

**Short Research Papers
on Knowledge, Innovation
and Enterprise**

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PREFACE

‘Strengthening the links in the knowledge, Innovation and Enterprise Chain’

The Organising Team of the International Conference on Knowledge, Innovation and Enterprise is enormously delighted to publish this book—Short *Research Papers on Knowledge, Innovation and Enterprise*—as part of the 2013 KIE Conference Book Series. It is also a real privilege for us to have a wide range of subject specialists to contribute to this book.

Knowledge, Innovation and Enterprise are significant themes of the KIE conference—innovation sits at the heart of what the KIE conference is all about. Innovation in this context is broadly defined. I have—along with a colleague from IBM—conceptualised innovation in a seminal work as a by-product of creativity (see Ogunleye and Tankeh, 2006; Tankeh and Ogunleye, 2007). At the heart of innovation is knowledge. But knowledge on its own will not produce a desired result: it requires our abilities to apply that knowledge in a variety of contexts—both to familiar and unfamiliar situations—in a way that creates or adds value (see also Ogunleye, 2001). Creating or adding value to a product or service or taking the outcome of innovation to the marketplace is an art of enterprise—something that is relished by every entrepreneur. So our mission at the KIE Conference is to provide a platform for stakeholders in the fields to join hands with us to strengthen the knowledge, innovation and enterprise chain.

Finally, I’m grateful to all the authors in creating time from their very busy schedules to contribute to this book. Thank you.

James Ogunleye, PhD, FRSA
Chairman, 2013 KIE Conference

References

- Ogunleye, J. and Tankeh, A. (2006) Creativity and innovation in IT Industry: an assessment of trends in research and development expenditures and funding with particular reference to IBM, HP, Dell, Sun, Fujitsu and Oracle, *Journal of Current Research in Global Business*, vol. 9, 14, pp 75-85, Fall 2006, 95-104.
- Ogunleye, J. (2001) Creativity training techniques: how to spell success in creative organisations, *Training Journal*, January, pp21-23.
- Tankeh, A. and Ogunleye, J. (2007) The Server Market: Innovation, Competitive Performance and Optimal Strategy in the face of ‘Disruptive Innovation’, *Conference Proceedings (Peer-Reviewed)*, 19th Annual Conference of the Association for Global Business, Nov 15-18, 2007, Washington DC, USA.

Short Research Papers on Knowledge, Innovation and Enterprise

ILEANA HAMBURG & EMMA O BRIEN

MANAGING AND USING KNOWLEDGE EFFICIENTLY IN COMPANIES BY USING COOPERATION AND SOCIAL MEDIA

Introduction

With constant changes within the business environment such economic recession, complex client requirements, rapid development of new technologies, and more knowledge. It is necessary for companies to be flexible and fast familiarise themselves with new working environments and technologies.

The only thing that gives competitive advantages to an organization is what it knows, how it uses that knowledge and how fast it can learn something new. Argote and Ingram (2000).

It is estimated that the average manager spends 25% of his time looking for information and trying to use this knowledge for their organisations. But with the ever increasing dependence of the web the body of information is growing exponentially. Traditionally, the web had a structured format with information being available from websites and databases. However with the introduction of social media (Wikipedia, 2012), blogging and other Web 2.0 tools (O'Reilly, 2005), a new population of users and knowledge managers appear; social media is an effective way to look for an answer to a request from a customer by searching in the business partner systems, customers data bases etc. Information is no longer structured. Individuals are becoming responsible for tagging and categorising their own content. Social media is considered as an "open and unstructured knowledgebase". With the growth of unstructured information and knowledge and different ontologies for such how do companies manage their knowledge and integrate it into their companies. The impact of social media in companies forces researchers, experts, managers to rethink knowledge management and create new challenges taking into considerations both behavioural as well as technical issues. More time should be spent analysing all of the new knowledge created through social interactions in communities, business-to-business and business-to-consumer and determining the advantages and disadvantages of using social media.

This chapter will explore traditional approaches to knowledge management and

use and how to exploit social media and Web 2.0 to effectively manage and use knowledge. Scenarios are outlined to give examples of the use of social media in industry.

Traditional approaches to Knowledge management and use

Knowledge management involves the creation use and transfer of knowledge. Knowledge management has roots in management, strategy, technology, innovation and psychology. There have been many approaches to knowledge management but little formal theories developed. Nonaka (2000) is one of the few people to develop a theory for the creation aspect of knowledge management that seems to have stood the test of time. Davenport et al (1997) also created a number of principles of knowledge management and did in-depth studies of knowledge management projects.

Significant research has been conducted in the area of technology and knowledge management with a number of researchers creating knowledge bases or repositories, yellow pages and best practice intranets. Robles-Flores (2005) highlighted that knowledge management system (KMS) are different from information systems. Information systems automate repetitive tasks, KMS “deal with the complex task of facilitating knowledge sharing”.

Knowledge Management projects

Most KM projects have one of three aims:

1. Coding and sharing of best practices e.g. knowledge bases, intranets
2. Creation of corporate knowledge directories e.g. yellow pages
3. Creation of knowledge networks to allow experts to connect to each other e.g. yellow pages.

However there has yet to be a revolutionary breakthrough in this area. There may be a number of reasons for this:

1. Schulze and Leider (2002) question, how much knowledge is enough? Too little leads to inefficiencies, chaotic social relations and expensive mistakes while too much results in stringencies that stifle creativity and knowledge creation resulting in counter-productiveness in a dynamic business environment, silencing diverse perspectives and unwanted accountability. The body of knowledge is exponentially increasing every day and it is difficult to provide the correct balance of information.
2. Furthermore Thomas et al (2001) also emphasise that context plays a large role in KM. They state that knowledge is bound up with human intelli-

gence and social context. Highlighting that the view of knowledge as passive, analytic and atomistic, composed of facts that can be stored, retrieved and disseminated with little regard for new and different contexts in which it can be used is too simplistic. Often KM is concerned with getting the right information to the right people at the right time. What is “the right”? IBM argue that the individual level is the wrong level of granularity, that KM should be aimed at the social level. Thus they advocate the use of social software to support KM.

3. Davenport, et al. (1997) highlighted that because of the human element in knowledge a flexible, evolving structure for knowledge is desirable and the motivational factors in creating, sharing and using knowledge are very important.

Lichtensten et al (2002) tried to combat these issues. She observed the use of email (due to its ubiquity) as a KM tool. She stated that email integrates work with practice and that its content, management and operation are highly personalised and contextualised. Thus it is a prime example of a sustainable KM tool. She identified a six stage approach to the generation of a sustainable KMS [five of the six stages are]:

1. Attention—so much information out there; difficult to catch employees attention; knowledge [therefore] needs to be personalised, emotionally evocative, trustworthy and easy to digest.
2. Integration—must be easily integrated with everyday work practices.
3. Personalisation—what is in it for me?
4. Context – must relate to the context in which it is used.
5. Knowledge development lifecycle—initiation (knowledge seed), crystallisation (knowledge formulated), sharing (disseminated) and application.

With increase in popularity of social media people are becoming more motivated to share and use knowledge in their own personal social networks. This media is being widely adopted by companies for marketing and sales purposes. However companies are slow to integrate this technology into their organisations to facilitate the management of knowledge. This may be due to the fact that it is highly unstructured and cannot be controlled. Furthermore people seem to be slower to share professional knowledge than personal knowledge. Social media can overcome some of the issues above it is highly personalised, contextualised and certainly gains ones attention! The next section will discuss the use of social media for knowledge management

Knowledge management and Social Media

Knowledge Management (KM) in an organisation means a hierarchical, structured view of knowledge to match the hierarchical view of the organization. Knowledge has different origins in the organization, but under knowledge management it is channelled and gathered together in a knowledge base (cistern) where it is distributed based on a predefined set of channels, processes and protocols (Bradly and Mc. Donald, 2011). This process of KM, traditionally, has been closely linked with librarianship—the keepers of structured document repositories.

Social media (SM) i.e. media which supports social interaction (Hamburg, 2011), with many different forms, including internet forums, weblogs, wikis looks chaotic in comparison. There is no predefined index, no pre-qualified knowledge creator and no knowledge managers, ostensibly little to no structure. SM should not kill off KM but bring it to life. So it is to expect that executives, knowledge managers, software firms will seek for tools, processes and approaches to “toughen” social media in order to support employees, customers, suppliers to find information, to create their own knowledge from their opinion.

The use of Web 2.0 in connection with social media facilitates a new level of interaction that makes it easier to collaborate and share information (Hall and Hamburg, 2011). Web 3.0 has led to simplification of software development; whose applications that are relatively small, and due to the data in the cloud, can be operated on any device like PC, tablet, smartphone; this means rapidity, easy customization and well distribution (particularly by social networks). The Web is moving beyond Web 2.0 and 3.0 but many organisations still struggling Web 1.0 do not make the most of what Web 2.0 and 3.0 offer also for KM.

It seems that social media is forcing creators to provide knowledge to users in consumable amounts, which makes it easier for sharing their knowledge and to stop the huge amount of information. In addition the knowledge is highly personalised and contextualised.

Some issues to be considered in connection with the use of SM for KM are the following (Hamburg, 2010):

- Social media technology provides the conduit and means for people to share their knowledge, insight and experience on their terms. It also provides a way for the user to see and evaluate knowledge based on other feedback.
- Purpose is the reason why people share their ideas, experience and knowledge. They participate personally in social media. They do so because they want to, rather than being told to as part of their job.
- In order for a knowledge management system (KMS) to have value, users must enter insight on a regular basis and they must keep the knowledge up-

- to-date.
- It's difficult to organize information in the right manner, make it searchable, and then present it so the most relevant responses are at the top of the search results.
- Public research engines benefit from counting the number of links between items, but unstructured content, which is the king of the public web, can bankrupt enterprises.

Some of the most effective approaches for capturing, sharing and transferring knowledge are listed. One of them refers to Community of Practice (CoPs) (Wenger et al., 2002). CoPs are groups of people working together at solving open-ended questions, learning in social and physical contexts of real-world problems and using collaboration and cognitive tools for KM and learning. Some main characteristics of CoPs are the following (Hamburg, 2010).

- a shared domain of interest of its members, their commitment to this domain and a shared competence.
- Common ideas, joint activities.
- Common practice, members being practitioners with different expertise.

The concept of CoPs has been revisited by several academics; sharing and transferring knowledge and learning seem to be the most relevant aspects of the concept. In CoPs, knowledge is created when people participate in solving a common problem and exchange the needed knowledge for the problem. Sharing knowledge makes more sense in the context of a CoP because its members have common interests in learning and exchanging experience in their specific area of activity and this favours reciprocal trust. Trust is a key facilitator necessary for the effective transfer of knowledge and is important for the creation of a common pool of knowledge that can also be used for a new/innovative product or service. Therefore, CoPs play a critical role in the promotion of learning and innovation in an organisation and can become a powerful tool in generating sustainable competitive advantages for companies. They are an alternative to building teams particularly in the context of an innovation. The tacit knowledge accumulated over years from experience can be processed to invent new products or services that add value to companies. Innovation depends also on how people apply knowledge to produce solutions for old and new problems.

Internet technologies extend the interactions within communities of practice beyond geographical limitations and make possible the building of virtual CoPs (VCoPs) (Hamburg, 2011). These communities free their members from constraints of time and space. In comparison to technical solutions for knowledge management, VCoPs can mark a change from "managing knowledge" to "enabling knowledge." (Krogh et al., 2000).

In the context of KM, many other virtual communities can be found on the internet, such as social networks and newsgroups. Also VCoPs can be social networks. In the last years, in connection with social media, the requirements for knowledge oriented communities have changed. For example, communication between the community members to reduce geographical and cultural distances and a simplified and effective sharing of knowledge has to be enabled. Also a structured knowledge base is an important step to (re)use common knowledge. The creation of communities involves more than developing technology and telling people to participate. It involves a range of vision, strategy and management actions.

Some tips when using social media and communities, to assist in knowledge management, should be the following (www.tibbr.com/blog/tag/knowledge-management/) Assess the current situation,

- Vision and definition to develop an own custom- or own business-oriented knowledge management strategy for the organisation,
- Plan of action, which should be adaptable.

Scenario of the use of Social media for Knowledge Management

We developed a scenario of social media and knowledge management within the project Net Knowing 2.0 (www.netknowing.eu) targeted to improve the use of informal learning (tacit knowledge use and transfer) and new technologies in companies. The scenario has been tested with companies from Germany.

We applied social knowledge management in the processes of people development and further education. A framework for social learning through technology based mentoring processes has been developed for introducing new staff particularly with disabilities in German companies. This is based on informal learning and trust. A road map has been developed within a workshop for a social efficient mentoring approach. In order to improve knowledge access and sharing and to leverage the benefits of social media in work context a CoP has been developed supported by an ICT platform.

The tool TikiWiki (<http://cop.netknowing.eu>) has been used which support different social media applications. The decision to use TikiWiki was taken after an analysis of some open source tools. The users of the platform can get information about the project and about Web 2.0, informal learning and knowledge management in networks. If the user registers on the CoP, they can use community services like discussion forum, file gallery and particularly the community directory with addresses, competences and interests of social network (community) members.

Two main social learning products of Net Knowing 2.0 are a self-learning basic

course focused on benefits of informal learning for SMEs and how to learn using Web 2.0 and social networks to transfer, share and use knowledge using collaborating practices through technology. An eLearning advanced course was also developed that focused on the implementation of Web 2.0 based informal learning and best practices of KM in networking and mentoring in SMEs and other organizations (Hamburg 2011, 2013).

The experience from this project will be used in the ongoing project DIMENSAAI (www.dimensaai.eu) for applied social knowledge management in the processes of people development and further education in social and care sectors. A social platform has been developed to support KM, social learning and mentoring (<http://www.platform.dimensaai.eu>).

Conclusions

Social media will be a boon for knowledge management in the organisations, which should mean that many of the benefits we experienced in the consumer web space will become basic features of enterprise solutions, but it's likely that social-media-driven knowledge management will require much less of the "management" component. In the future much more time will be spent on analysing all the new knowledge that is being created through social interactions instead of spending too much time cleaning up the data, validating and categorizing it like in traditional KM.

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References

Argote, L. & Ingram, P. (2000). Knowledge transfer: A basis for competitive advantage in firms. *Organizational Behaviour and Human Decision Processes*, 82(1), pp. 150-169.

Davenport, T., Long, D.W., Beers, M. (1997) *Managing the Knowledge of the Organization: Building Successful Knowledge Management Projects*, Centre for Business innovation working paper 1997

Bradley A.J. , McDonald, M.P. (2011) Social Media versus Knowledge Management - HBR Blog Network. blogs.hbr.org/cs/2011/10/social_media_versus_knowledge.html | 9:27 AM October 26, 2011.

Hamburg, I. (2011). Supporting cross-border knowledge transfer through virtual teams, communities and ICT tools. In: Howlett, Robert J. (ed.): *Innovation through knowledge transfer 2010*. Berlin: Springer, pp. 23-29.

Hall, T., Hamburg, I (2011) Readiness for knowledge management, methods und environments for innovation. In: O'Brien, Emma / Clifford, Seamus / Southern, Mark (eds.): *Knowledge management for process, organizational and marketing innovation: tools and methods*. Hershey: Information Science Reference, p. 1-15

Hamburg, I (2010). "eLearning 2.0 and social, practice-oriented communities to improve knowledge in companies". In: Ortiz Bellot, G., Sasaki, H., Ehmann, M., Dini, C. (eds.) *ICIW, The Fifth International Conference on Internet and Web Applications and Services*; 9-15 May, 2010, Barcelona, Spain. Barcelona: CPS, 2010 (411-416).

Hamburg, Ileana. "Learning solutions and social media based environments for companies". In: *Life long learning for competitiveness, employability and social inclusion: international conference*, 11.-13. Nov. 2011, Craiova, Romania. Editura Universitaria, pp. 31-37, 2011.

Hamburg I. (2013) Knowledge transfer through diversity coach and mentoring partnership. In: Howlett, Robert J. / Gabrys, Bogdan / Musial-Gabrys, Katarzyna / Roach, Jim (eds.): Innovation through knowledge transfer 2012. Heidelberg: Springer, p. 107-119

Hamburg, I (2013) Facilitating learning and knowledge transfer through mentoring. In: CSDU 2013: 5th International Conference on Computer Supported Education; Aachen, Germany, 6-8 May, 2013. Lissabon: Science and Technology Publications, 4 p.

Krogh, G., Ichijo, K. & Nonaka, I. (2000). Enabling Knowledge Creation. How to Unlock the Mystery of Tacit Knowledge and Release the Power of Innovation. New York. Oxford University Press.

Lichtenstein, S and Swatman, P M. C. 2002, *Sustainable knowledge management systems : intergration, personalisation and contextualisation*, Deakin University School of Information Systems, Geelong, Vic.

O'Reilly, T. (2005). What is Web 2.0. Design patterns and Business models for the next generation of Software. <http://www.oreillynet.com/lp/a/6228>.

Robles-Flores J.A., Kulkarni, U. (2005) Knowledge Management Systems: A Business Value Model. 01/2005; In proceeding of: Pacific Asia Conference on Information Systems, PACIS 2005, Bangkok, Thailand, July 7-10, 2005

Schultze, U., Leidner, D. (2002) Studying Knowledge Management in Information Systems Research: Discourses and Theoretical Assumptions, MIS Quarterly Vol. 26 No. 3, pp. 213-242/September 2002

Thomas, J.C., Kellogg, W. A., and Erickson, T. (2001) The knowledge management puzzle: Human and social factors in knowledge management, IBM White paper, 2001

Wenger, E., McDermott, R. & Sydner, W. (2002). Cultivating communities of practice: a guide to managing knowledge. Boston: Harvard Business School Press.

Wikipedia. <http://en.wikipedia.org/wiki/Tikiwiki>. Retrieved 2010-01-03.
Wikipedia http://en.wikipedia.org/wiki/Social_media

Short Research Papers on Knowledge, Innovation and Enterprise

EBRU CAYMAZ, METIN KARADEMIR & UGUR YOZGAT

**AN EXPLORATORY RESEARCH ON KNOWLEDGE SHARING
THROUGH FANTASTIC MOVIES: THE LORD OF THE RINGS CASE**

Abstract

Significance of knowledge sharing within an organization has been studied many times but this study does not aim to replicate these studies by only portraying the methods of efficient and effective knowledge sharing methods in a usual organizational setting. Instead, we seek to answer specific questions; whether effective and efficient knowledge sharing methods could be pursued through movies and if the answer is yes, in what ways and to what extent this process could be revealed and applied by the organizations. In order to answer these questions and develop a broad approach to comprehend this issue, the Lord of the Rings trilogy is selected as a case study. This trilogy is selected because we believe that movies have a potential to provide a different point of view in terms of understanding the concept of knowledge sharing, particularly tacit knowledge. By the method of document analysis, knowledge management literature has been examined carefully and five main headings are selected to investigate knowledge sharing methods within the selected sample. The data obtained is analyzed by the method of discourse analysis. Findings are discussed in the concluding part of this paper.

Key Words: Knowledge, Knowledge Management, Knowledge Sharing, Tacit Knowledge.

Introduction

In current studies, it could clearly be seen that knowledge management—which is defined as the combination of organizational culture, strategic goals, individual needs, and the expertise of people to create an atmosphere of learning and growth (Hovland, 2003; McElroy, 2000; Edwards, 1994; Argyris, 1992)—has increasingly been pointed out as a significant concept in terms of sustaining the efficiency and effectiveness of an organization in a fast-changing knowledge society (Marquart, 1996; Young, 2010; McElroy, 2000; OECD, 2004; Davenport and Prusak, 1998). Assessing and meeting each individual's needs becomes essential at

this point because it is believed that through the use of applicable knowledge, people and organizations could sustain their positions and therefore, improve. Accordingly, improving people within an organization would probably result in improving the organization's strategic goals (Rosenberg, 2001; Voosen and Conneely, 2002; Newman, 1999). It is also stated that knowledge management becomes legitimate through its conceptual components (Marquard, 1996; Nanoka and Takeuchi, 1995; Fowler, 1992). To manage knowledge successfully, significance of these components and knowledge transfer within an organization has been studied many times but this study does not aim to replicate these studies by only portraying the methods of efficient and effective knowledge sharing. Instead, in this study we aim to develop a broad approach to comprehend this issue by adopting a different method to investigate the knowledge sharing methods within a completely different setting. The Lord of the Rings trilogy is selected as a case study. Three movies are examined in detail by the methods of document and discourse analyses and the findings are discussed in conclusion part.

Review of literature

Knowledge

In literature knowledge is often defined as a "justified personal belief" (King, 2009). There are a number of taxonomies that specify different types of knowledge. The most fundamental distinction is between "tacit" and "explicit" knowledge. Tacit knowledge can be found in the minds of people and is either impossible or difficult, to express (Polanyi, 1966). Most knowledge is initially tacit in nature; it is laboriously developed over a long period of time through trial and error, and it is not utilized because "the organization does not know what its employees know" (O'Dell and Grayson, 1998). Some knowledge is well grounded in business processes, products and relationships that have been created over time through the implementation of ongoing series of improvements.

Knowledge Management

Knowledge management (KM) is the planning, organizing, motivating, and controlling of people, processes and systems in an organization to ensure that its knowledge-related assets are improved and effectively applied. Knowledge-related assets include knowledge in the form of printed documents such as manuals, knowledge stored in electronic repositories such as a "best-practices" database, employees' knowledge about the best way to do their jobs, knowledge that is used by teams who have been working on specific problems and knowledge that is well grounded in the organization's processes, products and relationships (Waterson,

2011; Clarke and Cooper, 2008). KM processes directly improve organizational processes; such as innovation, collaborative decision-making, and individual and collective learning. These improved organizational processes lead to intermediate outcomes; better decisions, products, services, organizational behaviours, relationships. These components will improve organizational performance as long as knowledge transfer is ensured within the organization (King, 2009).

Knowledge Transfer

Knowledge transfer is defined as the conveyance of knowledge from one place, person or ownership to another in literature. Successful knowledge transfer results in successful creation and application of knowledge in organizations. The process of knowledge transfer has been described by many researchers using models (Liyanage et al., 2009; Krishnaveni and Sujatha, 2012). Knowledge transfer does not necessarily mean that the knowledge has to be in exactly the same structure. As it is pointed out by Krishnaveni and Sujatha (2012) transfer of knowledge does not mean “a full replication of knowledge in the receiving unit”. Indeed, knowledge is often modified by the receiver. The key element in the knowledge transfer is not the underlying (original) knowledge, but rather the extent to which the receiver gets useful knowledge and utilizes this knowledge in its own operations (Wilkesmann et al., 2009). Nonaka et al. (2000) argue that knowledge can be converted or captured in several ways; “from tacit knowledge to tacit knowledge (through socialization); from tacit to explicit knowledge (through externalization); from explicit knowledge to explicit knowledge (through combination) and from explicit knowledge to tacit knowledge (through internalization)” and in this study we focus on capturing tacit knowledge as it is pointed out much more significant.

Methodology

The population of this study includes all movies ranked among the first 250 of IMDb list. The sample of the study consists of the Lord of the Rings trilogy. By the method of document analysis, knowledge management literature has been examined carefully and five main headings are selected in order to investigate knowledge sharing methods within the selected sample. These headings are creation of artefacts, micro-level interactions, reflection, storytelling and questioning (Krishnaveni and Sujatha, 2012) and they are believed to be efficient in transferring especially the tacit knowledge. For instance, in the movie called “Back to the Future” (1985) we see that the idea of inventing a “time machine” which enable people to travel in time and in this way repair their mistakes but we also see that just having ability to travel in time is not sufficient for repairing all mistakes. While the character is trying to repair his mistake by means of an artefact, he involves in an

active learning process and thus; he learns how to behave as a grown up person within this process. Also in the movie “The Shawshank Redemption” (1994) we see one of the best examples of reflection method in the sentences of the character Ellis Boyd Red Redding, who is a former criminal and turns into a good and merciful person:

Am I sorry for what I did? There's not a day goes by I don't feel regret. Not because I'm in here, or because you think I should. I look back on the way I was then, a young, stupid kid who committed that terrible crime.

Furthermore, questioning method could clearly be seen in most of the movies but one of the best examples is the movie called “12 Angry Men”. In this movie we see that a simple “what if” question causes such results that even go beyond our expectations and we start to question what we really “know”. Similarly, we applied the discourse analysis method to analyze the Lord of the Rings trilogy and discussed the findings in conclusion part.

Results and conclusion

Lord of the Rings Trilogy is selected because we believe that they have a potential to provide a different point of view in terms of understanding the concept of knowledge sharing in a completely different setting similar to daily life. Even more, it might help us to discover new natural and applicable ways of transferring the knowledge in an organizational setting.

As it is already mentioned we have determined five headings and examined the trilogy within that scope. We have found that there are many implications reflecting the tacit knowledge sharing and most of them are intermingled in each other. The most prominent examples are given below:

- **The Ring:** It is an example of both creating artefacts and storytelling. In the film we see that the ring has its own story and the plot is based on this story. As an artefact, it offers ultimate power and the holder of it would have the greatest dominance. The will to power so strong that leads to destruction in the end and it this way it adversely affects the fate of all races. Herewith the will to power is associated with evil and corruption, also there is a biblical reference that human race is inclined to evil by nature. Instead of destroying the ring, Isildur as a human, keeps it although he is well aware of that it only causes destruction and suffering. Therefore even the wisest people do not venture to carry it. This story and artefact presents ethical issues for the characters in the film as well as the audience. The ring urges the characters to question their deeds and intents while implying the fact that good people will always win. According to this film, the real power is abandoning the power itself. The key to a decent life is to

- abandon your power for the sake of others.
- ***Anduril (Aragorn's Sword)***: This sword is also a good example for creating artefacts and storytelling. Although there is a reference that human race is inclined to evil, there are brave heroes to fight against the evil as well. Here, Anduril, stands for the last hope of races who courageously fight for their lives. According to its history, the ring is taken with this sword from the Dark Lord, Sauron and it gives hope to people as it reminds that the evil can be defeated. Also this sword is very significant for Aragorn's personal journey to maturity. All these information presents us the fact that it is also possible for humans to make good choices when they have a chance to choose. Therefore, defeating the evil is possible as long as there are good ones.
 - The very end of the Fellowship of the Ring is a good example for micro level interactions. In this scene Aragorn gives hope and courage to Legolas and Gimli by these words: "Not if we hold true to each other. We will not abandon Merry and Pippin to torment and death. Not while we have strength left. Leave all that can be spared behind. We travel light. Let's hunt some Orc." Although it is a really difficult mission, they become successful in the end as they start to believe in themselves and then they make other people believe. For instance, in the first movie we see that even Elves do not believe that the evil can be defeated so they do not eager to help them but in the second movie they send their best troop to fight together with humans. We witness that a micro level interaction positively grows in a way that gets beyond the imagination and in the end results in the transformation of all characters, as they receive support from the others they get strong and enthusiastic; even the most coward ones turn into heroes like Merry and Pippin.
 - Gandalf is an outstanding example for reflection method. In the first movie Gandalf fights against the giant creature named Balrog. He stands on the bridge against Balrog and they fall into the pit. Gandalf continues to fight while they are falling together. Balrog follows Gandalf through the secret way leading to the top of the mountain but Gandalf manages to kill the most feared ancient monster in the Middle Earth. Gandalf also dies there. His soul goes to Eru. Eru decides that Gandalf has a mission to complete and sends him back to Middle-Earth. He transforms into Gandalf the White, who has great power and genius, as a divine representative of White Flame. Gandalf's white cloth stands for his wisdom. His vision changes and this makes him a great leader who brings all races together and encourages them to fight against Sauron. Gandalf does not only adapt to the new situation, but also experiences an internal transformation.

- In the first movie Gandalf and Frodo talks about Gollum in the Mines of Moria. Frodo keeps talking about Gollum and tells Gandalf his wish that Bilbo should have killed Gollum when he had a chance. Gandalf answers Frodo and tells him that they cannot decide who lives or who dies. Gandalf keeps talking and tells Frodo that Gollum may play an important role before everything finishes. The method that Gandalf uses here can be called questioning; he doesn't oppose Frodo's idea directly, makes Frodo question himself and Frodo's thoughts change after this process. Gandalf's foresight comes true at the end of the story. Frodo has a chance to kill Gollum but he decides to collaborate. Gollum helps Sam and Frodo to find the way to Mordor where the ring can be destroyed. The ring affects Frodo and he changes his mind about destroying the ring. When he puts the ring on his finger, Gollum gets the ring from Frodo. They fight for the ring and Gollum falls into the lava. The ring is destroyed. So Gollum plays his role, he helps to all races indirectly to get their freedom. The message is clear for the audience; be patient, evaluate the situation in detail, do not hurry to judge because people might be corrupted but this does not necessarily mean that their actions will not have any good results at all.

In 1990s, especially the significance of sharing tacit knowledge which is much more difficult to express, imitate and transfer within an organization setting, has started to be questioned in terms of gaining competitive advantage. In a recent study conducted by Krishnavi and Sujatha (2012), the significance of tacit knowledge to gain competitive advantage is clearly pointed out and five methods to share tacit knowledge are determined. In our study we use these headings to examine whether these methods have any similarities in a completely different setting. Also we tried to find out whether and to what extent knowledge sharing methods used in movies could be transferred to business. We found that knowledge sharing methods are similar in movies and these methods contribute to the personal developments of the characters. Also while these characters grow in maturity, they also assist other characters to mature in an informal way.

Sharing explicit knowledge might have high costs as it requires conducting trainings, employing experts, proper reporting etc. whereas sharing tacit knowledge in daily life does not necessitate any cost if there is an organizational culture based on trust. Besides, people are more inclined to internalize and utilize tacit knowledge compared to explicit knowledge. Furthermore, trainings basing on explicit knowledge sometimes may become a part of legitimization issue of organizations and hence may lose its influence when the organization conducts them only for the sake of legitimacy.

Conclusion

In conclusion, areas on tacit knowledge include an important potential so these areas should be discovered and highlighted. It is suggested that organizations should ensure an organizational culture, which is based on trust and sharing, and encourage their employees to share their knowledge and experiences. In this way they could increase the corporate performance. Last but not least, these experiences and knowledge should be materialized by technological tools and transferred to new employees in this way.

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References

- Argyris, C. 1992. *Overcoming Organizational Defences: Facilitating Organizational Learning*. Boston: Allyn and Bacon.
- Davenport, T. H. and Prusak, L. 1998. *Working Knowledge: How Organizations Manage What They Know*. Harvard Business School Press, Boston, MA.
- Edwards, M. 1994. NGOs in the Age of Information. *IDS Bulletin*, 25(2), pp.117–24.

- Fowler, A. 1992. *Prioritizing Institutional Development: A New Role for NGO Centres for Study and Development*. IIED Gatekeeper Series, London, No.35.
- Hovland, I. 2003. Knowledge Management and Organizational Learning: An International Development Perspective. Working Paper 224, London.
- Krishnaveni, R., and Sujatha, R. 2012. Communities of Practice: An Influencing Factor for Effective Knowledge Transfer in Organizations. *The UIP Journal of Knowledge Management*, Vol.10, No.1.
- Liyanage C., Elhag T., Ballal T., and Li Q. 2009. Knowledge Communication and Translation: A Knowledge Transfer Model. *Journal of Knowledge Management*, 13(3), pp. 118-131.
- Marquardt, M. 1996. *Building the Learning Organization*, New York: McGraw-Hill.
- McElroy, M. 2000. Second-Generation KM: A White Paper. *Knowledge Management*, 4 (3).
- Newman, A. 1999. *Knowledge Management*. Infoline No. 259903.
- Nonaka, I., and Takeuchi, H. 1995. *The Knowledge-Creating Company*. New York: Oxford University Press.
- O'Dell, C. and Grayson, C. J. 1998. If We Only Knew What We Know: Identification and Transfer of Internal Best Practices. *California Management Review*, 40(3): 154-174.
- Polanyi, M. 1966. *The Tacit Dimension*, Garden City, NY, Doubleday.
- Rosenberg, M. J. 2001. *E-Learning: Strategies for Delivering Knowledge in the Digital Age*, New York: McGraw-Hill.
- OECD, 2004. *The Significance of Knowledge Management in the Business Sector, Organisation for Economic Co-Operation and Development*, OECD Publications, Washington, U.S.
- Voosen, D., and Conneely, P. 2002. *Building Learning Communities*. Infoline No. 250208.
- Wilkesmann U, Fischer H., and Wilkesmann M. 2009. Cultural Characteristics of Knowledge Transfer. *Journal of Knowledge Management*, 13(6), pp. 464-477.
- Young, R. 2010. *Knowledge Management Tools and Techniques Manual*. Asian Productivity Organization Press, Tokyo, Japan.

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“AT THE FUZZY FRONT END” INTRODUCING FOUR STAGES OF INNOVATION TO SOLO CUP EUROPE: A KNOWLEDGE TRANSFER PARTNER- SHIP WITH TEESIDE UNIVERSITY

Introduction

This case study paper describes a two year Knowledge Transfer Partnership (KTP) between Teesside University and Huntingdon based foodservice and food packaging manufacturer Solo Cup Europe. The project focused on “fuzzy front end” innovation including early problem definition, idea generation and screening methodologies as the first stages in a Stage-Gate process. It introduced, developed and embedded a new creative working culture centred on New Product Development (NPD) as a core activity. The project was successfully completed in October 2010.

The Situation

Solo Cup Europe (SCE) manufacture or import and distribute disposable paper cups, thermo-formed rigid plastic containers and expanded polystyrene articles to the foodservice and food packaging markets. SCE is a UK limited company operating from a 13 acre site in Huntingdon, Cambridgeshire. In 2009 SCE produced over 3.5 billion units with sales of £70 million and it is one of the world’s largest manufacturers of disposable foodservice packaging.

At that time, SCE had an American parent, the Solo Cup Company who had limited knowledge of the UK market and no knowledge, skills or resources to identify UK/European markets or the most appropriate strategies, products or materials to succeed in these markets.

Prior to the commencement of the KTP, SCE’s core competencies were in the manufacture of food service and retail packaging products from paper, plastic and foam.

SCE was one of the first food packaging companies to implement an effective Environmental Management System (EMS) system based on the International Standard ISO14001. The company had an existing and strong engineering CAD design capability allowing technical refinements and alterations to products at a customer’s request but had limited collaborative product development experience.

This centred on tailoring products to customer requirements and often stemmed from a customer's own initiation. Engineering expertise was supported by a graphic design service which allowed Solo to offer a wide range of print services from stock prints and specialty designs, to custom design and printing. As might be expected, Sales and Marketing were also existing areas of strength with a high level of product knowledge and market expertise for foodservice and packaging products. This enabled advice to customers on a wide range of disposables and the industry as a whole. Product ranges centered on:

- *Plastic Thermoforming*—e.g. Polyethylene terephthalate (PET) tumblers and containers and thermoformed dairy pots and lids.
- *Paper Conversion*—converting various papers into ranges of products e.g. cups and containers.
- *Foam Extrusion and Forming*—Expanded Polystyrene (EPS) products from cups to containers and bowls.

SCE had previously relied upon decreasing polystyrene usage as its base material as a means of innovation and in order to comply with increasing environmental pressures and customer demands. The KTP challenge was to decrease the UK dependence on this single monomer material in a single market sector. This would be achieved by entering new food/foodservice packaging markets with innovative, value added products which accounted for environmental factors.

The Opportunity

The project was to design and implement a market driven, new product development facility to enable the commercialisation of new, innovative and environmentally responsible products. The purpose of the project was to:

- *Predict* changes in the marketplace.
- *Enable* SCE to be responsive to these changes.
- *Ensure* that SCE products meet and/or exceed customers' changing needs and expectations.
- *Protect* SCE's existing market share from its competition
- *Drive* increased sales.

Innovation would be at the core of the activity. This would be achieved by:

- *Understanding* SCE capabilities, the competitive market environment, strengths, weaknesses and areas for competitive advantage.
- *Implementing* an NPD strategy, systems and procedures to identify new customers, product and market gaps and to deliver suitable designs that would have protectable IP.

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- *Embedding* NPD best practice and protocols in SCE within a continuous research and NPD facility.

The Problem

Bringing “change” to a company is never an easy task and developing a cultural shift within a long established organisation is always challenging. This KTP has been an effective tool in bringing about a shift in approach which has enabled seven new products to be developed as well as new processes and new thinking to emerge. This was accomplished by applying a structured methodology, utilising, developing and refocusing the considerable expertise that already lay within the company. The KTP associate was embedded within the company to act as the creative lead, to manage the process and to instil design thinking as a normal working practice.

The Method

A staged approach was implemented which developed capacity over its duration.

Internal Audit

An internal auditing process was undertaken. The associate gathered information from across the organisation (marketing, supply chain/production, sales and innovation, environment and packaging). The overarching corporate business strategy was also discussed with directors. The audit set out to familiarise the associate with the company and bring an external “consultant’s” eye to current procedures. Areas examined included:

- Company vision and strategy
- Organisational structure and business plan
- Core competencies
- Internal SWOT analysis
- Key personnel, their roles, and the relevant skills and experience that they could bring to NPD
- Potential for efficiency gains

External Audit

An external audit was designed to build a threshold level of market knowledge from which a continuous research process would deliver sustained intelligence into the business. Its purpose was:

- To understand and contextualise the marketing environment

- To rate competitors objectively against the company
- To assess opportunities, threats & potential for new business by forecasting the future

The NPD Strategy

The NPD Strategy was developed and implemented with key personnel which had been agreed at the directorate level. This was later refined into a document which gave:

- A platform for continuous Research & NPD including checkpoints for management decisions taking
- A roadmap setting clear expectations and deliverables
- Clarity of thinking between the NPD activity and the corporate strategy
- Resourcing needs were also identified and
- Sustainable design was to be given greater emphasis

Based on the skill sets identified from the internal audit and the opportunities defined from the NPD strategy, project initiations were identified and flexible teams were created to contribute to their development. Here, in “the innovation space”, the associate was tasked with:

- Managing & facilitating NPD
- Developing NPD, design thinking & capacity across the organisation
- Utilising knowledge & expertise effectively.

By forming loose and flexible teams from within the company’s existing workforce the company benefited from more fully utilizing the existing expertise. Participants also gained new skills and approaches which would benefit the company in the long term. The role of the associate was to act as a catalyst for this creative thinking and bring together the right teams for specific projects and project stages.

Teams within the innovation space came from four divisions of the company – Marketing, Sales, Innovation & Environment and Production. Whilst there were some crossovers each area had key areas of contribution:

Marketing:	International Lifestyle New/Emerging Markets Competitor Activity Possible Futures	Sales:	International Current Needs Customer Interface Trade Intelligence
Innovation and: Intellectual Property		Environment:	Sustainability Legislation Materials & Processes

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Production: Materials & Processes
 Future Investment
 Current Capability
 Production and Distribution
 Tooling and Technical

Innovation Funnel

Market opportunities were examined and a variety of design processes, models and protocols were trialled. This approach led to the evolution of a four stage *Innovation Funnel* which was specifically tailored to the company:

1. *Discovery*— Ideas into the Concept Funnel. Led by a research and intelligence feed. Ideas are proposed and screened against the NPD strategy. A *Product Idea Net* invites contributions from across all areas and levels of the organisation submitted via a widely internally advertised, product idea form.
2. *Ideation*—Shaping the Idea into a Realised Concept. A number of different creative tools are used to develop an idea or realise a concept in the process. These include brainstorming, scenario setting, sketching, experience prototyping, form prototypes and consumer trials. This feedback is fed back to multidisciplinary teams which help shape the idea to the best configuration
3. *Development*—Concept to Feasible Product. At this stage the brief is finalised for the detailed design of the product. Tooling design and manufacturing prototypes for testing can be outlined together with risk analysis and outline specifications for the product. At the end of this stage detailed financial analysis takes place and Intellectual Property is filed.
4. *Launch Process*—Taking the Product to market after resource assessment. Full production tooling is produced, customers are targeted, marketing materials are developed and the sales team trained.

Throughout this collaborative process effective internal communication is critical. This is important to:

- *inform* and ensure staff understanding of the project benefits
- *rally support* and gain “buy-in” from key staff
- *educate staff* in new ways of working and thinking

Effective control of external communications is needed in order to avoid early disclosure of designs which could threaten Intellectual Property Registration.

Measuring Success

Over the 2 year duration of the project a number of key changes were introduced at SCE. These included:

A new innovation department

Headed by a new innovation management (the former KTP associate)

Innovation team now operating

- NPD procedures and protocols in place.
- A creative culture has been developed.
- Cross functional inputs enhance the creative process and the quality of decisions making.
- Improved efficiency (time to market).

Enhanced design process model in operation

- A deeper understanding of competitors and the marketplace based on on-going research.
- A steady stream of new product initiations.
- Creative and evaluative techniques have been adopted.
- A project timeline management process enables project progression to be monitored and efficiency enhanced.
- Reduction of risks for NPDs has been achieved due to greater understanding of market dynamics and applied metrics evaluations.

Presentation capability has been enhanced

- Improved visual coherency across presentation materials.
- 2-D (sketches), 3-D (CAD Visualisation and prototyping) and moving image (video demonstration).

Increased customer focus

- Key customer requirements are now more clearly understood.
- Customer facing materials and interaction has improved (including briefing sheets and non disclosure documents).
- Proactive development of products anticipates customer needs.

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- Customer involvement in the innovation process has enhanced customer loyalty.

NPD Strategy document implemented

- A platform now exists for continuous research & NPD with checkpoints for management decisions
- A roadmap with clear expectations
- Future resourcing needs have been identified
- Greater emphasis is now placed on sustainable design

Concluding remarks

By the end of the project, SCE's measurable deliverables included a series of seven new products, (including protected IP) which were nearing market readiness. A number have subsequently been successfully launched with customer feedback being very positive. The Associate won a prestigious 2010 National KTP Business Leader of Tomorrow Award and a North East Knowledge Transfer Showcase best poster award. He gained a Chartered Management Institute (CMI) Level 5 Diploma in Management and Prince 2 Foundation and Practitioner certificates. The associate was offered and accepted a full time, permanent position as innovation manager, in October 2010. The Teesside University has benefitted from supported, live student projects, support for teaching through associate presentations, case study materials and dissemination of best practice to university colleagues. The project has increased the profile of the university and presented public relations opportunities as well as helping to fulfil its key performance indicators for enterprise engagement. Research from this project is also building on the university's previous KTP experience in New Product Development.

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IRINA NEAGA & YUQIUGE HAO

TOWARDS BIG DATA MINING AND DISCOVERY

Introduction

We live in an era of big data that has embedded a huge potential and increased information complexity and risks such as insecurity as well as information overload and irrelevance. Also business intelligence and analytics are important in dealing with the magnitude and impact of data driven problems and solutions in the contemporary society and economy. Analysts, computer scientists, economists, mathematicians, political scientists, sociologists, and other scholars are clamouring for access to the massive quantities of data in order to extract meaningful information and knowledge. Very large data sets are generated by and about organisations, people, and their collaboration and interactions in the digital ecosystems and physical spaces. Diverse groups argue about the potential benefits, limitations, and risks of accessing and analysing huge amounts of data such as financial data, genetic sequences, social media interactions, medical records, phone/email logs, government records, and other digital traces generated by people and organisations.

With the development of internet communication and collaboration, data is playing a central and crucial role. Lots of data intensive applications occur in recent years such as the Google+, Twitter, LinkedIn and Facebook etc. All these data intensive driven applications generate and process massive data usually stored in the cloud.

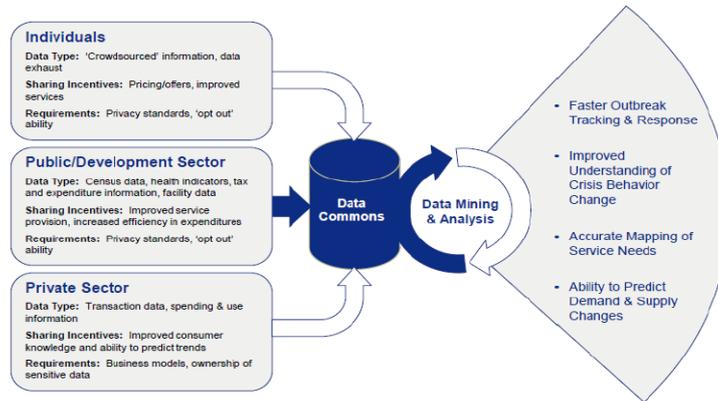


Figure 1 – Complex Data Infrastructure/Ecosystem (source: World Economic Forum, 2012)

Big data could be very beneficial to resolve critical issues providing the potential of new insights for the advancements of medical especially cancer research, global security, discovering and predicting terrorism activities, and dealing with socio-economic and environmental issues.

Big data could be interpreted as a complex data infrastructure and new powerful data technologies and management solutions are needed and will be directed to improve the decision making processes and forecasting through application of advanced data exploratory studies, data mining, predictive analytics and knowledge discovery as presented in figure 1.

The main key characteristics that define big data are volume, velocity, variety and value. Veracity could be also considered an additional characteristic. The related big data models are presented in figure 2.

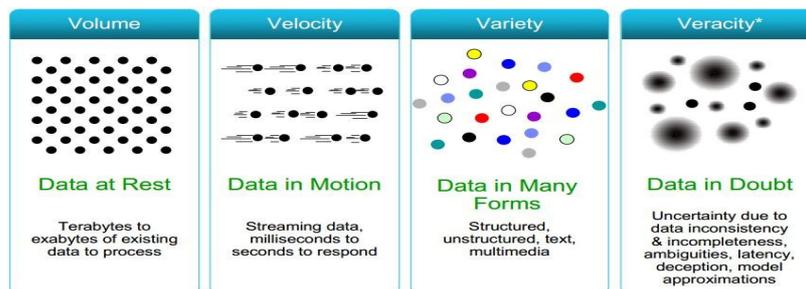


Figure 2 – Big Data Characteristics based on the source: McKinsey Global Institute, 2011

On the other hand because of the characteristics of the cloud, it is an enabler of big data acquisition, and software processing strategies. Based on Gartner's estimation, 50% of data will be stored on the cloud by 2016 (Schouten, 2012). However in the reality, cloud has not been widely used for data analytics especially in practical applications.

The availability of cloud based solutions has dramatically lowered the cost of storage, amplified by the use of commodity hardware even on a "pay as-you-go" basis that is directed to effectively and timely processing large data sets. The big data could be delivered in form of "as-a-service". Google BigQuery [<https://cloud.google.com/products/big-query>] is only one example of applying big data solutions in a cloud based platform.

In cloud computing, data and software applications are defined, developed and implemented as services. These services have defined a multi-layered infrastructure and are described as follows (Grace, 2010; Mell and Grance, 2009):

1. *Software as a Service* (SaaS), where applications are hosted and delivered online via a web browser offering traditional desktop functionality
2. *Platform as a Service* (PaaS), where the cloud provides the software platform for systems (as opposed to just software)
3. *Infrastructure as a Service* (IaaS), where a set of virtual computing resources, such as storage and computing capacity, are hosted in the cloud; customers deploy and run only their own applications for obtaining the needed services.

On the other hand it is also recognised the tension between big data approaches, and solutions versus information security and data privacy requirements. The big data might enable the violation of the privacy and information security breaches and by consequence decreasing the trust in data defined as a service in the cloud. Big data stored and processed in the cloud could lack a centralized control and ownership.

According to McKinsey & Co (2011) Big Data is seen as "the next frontier for innovation, competition and productivity" and as such the related applications will contribute to economic growth. The positive impacts of big data provide a huge potential for for organisations. In order to achieve these aspirations several issues should be analysed and discussed in the context of complex systems and using systems approaches such as holistic thinking and system dynamics.

Therefore major issues are emerging and this work-in-progress attempts to discuss a few key aspects directed to the development and adopting data mining techniques and strategies for big data.

Background and Research Approach

Demirkan and Delen (2013) have defined some research directions including dealing with affordable analytics for big data. This means using open-source, free-of-charge data/text mining algorithms and associated commercial tools (e.g. R, RapidMiner, Weka, Gate, etc.) New approaches need to provide solutions for moving these tools to the cloud and produce efficient and affordable applications for discovering knowledge and patterns from very large/big data sets directed to support business intelligence and decision support systems applications.

The principles of data/information-as-a-service, data/information-security-as-a-service, and analytics-as-a-service are explained in the context of using service oriented architecture.

However the cloud platforms are not completely following service oriented thinking and even more there is a debate that cloud computing is different of service oriented architectures, and grid computing.

The main motivation of adopting cloud computing for analytics applied for large (big) data sets could be because cloud solutions are accessible outside the a web based organisation communication secured with firewalls. Cloud based business analytics are also cost effective, easy to set up and test. The results are easy to be shared outside the organisations. Greg Sheldon, CIO of Elite Brands said “The biggest benefit, is to be able to access a large amounts of information from anywhere you have web access, specifically on an iPad. This is beneficial to our field sales team when information is needed on the fly.” (Fields, 2013:2)

The main research questions are related but not limited to the following aspects:

1. In the context of big data and cloud computing how analytics (e.g. data mining), information and knowledge management disciplines and approaches will evolve?
2. What should be the techniques, strategies and practices to increase the benefits and minimise the big data risks?
3. The potential to reduce the growing number of security breaches and cyber-security risks and increase organisational awareness, business agility and resilience.
4. The existing legislation such as data protection law, regulations and standards how should evolve. Moreover, the ethics issues will be considered.

Efforts and Challenges of Big Data Mining and Discovery

Considering big data a collection of complex and large data sets that are difficult to

process and mine for patterns and knowledge using traditional database management tools or data processing and mining systems a briefing of the existing efforts and challenges is provided in this paragraph. While presently the term big data literally concerns about data volumes, Wu et al. (2013) have introduced HACE theorem that described the key characteristics of the big data as (1) huge with heterogeneous and diverse data sources, (2) autonomous with distributed and decentralized control, and (3) complex and evolving in data and knowledge associations. Generally, business intelligence applications are using data analytics that are grounded mostly in data mining and statistical methods and techniques. These strategies are usually based on the mature commercial software systems of RDBMS, data warehousing, OLAP, and BPM. Since the late 1980s, various data mining algorithms have been developed mainly within the artificial intelligence, and database communities. In the IEEE 2006 International Conference on Data Mining (ICDM), the 10 most influential data mining algorithms were identified based on expert nominations, citation counts, and a community survey (Chen et al, 2012). In ranked order, these techniques are as follows C4.5, k-means, SVM (support vector machine), Apriori, EM (expectation maximization), PageRank, AdaBoost, kNN (k-nearest neighbors), Naïve Bayes, and CART (Wu et al, 2007). These algorithms are for classification, clustering, regression, association rules, and network analysis. Most of these well known data mining algorithms have been implemented and deployed in commercial and open source data mining systems (Witten et al. 2011).

Chen et al. (2012) have compared database management systems and analytics as well as ETL with using MapReduce and Hadoop. Hadoop was originally a (distributed) file system approach applying the MapReduce framework that is a software approach introduced by Google in 2004 to support distributed computing on large/big data sets. Recently, Hadoop has been developed and used as a complex ecosystem that includes a wider range of software systems, such as HBase (a distributed table store), Zookeeper (a reliable coordination service), and the Pig and Hive high-level languages that compile down MapReduce components (Rabkin and Katz, 2013). Therefore in the recent conceptual approaches Hadoop is primarily considered an ecosystem or an infrastructure or a framework and not just the file system alongside MapReduce components.

The big data and cloud computing frameworks include the Google MapReduce, Hadoop Reduce, Twister, Hadoop++, Hadoop, and Spark etc. which are used to process big data and run computational tasks. The cloud databases are used to store massive structured and semi-structured data generated from different types of applications. The most important cloud databases include the BigTable, Hbase, and HadoopDB. In order to implement an efficient big data mining and analysis framework, the data warehouse processing is also important. The most important data warehouse processing technologies include the Pig, Hive etc.

Strambei (2012) suggests a different conceptual interpretation of the OLAP technology considering the emergence of web services, cloud computing and big data. One of the most important consequences could be widely open access to web analytical technologies. The related approach has evaluated the OLAP Web Services viability in the context of the cloud based architectures.

There are also a few reported practical applications of big data mining in the cloud. Patel et al. (2012) have explored a practical solution to big data problem using the Hadoop data cluster, Hadoop Distributed File System alongside Map Reduce framework, and a big data prototype application scenario. The results obtained from various experiments indicate promising results to address big data problem.

The challenges for moving beyond existing data mining and knowledge discovery techniques (NESSI, 2012, Witten et al, 2011) are defined as follows:

1. a solid scientific foundation to be able to select an adequate analytical method and a software design solution
2. new algorithms (and demonstrate the efficiency and scalability, etc.) and machine learning techniques
3. the motivation of using cloud architecture for big data solutions and how to achieve the best performance of implementing data analytics using cloud platform (e.g. big data as a service)
4. dealing with data protection and privacy in the context of exploratory or predictive analysis of big data
5. software platforms and architectures alongside adequate knowledge and development skills to be able to implement them
6. a genuine ability to understand not only the data structures (and the usability for a given processing method), but also the information and business value that is extracted from big data.

Concluding Remarks

The big data movement has energized the data mining, knowledge discovery in data bases and associated software development communities, and it has introduced complex, interesting questions for researchers and practitioners. As organizations continue to increase the amount and values of collected data formalizing the process of big data analysis and analytics becomes overwhelming. In this paper, we discuss some existing approaches and have analysed the main research issues of big data mining, knowledge, and patterns discovery in a data intensive cloud computing environment. This research will be progressed providing theoretical and practical approaches that will be tested through the development of a case study for the application of big data.

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References

Chen, H., Chaing, R.H.L. and Storey, V.C. (2012) Business Intelligence and Analytics: From Big Data to Big Impact, MIS Quarterly, 36, 4, pp. 1165-1188

Short Research Papers on Knowledge, Innovation and Enterprise

Chong, R.F. (2012) Changing the World: Big Data and the Cloud, The Atlantic. Available at: <http://www.theatlantic.com/sponsored/ibm-cloud-rescue/archive/2012/09/changing-the-world-big-data-and-the-cloud/262065/> [Accessed by: 20 May, 2013].

Demirkan, H. and Delen, D. (2013) Leveraging the capabilities of service-oriented decision support systems: Putting analytics and big data in cloud, *Decision Support Systems*, 55, 1, pp. 412–421.

European Commission (2010) *The Future of Cloud Computing - Opportunities for European Cloud Beyond 2010*, European Commission Public Report.

Fields, E. (2013) *Why Business Analytics in the Cloud?*, Tableau Software White Paper.

Grace, L. (2012) *Basics about Cloud Computing*, Software Engineering Institute, Carnegie Mellon University, USA at: <http://www.sei.cmu.edu/library/assets/whitepapers/Cloudcomputingbasics.pdf>.

Mell, P. and Grance, T. (2009) *The NIST definition of cloud computing v15*. Version 15 available at <http://csrc.nist.gov/groups/SNS/cloud-computing/cloud-def-v15.doc>

McKinsey Global Institute (2011) *Big Data: The next frontier for innovation, competition and productivity*.

NESSI (2012) *Big Data – A New World of Opportunities*, White Paper.

Rabkin, A. and Katz, R.H. (2013) *How Hadoop Clusters Break*, IEEE Software, Feature: Big Data, pp. 88-94

Patel, A.B., Birla, M. and Nair, U. (2012) *Addressing Big Data Problem Using Hadoop and Map Reduce*, NIRMA University Conference on Engineering, NUI-CONE, pp. 1-5.

Rittinghouse, J.W. and Ransome, J.F. (2010) *Cloud Computing Implementation, Management and Security*, CRC Press Taylor and Francis.

Schouten, E., (2012) *Big Data 'as a Service'*. The Atlantic. Available at: <http://www.theatlantic.com/sponsored/ibm-cloud-rescue/archive/2012/09/big-data-as-a-service/262461/> [Accessed by: 20 May, 2013]

Strambei, C. (2012) OLAP Services on Cloud Architecture, Journal of Software & Systems Development, IBIMA Publishing.

Witten, I.H., Frank, E. and Hall, M.A. (2011) Data Mining: Practical Machine Learning Tools and Techniques. 3rd edition. Morgan Kaufmann series in data management systems.

World Economic Forum (2012). Big Data, Big Impact: New Possibilities for International Development. World Economic Forum Report.

Wu, X., Kumar, V., Quinlan, J. R., Ghosh, J., Yang, Q., Motoda, H., McLachlan, G. J., Ng, A., Liu, B., Yu, P.S., Zhou, Z.-H., Steinbach, M., Hand, D. J., and Steinberg, D. (2007). Top 10 Algorithms in Data Mining, Knowledge and Information Systems, 14,1, pp. 1-37.

Wu, X. , Zhu, X., Wu, G., Ding, W. (2013) Data Mining with Big Data, Knowledge and Data Engineering, IEEE Transactions, in press World Economic Forum (2012). Big Data, Big Impact: New Possibilities for International Development. World Economic Forum Report.

TARIQ SADAT, ROSLYN RUSSELL & MARK STEWART

THE FORCES TRANSFORMING PHARMACEUTICAL INNOVATION MODELS

Introduction

The modern pharmaceutical industry has always been dominated by a few large pharmaceutical companies, or 'big pharma'. Until recent times, the pharmaceutical industry has enjoyed success through big pharma's integrated approach of exploiting growing scientific and technological know-hows and commercialising high value blockbuster drugs. However, a number of market forces are influencing the value of pharmaceutical innovation. In response, big pharma is transforming its innovation models to sustain growth. This chapter characterises the market forces that are affecting pharmaceutical innovation models within the current context of healthcare and pharmaceutical industry.

Historically, after the Second World War, a number of pharmaceutical companies in Europe and the US led the success of the modern pharmaceutical industry based on their integrated model of prescription drug commercialisation. These companies acquired capabilities in research and development (R&D) of new prescription drugs, as well as in large-scale clinical trials management, management of regulatory approvals, and marketing and distribution of pharmaceuticals around the globe. They became large integrated companies, and also became known as 'big pharma' with their oligopolistic dominance of the global pharmaceutical industry. By the 1970s, the discovery of DNA and genetic engineering created a new paradigm in pharmaceutical R&D, called 'biotechnology'. Hundreds of university research spin-off companies emerged to commercialise biotechnology R&D. Big pharma relied upon these biotechnology companies to exploit specialised biotechnology knowledge and applications in drug discovery and development. By exploiting biotechnology capabilities in discovery and development of small molecule and biological drugs, big pharma produced a number of billion dollar value 'blockbuster drugs' (such as GlaxoSmithKline's anti-ulcer drug Zantac, Pfizer's cholesterol lowering drug Lipitor, Roche's breast cancer drug Herceptin) that sustained the success of big pharma-dominated pharmaceutical industry (Chandler, 1990, Mckelvey, 1996, Henderson et al., 1999, Chandler, 2005, Pisano, 2006).

The forces behind shifting pharmaceutical innovation models

Currently, a range of market forces are making big pharma's growth through its integrated innovation model unsustainable. Market forces such as payers (health insurers), government policies (healthcare reforms and drug price controls), emerging market dynamics, and dominance of low-price generic drugs over patented ones are commanding the value of pharmaceutical innovation. These forces are creating intertwining opportunities and barriers to big pharma's growth. The following sections discuss the market forces that are affecting the value of pharmaceutical innovation. This is followed by a discussion of how big pharma is transforming its innovation models in response to these forces.

Healthcare reforms and drug price controls—benefits and hurdles

Crippled by the ballooning healthcare costs, policy makers (governments) around the world are implementing measures designed to contain public healthcare spending. Also, many countries are reforming their healthcare policies so that every citizen can access affordable healthcare services, as described in World Health Organisation's (WHO) 2010 World Health Report. Such reforms are extending affordable healthcare services to disadvantaged citizens by means of prepayment of healthcare services, or mandatory and subsidised health insurances (WHO, 2010).

In the US, the Health Reform Legislation (Affordable Care Act), passed in March 2010, will extend mandatory subsidised health insurance by 2014 to previously uninsured 32 million citizens (Tumulty et al., 2010). As millions more US citizens come under mandatory insurance cover by 2014, the pharmaceutical and biotechnology industry will gain from expanded market coverage.

In China, the government launched an ambitious healthcare reform in April 2009 to bring the entire Chinese urban and rural population under universal primary medical services. An estimated 1.2 billion people are now covered by a basic medical insurance system (Guo, 2011), including over 300 essential medicines (Wang and Li, 2011). This provides the international and local pharmaceutical manufacturers with the benefit of expanded pharmaceutical market, although government measures taken to control essential drug prices will partly diminish the benefit of such expanded market.

Similar to China and the US, a number of African, South American and other Asian countries have also undertaken healthcare reforms to expand healthcare coverage (WHO, 2010). Such reforms will expand the pharmaceutical market for international and local companies. However, as discussed below, government policies to contain healthcare costs are targeted towards controlling drug prices, which are harming big pharma's income.

Traditionally, the regulatory approval of a new drug based on its safety and efficacy has been the biggest barrier to its market entry. But now the biggest hurdle for a new drug's success is whether it would qualify for reimbursement from the payers (PricewaterhouseCoopers, 2013). The payers are increasingly becoming important in determining the value of new drugs. Rising healthcare costs are forcing governments and payers to drive drug prices down. To qualify for reimbursement, pharmaceutical companies are now required to demonstrate through clinical trial results that their new drugs offer significantly more clinical benefit than existing alternatives (comparative effectiveness), and also reduce the total cost of care (cost-effectiveness) (Ernst and Young, 2010; PricewaterhouseCoopers, 2012a; Burrill, 2013).

Pharmaceutical companies are increasingly losing their control over drug pricing as governments around the world are taking radical measures to gain control over drug prices and determine reimbursement. Following are some country-specific examples.

In the UK, National Institute for Health and Care Excellence (NICE) of National Health Service (NHS) uses clinical data on new drugs to assess their cost and clinical effectiveness (value) and whether they could be reimbursed (PricewaterhouseCoopers, 2012a). Also, effective from January 2014, the UK government will switch to a 'value-based pricing' scheme, whereby medicines will be priced according to the benefits they deliver to patients. The scheme will reward only 'breakthrough' medicines rather than 'incremental' developments (Cooper, 2012).

In Germany, according to the 'reimbursement modernisation act' passed in 2011, the launch price of new drugs fixed by drug developers stays effective for one year, and after that new drugs will be assessed for their extra clinical benefits over reference drugs in the market. If no superior clinical benefit is found, the pricing will be matched with that of reference drugs (PricewaterhouseCoopers, 2012a).

In the US, the Affordable Care Act sets out provisions (e.g. discounts) to reduce out-of-pocket pharmaceutical costs, which means branded drugs could see \$97 billion in lost revenues over the next decade despite the gains from expanded health insurance coverage (PricewaterhouseCoopers, 2012b).

China is no exception to such price control measures. In August 2012, China announced to double its number of price-controlled 'essential drugs' to 700 in pursuit of affordable and universal healthcare for its population of 1.3 billion (Sweeney, 2012).

Emerging markets—opportunities and challenges

Emerging markets like China, India, Latin America and Africa hold big promises

for the global pharmaceutical industry. Rising burden of chronic diseases like diabetes and expanding middle-class affluence in these markets are creating big opportunities for pharmaceutical companies (PricewaterhouseCoopers, 2012b). According to IMS Institute for Healthcare Informatics (IMS Institute for Healthcare Informatics, 2012), drug spending in emerging markets is estimated to increase from 20% of global spending in 2011 to 30% in 2016, whereas US and Europe's combined share will shrink from 58% to 49%. The current African market size will double to \$45 billion by 2020, and chronic non-communicable diseases such as heart disease, lung disorders, cancer and diabetes, are estimated to account for almost half of all deaths in sub-Saharan Africa by 2030 (Berton, 2013).

But many challenges remain in emerging markets. Weak regulatory regimes and Intellectual Proprietary (IP) protection system, and underdeveloped infrastructure are some. Also, lack of health insurance for the majority of population in emerging markets means the patients themselves fund a larger share of drug costs than that in developed markets, and thus cannot support specialised drugs, e.g. biologic cancer drugs, that cost several thousands of dollars each (PricewaterhouseCoopers, 2012b, Burrill, 2013).

Though the middle-class affluence is growing, significant differences in per capita drug spending between developed and emerging markets will remain. According to IMS Institute for Healthcare Informatics (IMS Institute for Healthcare Informatics, 2012), per capita drug spending in 2016 will be \$609 and \$91 for developed and emerging markets respectively. Such difference in drug spending capacity mean that big pharma cannot expect to reap much of the value of their high-priced patented drugs in emerging markets, and have to rely on large volume generic drug sales.

Healthcare reforms across many parts of the world and growing emerging markets are expanding global pharmaceutical markets and, hence, the value opportunities for pharmaceutical companies. However, the value of new drugs is now determined and perceived by value users, in particular payers and policy makers, based on the performance and benefits the new drugs deliver, and also based on market-specific needs. Therefore, the value of pharmaceutical innovation is no longer embodied in new drugs and new markets alone, or commanded by pharmaceutical companies; rather the benefits of new drugs delivered to and perceived by users in existing and new markets embody the value of pharmaceutical innovation. This can be called the 'perceived value'.

Patent cliff—the end of 'blockbuster era'

The patent expiry of many blockbuster drugs, also regarded as the 'patent cliff', is displacing the 'blockbuster era' of big pharma. As many of the blockbuster drugs are crossing the period of patent expiry and generic competition, the pharmaceuti-

cal industry is looking at \$290 billion of global prescription drug sales at risk (the value corresponds to sales in years prior to patent expiry), and \$148 billion in potential loss due to patent expiry of branded drugs between 2012-18 (EvaluatePharma, 2012). Top ten drugs (according to their annual US sales in 2012) facing patent expiry in 2013, generated combined sales of nearly \$15 billion in 2012, and are predicted to lose nearly \$8 billion of that value by 2016 (EP Vantage, 2013).

Patent cliff is changing the drug spending landscape in developed markets. According to forecasts by IMS Institute for Healthcare Informatics (2012), patent expiry of many blockbuster drugs will bring total drug spending in developed markets down by \$127 billion from 2011 to 2016. Also, global brand drug spending is forecast to grow by only 8% from 2011 to 2016, compared to nearly 80% growth in global generic drug spending. According to the US prescription data from Express Scripts, a pharmacy benefits management organisation in the US, for the first time in more than 20 years, traditional prescription drug spending for common diseases (cholesterol or heart problems, ulcer, pain, depression, neurological disorders, and infections) fell in 2012 due to increased use of low-cost generics. There was significant increase in the use of these drugs by Medicare and Medicaid patients in many therapeutic areas (e.g. diabetes); however, low-cost generics replacing patented blockbuster drugs brought traditional prescription drug spending down. This trend will continue in the short term, and by 2015, spending on traditional prescription drugs for different diseases in the US is expected to drop between 10-25% (Frazee, 2013, Stettin, 2013).

In contrast, spending on specialty drugs for chronic, rare and complex diseases is increasing. It represented one-fourth of total 2012 drug spending within pharmacy benefit in the US, and is predicted by Express Scripts to grow 67% over the next three years. Specialty drugs treat diseases like cancer, HIV, hepatitis C, multiple sclerosis, and rheumatoid arthritis (Frazee, 2013, Stettin, 2013). They are mostly high-priced drugs prescribed by specialists, and involve ongoing patient follow-up and clinical monitoring (IMS Institute for Healthcare Informatics, 2012). Many specialty drugs are biological drugs (or, biologics) that include vaccines, recombinant proteins, and cell, tissue or gene-based therapeutics produced from microorganism, animal or human sources (FDA, 2010).

Transformation of big pharma's innovation models

The big pharma-dominated pharmaceutical industry has long enjoyed the success of innovation through its integrated model of commercialising blockbuster drugs. The success was achieved through big pharma's ability to create and command the value that was embodied in its blockbuster drugs. Healthcare reforms, drug pricing pressures, growing emerging market needs and increasing dominance of generic drugs

over patented blockbuster drugs are forcing big pharma to shift away from its successful integrated model. As the analyses of market forces in this chapter point out, while the value of pharmaceutical innovation is embodied in new drugs, the value of new drugs is now determined by market-specific users based on the benefits of these drugs they can access. The success of new drugs now depends on how users in differentiated markets access and perceive their value. Consequently, big pharma is complementing its model of creating value through new drugs and new markets with one that is focused on making the benefits (perceived value) accessible to users.

As payers are taking charge of determining the value of new drugs, big pharma is collaborating with payers, including healthcare insurance companies and pharmacy benefits management organisations, to develop models of identifying and pinpointing value users (treatment responsive patients), evaluating comparative effectiveness of new drugs, and delivering perceived value to users through improved healthcare practice, treatment adherence and patient outcomes (Burrill, 2013). Also, big pharma is pursuing risk-sharing agreements with payers whereby rebates, discounts or refunds on new drugs are offered by them to cover the cost of drugs having treatment response failure or response rates below expectations compared with existing alternatives (Ernst and Young, 2013). To better demonstrate the effectiveness and value of new drugs to regulators and payers, big pharma is focusing on the development of personalised medicines that work on a specific patient subgroup who express a particular disease trait. The disease trait is identifiable by a companion diagnostic test. So, by using the diagnostic test the patient subgroup can be selected for treatment with personalised medicines (Burrill, 2013). Big pharma is also building innovative healthcare delivery models in many emerging markets through engaging doctors, patients and policy maker stakeholders in various healthcare initiatives. These include training and mentoring of rural doctors, and raising awareness among patients through patient education programs.

Big pharma is expanding its R&D, manufacturing and marketing activities in many emerging markets like China and India not only to grab the share of these rapidly growing markets, but also to take control of global commercialisation of low-price generic drugs through exploitation of local generic manufacturers in emerging countries. Finally, big pharma is offering huge discounts on its high-price specialty drugs and patented drugs for low-income patients in emerging markets.

Conclusion

This chapter examines the market forces that are shifting traditional pharmaceutical innovation models. Although expanding pharmaceutical markets in both developed and emerging markets are boosting growth opportunities, drug pricing and reim-

bursement pressures from governments and payers, and patent expiry of many blockbuster drugs are impeding big pharma's growth. Big pharma is responding to these opportunities and challenges by adapting its innovation models. As healthcare demands of emerging markets are steadily increasing, the long prevailing developed market-centric pharmaceutical industry is becoming increasingly focused on emerging markets. Since the value of traditional blockbuster drugs are diminishing rapidly, big pharma is seeking ways to capture value from new markets, such as specialty drugs for unmet, rare diseases, and drugs for disadvantaged and uninsured consumers in vastly untapped global markets. In the new landscape of the global pharmaceutical industry, the value of pharmaceutical innovation lies in the path towards new opportunities. The path forward for the big pharma-dominated pharmaceutical industry is one that makes a shift from product-centric innovation towards market-centric innovation.

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References

- Berton, E. (2013) *Drugmakers eye Africa's middle classes as next growth market*, Reuters, February 12, 2013, <http://www.reuters.com/article/2013/02/12/bigpharma-africa-growth-idUSL5N0BBDPB20130212> [Accessed May 23, 2013].
- Burrill (2013) *Biotech 2013: Life Sciences - Capturing Value*, Burrill & Company LLC.
- Chandler, A.D., Jr. (1990) *Scale and Scope: The Dynamics of Industrial Capitalism*, Cambridge, Belknap Press.
- Chandler, A.D., Jr. (2005) *Shaping the Industrial Century: The Remarkable Story of the Evolution of the Modern Chemical and Pharmaceutical Industries*, Cambridge, Massachusetts, Harvard University Press.
- Cooper, R. (2012) *Drug makers could leave UK over Government's 'breakthrough' obsession, warns trade body chief Stephen Whitehead*, The Telegraph, June 5,

Short Research Papers on Knowledge, Innovation and Enterprise

- 2012, <http://www.telegraph.co.uk/finance/newsbysector/pharmaceuticalsandchemicals/9312091/Drug-makers-could-leave-UK-over-Governments-breakthrough-obsession-warns-trade-body-chief-Stephen-Whitehead.html>.
- EP Vantage (2013) *Clouds break as patent storm eases in 2013* [Online], EP Vantage, <http://www.epvantage.com/Universal/View.aspx?type=Story&id=384296&isEPVantage=yes> [Accessed May 26, 2013].
- Ernst & Young (2010) *Progressions: Pharma 3.0*, EYGM Limited.
- Ernst & Young (2013) *Beyond Borders: Biotechnology Industry Report 2013*, EYGM Limited.
- EvaluatePharma (2012) *World Preview 2018 - Embracing the Patent Cliff*, EvaluatePharma Ltd.
- FDA (2010) *Resources for You (Biologics)* [Online], U.S. Food and Drug Administration, <http://www.fda.gov/BiologicsBloodVaccines/ResourcesforYou/default.htm> [Accessed May 31, 2013].
- Frazeo, S. (2013) *2012 Drug Trend Report* [Online], Express Scripts, <http://lab.express-scripts.com/prescription-drug-trends/2012-drug-trend-report/> [Accessed May 27, 2013].
- Guo, Y. (2011) 'A Midterm Assessment of China's Health Care Reform' in Freeman III, C.W. & Boynton, X.L. (eds). *Implementing Health Care Reform Policies in China: Challenges and Opportunities*, Washington, D.C., Center for Strategic and International Studies.
- Henderson, R., Orsenigo, L. & Pisano, G.P. (1999) 'The Pharmaceutical Industry and the Revolution in Molecular Biology: Interactions among Scientific, Institutional, and Organizational Change' in Mowery, D.C. & Nelson, R.R. (eds). *Sources of Industrial Leadership: Studies of Seven Industries*, Cambridge, UK, Cambridge University Press.
- IMS Institute for Healthcare Informatics (2012) *The Global Use of Medicines: Outlook Through 2016*, IMS Health Incorporated and its affiliates.
- Mckelvey, M.D. (1996) *Evolutionary Innovations: The Business of Biotechnology*, New York, Oxford University Press.
- Pisano, G.P. (2006) *Science Business: The Promise, The Reality and The Future of Biotech*, Boston, Harvard Business School Press.
- PricewaterhouseCoopers (2012a) *Unleashing value: The changing payment landscape for the US pharmaceutical industry*, PricewaterhouseCoopers.
- PricewaterhouseCoopers (2012b) *From vision to decision: Pharma 2020*, PricewaterhouseCoopers.
- PricewaterhouseCoopers (2013) *Top health industry issues of 2013: Picking up the pace on health reform*, PricewaterhouseCoopers.
- Stettin, G. (2013) *Specialty Drug Spending to Jump 67% by 2015* [Online], Express Scripts, <http://lab.express-scripts.com/prescription-drug-trends/>

- specialty-drug-spending-to-jump-67-by-2015/ [Accessed May 28, 2013].
- Sweeney, P. (2012) *China to double price-controlled drugs list by year-end - paper*, Reuters, August 18, 2012, <http://www.reuters.com/article/2012/08/18/china-pharma-outlook-idUSL4E8J109T20120818> [Accessed June 1, 2013].
- Tumulty, K., Pickert, K. & Park, A. (2010) *The Five Keys to Health Reform's Success or Failure*, Time, March 25, 2010, http://www.time.com/time/specials/packages/article/0,28804,1975068_1975012,00.html [Accessed October 19, 2011].
- Wang, H. & Li, Y. (2011) 'The Development of China's Essential Medicine System' in Freeman III, C.W. & Boynton, X.L. (eds). *Implementing Health Care Reform Policies in China: Challenges and Opportunities*, Washington, DC, Center for Strategic and International Studies.
- WHO (2010) *The world health report 2010 - Health systems financing: the path to universal coverage*, World Health Organisation.

CHIJOKE AGOMO

REVIEW OF LEARNING—MY OWN SMALL CONTRIBUTION TO PHARMACY INNOVATION IN THE UK

Introduction

In this article, I will reflect briefly on my role in the UK as a community pharmacist, a pharmaceutical writer and recently a visiting clinical teacher. In addition, I plan to also reflect on my involvement with postgraduate studies. By reflecting on these areas, it is easy to appreciate how my Review of Learning highlights my contribution to pharmacy innovation in the United Kingdom.

My professional experience in the UK

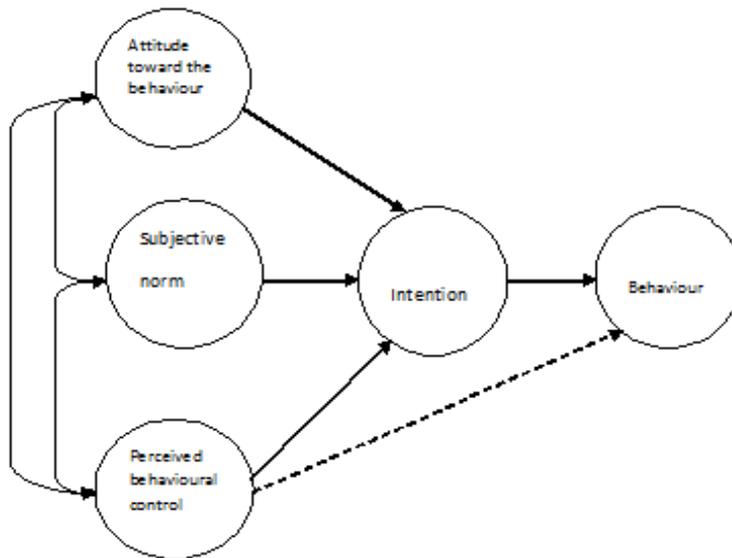
The aspect of pharmacy practice that I have found the most challenging in my role as a community pharmacist in the UK is in the management of patients with drug addiction problems. At the same time, my contact with drug addicts has given me the opportunity to apply indirectly some of the things I learnt with the behavioural change models while undertaking my MSc dissertation at St. George's, University of London. Reflecting on the MSc dissertation, which investigated the current provision of smoking cessation services by community pharmacists in an inner-city area, the literature review revealed, among other things, the role of the health behaviour change models in smoking cessation and situations requiring behavioural change. The first model I identified in the literature review was Ajzen's Theory of Planned Behaviour [see Figure 1]. What I learnt from the theory was that a person's intention, for example, to stop smoking or change any other behaviour (including drug addiction), is a function of his/her attitude towards stopping the behaviour, the subjective norms of the behaviour and the amount of control he/she perceives that he/she has over the behaviour. The second model I identified was Prochaska and Di-Clemente's Stages of Change Model, also known as the Transtheoretical Model of Change (TTM), which describes the five stages of change people pass through during a behavioural change programme, namely pre-contemplation (not seriously thinking about change), contemplation (seriously thinking about change), preparation (ready to change), action (attempting to change) and maintenance (change achieved).

Through my contact with drug addicts, I have learnt about the importance of establishing good rapport with this group of patients if drug addiction management

is to be a success story. Again, through my contact with addicts, I have also learned that many of the patients faced complex issues, many of which cannot easily be managed within the community pharmacy setting. Some of these issues include, many addicts also suffering from mental health problems, homelessness, poverty, criminal convictions and social deprivation. With this type of situation in place, it therefore means that any meaningful outcome with many of these addicts will require the input of a multi-disciplinary team that includes the community pharmacist, as an active participant.

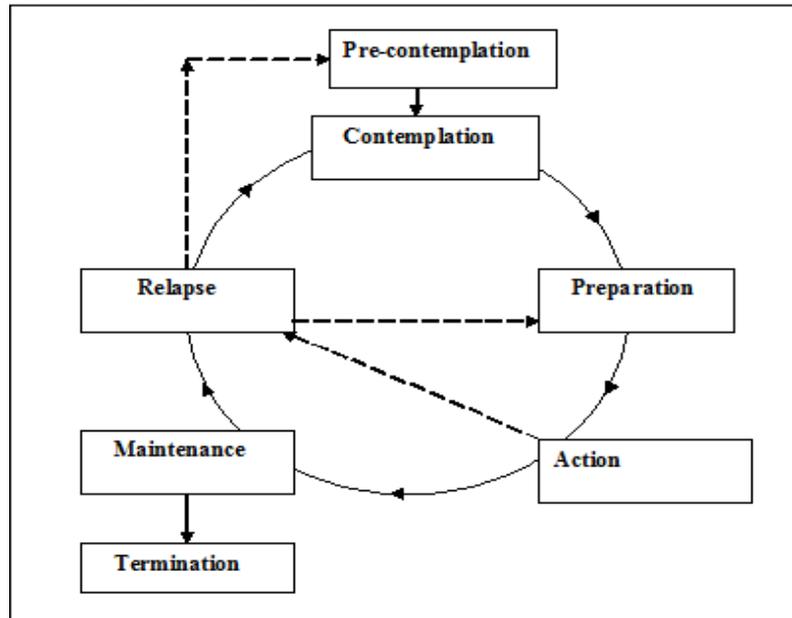
My experience with drug addicts and other public health activities has therefore strengthened my conviction about the role of community pharmacists in public health. At the same time, it has enhanced my consultation and communication skills. I also hope to advance this learning in my Doctorate in Professional Studies (DProf) project at Middlesex University, which aims to identify strategies that can enhance the role of community pharmacists in public health.

Figure 1: The Theory of Planned Behaviour



Adapted from Ajzen 1991, p.182).¹

Figure 2: Stages of change



Source: Adapted from Goldstein et al, 1994:p.345.⁶

Academic activities

My postgraduate studies actually started in 1998 when I enrolled on a postgraduate diploma programme in business administration (marketing) to augment my role as a medical representative in Nigeria. In this programme I was introduced to business modules such as marketing, banking and finance, economics, accounting, management and statistics. In 2003 I enrolled with St. George's Hospital Medical School, Tooting (now St. George's, University of London) to study for a master's degree in Health Sciences. On completion of the programme in 2005 I learnt a lot about the roles of the various health-care professionals in the NHS, as the students were drawn from a wide background that included medicine, nursing, midwifery, occupational therapy and the arts. The programme enhanced my critical and analytical skills. The modules that I found particularly useful in my role as a community pharmacist, a freelance pharmaceutical writer and a postgraduate student included the Ethics and Law, Sociology of Health and Illness, Population Health, Using Computers in Health Care, Communi-

cation Skills Presentation and the Statistics and Research Methods modules. I used some of these learning when I enrolled in 2007 for the Master of Science in Professional Health Care Research at King's College, London. A specific example, of where the MSc module became very useful was when I had to use learning from the Statistics and Research Methods to tackle the programme Advanced Qualitative Research Methods assignments. The modules covered in both programmes will be of great help as I undertake the DProf project.

My role as a change agent through publication

In addition to my role as a community pharmacist and recently a visiting clinical teacher, I work part-time as a freelance writer, with my writing guided by both my work and study experiences from Nigeria and the UK. My involvement in writing started in 2003, when I became aware (by reading Pharmaceutical Journal [PJ] articles and letters) of some of the challenges faced by practising pharmacists in the UK. These challenges included low morale due to poor remuneration, stressful working conditions and inadequate representation from the former the regulator and representative body, the Royal Pharmaceutical Society of Great Britain (RPSGB). This awareness, as well as my desire to help to shape the development of pharmacy students and pharmacy practice in the UK, was later to become one of the main motivating factors for my enrolling on the MSc programme at St. George's. Highlighting briefly my publication activities, my involvement with innovation and advancing pharmacy practice in Britain started initially with letters and articles that looked at the benefits of separating the regulatory and representative roles of the RPSGB—a dual role that some pharmacists saw as a stumbling block to advancing pharmacy practice in Great Britain. This aspiration to separate the dual role of the RPSGB was not realised until 2006 (completed in late October 2010), when the then UK government directed the RPSGB to separate into two bodies in line with other health-care professions. This separation produced two independent bodies for pharmacy, the General Pharmaceutical Council (the regulator) and the Royal Pharmaceutical Society (the representative and professional body).

However, as I later realised that other changes within the profession were also needed in order to innovate and advance the practice of pharmacy in the UK, I extended my interest to other areas. On the use of enhanced technology, the applications that I felt were most helpful included the use of robotic dispensers, the Internet and webcams to make community pharmacies more advanced, innovative and accessible to the public.¹⁸ To enhance the competitiveness of British pharmacists, I have proposed the restructuring of the UK undergraduate pharmacy curriculum to enhance both the clinical,¹⁹⁻²² professional²³ and the managerial skills of pharmacists. The impact of these publications, coupled with recent changes in the NHS that demand more input from pharmacists,²⁷ is such that there are now plans in the UK to restructure the under-

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graduate pharmacy curriculum to incorporate clinical, leadership and management modules. A number of these proposals have also received specific encouraging responses from the profession.

In terms of learning, my involvement with publications has given me much insight into pharmacy practice in Great Britain as well as helping to develop my knowledge base, through research and the use of reflective skills. It has also help me to engage easily with continuing professional development (CPD) programme as well as allowing me to link theories learnt during my master's programmes with pharmacy practice.

Conclusion

In this Review of Learning, I have reflected briefly on my professional career in the UK as a pharmacist, my postgraduate academic studies and my involvement with publications on pharmacy issues. In addition, I discussed some of the skills underpinning my activities and how the learning and activities have enabled me to contribute to the innovation agenda of pharmacy practice in the UK, as well as, how these activities and learnings will be used in my Doctorate in Professional studies at Middlesex University.

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References

- Ajzen I. The theory of planned behaviour. *Organisational Behaviour and Human Decision Processes* 1991; 50: 179-211.
- Prochaska JO. Strong and weak principles for progressing from pre-contemplation to action on the basis of twelve problem behaviours. *Health Psychology* 1994; 12: 46-51.
- Department of Health. *Saving lives: Our healthier nation*. London: Stationery Office, 1999.
- Department of Health. *Healthy Lives, Healthy People: Our strategy for public health in England*. Norwich: Stationery Office, 2010.
- Agomo C. The role of community pharmacists in public health: a scoping review of the literature. *Journal of Pharmaceutical Health Services Research* 2012; 3: 25-33.
- Goldstein MG *et al.* 'Dissemination of physician-based smoking cessation interventions' in DR. Shopland *et al.* (eds) *Tobacco and the Clinician – Interventions for Medical and Dental Practice*. Maryland, National Cancer Institute, Monograph 1994; 5: 342-355.
- Agomo CO. Society should split in two. *Pharmaceutical Journal* 2003; 271: 677.
- Agomo CO. Time for the Society to split into two bodies. *Pharmaceutical Journal* 2004; 272: 739.
- Agomo CO. We need two non-conflicting and strong bodies. *Pharmaceutical Journal* 2004; 273: 55.
- Agomo CO. Two bodies operating under one roof? *Pharmaceutical Journal* 2004; 273: 151.
- Agomo C. One solution to the Foster conundrum. *Pharmaceutical Journal* 2006; 277: 364.
- Agomo C. Tis the set of the sails and not the gales, that decides the way to go. *Pharmaceutical Journal* 2007; 278: 548.
- Banjo TO. We must protect our interests. *Pharmaceutical Journal* 2003; 271: 580.

Short Research Papers on Knowledge, Innovation and Enterprise

Bellingham C. Learning from New Zealand pharmacy. *Pharmaceutical Journal* 2004; 273: 555-556.

15. Pettit M. Can one body exist without conflicts of interest arising? *The Pharmaceutical Journal* 2004; 272: 801-802.

Southall-Edwards G. More like the Sweeney! Beware the rise of the Society's regulatory machine. *Pharmaceutical Journal* 2006; 276: 564. Icha C. Regulatory review proposes separation of professional and regulatory roles. *Pharmaceutical Journal* 2006; 277: 97.

Agomo CO. Telemedicine: improving health services through technology. *Pharmaceutical Journal* 2008; 281: 103-105.

Agomo CO. Clinical skills need to be upgraded. *Pharmaceutical Journal* 2004; 273: 114.

Agomo C. Could a review of pharmacy training benefit independent prescribers? *Pharmaceutical Journal* 2006; 277: 100.

Agomo C. Time to engage with the concept of advancing professional practice. *Pharmaceutical Journal* 2009; 283: 150.

Agomo C. Is it time for a PharmD programme in the UK? *Pharmaceutical Journal* 2011; 286: 618.

Agomo C. Why UK pharmacists must adapt to the increasing demands of professionalism in practice. *International Journal of Pharmacy Practice* 2012; 20: 320-323

Agomo C. Can management training be used to advance pharmacy practice? *Pharmaceutical Journal* 2007; 278: 284.

Agomo C. Understanding what motivates staff. *Pharmaceutical Journal* 2008; 280: 545-548.

Agomo C. We need "change agents" and effective leaders. *Pharmaceutical Journal* 2011; 286: 201.

Fajemisin F. Community Pharmacy and Public Health. 2013; <http://www.sph.nhs.uk/sph-documents/community-pharmacy-and-public-health-final->

report (accessed 11 August 2013).

News Team. GPhC agrees new standards for pharmacy education and training. *Pharmaceutical Journal*, 2011; 286: 483.

Agomo C *et al.* An investigation of nicotine replacement therapy provision by community pharmacists in Wandsworth Primary Care Trust, London. *Pharmaceutical Journal*, 2006; 277: 609-611.

ANTHONY I ANOSIKE & MING K LIM

INTEGRATING LEAN, THEORY OF CONSTRAINTS AND TRIZ FOR PROCESS INNOVATION

Abstract

A growing challenge for organisations is how to respond effectively to the unpredictable changes that occur today's global economy. These changes often result from increasing competition, falling product life cycles and changes in consumer preferences and expectations. As processes are at the heart of business operations, it has become necessary for organisations to develop competency in articulating and delivering innovative business processes that are adaptable to changes. This chapter proposes the integration of Lean, TOC and TRIZ as a way to bring in creativity and logical thinking within process improvement in order to facilitate innovative and adaptable processes.

Introduction

A growing challenge for organisations is how to respond effectively to the unpredictable changes that occur today's global economy. These changes often result from increasing competition, falling product life cycles and changes in consumer preferences and expectations. As processes are at the heart of business operations, it has become necessary for organisations to develop competency in articulating and delivering innovative business processes that are adaptable to changes. This chapter argues that integrating creativity and logical thinking within existing process improvement techniques would facilitate process innovation. Thus, this chapter explores a number of ways to synergistically integrate three techniques for problem solving and process improvement: Theory of Inventive Problem Solving, which is more commonly known by its Russian acronym, TRIZ; Theory of Constraints (TOC); and Lean Manufacturing.

TRIZ can be seen as a collection of tools that facilitate creativity and innovation in problem solving. The main premise of TRIZ is that creativity can be structured and repeated. The main premise of TOC is that the performance of a system is dictated by the performance of its biggest constraint, and the proposition is that improvement efforts should be focused on the constraint where they would have the biggest impact on the overall goal of the company. The key philosophy of Lean

is that the elimination of non-value adding activities, variability and inflexibility is imperative in order to deliver value to customers at the right time, quantity, quality and at minimum cost.

In the next section, brief background information regarding each of the three techniques is provided. In section 3, a literature review of some of the works that have sought to explore similar synergies is presented. Section 4 explores a number of ways to integrate the three techniques. Section 5 summarises the chapter.

Background

The key philosophy of Lean is that the elimination of non-value adding activities, variability and inflexibility is imperative in order to deliver value to customers at the right time, quantity, quality and at minimum cost (Drew et al., 2004). Lean refers to non-value adding activities as wastes and Womack and Jones (2003) developed a five step process for eliminating wastes: specify value; identify the value stream; flow; pull; seek perfection.

The main premise of TOC is that the performance of a system is dictated by the performance of its biggest constraint, which is usually referred to as a bottleneck. TOC advocates that improvement efforts should be focused on the constraint where they would have the biggest impact on the overall goal of the company, which is to “make more money now as well as in the future” (Goldratt and Cox, 1989).

For physical constraints such as resource constraints, TOC provides 5 focusing steps (Goldratt, 2003): identify the system’s constraint; decide how to exploit the system’s constraint; subordinate everything else to the above decision; elevate the system’s constraint; if in a previous step a constraint has been broken, restart the process.

For policy constraints, TOC provides 3 focusing questions (Avraham, 2009a): what to change?; what to change to? How to cause change?

TRIZ can be seen as a collection of tools that facilitate creativity and innovation in problem solving. The initial TRIZ research was focused on fostering creativity in product development. However, more research has been carried out to apply the original TRIZ tools and thinking to business problems. The main premise of TRIZ is that creativity can be structured and repeated because ‘someone, somewhere has already solved a problem like yours’ (Mann, 2007). So, why not re-use the strategies that worked for someone else? These strategies are encompassed in the key philosophies of TRIZ: Ideality—the concept that systems evolve in the direction of increasing ‘idealness’; Contradiction—the notion that strong solutions to problems are achieved when conflicts and trade-offs are eliminated; Resources—effective and creative use of things within and outside a system even seemingly negative

resources; Functionality—focus on the functions required from a system (solutions change, functions stay the same); Space/Time/Interface—viewing systems from different spatial, temporal and interface contexts.

Literature Review

In this section, other works that have explored similar synergies are presented. The works of Dettmer (2001), and Moore and Scheinkopf (1998) focused on utilising Lean within a TOC framework. The works explored the similarities and differences between Lean and TOC and sought to use the differences to enrich both techniques.

Some other works explored the synergies of TOC and TRIZ such as the works of Stratton and Mann (2003). In this work, the discussions were on the viewpoints of TRIZ and TOC with regards to conflicts and contradictions, and also on the commonalities of the underlying principles. Lebepe and Emwanu (2013) provide a comparison of TRIZ and TOC in relation to the effectiveness of the tools in a production environment.

Other research works explored the synergies between Lean and TRIZ including the works of Bligh (2006), Iyer (2006) and Ikovenko and Bradley (2004). Also, Martin (2010) provides a very brief description of the commonalities between TRIZ and TOC, and between TRIZ and Lean. He also suggests the combination of the three techniques as a way forward. The main drawback of this work is the lack of details. To the best of our knowledge, this unpublished work by Martin (2010), which is under three pages in length, is the only work that has attempted to consider the synergies between TRIZ, TOC and Lean.

Integrating lean, Toc and Triz

This section explores how the three techniques can be integrated. Specifically, it explores how to incorporate: Lean and TRIZ tools within a TOC framework; TOC and TRIZ tools within a Lean framework; and TOC and Lean tools within a TRIZ framework.

Using Lean and TRIZ tools within a TOC Framework

This work presented in this sub-section utilises the 5 focusing steps of TOC and draws from the works of Dettmer (2001), Moore and Scheinkopf (1998) and Vorne (2013).

- i. Identify the constraint

Lean

Value stream mapping (VSM)—when used within a TOC framework, VSM can help to identify resource constraints in a system.

Gemba visits—Lean and TOC advocate visiting the shop floor and having conversations with shop floor workers as one of the conventional ways of identifying wastes and bottlenecks respectively.

TRIZ

Conflicts/Contradictions—in TOC, the identification of conflicts within a system is most often achieved using Current Reality Tree (CRT) and Evaporation Cloud. This can be supplemented using TRIZ which has some tools that are equally effective but less rigorous than CRT such as ‘root contradiction analysis’ tool (Mann, 2007) and ‘why-what’s stopping’ tool (Basadur, 1995; Mann, 2007).

S-Curve analysis—S-Curve is known in a number of fields of work to represent the way in which a wide range of systems evolve. A very good example is ‘product life cycle’ which usually goes from conception, birth, growth, maturity to decline. Carrying out an s-curve analysis on the different aspects of a process might help to identify the aspects that have reached their limits on their s-curves or those that are near.

Function/Attribute Analysis (FAA) (Mann, 2007)—FAA is a graphical technique for analysing how a system works by mapping the functional interrelations amongst the components of system. Different types of arrows are used to show different functional relationships such as effective, insufficient, excessive, missing and harmful relationships. This kind of mapping could be very useful in identifying the constraint of a system.

ii. *Decide how to exploit the constraint*

Lean

A number of Lean tools are applicable in this step of TOC. These tools include: Kaizen, 5S, Standardised Work, Pokayoke, Visual Management, Single Minute Exchange of Die (SMED), Jidoka etc. Any of these could be used to maximise the performance of the constraint.

TRIZ

Ideality—employing the ideality concept in this step would help to envision an ideal situation for the constraint. TRIZ advocates the use of ideality to encourage people to envision an ideal situation first and then work back, if necessary, to the most practical situation. This approach encour-

ages 'out of the box' thinking.

Contradictions—within a system, there may be conflicts and contradictions that prevent the constraint from reaching its maximum performance. This step in TOC is an ideal place to utilise TRIZ contradiction resolution methods.

Trends of evolution—this concept is based on the premise that the stages of evolution of systems and their components are identifiable (Mann, 2002). And once the current stage of evolution of a system is identified along a particular trend, the future stages of evolution of the system can be predicted. There are 35 trends in TRIZ which could be examined to identify the trends that are relevant to the constraint. For each of the relevant trends, the current stage of the constraint along the trend's evolution path could be identified. Together, these trends would provide directions on how to exploit the constraint.

S-Curve—if, for example, the s-curve analysis in step (ii) suggests that the constraint has reached its limit, then there is no point in trying to squeeze out anymore from it. The focus should then be on transitioning to a new S-Curve to enable step change innovation.

iii. Subordinate everything to the constraint

Lean

Kanban for non-bottlenecks—Kanban can be used within this step in the TOC framework to regulate the flow of materials from upstream resources to the constraint.

The other lean tools mentioned in step (ii) can also be applied to non-constraints to ensure that the non-constraints have the capability to appropriately serve the constraint.

TRIZ

Functional/Attribute Analysis—FAA can also be used at this stage to help understand the interrelationships amongst the components of the system and to identify the harmful, insufficient and missing actions that may exist.

Space-Time-Interface (Mann, 2007)—this is tool is an attention focusing devise that encourages users to examine the system from different spa-

tial, temporal and interfacing perspectives. For instance, one may examine the constraints spatially from the sub-system, system and super-system points of view, or from specific temporal views of past, present and future while at the same time examining any interface issues.

iv. Elevate the system's constraint

Lean

Lean tools such as SMED, TPM and Jidoka can be used to significantly improve the performance of the constraint.

TRIZ

S-Curve—it might be necessary to think about transitioning to a new S-curve whether or not the constraint has reached its limit.

Trends of Evolution—moving onto another step on a trend's path could also help to elevate the constraint.

Space-Time-Interface—examining how the constraint could change over time may suggest ways to elevate the constraint.

Return to step 1

Using TOC and TRIZ tools within Lean framework

i. Identify value

TOC

TOC goal—in addition to identifying value from the perspective of the customer, this step in Lean can be complemented with an important aspect of TOC which is about identifying the goal of the system in order to maximise throughput.

TRIZ

Ideality—ideality in this context is about considering customer value from an ideal perspective. This would enable users to gain broader sense of the concepts of value and help to refine the direction of Lean implementation.

ii. Map the value stream

TOC

This step can be complemented with TOC tools such as CRT and Future Reality Trees (FRT) to identify any policy constraints that affect the

behaviour of the system.

Also, a constraint mind-set may be adopted to help prioritise improvements.

TRIZ

Function/Attribute Analysis—FAA could help to provide deeper insight into the inter-relationships that exist amongst a system's components.

Ideality—it may also be necessary to think about future value streams in terms of ideal value stream.

iii. Create flow

TOC

TOC bottleneck concept is very applicable in this step to help identify resource and policy constraints that are impeding flow. TOC's tools such as CRT, FRT and evaporating cloud can be used to achieve this.

TRIZ

Trends of evolution—can be used to understand where the system/process is at different evolution paths. Some trends that may be applicable include: Space Segmentation, Trimming, Dynamisation and Action Co-ordination (Mann, 2002).

Conflicts/Contradictions—it may be beneficial to seek out the conflicts and contradictions that block flow.

Inventive principles—there are 40 inventive principles in TRIZ that represent problem solving strategies that have resulted in innovative solutions (Terninko, 1998; Mann, 2007). Identifying the applicable inventive principles that would support the work in this stage can be very beneficial.

iv. Establish pull

TOC

In this step of lean, it is possible to use the DBR system (Avraham, 2009b) instead of kanban system or as a complementary set of tools.

TRIZ

Trends of evolution—the following trends could be applicable in this step of Lean: Action Co-ordination, Rhythm co-ordination, Controllability (Mann, 2002).

V. Seek perfection

Using Lean and TOC within a TRIZ framework

In this section, the focus is to explore how TRIZ problem solving routine can support Lean and TOC implementation. In literature, there are different TRIZ problem solving routines but this section will be based on the routine developed by Mann (2007) as presented below.

Define problem

In every problem-solving situation, understanding and defining the problem is a very crucial step and this is the purpose of this step. This chapter argues that combining the problem classes from Lean, TOC and TRIZ could help in providing a range of alternatives in problem definition: *Wastes; Constraints; Conflicts; Contradictions; Inflexibility; Variability; Reliability; Robustness; Cost; Risk; Missing, Insufficient and excessive actions.*

Select tool

The 'select tool' step guides a user through a process of identifying which techniques, strategies or tools that maybe most applicable for a particular problem. For example, if the predominant problem is 'waste', the 'select tool' may point to the direction of utilising Lean as a base framework.

Generate solutions

This step focuses on generating potential solutions using the tool(s) selected in step (ii). In Lean, this could be creating a number of future state VSM options. In TOC, this could be creating a number of FRT options and evaporations clouds.

Evaluate solutions

This step identifies the most suitable solution from the solution set. In Lean, the various future state VSMS can be subjected to analysis to identify the best VSM. In TOC, this would involve the analysis of different FRTs to identify the most appropriate.

Summary

This chapter explored how to integrate Lean, TOC and TRIZ to facilitate process innovation. The idea is to draw on the inherent strengths of each technique: TOC brings focus and logical thinking to process improvement; Lean facilitates waste elimination and process stability; and TRIZ enables lateral thinking, creativity and foresight. TRIZ tools such as ideality and trends of evolution can enable foresight in process improvement in such way that the processes become the vehicle for helping an organisation to adapt to changes in the business environment.

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References

Avraham Goldratt Institute (2009a) *The Theory of Constraints and its thinking processes: a brief introduction to TOC* [Online]. Available at: <http://www.goldratt.com/pdfs/toctpwp.pdf> (Accessed: 8 August 2013)

Avraham Goldratt Institute (2009b) *Combining Lean, Six Sigma, and the Theory of Constraints to Achieve Breakthrough Performance* [Online]. A velocity white paper. Available at: <http://www.goldratt.com/pdfs/CombiningLSSandTOC.pdf> (Accessed: 8 August 2013).

Basadur, M. (1995) *The power of innovation: how to make innovation a way of life and put creative solutions to work*. London: Pitman Publishing.

Bligh, A. (2006) *The Overlap Between TRIZ and Lean* [Online]. Available at: http://www.innovation-triz.com/papers/TRIZ_Lean.pdf (Accessed: 8 August 2013).

Dettmer, W.H. (2001) *Beyond Lean Manufacturing: Combining Lean and Theory of Constraints for Higher Performance* [Online]. Goal System International. Available at: <http://www.goalsys.com/books/documents/TOCandLeanPaper-rev.1.pdf> (Accessed: 8 August 2013).

Drew, J., McCallum, B. and Roggenhoffer, S. (2004) *Journey to Lean: making operational changes stick*. Basingtoke: Palgrave Macmillan.

Goldratt, E.M. and Cox, J. (1989) *The goal*. Revised edn. Great Barrington: North River Press.

Goldratt, E.M. (2003) *Production the TOC way*. Revised edn. Great Barrington: North River Press.

Ikovenko, S. and Bradley, J. (2004) 'TRIZ as a Lean Thinking Tool', *ETRIA TRIZ Future Conference*, Florence, Italy.

Iyer, K. (2006) *Holistic Value Framework – Creating right value streams using TRIZ and other concepts*. Crafitti Consulting. Available at: <http://www.aitriz.org/articles/InsideTRIZ/3230313130322D69796572.pdf> (Accessed: 8 August 2013).

Lebepe, B.A. and Emwanu, B. (2013) 'Comparing Theory of Constraints (TOC) with TRIZ in solving production problem in South Afrika – a case study', *SAIIE25*

Short Research Papers on Knowledge, Innovation and Enterprise

Proceedings. Stellenbosch, South Africa 9 – 11 July 2013. Available at: <http://conferences.sun.ac.za/index.php/saiie/SAIIE25/paper/viewFile/638/210> (Accessed: 8 August 2013).

Mann, D.L. (2007) *Hands-on systematic innovation for business and management*. 2nd edn. Bideford: Lazarus Press.

Mann, D.L. (2002) *Hands-on systematic innovation*. Kuala Lumpur: CREAX Press.

Martin, A. (2010) *TRIZ, Theory of Constraints and Lean* [Online]. Available at: http://www.triz.co.uk/files/triz_toc_and_lean.pdf (Accessed: 8 August 2013).

Moore R. and Scheinkopf, L. (1998) *Theory of Constraints and Lean Manufacturing: Friends of Foes?* [Online]. Chesapeake Consulting, Inc. Available at: <http://www.tocca.com.au/uploaded/documents/lean%20and%20toc.pdf> (Accessed: 8 August 2013).

Stratton, R. and Mann, D. (2003) 'Systematic Innovation and the Underlying Principles behind TRIZ and TOC', *Journal of Materials Processing Technology*, 139(1–3), pp.120–126.

Terninko, J., Zusman, A. and Zlotin, B. (1998) *Systematic Innovation: an introduction to TRIZ (Theory of Inventive Problem Solving)*. Florida: CRC Press LLC.

Vorne Industries Inc. (2013) *Theory of Constraints*. Available at: www.leanproduction.com/theory-of-constraints.html (Accessed 8 August 2013).

Womack, J.P. and Jones, D.T. (2003) *Lean thinking: banish waste and create wealth in your corporation*. London: Simon & Schuster.

ANTHONY I ANOSIKE & MING K LIM

DANIELE DONEDDU & MARC CLEMENT

COMPANION DIRECT INVESTMENT: AN ACCELERATOR FOR THE ECONOMIC DEVELOPMENT OF TRANSFORMING RESOURCE-RICH NATIONS

Abstract

The discovery of hydrocarbons in a number of countries especially in the Middle-East has enabled these nations to develop and generate significant wealth. However, long-term sustainability within these countries' transforming economies has not been addressed in full, with oil revenues still accounting for the vast part of the countries' income. A novel open innovation concept, the Companion Direct Investment (CDI), is herewith introduced. By using the Emirate of Abu Dhabi as a case study, we discuss CDI's potential as a complimentary approach to enable value exchange leading to the location and nurturing of knowledge enterprise as a means to accelerating the transformation of these nations into knowledge-based economies.

Background—Natural Resource-Rich (NRR) Transforming Economies: Governments aspirations, current interventions, and limitations

Natural Resource Rich Economies (NRREs), especially those in the Arabian Gulf, the Gulf Cooperation Countries (GCC) enjoyed recent fast pace of development and have made significant strides in transitioning from primarily oil based economies to laying the foundations for becoming innovative and diversified knowledge-based societies (National US-Arab Chamber of Commerce, 2010). The Abu Dhabi Government with its Vision 2030 (ADIA, 2008), The Saudi Arabian Government through its vision 2020 (Saudi Arabian General Investment Authority, 2009) and the state of Qatar with its long term ambitious plans via the Qatar 2030 Vision (General Secretariat for Development Planning, 2008) all aspire to transform and diversify their Resource Rich economies into Sustainable Knowledge Based Societies.

Abu Dhabi, for example, aspires to become an innovation hub for knowledge, science and technology and to benefit from a diversified knowledge-based economy, where various sectors contribute to the total GDP with reduced reliance on

the Oil and Gas Sector. This is to be achieved through the expansion in to non-oil revenue sources, such as renewables (Reiche, 2010), whilst tackling key development areas, such as infrastructure and real estate (Davidson, 2009; Ponzini, 2011); tourism (Sharpley, 2002); and finance (Alfaro et al., 2006; Beck and Fidora, 2008). These developments are being pursued through interventions such as intensified investment activities (Partners, 2010); improved cultural and entertainment activities, drawing on Qatar's recent interests in Arts and Museums (Adam and Burns, 2011); improved education and research systems (Muysken and Nour, 2006). All these interventions can contribute to increase the absorptive capacity of these economies and lead them to transformation (Durham, 2004; Krogstrup and Matar, 2005; Murovec and Prodan, 2009).

Unfortunately in many of the Middle Eastern economies there is inadequate spending on activities such as research and development (R&D) (Nations, 2010), compared to OECD countries (OECD, 2007). This problem is exacerbated further by the tendency of cash rich nations to import rather than manufacture, which means there is little impetus for industries to conduct their own R&D. Furthermore, any needs which a particular industry does have are brought in from leading global R&D providers meaning that local universities and institutions remain weak (Nations, 2010). New forms of industry that create higher value added activities are therefore needed (Feldman, 2004). The enterprise base needs, in parallel, to broaden—since an imbalances exist in resource rich economies whereby large enterprise dominate the share of industry's contribution to GDP, with little presence of Small to Medium Size Enterprises (SMEs).

There is a growing evidence and support for the idea that innovation and innovation processes, systems and models are fundamental to a healthy and sustainable development of firms as much as it is of nations and regions aspiring to build and sustain progress and competitiveness, and therefore need to be embedded within an holistic government policy approach, as an utmost priority (OECD, 2007). Governments of transforming NRREs increasingly need to capitalise on their current financial strengths and embrace “investor-driven innovation” (Bart Clarysee, 2012) as a mechanism part of their toolkit to accelerate the knowledge economy development in their nations.

Investment mechanisms such as Foreign Direct Investment (FDI) are being pursued by most of these countries. FDI is in general associated with positive economic development and indirect (spillover) effects on national economies (Branstetter, 2006). At present, however, its effects within the wide dynamics of the average Arab country economies is still not completely understood; specifically, increasing FDI was found to be no more likely to benefit an economy's growth than other types of investments (Krogstrup and Matar, 2005). The dynamics at play show a stronger volatility of FDI of non-diversified Arab economies, such as Saudi Arabia, compared to more diversified Arab economies (Krogstrup

and Matar, 2005). Among investment vehicles, Sovereign Wealth Funds (SWFs) have in recent times arisen to increased prominence (NOTES, 2007), operating often sizable equity investments in large foreign multi-national corporations and in high value added brands (Beck and Fidora, 2008) - as well as classic FDI outflow investments involving multinational, international and global corporations, however with limited benefits. SWFs' potential to promote economic development, and especially the knowledge economy, is still greatly underutilised by and within NRREs and therefore represents an ideal candidate for the role of "Financier" to channel current natural resources-derived wealth in to knowledge intensive activities and for Governments as investors to drive innovation.

A new paradigm: Open Reciprocal Companion Direct Investment (CDI) and its benefits to Transforming Nations

We define Companion Direct Investment (CDI) as an innovation engine exhibiting reciprocal, multi-way and multi-directional monetary and knowledge "transactions". CDI possesses the following properties:

1. A financial transaction is made from a Host Country (Financier) and channelled as an equity investment in to both an established, knowledge intensive Micro-company - from a knowledge intensive region, and a prospective startup enterprise located in said host Country;
2. Initial knowledge transfer and—potentially, intellectual property (IP) rights "transactions" are made by the knowledge intensive micro-company on to the newly established, knowledge-driven startup enterprise in the Host Country to initialise its enterprise innovation engine.

Within CDI, equity investments are made in order to establish a new entity - a startup enterprise in the Host region, to be set up as a knowledge-driven Joint Venture company co-owned by the Financier and a (foreign) knowledge based micro-company / SME based in a Knowledge based economy. In addition, and according to Points 1 and 2, an investment is made by the Financier in to the same (foreign) knowledge based micro company/SME. The establishment of a Joint Venture, knowledge-based Company within the Host Country primarily enables two factors: knowledge infusion between the foreign enterprise and the newly established enterprise; access to Intellectual Property Rights already developed within the parent micro-company. The former dynamics enables the company to, at least in part, forego the lengthy process of having to develop an initial knowledge base, know-how, initial strategic business directions, and initial required skills identification and exploitation within the new business, whilst enabling a predominantly indigenous workforce to drive the enterprise and its core activities. The latter dynamics enables the development of technology and new intellectual property within the newly established enterprise, thanks to the R&D activities which

are core to any knowledge based and knowledge intensive business, to initially serve the Host country Market and its region, and with the potential to have a wider reach. This translates in to the creation of substantial value within the newly established business. The strong links associated with the parent company, the Host Country/Financier together with their respective networks at the same time ensure that strategic development will take in to consideration the global markets, optimizing the local and regional commercial—as well as economic, potential, whilst serving as part of the country’s strategic toolkit to accelerate its internal knowledge economy development.

The CDI innovation engine starts with the identification of an existing Knowledge Intensive Enterprise (KIE), usually from a knowledge intensive/region, in general established to: develop technologies or knowledge based services utilizing intellectual property which the company would have access to—typically, own; and to satisfy identified or emerging market needs (in agreement with a dualistic “science-push/demand-pull” absorptive capacity two-dimensional paradigm (Murovec & Prodan, 2009). More generally, KIEs are “focused on knowledge creation, acquisition, learning, use, sharing, integration, exploitation and protection in order to achieve economic and social performance” (Dorinela, 2011). The nature and core technologies of the knowledge businesses considered for CDI offer the potential to be utilized as a platform to serve a global market, as well as to be tailored to suit different niche markets and different applications, in addition to enabling the traditional expansion of the business in other areas/geographical regions. This enterprise would have conducted a substantial amount of R&D, especially during the company’s early, high risk stages of startup, proof of concept (POC) and early prototype / technology demonstrator; it would have overcome the early, high mortality rate phase between research and successful innovation - the so-called “Valley of Death” (Gulbrandsen, 2009; Hudson & Khazragui, 2013); and would likely have developed a substantial knowledge base and technology, all factors leading to greatly reduced risks (for potential investors) associated with equity investments, compared to a company possessing an untested/unproven technology (Murphy and Edwards, 2003). However, the process of raising investment funds to pursue commercialisation, diversification and expansion may still present substantial challenges for the SME to penetrate markets—such as, for example, the GCC area, which may present higher than usual barriers to entry for micro-companies (especially market size, bureaucracy and other institutional and culture-related variables) (Mohamed and Sidiropoulos, 2010).

In order to progress through its value roadmap, this enterprise would therefore greatly benefit from investment as well as from the establishment of a sister operation in transforming regions keen on developing a Knowledge Economy, such as the GCC. The Host nation “financier”, whether it be the Government, an SWF or another entity as the investor, would, according to the definition of CDI, acquire

an equity stake in the Knowledge rich enterprise which will fund the next phase of the business development. The magnitude of this equity investment would typically position the Financier as a minority shareholder investor in the micro-company. This first investment event can be considered as a classic FDI outflow from our nation of interest's perspective. Conversely, a parallel investment enabling the creation of a knowledge driven business within the Host nation will place the Financier as a co-owner of the new business (together with the Micro-company), typically holding a majority stake in this newly formed business.

The newly established enterprise would be a full-fledged company, incorporated in the Host nation and comprising of management, operational, research and development, sales and marketing, and manufacturing functions. Governance would have representation from the parent business as well as the Financier. The workforce and leadership would be—in the fullness of time, predominantly constituted by local skilled workers, managers and researchers. In contrast to a traditional FDI scenario, the newly established company would undertake significant research and development in the Host Country as well as manufacture, assemble and conduct product sales within its host nation. In parallel with the planned launch of a first product by the new enterprise, a presence within the wider region will be established, in order to service the neighbouring nations. This is by no means an exclusive trait of CDI; however, in contrast with the traditional FDI approach, in the case of CDI the decreased burdens dictated by the interface with the local and regional governments are greatly reduced, due to the active involvement of the Host nation's indigenous investment and leadership.

The inner structure, as well as the dynamic behaviour, of the new enterprise therefore differs profoundly from the archetypical product of a traditional FDI inflow process, as well as from the product of a Government-backed inward investment. This translates in a different dynamic at play, as well as a different economic and business performance of a CDI compared to a traditional FDI approach, as exemplified below. A real-life medical device company based in the United Kingdom, to which the authors have access, was utilised as a case study within an hypothetical investment scenario by the Sovereign Wealth Fund of Abu Dhabi. Real GDP calculations were conducted utilising the standard expenditure method (McCulla and Smith, 2007). Comparative analysis of economic performance between FDI and CDI shows the inner benefits of CDI, in terms of: a) greater sales generated, and at a increased rate, as the company benefits from an earlier start to its operations in the country and a more enhanced access to wider markets, in part due to a more direct access to levers of influence within the administrative and bureaucratic local machinery; b) greater government's revenue from taxation, due to the aforementioned increased employment, as well as the increased retention of capital within the region, owed to the predominantly local workforce, which leads to the redeployment of money within the local economy, assuming a constant level

of savings; and c) increased employment of skilled workforce employed, as a direct effect of the presence of a robust business core, together with R&D, Manufacturing and Clinical activities, in addition to Sales and Marketing, compared to FDI, whereby the business would be focused predominantly on sales activities, with a certain level of tech and clinical support. Calculated Real GDP for the Country, based upon a “single company” economy (Feldman, 2004) was found to be significantly higher in the CDI scenario than in an FDI equivalent. Again, the observed behaviour can be readily attributed to factors such as: extra number of people being employed – leading to greater taxation and consumption; increased number of sales of the device due to factors such as an earlier start to operations and preferential opportunities in the wider region which could occur as the government or financier would be a key investor in the Sister/Core Company and present opportunities to participate in other ventures and to hold exclusivity in the region.

In its role as an engine, CDI can readily integrate within existing and future innovation and development policies and immediately benefit the performance of government interventions and policies such as: educational reforms and increased focus on Higher Education, knowledge economy skills and the R&D agenda - since it can absorb the new up and coming flow of highly skilled local graduates who may be diverted on to other types of employment, as well as providing an initial knowledge platform as opposed to developing a knowledge base from the ground up, whilst avoiding the criticisms of “extra-mural R&D” as a means to boosting absorptive capacity (Murovec and Prodan, 2009); entrepreneurship policies, since CDI has the potential to stimulate the creation of knowledge entrepreneurs within the nation at a faster pace; financial and investment policies to improve internationalisation of the country’s economy and its diversification, due to the international nature of CDI; investment policies, since it stimulates and favours net and active investment in knowledge and skills, whilst acting as an accelerator for the development of further high level skills within the local population, thus fulfilling government’s objectives of nationalisation of the countries’ workforce (Mashood et al., 2009). The establishment of knowledge enterprise will also have the effect of producing cross-fertilisation of the economy and the potential development of new government-investor driven policies, since it can allow a more effective exploitation of potential synergies between sectors (for example, a thriving life science industry can help boost underperforming tourism (Sharpley, 2002), by stimulating the globally growing market represented by health tourism).

Conclusions

We have presented the novel concept of Companion Direct Investment as an engine to help boost the economic development potential of transforming resource-rich economies, such as the GCC, utilising the Emirate of Abu Dhabi, and a real

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life high potential micro-company based in a knowledge intensive region as the actors to exemplify the high-level operation of the model, and have shown its performance potential compared to a traditional FDI model. CDI provides a unique, flexible and innovative approach which fits harmoniously within NRRE governments' objectives and policies and the countries' respective long-term strategic visions and aspirations, with direct and indirect benefits to the economy and wider policy implications. Direct benefits are: economic growth via increased GDP and of increased skilled employment; increased Government revenues and projections of accelerated sales for the company's products pipeline. From the Government's perspective, *CDI ensures that the objectives of: increasing investments in to potentially high-return equity in diversified investments; enhanced and complementing knowledge transformative activity of the nation, in line with Government policy and aspirations of the Host Nation, are met. Wider policy implications* show significant benefits to seamlessly integrate within, and complement, existing innovation and development policies. A successful implementation of CDI within an holistic government-driven economic development strategy has the potential to help create a more dynamic and diversified, balanced sustainable knowledge economy.

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References

Adam, G., Burns, C., 2011. Qatar revealed as the world's biggest contemporary art buyer. The Art Newspaper, online.

ADIA, 2008. The Abu Dhabi Economic vision 2030, Abu Dhabi.

Alfaro, L., Chanda, A., Kalemli-Ozcan, S., Sayek, S., 2006. How does foreign direct investment promote economic growth? Exploring the effects of financial markets on linkages. National Bureau of Economic Research.

Bart Clarysee, I.P., Charlotte Pauwels, 2012. Investor Driven Innovation. Science Business innovation board.

Beck, R., Fidora, M., 2008. The impact of sovereign wealth funds on global financial markets. *Intereconomics* 43, 349-358.

Branstetter, L., 2006. Is foreign direct investment a channel of knowledge spillovers? Evidence from Japan's FDI in the United States. *Journal of International economics* 68, 325-344.

Davidson, C., 2009. Abu Dhabi's new economy: Oil, investment and domestic development. *Middle East Policy* 16, 59-79.

Durham, J.B., 2004. Absorptive capacity and the effects of foreign direct investment and equity foreign portfolio investment on economic growth. *European Economic Review* 48, 285-306.

Feldman, M., 2004. the Significance of Innovation. prepared for the Swedish Institute for Growth Policy Studies, 1-14.

General Secretariat for Development Planning, 2008. Qatar National Vision. General Secretariat for Development Planning, Doha.

Krogstrup, S., Matar, L., 2005. Foreign direct investment, Absorptive capacity and Growth in the Arab world. Graduate Institute of International Studies (Geneva) Working Paper.

Mashood, N., Verhoeven, H., Chansarkar, B., 2009. Emiratisation, Omanisation and Saudisation—common causes: common solutions?, Proceedings of the Tenth International Business Research Conference, Crown Plaza Hotel, Dubai, 16-17 April. Butterworth Heinemann.

McCulla, S.H., Smith, S., 2007. Measuring the Economy: A primer on GDP and the National Income and Product Accounts. Bureau of Economic Analysis, US Department of Commerce.

Mohamed, S.E., Sidiropoulos, M.G., 2010. Another look at the determinants of foreign direct investment in MENA countries: an empirical investigation. *Journal*

Short Research Papers on Knowledge, Innovation and Enterprise

of Economic Development 35, 75-95.

Murovec, N., Prodan, I., 2009. Absorptive capacity, its determinants, and influence on innovation output: Cross-cultural validation of the structural model. *Technovation* 29, 859-872.

Murphy, L.M., Edwards, P.L., 2003. Bridging the valley of death: Transitioning from public to private sector financing. National Renewable Energy Laboratory.

Muysken, J., Nour, S., 2006. Deficiencies in education and poor prospects for economic growth in the Gulf countries: the case of the UAE. *Journal of Development Studies* 42, 957-980.

National US-Arab Chamber of Commerce, 2010. Connecting Globally: knowledge based societies in the arab world, US Arab tradeline.

Nations, U., 2010. Arab Knowledge Report. United Nations Development Programme.

NOTES, P.B., 2007. Sovereign wealth funds: stumbling blocks or stepping stones to financial globalization? FRBSF Economic Letter 2.OECD, 2007. Innovation and Growth.

Partners, I., 2010. Abu Dhabi Investment Environment.

Ponzini, D., 2011. Large scale development projects and star architecture in the absence of democratic politics: The case of Abu Dhabi, UAE. *Cities* 28, 251-259.

Reiche, D., 2010. Renewable Energy Policies in the Gulf countries: A case study of the carbon-neutral "Masdar City" in Abu Dhabi. *Energy Policy* 38, 378-382.

Saudi Arabian General Investment Authority, 2009. Creating a Knowledge economy in Saudi Arabia.

Sharpley, R., 2002. The challenges of economic diversification through tourism: the case of Abu Dhabi. *International Journal of Tourism Research* 4, 221-235.

CHRISTIAN CHILESHE

BRINGING ENTREPRENEURSHIP INTO BUSINESS DEVELOPMENT SERVICES—A DEVELOPING COUNTRY PERSPECTIVE

Introduction

Many now see entrepreneurship as playing a critical role in enhancing economic development, especially through its positive effect on the micro-small and medium enterprises (MSME) sectors of developing countries. Business Development Services (BDS) have also been identified as being able to incorporate and so serve as a conveyer of entrepreneurship development amongst MSMEs. Yet there seems to be lack of common understanding of entrepreneurship as a construct and of the extent to which entrepreneurship development may be distinct to what is typically implied in BDS, with many assuming the two fields are effectively identical. This has implications on how entrepreneurship is brought into BDS and, in turn, on how it supports MSME development. This theoretical paper attempts to begin the process of closing this knowledge and practice gap by drawing on various literature on entrepreneurship and BDS, and creating movement towards developing a framework within which future empirical research could be undertaken. The objective is to begin a conversation that could encourage scholarly work around the intersectionality of these concepts and to also support the better understanding and effective infusion of entrepreneurship into BDS practice within a developing country context. To achieve this, the paper utilises a sensemaking approach (Weick, 1979; 1995) to discuss entrepreneurship and BDS from a developing country perspective, and to scan literature with the purpose of identifying relevant building blocks towards the set objective.

The paper starts with a fairly in-depth consideration of the concepts of entrepreneurship and of BDS, and then goes on to explore aspects that may call for greater understanding of the place for entrepreneurship in BDS delivery. The conclusion also includes some pointers to some research, policy and practice implications.

Entrepreneurship

There is currently no universally accepted *definition* of entrepreneurship, with most researchers opting to rather provide *descriptions* that, though revealing important dimensions of the phenomenon, do not necessarily define its parameters (Gartner, 1988). Major strides towards the development of a theoretical framework of entrepreneurship have however been made over the last few decades. Our understanding of entrepreneurship has evolved from the initial focus on establishing *a profit oriented business* (Schumpeter, 1934; Cole, 1968) to looking beyond the profit motive (Gartner, 1985) and on to including the whole process of *following an opportunity irrespective of the existing resources* (Stevenson et al., 1989; Bygrave, 1994). Mui (2011) proposes a definition and conceptual framework that could very well be an important step for the field of entrepreneurship. He refers to entrepreneurship as “*the act of enhancing one’s reality*” (p. 5). Reality is in this context viewed as being bigger than any particular realm of human existence. Mui (ibid) argues that entrepreneurship is not only limited to the realm of economics nor limited to the start-up of firms or profit making. Rather, that it captures the “very essence” of our being (p. 4). It recognises all human progress made, from the first handmade fires of long ago to the nuclear power plants of today. Such progress, Mui asserts, is the result of the ever continuing accumulation of entrepreneurial action. From this more holistic view, entrepreneurship should be seen as being descriptive of the way society and its constituent individuals go about engaging with the various livelihood issues affecting their existence. It should therefore be brought into the discussion of, for instance, the way a rural community sees and responds to the need to ensure safe drinking water and good health practice, or how its respective individuals and households access and utilise various resources. Within this context, successful establishment and operation of a business would merely be only one (albeit important) form of expression of entrepreneurship.

By drawing on the various descriptions of entrepreneurship, and based on this livelihoods perspective, some fundamental “pillars” of entrepreneurship emerge, and include the following:

- i. Entrepreneurship is a transformative process that introduces newness to livelihood structures (and not merely to the products of pre-existing structures). This is the sense in which even the economist Schumpeter (1934) understood the con-

cept;

- ii. Opportunity identification and exploitation constitute the “two legs” of entrepreneurship. Opportunity is here defined as ‘*a future situation which is deemed desirable and feasible*’ (Stevenson & Jarillo, 1990, p. 23);
- iii. Entrepreneurship (at the stage of opportunity exploitation) requires the commitment of various resources (such as people, information, time and money), though resource adequacy is not a pre-requisite for opportunity exploitation;
- iv. The driving force behind entrepreneurship comes from the desire to realize future benefit or value. Such benefit or value could be economic, psychological, social and/or any other as envisaged; and
- v. There is also the aspect of risk - the possibility that at least some of the activities may not, in part or wholly, result into the desired future benefits.

The above five “pillars” appear critical to the pursuit of a robust conceptual and theoretical framework of entrepreneurship, and to a globally-accepted definition.

Who is an Entrepreneur?

Central to the concept of entrepreneurship is the individual. In the words of Krueger & Brazeal (1994), “*entrepreneurial potential requires potential entrepreneurs*”. But who then is an entrepreneur? There is growing agreement that an entrepreneur should be seen as an individual with *the ability* (1) to identify opportunities and (2) to develop mechanisms for their successful exploitation. But even with this recognition, and even after Gartner (1988) expressed concern, many references to an entrepreneur continue to still be based on “*what the entrepreneur does*” rather than “*who the entrepreneur is*”. And so, various writings continue to refer to an entrepreneur as a person that successfully starts and operates a business enterprise.

It is however evident that a growing amount of literature has begun to enquire more into the aspect of *the ability* possessed by the entrepreneur and not just how entrepreneurship manifests (as can be seen from Shaver & Scott, 1991 and all the way through to Covin & Lumpkin, 2011). Because this line of enquiry has placed focus on the person of the entrepreneur, the field of psychology has invariably been drawn into the discussion so as to assist in explaining the underlying mental function and resultant behaviour of the entrepreneur (Johannisson, 1998). Further, because entrepreneurship is a phenomenon influenced and experienced within the context of social interaction (i.e. it impacts and is impacted by society), the field of sociology has also become implicated.

Various studies have enquired separately into either the psychological or the sociological dimensions pertaining to the entrepreneur and the entrepreneurial environment respectively (e.g. Rauch & Frese, 2000 and Thurik & Dejardin,

2012). But researchers such as Kourilsky (1995) and Thornton (1999) have considered these two dimensions together and so helped in creating a clearer understanding of the entrepreneurial continuum that exists from the individual to the institutional vehicles employed, and onto their environment at large. The outcomes of various research in this sphere enables us to assert that the state of being entrepreneurial involves (1) a state of mind that leads to (2) particular behaviour that combines with (3) particular environmental circumstances.

Based on the foregone, entrepreneurship development could then be understood to include the whole processes of influencing individual mind-sets and behaviour (and even entire environments) towards acts that enhance their reality. Also, the five fundamental “pillars” of entrepreneurship identified above become important to the design, implementation and measurement of entrepreneurship development efforts.

Business Development Services

There is currently still very limited scholarly work in the area of business development services (BDS), with most publications based on developmental projects undertaken in developing countries. It has in the recent past been presented as involving *the tasks and processes pertaining to the analytical preparation of potential enterprise growth opportunities and the support and monitoring of the same* (Sørensen, 2012, p. 26). Though BDS is a function that can be performed internally, it is traditionally linked to a wide range of non-financial services provided by external service suppliers to MSME operators who use them to improve operations and prospects for growth. Within a developing country context BDS is intended to respond to challenges of low levels of productivity and competitiveness amongst MSMEs. Typical services could be categorised into the following seven segments, based on Gagel (2006):

- i. *Market access services* – including facilitating access to market information, establishment of market linkages and other support to expose MSMEs and their offerings;
- ii. *Input supply services* – facilitating firm linkages with providers of inputs;
- iii. *Technology and product development services* – facilitating the development and utilization of appropriate and enterprise-enhancing technologies;
- iv. *Training and technical assistance* – skills development and experience sharing;
- v. *Infrastructure-related and information services* – provision of facilities needed by enterprises;
- vi. *Policy and advocacy* – facilitating active engagement of entrepreneurs in addressing issues affecting them and their operations; and

Access to finance—support to enterprises in their quest for appropriate financial services.

A significant proportion of BDS interventions in developing countries particularly focus on supporting rural agriculture-based enterprises and the agribusiness environment as a whole (Agri-Profocus, 2012). Rural BDS is now increasingly forming a part of overall agricultural extension services that is evolving from provision of basic technical services to including a broader range of support intended to help small holder farmers to view farming as a business.

But evaluations of some of the major BDS programmes in developing countries show that conventional BDS interventions (which by design typically focus on awareness creation and skills development) lack the transformative power to lead to generalised significant levels of business success (as measured by indicators such as productivity, competitiveness, incomes, employment, etc.) amongst MSMEs, and ultimately to overall significantly improve livelihoods (Chileshe et al., 2011). Most studies suggesting otherwise will typically have been commissioned by an agency that also funded the interventions being evaluated, will have an advocacy tone to them and will also appear to utilise doubtful methodologies.

It is increasingly becoming common for BDS interventions to claim to be working towards developing better entrepreneurs out of MSME operators. But a review of the content and implementation processes of such interventions would more likely than not expose challenges with regard to the conceptualisation of entrepreneurship and how it has been incorporated into the BDS. Most BDS interventions appear to often seek to develop, in MSME operators, specific funder-determined business management competencies intended to enable them exploit equally funder-determined opportunities. But based on how entrepreneurship has been conceptualised above, an entrepreneurial approach would seek to develop the capabilities of the MSME operators to identify business opportunities themselves and to exploit them in the best way they may deem fit. The latter approach is clearly the more complex and longer term, and so may most likely not appeal to most donor-funded BDS projects that often have limited timeframes and pre-set performance parameters.

Even where BDS interventions appear to clearly recognise human transformational imperatives, and where psychological and sociological dimensions are drawn in, questions may still arise with regard to (1) how this intervention framework has been developed and (2) the existence of any research-based evidence of its effectiveness in producing desired results.

Probably the most notable progress towards developing research-based entrepreneurship development models for business development are in the area of entrepreneurship education. But, as would be expected, most of these models lend themselves more to the developed country student who is considering starting a

business than to an out-of-school developing country MSME operator that may have a low to moderate literacy level. Of those that actually target MSME operators, none could be identified that possessed a robust conceptual and theoretical framework that could enable them to be adapted to different socio-economic contexts.

The Human Capabilities Approach and the Search of a Place for Entrepreneurship in BDS

No doubt, the value of entrepreneurship to overall development is in its transformative power that begins with the individual and is experienced in the environment. Based on this view, this paper has identified the Capabilities Approach (CA) as potentially providing a framework for further exploring the role and place of entrepreneurship in BDS. CA is a developmental perspective that seeks to enhance human flourishing by unlocking people's potential (Sen, 2000; Nussbaum, 2000). This suggestion is based on evidence from Gries & Naudé (2010) who have drawn on CA to propose a human development framework that draws in entrepreneurship as a key element in the sustainable economic development process. Could this particular framework be extended specifically to BDS? Or could some valuable lessons be drawn from it in developing another more suited to BDS?

What is clear is that the CA approach would allow for focus to be placed on the person in the business and also on the person in the external environment, and not just on the strategies, systems and operations or on any business or economic aggregates used to view the external environment. Based on this approach, entrepreneurship may then come in to provide the means by which human capabilities could be unlocked, both within the business and in its environment. Resultant transformed mind-sets and social relations become key to continued business opportunity identification and exploitation, and ultimately to sustained development. It is also within this mind-set and social relations context that business management knowledge and skills that come with BDS delivery could be put to optimal use by MSME operators.

Conclusion and scope for further research

The above discussion has sought to demonstrate that entrepreneurship development is a distinct field that is separate from even the business development to which it is often associated. However, based on knowledge drawn from the disciplines of psychology and sociology, we understand that entrepreneurship can enhance the effectiveness of BDS because of the transformative effect it can have on enterprise operators and on associated business environments. In trying to deal with how entrepreneurship could enhance BDS delivery in a developing country

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context, the paper points to the Capabilities Approach (CA) and to its potential to provide an appropriate framework for this purpose. The paper not only calls for a further examination of this approach, but also for revisiting current views, policies and practice in entrepreneurship development and BDS if the normative sustainable development is to ever become a reality in any significant measure. It would particularly be useful to see more empirical studies into the extent to which entrepreneurial aspects (based on this more holistic definition of entrepreneurship) are being incorporated into BDS interventions in developing countries, and to attempt to assess the impact that these specific entrepreneurial aspects may have on MSME development. Resultant evidence may feed into important policy and practice shifts, and possibly provide a step towards the development of a framework for the development and delivery of what could very well become known as *Entrepreneurship and Business Development Services* (EBDS).

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References

- Agri-Profocus, 2012. *Organised Farmers as Partners in Agri-business*. [Online] Available at: <http://apf-producers.ning.com/group/agri-business-development-services> [Accessed 25 September 2012].
- Bygrave, W. D., 1994. *The Portable MBA in Entrepreneurship*. New York: Chichester Publishers.
- Chileshe, C; Banda, J. S; Msoni, M., 2011. *Development of Market-oriented Business Development Services in Zambia*, International Labour Organisation
- Cole, A. H., 1968. Meso-economics: A contribution from entrepreneurial history. 6(1).
- Covin, J. G. & Lumpkin, G. T., 2011. *Entrepreneurial Orientation Theory & Research: Reflections on a Needed Construct*. *Entrepreneurship Theory & Practice*, 35(5)

- Gagel, D., 2006. *How to develop sustainable BDS without radicalism?*. s.l.:MSN Publishers.
- Gartner, W., 1985. *A framework for describing the phenomenon of new venture creation*. Volume 10.
- Gartner, W. B., 1988. *"Who Is an Entrepreneur?" Is the Wrong Question*. s.l.: University of Baltimore Education Foundation.
- Gries, T. & Naude, W., 2011. *Entrepreneurship and human development: A capability approach*. 95(3).
- Johannisson, B., 1998. *Entrepreneurship as a collective phenomenon*. RENT XII. Lyon, France.
- Kourilsky, M.L., 1995. *Entrepreneurship Education: Opportunity in Search of Curriculum*. Center for Entrepreneurial Leadership, Ewing Marion Kauffman Foundation, Kansas City, MO.
- Krueger, N. F. & Brazeal, D. V., 1994. *Entrepreneurial Potential and Potential Entrepreneurs*. 18 (3).
- Mui, A., 2011. *Entrepreneurship: The Act of Enhancing One's Reality*. Vienna, s.n.
- Nussbaum, M., 2000. *A look at Human Development*. s.l.:Cambridge University Press.
- Sen, A., 1990. *Development as Capability Expansion Human Development and the International*. London: Macmillan Publishers.
- Shaver, K. G. & Scott, L. R., 1991. *Person, Process, Choice: The Psychology of New Venture Creation*. *Entrepreneurship Theory & Practice*. 16(1).
- Sorensen, H. E., 2012. *Business Development: a market-oriented perspective*. John Wiley & Sons.
- Stevenson, H. H. and Jarillo, J. C., 1990. *A paradigm of entrepreneurship: Entrepreneurial management*, *Strategic Management Journal*, 11, pp. 17-27.
- Stevenson, H.H., Roberts, M.J., Grousbeck, H.I., 1989. *Business ventures and the entrepreneur*, Homewood, IL, Richard D Irwin Publishing
- Thornton, P H., 1999. *The sociology of entrepreneurship*. *Annual Review of Sociology* 25:19–46.
- Rauch, A. & Frese, M., 2000. *Psychological approaches to entrepreneurial success. A general model and an overview of findings*. In C.L. Cooper & I.T. Robertson (Eds.)
- Weick, K., 1995. *Sensemaking in organizations*. s.l.:Thousand Oaks Publishers.
- Weick, K. E., 1979. *The social psychology of organizing*. London: Wesley Publishing Company.

MARIA LUISA B. GATCHALIAN ANTONIO M. LOPEZ

ENTREPRENEURSHIP CURRICULUM FRAMEWORK DEVELOPMENT FOR GLOBAL COMPETITIVENESS

Introduction

The heightened recognition of Entrepreneurship Development as the socio-economic seedbed that develops and enables the country's human capital resources to grow and fuel global economies puts Entrepreneurship Education as the new generation course of the century (*Learning for the 21st Century, 1999; Globalization, 2009*). It is an education discipline that allows and enables its citizens to set up their own ventures or businesses models, generate employment and productivity, create wealth for themselves and for others, and sustain it ethically and responsibly. Entrepreneurship education, development and training are recognized as one among the concrete answer for a vibrant and productive economic societies (*McClelland, nd*). It has also gained the formal recognition in higher-level institutions, as a subject or a full degree course, globally. As a new academic discipline, laying the curriculum groundwork and framework for an effective Entrepreneurship Program in higher education is a great challenge mainly because of its dynamic nature and it is non-traditional. The foundation of a curriculum framework evolved and took shape from the results of research, series of related activities and the program management experiences of the educator/researchers and contributors for decade. Specifically, the key findings of the research conducted from 2008 to 2010 (*Gatchalian, 2010;2012; Lopez, et al, 2013*) emphasizes the 5 development foundation necessary to address the present needs and future requirements of the academic stakeholders: the learner, educator, school, businesses and industries, the community and society at large (*Gatchalian, 2010*).

The 5 Development Foundation

Defining the course teaching and learning needs, entrepreneurial competencies and outcomes for aspiring entrepreneurs

More than ever, there is a general realization that education of the future should be

relevant to a changing environment where careers and making a living have changed drastically. While the future is headed for a shrinking traditional careers, it also opens up new ones as well. The 21st century foundation skills and competencies (*Higher Education for 2030, OECD, 2009; 21st Century Skills, 2007*) puts focus on a lifelong learning that should enable people to be self-directed, self-reliant with income that is self-derived and entrepreneurial. Entrepreneurship education is one program designed to address just that—to be entrepreneurial! Entrepreneurship is an education of values, attitude, aptitude, mindset, character building, and decision making for self-direction that will allow them to take personal responsibility and accountability for their own learning, career and life. It is an education that creates and develops the awareness and acquisition of knowledge on the theoretical foundations of economics, business, and management. These knowledge allows then, to draw out creativity, inventiveness or innovativeness, use of critical and practical thinking of making sense in the transformation process of an idea into life, problem into a solution, needs and wants into some product as a source of living, income or wealth.

Entrepreneurship in higher education offers practical application of knowledge through opportunity identification, prototype development, some methodical and systems process, which are largely organic in nature because it is output and results oriented. It is also an activity of self-fulfilment where one can claim ownership to the very output one has produced or built. Meaning, one has to grow and transform their ideas into life with a new form or value. The course structure therefore, generally requires differentiated teaching (*Tomlinson, 1996; 2004; 2010; Diñozo, 2013*) depending on the learning needs and ventures the students intends to explore, build and grow. It is a course that aims to produce change agents, innovators and future employers.

Inherent in the process are challenges and failures where one's entrepreneurial character is minted. That is why the course is heavy on mentoring, close monitoring and hand holding especially at the beginning or early in its developmental stage. It is likened to growing a child where the parents are present during their wobbly beginnings until you wean them over time (*Gatchalian, 2013*).

Teaching entrepreneurship therefore, requires specific higher order teaching and mentoring skills, insightfulness and sensitivity, all at the same time. This is especially true in handling the digital generation of college teens. Likewise, teaching it requires specific methods of teaching, new academic standards that suggest developing entrepreneurial competencies and thinking process that makes entrepreneurs. It is a program that requires a support system and an enabling environment, which are all aimed at increasing the likelihood of success among startup businesses.

10 Entrepreneurial competencies and outcomes and more

The Management Systems International (MSI), which developed the 10 Entrepreneurial Competencies now used by Entrepreneurial Development Programs worldwide has become the standard in developing the curriculum framework, as well as, the entrepreneurial learning outcomes. (Diaz, 2013) From webpage, the following is quoted:

Through the USAID research project, MSI discovered a surprising research finding: successful entrepreneurial behaviours are remarkably consistent from country to country. The research and subsequent testing identified 10 Personal Entrepreneurial Characteristics (PECs) and 30 behavioural indicators found to be most useful for detecting and strengthening entrepreneurial potential. David McClelland, the Harvard University psychologist, helped launch the entrepreneurial revolution, as 'the most significant new development in entrepreneurship training for more than two decades.

The 10 Entrepreneurial Competencies are: a) opportunity seeking; b) moderate risk-taking; c) high demand for efficiency and quality; d) commitment to work contract; e) persistence; f) information seeking; g) goal setting; h) systematic planning and monitoring; i) persuasion and networking; and, j) self-confidence.

The point here is, given the teaching and learning environment, entrepreneurship can be caught and taught by educated and professionally trained educators with the necessary knowledge, skills and competencies, with a teaching model that works!

Learning and teaching needs of young adolescents as nascent entrepreneurs

The study, "An-depth analysis of the entrepreneurship in higher education in the Philippines," (Gatchalian, 2010) revealed that the new digital/touch screen generation of youth, characterized by multiple intelligences, prefers hands-on, experiential learning methods and strategies, especially in entrepreneurship education. These students who are no longer children, but still minors, and not yet adults, need an engaging and enriching learning environment where they can navigate with. They need role models, as well as, teachers with expertise who are more of mentors and facilitators rather than lecturers. They prefer guides who will show them the way at the onset, as they learn to be more self-directed in their entrepreneurial learning journey in college. Thus, educators should fully recognize, understand and work around the dynamics of teaching entrepreneurship to learners in relation to their developmental and maturation stage, aspirations, learning out-

comes and the increasing demand to be globally competitive as lifelong learners, to be effective.

Policy framework of the National Education Body: CHED CMO No.17; Academic, administration and institutional support for the promotion of an entrepreneurial culture and environment

There are already concerted efforts in the government and the private sector to advance entrepreneurship education as a long-term solution to national economic advancement globally and locally. In the Philippines, which is also true in other nations, there is a national governing body that takes care of the over-all education and its thrusts for standards of excellence and quality. This governing body in the Philippines called the Commission on Higher Education (CHED) has formally integrated entrepreneurship education in higher education. Its role as defined in Republic Act No. 7722 Memorandum Order No. 17 (CMO # 17). It contains the standards of development, thrusts and compliance requirements in Policies, Standards, and Guidelines for Bachelor of Science in Entrepreneurship.

The Philippine education system is presently undergoing an important K1 to 12 [programme covering Kindergarten and 12 years of basic education] transition affecting and impacting higher education. Already, CMO #17, is being updated to align its thrusts to the ongoing changes amidst the increasing number of colleges and universities offering entrepreneurship courses and specialized program. The nature of the course program will take on a newer form as it evolves and develops over time. The biggest task of the school administrator is to put all these elements into action according to their values, vision, and thrusts, however guided by CHED's CMO # 17.

The basic learning outcomes it requires schools and universities to develop are: a) entrepreneurs who are motivated and knowledgeable in identifying opportunities; b) developing and preparing business plans; c) accomplish requirements in actually starting and managing a business and as future employers (Lopez, 2012, CHED, 2005).

In general, a total of 146 units follows a progression of: a) general education courses; b) business core courses; c) entrepreneurship core courses; d) incubation courses; e) non-incubation courses; and e) specialized or elective courses. The guideline includes the enabling features, structures or infrastructures such as : a) hiring of competent educators; b) inclusion or availability of a good teaching model that works ; c) a teaching guide that would help both educators and practitioners, in teaching entrepreneurship as a subject in the tertiary level; d) program for faculty training and development as part of resource and competency building or strengthening; e) availability or development of own teaching and learning resource materials; f) business incubation structure and laboratory facilities. The

incubation is a necessary physical structure where ideas are generated, explored, incubated and operated; some kind of infrastructure that will approximate the realities of doing business; where business activities are done or operated with the necessary or basic office or laboratory contraptions for start ups; serving as a transition point for students to either continue their business or create a new one after graduation ; g) institutional support to welcome and build on the new pedagogy for this non-traditional course, as the administration refine and find its program niche in entrepreneurship. Likewise, schools under the government's jurisdiction are also allowed, according to its defined specialization , track or niche come up with enhanced program and outcomes depending on their own mission, vision and thrusts. The entrepreneurship program and its courses are constantly evolving depending on the level and extent to where the stakeholders are willing bring it. To be effective, its management has to be as dynamic as the course itself.

Specialization and Differentiated Program of Instruction

Specialization in the context of entrepreneurship is about building on a program that a school aims to be capable, strong and be known for it. (Lopez, 1998, 2007). Miriam College, in the Philippines, for example, one of the pioneering entrepreneurship schools in higher education in the late '90's developed a program that made its identified weaknesses turn out to be one of its strength. Its limited resources in terms of infrastructure and resources, embarked them to collaborate with specialized institutions to address the growing number of enrolment with industry-specific- path like culinary, fashion and product design. It formally engaged in an extended classroom program with specialized local institutions and their international counterparts in the United States of America, to provide the infrastructure and industry expertise for content and delivery following the guidelines and requirements of CHED (Lopez, 1998, 2007) . Over the years, it has developed its niche and curriculum which served as the model framework for other academic institutions to gather ideas and insights in forming their own (Lopez, et al 2012).

Eventually, several academic institutions offered entrepreneurship with specialization in: family business, food business, agribusiness and the like. Some private or state college and universities in the regions offer entrepreneurship as part of an extension of their specialized course in business and accountancy, agriculture or aqua marine courses, cooperative, tourism , and other science disciplines as a full course, track, subject, non-college credit or certificate and diploma courses.

There are other emerging entrepreneurial applications in areas of social entrepreneurship, intrapreneurship, or industry specific like, manufacturing or service, service, retail or real estate industry. This is, in its sense, specialization (or 'niching'). Such that, the entrepreneurship program now segues to a defined en-

trepreneurial discipline, activity or venture.

This leads on to a differentiated program or instruction as learners complete the course. Differentiated teaching and instruction in general, builds on the premise that learners differ in many important ways and teachers must be ready to engage students (Tomlinson, 1997, 2004, 2008, 2012). Students who are aspiring entrepreneurs are placed at the centre stage, comes with a very defined learning path and achievement goals. Engagements, largely responds to the unique ventures they created which are needing different teaching and learning modalities along with their varied degrees of complexities and industry standards. Thus, needing educators who can facilitate and mentor the learning journey.

Relevant pedagogies, use appropriate technologies, competent educators and assessment beyond numbers

Effective teaching and learning preferences are definitely non traditional in entrepreneurship. The integrative nature of the various related subjects in a ladder type progression requires long teaching engagement alongside the learning process and progress of each student.. It is handholding at the beginning towards self-direction and educated decision-making later. The desired learning outcomes can be met alongside the ideas generated and exclusive to the venture, the student as nascent entrepreneur has set to reach. This is also true in defining the appropriate teaching and learning engagement where the educator/facilitator/mentor and the student as colleagues should mutually develop the “trust” as they both set to co-create their entrepreneurial journey. (Gatchalian, 2010; 2012).

Relevant and effective teaching and learning strategies for example include peer counselling or the “big-sister; little-sister” concept (Lopez, Serrano et al 2007); advising/mentorship engagements from faculty which both create a family-like environment makes learning more engaging and students more responsive. Interventions which include plant visits, local and foreign travel, exhibitions, competitions, retreats, social outreach programs, interaction with “real entrepreneurs,” and joining student organizations that offers extra-curricular activities are more meaningful.

Entrepreneurs or practitioners are enjoined in varying roles from mentors, guest lecturers, or part-time faculty. At the same time, having a good teaching model that works (Katz, 2007) makes entrepreneurship much more effective. In addition, these digital students is best engaged using digital tools and application by digitally competent educators .

What makes entrepreneurship unique is its assessment system which allows room to commit mistakes and learn from it. Numerous constraints, challenges and repeated failures lead students to iterate their ventures which teach them patience, resiliency at odds, or the use of business tools for better management decision-

making. Entrepreneurship after all, is about honing skills and strengthening ones character and values with renewed optimism and confidence from the experiences and learning with some end in sight, of something incalculable from the enriching experience of personal triumphs to the exponential bounties the future of their venture holds.

Collaboration, Partnerships, Linkages and Internationalization

The trend on regional and international academic collaboration beyond exchanges, internships or institutional friendships has not been as active as it is today. This openness is all meant to build a stronger community of learners making education accessible, more than ever, in this globalized world. The academic community and its programs for the new generation therefore should be as dynamic as the change that is happening they in the first place have part in bringing about.

Likewise, the increasing recognition of gaps in education versus the challenges in dealing with realities from prompting entrepreneurial intentions to initializing and doing business while in school and after graduation resulted to some creative initiatives by an emerging ecosystem of like-minded stakeholders. These are in the form of support to the lack or needs the educational system, for some reason or another, it can not provide (*e. g. MC Entrepreneurship Alumni Association, SERDEF, UP ISSI, ENEDA-YES, AFI-TBI; Enterprise – DOST UP OPEN TBI; Cebu InIT; IdeaSpace and , JG-Entrep Corner are examples among many others*).

For some time now, these stakeholders are collaborating for purposeful action development programs and bold initiatives like: expertise and information sharing, resources and structures, curriculum innovation, angel investments, incubation facilities, mentoring and consultations, boot camps, competitions and the like.

These creative curriculum and initiatives that are set to prime and accelerate development in the academic, industry, government as well as start-up communities will definitely raise the entrepreneurial education and culture this new generation needs. One can only anticipate positively, the next big thing

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References

- Arends, Richard (2012). *Learning to teach*. 9th Edition. New York: McGraw-Hill.
- Avis, James, Fisher Roy and Thompson Ron (Editors, 2009). *Teaching in lifelong learning*. Open University Press, McGraw -Hill International- Education Commission on Higher Education. (2005). *Memorandum order no. 17 series of 2005: Curriculum requirement for bachelor science in entrepreneurship*. Philippines
- Diaz, P.H. (1993). *Entrepreneurial Competency Training, Student and Teacher Workbook*. Entrepreneurship Development for the Collegiate Education Level, Philippines (EDCEL), (PACSB), (SERDEF), (FAMD) Tokyo, Japan
- Feldman, R. S. (2003). *Development across the life span* (3rd ed.). New Jersey, USA: Prentice Hall.
- Gatchalian, M.L.B. *Bottom up Development approach to sustain the entrepreneurship program, Malaysia, 2012; An in-depth analysis of the entrepreneurship education in the Philippines: an initiative towards the development of a framework for a professional teaching competency program for entrepreneurship educators*. The International Journal of Research and Review (TIJRR ISSN 2094-1420). Vol. 5 Issue 1, Sept 2010. http://journalofresearchandreview.books.officelive.com/Documents/V5_TIJRR.pdf.; *Building Capacity and Competency in Entrepreneurship Education*, 2008) Retrieved from <http://enedancr.blogspot.com/2008/12/eneda-yes-ncr-organized-ground-breaking-html>.
- Katz, J.A. (2007). *Education and training in entrepreneurship*. In Baum, J. R., Frese, M, &Baron, R. A. (Eds.). *Psychology of entrepreneurship* (Chapter 4) New Jersey, USA
- Lopez, A. M. (2007; 2008, 2012). ENEDA Regional Conferences, Miriam College: *Support agencies involved in entrepreneurship training and development; Entrepreneurship curriculum development*. Philippines MSI: <http://www.msiworldwide.com/approach/trainings-courses/entrepreneurship-development-program/>
- Tomlinson, Carol A. Imbeau, Marcia B. (2011). *Leading and managing a differentiated classroom*. ASCD USA.
- Wennekers, A.R.M. And A.R. Thurik (1999). *Linking entrepreneurship and economic growth*. Small Business Economics 13(1)

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Interviews/Consultative meetings/Roundtable Discussions:

Diñozo, Percival G. NFTE Educated Teacher, Bronx, NY USA, May 14, 2013.
Lewis, Loida Nicolas, Beatrice, Lexington, NY, USA, May 12, 2013.

Entrepreneurship, Start-up and innovation community: *UP ISSI, SERDEF ENEDA-YES, AFI-TBI; Enterprise – DOST UP OPEN TBI; Cebu InIT;, IdeaSpace, JG-Entrep Corner, PCCI, Go Negosyo, DTI-MSMED*

Yusof, Zulkarnain; Roslan Ab Rahim, Nik Ismail, Nik Nor, Maria Luisa B. Gatchalian, Rodolfo P. Ang, Glenda E. Fortez, Antonio M. Lopez. *Roundtable discussion on collaboration and exchange with ENEDA and UiTMMalaysia. 11thENEDA National Conference.* February 8, 2013, Iloilo City, Philippines.

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ATHAR AFZAL KHAN

HOW GENDER AFFECTS WOMEN ENTREPRE- NEURSHIP: EXPERIENCE FROM PAKISTAN

Abstract

Gender analysis has shown that women can only be self-confident, independent and self-governing in their economic activities if there are no cultural restrictions holding them back (Chitsike, 2000). In Pakistan, female entrepreneurs are often held back by both work-family conflict and barriers such as a lack of access to capital, land and technology. There is a debate within the literature about the impact of gender on business success. Some authors feel that being a woman gives an extra advantage to entrepreneurs while many others are of the opinion that women entrepreneurs face considerable financial and societal problems purely because they are women. Other researchers suggest that most activities associated with business start-up are gender-neutral (Wees and Romijn, 1987). This chapter drawing on focus group discussion of women entrepreneurs (four groups were selected for this study) and members of supporting organizations explores how gender affects business ventures and the performance of female entrepreneurs in Islamic countries like Pakistan.

Introduction

In the last 100 years, rates of entrepreneurship have risen (Gartner & Shane, 1995). The findings of a recent survey are that many people have started their own businesses as a means of livelihood: this equates to four percent of young people: one in 25 (Reynolds and White 1997: 7). In the 19th and early 20th centuries, entrepreneurs were mostly equated with managers and considered from the same economic perspective (Hisrich & Peter, 1995; Bruni et al., 2004b).

It has been recognized that entrepreneurship is mainly responsible for progress of country (Fitzsimons & O’Gorman, 2003), in which future success is dependent on setting up local enterprise (Orhan and Scott, 2001). Morrison holds the same opinion and further proposes that an entrepreneur who is making good progress is the “first among equals in the process of wealth creation” (1998: 177).

Entrepreneurship is a useful financial development tool in difficult economic times, and female entrepreneurs are often an untapped and undervalued resource with the potential to boost economic success (Allen et al., 2007). Through entrepreneurship, it is possible to find a way to integrate and empower minority and marginalised groups, creating upward mobility and curtailing labour market discrimination.

It has been noted that women are becoming increasingly important as members of the entrepreneurial family (Coulter, 2003; Eddleston and Powell, 2008; Tominc and Rebernik, 2003). In the 1990s, interest in women entrepreneurs grew because the number of female-owned businesses surged, especially in the United States and Europe. Beeker-Blease (2007) has supported this argument that women’s businesses are a growing component of new enterprise ownership in the United Kingdom.

Globally, the number of women business owners is gradually increasing, and it has been estimated that firms which are run and owned by women account for between 25% and 33% of all businesses. It is suggested by Tominc and Rebernik (2003: 781) that apart from generating an important amount of GOP, women are also influencing how the business community, the public, officials and the media see and responds to them. Researchers such as McClelland, Swail, Bell and Ibbotson (2005) state that it is obvious that the economic activity of women is bringing about change in developing, as well as developed countries.

In Pakistan, female entrepreneurs do not enjoy the same opportunities as men due to deep-rooted discrimination (Roomi and Parrott, 2008). The economic potential of female entrepreneurs cannot be fully realised because it is difficult for them to gain access to capital, training and agency assistance. Financial institutions do not cooperate with women (Bari, 1997). Furthermore, male family members often discourage women from becoming entrepreneurs, which limits their spatial mobility, and they have to face a lack of social capital (Roomi, 2011; Shabbir, 1995).

Pakistani women entrepreneurs do not have a homogenous role to play in society as there is a relationship between gender and social exclusion. Women face difficulties due to religious prescriptions, and cultural norms and practices. An Asian Development Bank (2000) report has found that gender is the most important feature of Pakistani society. There are also feudal and social traditions which influence the performance of female entrepreneurs throughout their working lives.

Discussion

Barriers Women Face at Start-up Stage (Societal & Cultural Level)

Women entrepreneurs in Pakistan do not enjoy the same opportunities as men due to a number of deep-rooted discriminatory socio-cultural values and traditions (Roomi and Parrott, 2008). Pakistani women have fewer opportunities to do business as compared to their male counterparts. This greatly restricts the availability of occupational opportunities open to women throughout Pakistan. Some members of the focus group discussion recounted their experiences:

Women face problems due to the male dominant society of Pakistan. There is conflict of male and female. When some woman starts to work out of home this conflict arises and their male members create problems. Secondly they face problems due to lack of finance. When a woman starts her business she has no money in her own pocket. She depends upon someone else usually upon a man: say her husband or father.

Women are usually forced to remain within their homes and are supposed to maintain high standards of female modesty. Pakistan, like many south Asian countries, is perceived to be a gender-biased society. The *burqa* (veil), often worn by Muslim women, has been described by Papanek (1982) as a portable means of seclusion. Female entrepreneurs need to observe the notion of *izzat* (honour), as women are considered to be the repositories of their families' honour, and their chastity and good reputation are highly valued and guarded (Shaheed, 1990). Wees and Romijn (1987), however, stated that most activities associated with business start-ups are gender-neutral.

In Pakistan, women face hindrance because of the traditional bias that banks have against SME owners operating in the informal sector. They are considered to be risky clients who lack the necessary guarantee which is needed to obtain loans (Afzal, 2006). As an assistant manager in the WBIC and other members of supporting organisations stated:

Women do not have [a] proper place for businesses and finance. They need money to start business[es], which they don't have. Although they are ambitious and enthusiastic to do something these are the restriction[s] they face.

Women entrepreneurs face many problems, including their insufficient education; inter-role conflicts originating from the fact that their parenting responsibilities are greater than their male partners'; lack of financial assistance and socio-cultural

restrictions (Ghosh and Cheruvalath, 2007). Female entrepreneurs experience gender-related constraints related to: their choice of business; access to capital; a lack of business experience and specifically experience of public dealings; a lack of credibility as a woman entrepreneur; restricted spatial mobility and managing employees' behaviour (Shabbir, 1995).

Shortage of Capital

Shortage of capital was a problem that the women entrepreneurs and the members of the supportive organisations perceived as related to gender. A member of one of the focus group discussions said that:

Whenever women want to initiate some business, they don't have a proper place for that. They try to establish small-level businesses by reserving a room or two at their homes but you know this is not a proper arrangement.... Their second problem is that of finance. They need money to start business which they don't have.

In Pakistan, people usually criticise the participation of women in business. Women face hurdles in getting finance from their families and loan agencies so neither side trusts them. Most female entrepreneurs in Pakistan run businesses in traditional sectors like "boutiques, bakeries, apparel, handicrafts, jewellery, and other similar micro and small businesses" (IFC, 2007). No doubt many organisations offer financial support programmes to women in Pakistan but there is only a limited number of these who actually benefit from credit schemes. The recent microfinance performance indicator report shows that Pakistan has the lowest global ratio of female in comparison to male borrowers; this report has also pointed out that probably this discrepancy is one of the reasons why Pakistan's microfinance sector has not been able to scale-up as successfully in comparison to other countries (PMN, 2005).

Networking Problems

The business performance of women entrepreneurs is affected because they are surrounded by personal and social networks which are different to male networks, and divisions and barriers limit the access and diversity of their networks (Aldrich, 1989a). The focus group discussions revealed that in Pakistan there is a lack of networking opportunities for female entrepreneurs. As a member of a supporting organisation stated:

Yes, there is lack of networking. Female entrepreneurs in the same sort of business don't have a business circle. They seldom meet together and share their problems.

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So there is no networking. Although we provide offices to women and they meet together as well but nearly all of them are doing different businesses and have different problems so they don't have a problem sharing culture. They are not updated and they cannot get advice in this way.

As discussed above, networking plays a vital role in business performance. In earlier researches, it was noticed that a support system, mentors and advisors have an important role to play in business growth; business associates and friends can provide good moral support, whereas participation in trade associations and women's groups was related to business guidance (Hisrich and Brush, 1987). This research has shown that there is a lack of networking opportunities available to the business women of Pakistan. They don't have many platforms (as there are few in the whole country) where they could gather and share their experiences and seek guidance from more experienced businesswomen and so on.

Work-Family Conflict

The focus group discussions revealed that the female entrepreneurs have faced different types of work-family conflict. It is challenging for them to manage the demands of both work and family. In Pakistan, the family role is the most important thing, socially, and business roles are given a secondary value. Due to such conceptions, female entrepreneurs face the problem of work-family conflict. Here are some stories revealed by focus group participants:

You know, usually women are expected to give proper time to their homes. In case they are married they are required to give proper time to both their kids and husband. And even if they are unmarried they are required to give time to their homes.

A focus group member recounted her experiences:

When women come here they always are in hurry and want to go back immediately as they have to do some unfinished house chore. It shows that due to their business their home is neglected and they are unable to give proper time to their homes.

Women experience conflict when they are unable to resolve the pressures from their dual roles as business women and family members (Greenhaus and Beutell, 1985). The same point is suggested in Caligiuri and Cascio's spillover theory (1998) i.e. carrying a role over from one domain (home life) to the other (work

life), can upset the performance of the entrepreneur while they are at work. This point seems most true in the case of Pakistani female entrepreneurs. Shah (1986) divided Pakistani women's roles into seven categories: parental, occupational, conjugal, domestic, kin, community and individual, analysing the relative importance of each role in the Pakistani context. Regarding the importance of each role in the case of Pakistani women, Shah (Ibid) concluded that parental and conjugal roles are primarily important while the occupational roles are given just a secondary value. The individual role is quite different from that in Western societies, as individualism does not constitute a significant ideology in Pakistani society. Rather, it is the family (kin) that predominates in most major decisions regarding a woman's role.

The above discussion shows that due to the influence of cultural and societal factors, the position of women in Pakistan is highly ironic. In a society like Pakistan, women entrepreneurs experience work-family conflict which affects their performance both as businesswomen and as wives, mothers or daughters.

Non-Professional Behaviour of Male Entrepreneurs

The focus group members felt that the behaviour of male entrepreneurs was not cooperative. In their view, male entrepreneurs do not cooperate with businesswomen due to professional jealousy and socio-cultural factors; they feel women are incompetent and not serious about their work. However, men's perception of women as being weak and helpless is not the only reason for them putting women at a disadvantage. There is more cooperation among men mostly because there are few women in the business field; men are more lenient and trustful of other men.

Many of the statements made by the women entrepreneurs reinforce the earlier evidence that the lack of acceptance of a woman's authority as an employer is particularly related to the business sector. The focus group members related that most female entrepreneurs face difficulties in dealing with all sorts of customers

The focus group discussions therefore illustrate the various constraints that women usually face not only in starting a business, but in the very choice of businesses that women can undertake. Wees and Romijn (1987) pointed out that women may face gender-specific barriers to entry in particular occupational sectors in particular socio-economic settings. Women's entry into certain 'women-friendly' business sectors may be more readily accepted than in other non-traditional fields. It was stipulated by the focus group members that most female entrepreneurs sometimes feel supplier relations to be a potential constraint and were an important area of concern, especially for women at the start-up stage in the non-traditional business sectors. The two main problems that the group members related were "restricted spatial mobility due to cultural reasons" and "lack of acceptance and credibility in dealing with suppliers".

Conclusion

Four major barriers are faced by women entrepreneurs in starting up their businesses. These are (on the family, societal and religious levels) lack of finance; lack of marketing experience; networking and work-family conflict, and they may negatively affect the business performance of female entrepreneurs in Punjab, Pakistan. The women entrepreneurs in this research considered that being a woman had caused them many problems at the start-up stage of their ventures. Also there are some religious perceptions, cultural norms and social practices related to women which hinder them from working freely in an Islamic society like Pakistan. One such norm is the concept of izzat (honour). It is considered to be against the family honour if women go leave their homes to work. Then there is the concept of purdah, which also confines women to their homes and decrees that they are not allowed to interact with men. Another difficulty that women have to face when they want to start an enterprise is that they have only a limited choice of business. They can only run businesses where there is little or no interaction with men and where there is not a lot of travelling or outdoor activity involved. Women face difficulty because they have a special role to play in society and have limited spatial mobility and limited access to different opportunities as compared to men. The focus group discussion participants revealed that mostly women lack business experience and training and there is insufficient networking which puts them at a disadvantage, particularly in their public dealings; i.e. in negotiating with customers, suppliers and others. The group members described another issue related to female entrepreneurs, which is that women face many problems in travelling. Sometimes this relates to security, as travelling alone is not considered to be good for females in Pakistan especially late at night. Transport facilities are seldom provided and when women travel on their own it is very costly.

With regard to the problems of women entrepreneurs, the focus group discussion findings are as expected. This means that women entrepreneurs in Punjab, Pakistan are not different. They face similar challenges to entrepreneurs across the world. In the focus group discussions, the progressive female entrepreneurs and members of the supporting organisations pointed out that most Pakistani female entrepreneurs face problems because they are considered to be inferior to men. Their role as a potential breadwinner is underestimated; gender discrimination is present in the regional, tribal and feudal culture of an Islamic society. It is also a well-known fact that Pakistani females have restricted access to different resources. This includes land, loans, and education and training facilities (ADB, 2000; Roomi and Parrot, 2008). The women entrepreneurs in this research also faced problems when the question of finance arose: they often did not have enough capital to start their business. Secondly, they faced a lot of difficulties in getting financial support

from banks and other institutions. Women entrepreneurs face a challenging set of social mores while interacting with male bank officials. They often resort to raising most of the capital they need for their businesses from their own savings, or ask relatives and/or friends for money. In short, most of the problems cited in focus group discussion are the following: influence of the socio-cultural and religious environment; lack of training and isolation from business networks; lack of capital and financial facilities; laws and regulations; family pressure and lack of self-confidence and all these problems inhibit the start-up and performance of female entrepreneurs in Punjab, Pakistan.

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References

- Afzal, Fatimah (2006), State of SMEs in Pakistan. United States Agency for International Development, Islamabad, Pakistan
- Aldrich, H. (1989a), Networking among women entrepreneurs. In O. Hagan, C. Rivchun and D. Sexton (eds), *Women-Owned Businesses* (pp. 103–32). New York: Praeger.
- Allen, C., Loudoun, R., & Peetz, D. (2007), Influences on work/non-work conflict. *Journal of Sociology*, 43(3), 219-239.
- Asian Development Bank (ADB) (2000), Women in Pakistan, Country Briefing Paper, Programs Department and Office of Environment and Social Development, Manila.
- Bari, F. (1997), “Women and Access to Credit: A Case Study of Pakistan,” Islamabad, p.6.
- Becker-Blease, J.R. & Sohl, J.E. (2007), Entrepreneurship, entrepreneurial finance, innovation and regional development. *Journal of Business Venturing*, 22(4): 503-505, July.
- Bruni, A.G., Gherardi, S. & Poggio, B. (2004b). Doing gender, doing entrepreneurship: an ethnographic account of intertwined practices. *Gender, Work and Organisation*, 11 (4): 403-429, July.
- Caligiuri, P. and W. F. Cascio (1998), ‘Can we send her there? Maximising the success of Western women on global assignments’, *Journal of World Business*, 33(4), pp. 394–416.
- Chitsike, C (2000), Culture as a barrier to rural women's entrepreneurship: Experience from Zimbabwe. *Gender & Development*; Mar 2000, Vol. 8 Issue 1, pp. 71-77.
- Coulter, M. (2003), *Entrepreneurship in action*. 2nd ed. London, UK: Prentice Hall.
- Eddleston, K.A. & Powell, G.N. (2008), The role of gender identity in explaining sex differences in business owner's career satisfier preferences. *Journal of business venturing*, 23(2): 244-256.
- Gartner W B, Shane S A. (1995), Measuring entrepreneurship over time. *J. Bus. Venturing* 10:283-301
- GEM (2010). Global Entrepreneurship Monitor Report Pakistan.
- Ghosh, P. & Cheruvalah. R. (2007). Indian female entrepreneurs as catalysts for economic growth and development. *The International Journal of Entrepreneurship and Innovation*, 8(2):139-148, May.
- Greenhaus, J. H. and N. J. Beutell (1985), ‘Sources of conflict between work and family roles’, *Academy of Management Review*, 10(1), pp. 76–88.
- Hisrich, R., and Brush, C.G. (1987). Women entrepreneurs: A longitudinal study. In *Frontiers of Entrepreneurial Research 1987*. Cambridge, MA: Babson College, pp. 187-199.

- Hisrich, R.D., & Peters, M.P. (2001). *Entrepreneurship* (4th ed.). Boston: McGraw-Hill.
- International Finance Corporation (IFC). (2007), Gender Entrepreneurship Markets, GEM Country Brief 2007 Pakistan. International Finance Corporation (IFC). <http://www.ifc.org/menagem>.
- McClelland, E., Swail, J., Bell, J., & Ibbotson, P. (2005). Following the pathway of female entrepreneurs: A six-country investigation. *International Journal of Entrepreneurial Behaviour & Research*, vol. 11, no. 2, pp. 84-107
- Morrison, A., (1998). The Tree of Entrepreneurship. In: Morrison, A., ed. *Entrepreneurship: An International Perspective*. Oxford: Butterworth-Heinemann.
- Orhan, M. and Scott, D., (2001) Why Women Enter into Entrepreneurship: An Explanatory Model. *Women in Management Review*, 16 (5), 232-243.
- Pakistan Microfinance Network (PMN). (2005). Performance Indicators Report 2005. Islamabad, Pakistan. <http://www.pmn.org.pk/link.php?goto=pir2005>.
- Papanek, H. (1982). Pardah in Pakistan: Seclusion and modern occupations for women. In H. Papanek and G. Minault (eds), *Separate Worlds* (pp. 3–53). New Delhi: Chanakya Publications.
- Reynolds, P. D and White S. (1997). *The Entrepreneurial Process: Economic Growth, Men, Women, and Minorities*. Westport, CT: Quorum
- Roomi M. A. (2011). Entrepreneurial capital, social values and Islamic traditions: Exploring the growth of women owned enterprises in Pakistan, *International Small Business Journal* 13 November 2011, pp. 1-17
- Roomi, M. A. and G. Parrott (2008). "Barriers to Development and Progression of Women Entrepreneurs in Pakistan," *International Journal of Entrepreneurship*, 17(1), 59- 72.
- Shabbir, A. (1995). "How gender affects business start-up—evidence from Pakistan," *Small Enterprise Development*, 6: 25–33.
- Shah, N.M. (1986). *Pakistani Women*. Islamabad: Pakistan Institute of Development Economists.
- Shaheed, F. (1990) *Pakistan's Women: An Analytical Description*. Lahore: SANJH.
- Tominc, P. & Rebernik, M. (2003). The scarcity of women entrepreneurship. University of Maribor, Faculty of economics and business. Slovenia: Razlogova.
- Wees, C. van der & Romijn, H. (1987). *Entrepreneurship and Small Enterprise Development for Women Entrepreneurs in Developing Countries*. Geneva: International Labour Office.

FESTUS O. EDOBOR

ENTREPRENEURSHIP AND THE ROLE OF PUBLIC POLICY

Abstract

The objective of this paper is to highlight the relationship between entrepreneurship, public policy, and economic growth. Entrepreneurship has proven to be a panacea for poverty reduction through employment generation and wealth creation. To begin this paper, an operational definition of entrepreneur and public policy is given, a review of some underlying theories of entrepreneur, a further look at other factors that impact entrepreneurship with particular reference to security and terrorism. A review of relevant literature is carried out, the paper concludes that there has been lack of directional policy co-ordination and as a result not much impact has been made in entrepreneurship development by public policies. It is therefore recommended that entrepreneurship development should be more vigorously pursued by government in order to accelerate economic growth and development through public policies.

Key words: Public policy, entrepreneurship, economic growth and employment

Introduction

Entrepreneurship is a major force that drives the economy of many nations, it is also engine which new ideas are introduced continually into businesses and the market place. Entrepreneurs convert ideas into products and services and ultimately create wealth and reduce unemployment (Schumpeter, 2005). The strength of any nation depends on its ability to create wealth. The wealth creation process lies in the hands of individuals who are innovative. This will translate into capital formation, creating large-scale employment opportunities, promotes balanced regional development, reducing concentration of economic power, stimulating wealth creation and distribution, increasing gross national product and per capita income, improvement in the standard of living, promotes the country's export trade and reducing poverty. Therefore a nation that wants to experience economic growth and reduce poverty needs to understand the impact of entrepreneur on

poverty reduction and economic development.

According to some theories of entrepreneurship, there are factors that affect the survival of entrepreneur like availability of bank credit, education & training, government etc. The Economic Theory of Entrepreneurship states that economic growth take place when economic conditions are favourable. Economic incentives are the main motivators of entrepreneurial activities, the incentives include taxation policy, industrial policy, source of finance and raw material, infrastructure availability, investment and marketing opportunities, access to information about market conditions and technology (Anupam, 2011). There is need to examine these factors and create an environment for entrepreneurship to thrive. Therefore the proposed study will look at the impact of entrepreneurship on poverty alleviation as well as the factors that affect entrepreneurship.

Entrepreneurship in Nigeria

Entrepreneurship in Nigeria started when people in the rural areas and farming communities produced more products than they needed, as a result they had to exchange these surpluses with those who needed them within their immediate and neighbouring communities. The exchange of goods for goods or services was based on trade by barter, until commodity was used as a medium of exchange. Exchange has encouraged specialisation among producers, and the communities came to realize that they can concentrate on the areas of production they are best fitted. Consequent on the above, the culture of entrepreneurship started in Nigeria (Nicks, 2008; Raimi and Towobola, 2011).

Several policy interventions in Nigeria that were aimed at stimulating entrepreneurship development via small and medium scale enterprises have failed. Instead of building in-country entrepreneurial capacity, entrepreneurs have become distribution agents of imported products.

On account of encouraging entrepreneurial initiatives, the country has experienced exponential growth in the number of private firms. However, majority of these businesses are very small when their operations are measured in terms of capital, employment and revenues (Attahir and Minet, 2000). Added to the above is difficulty confronted by small businesses in accessing bank credits, education and training, unfavourable government policies but the most serious and damaging problem threatening the state of entrepreneurship in Nigeria is a lack of government interest inadequate policy framework and support for micro, small enterprises (Ariyo, 2005; Chu et al., 2008).

Entrepreneurship and economic development

Development is a broad concept which entails the raising of human capabilities

(Sen 1999). One of the cardinal challenges in improving economic development is to increase the standards of living for individuals and growth of the economy as a whole. Though economic growth in itself is a rather narrow target, it is probably one of the most important targets for development policies. It is also one of the measures that is most easy to access for analysts, and probably the best measure to make cross-national (Barro 1991; Sala-i-Martin 1997) and historical (Maddison 2001) analyses of the development of economies. Traditionally the economic output of a country is seen as a function of capital and labour inputs, combined with technical change (Solow 1957).

In traditional models of economic growth investment in capital, labour and technology is sufficient to realize economic growth. New models of economic growth see these investments as a necessary complement to entrepreneurship/innovation, but not as a sufficient explanation for economic growth in its own right (Nelson and Pack 1999). One could even argue that high rates of investment in human and physical capital are themselves stimulated by effective innovation, and cannot be maintained in the absence of innovation. Recent studies emphasize entrepreneurship as a driver of economic development and some authors include entrepreneurship as a fourth production factor in the macroeconomic production function (Audretsch and Keilbach 2004). Entrepreneurship is the factor that creates wealth by combining existing production factors in new ways. Entrepreneurs experiment with new combinations of which the outcomes are uncertain, but in order to make progress, many new variations have to be tried in order to find out which ones will improve (economic) life (Rosenberg and Birdzell 1986). Other authors have argued that entrepreneurship will only unlock economic development if a proper institutional setting is in place (Baumol 1990; Powell 2008; Boettke and Coyne 2003).

Defining Entrepreneurship

There are different opinions about what constitutes entrepreneurship, especially the distinction between entrepreneurship and small business. The Kauffman Center [Ewing Marion Kauffman Foundation in Kansas City, Missouri, USA] provided the following definition of entrepreneurship as follows:

Entrepreneurship is the ability to amass the necessary resources to capitalize on new business opportunities. The term is frequently used to refer to the rapid growth of new and innovative businesses and is associated with individuals who create or seize business opportunities and pursue them without regard for resources under their control. They build something from practically nothing and usually reinvest earnings to expand their enterprise or to create new

enterprises. Other words that characterize entrepreneurship include innovative, creative, dynamic, risk-tolerant, flexible and growth-oriented.

Public Policies that Impact Entrepreneurship

Public Policy

According to Mbaegbu (2008), many definitions of public policy abound. Dye (1965) and Jones (1977) agree that public policy is a public decision to achieve a purpose. However, policy only lays down the general directive rather than detailed instructions or strategies to follow to achieve the objective. Basically, public policies are formulated by the three arms of government working in concert. Nwizu (1997) simply defines it as a guiding principle which governs action especially repetitive actions, it is a decision as to what should be done and how, when and where. Easton in Chukwuemeka (2001) defines public policy as the authoritative allocation of value of the whole society. Some of these definitions are in one way or the other not adequate. The following policies impacts entrepreneurship:

- General perspective of entrepreneurship.
- Tax and regulatory climate
- Access to capital
- Entrepreneurship education
- Intellectual capital

Factors influencing the growth of entrepreneurship

Competition fostering policies

Government as a regulator develops policy agenda for the purpose of economic development. Some of these policies mitigate entrepreneurship. The policy framework should foster entrepreneurship. Regulations limits entrepreneur opportunities such as taxation, licensing, land ownership, business registration, government subsidies, loan programs through government departments and agencies amongst others impact entrepreneurship development.

Bank credit

Finance plays a key role in the development of entrepreneurship- for start ups and expansion. The availability and accessibility of finance is key to the wellbeing of entrepreneurship.

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Education and training

Economic analysts have argued for the need to improve human capital development as it is a foundation for national development. Entrepreneurs need the right information for innovation and creativity.

Social security & Terrorism

No business thrives in an environment where there is no peace, no security of lives and properties. The UK the Terrorism Act 2000 defines terrorism as: the use or threat of action designed to influence the government or an international governmental organisation or to intimidate the public, or a section of the public; made for the purposes of advancing a political, religious, racial or ideological cause; and it involves or causes:

- serious violence against a person;
- serious damage to a property;
- a threat to a person's life;
- a serious risk to the health and safety of the public; or
- serious interference with or disruption to an electronic system.

The roles of Entrepreneurship in Economic Development

Developing new markets

Under the new concept of marketing, markets are people who are willing and able to satisfy their needs. Okafor (1995:5) saw marketing as looking at the business through the customer's eyes profitably. In Economics, this is called effective demand. Peterson (1983:14) observed that demand has relationship with prices and quality. Entrepreneurs are therefore resourceful and creative. They can create customers or buyers. This makes entrepreneurs different from ordinary businessmen who only perform traditional functions of management like planning, organising and coordinating.

Discovering new sources of materials

Owing to the entrepreneur's innovative nature, they persist in discovering new sources of materials to improve their enterprises.

Mobile Capital Resources

Entrepreneurs properly mix the factors of production to create goods and services. Capital resources, from a layman's view, refer to money. However, in Economics, capital resources represent machines, buildings, and other physical productive resources. Entrepreneurs have initiative and self-confidence in accumulating and mobilising capital resources for new business or business expansion.

Introducing new technologies, new industries and new products

Apart from being innovators and reasonable risk-takers, entrepreneurs take advantage of business opportunities and transform these into profits.

Creating employment

The biggest employer is the private business sector – factories, services, industries, agricultural enterprises, and the numerous. Small-scale businesses provide millions of jobs.

Summary

This brief paper has attempted to examine the importance of entrepreneurship in economic development in Nigeria; the paper defines entrepreneurship, its role as well as factors influencing the growth of entrepreneurship. The paper is part of a work-in-progress paper.

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References

- Mary, J. O. (2004) The Formal Institutional Framework of Entrepreneurship in the Philippines: Lessons for Developing Countries. *Journal of Entrepreneurship* 2004 13: 185.
- Masaviru, W. (2011) Econometric Analysis of the Impact of Entrepreneurship on Economic Growth, *Journal of Economics and Sustainable Development*. Vol.2, No.7, 2011, 1.
- Anthony K. A. (2012) Access to Credit and Growth of Small and Medium Scale Enterprises, *British Journal of Economics, Finance and Management Sciences*. Vol. 6 (2).
- Sofoluwe, A. O, Shokunbi, M. O, Raimi, L.I. and Ajewole, T. (2013) Entrepreneurship Education as a Strategy for boosting Human Capital Development and Employability in Nigeria, *Journal of Business Administration and Education*. Volume 3, Number 1, 2013, 25 -50.
- Muhammadsuhaimee, Y. (2012) Causal Relationship between Entrepreneurship Poverty and Income Inequality in Thailand, *International Journal of Trade, Economics and Finance*, Vol. 3, No. 6, December 2012.
- Sandra E, and Philip, E, (2002) The Journal of Finance, Entrepreneurship and Bank Credit Availability Vol. 57, No. 6.
- Acs, Z. J. and Storey, D. J. (2004) 'Introduction to Entrepreneurship and Economic Development', *Regional Studies*38 (8): 871-877.
- Alan, B. (2010) *False Economy –A surprising economic history of the world*. Penguin Books'. ISBN: 978-0-141-03370-9.
- Acs, Z. J. (2006) How is entrepreneurship good for economic growth? *Innovations*, 97–107.
- Naudé, W. (2007) 'Peace, Prosperity, and Pro-Growth Entrepreneurship', Helsinki: United Nations University.
- Alao, O. (2005) *Principles of Economics: Macro*. Darkol Press and Publishers, Isolo, Lagos.
- Jay, K. (1999) *State Entrepreneurship Policies and programs*, Kauffman Center for Entrepreneurial Leadership at the Ewing Marion Kauffman Foundation Kansas City, Missouri.
- Abdullahi S.A (2012) Entrepreneurship and Economic Growth: An Analysis of Impact of Public Policy On Entrepreneurship Development in Nigeria, <https://www.mi5.gov.uk/home/the-threats/terrorism.html>.

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JØRGEN RAVN ELKJÆR

ENTREPRENURIAL BARRIERS TO STRATEGY

Abstract

A limiting factor to strategic management is often the education and experience of the entrepreneur, which may have a tendency to determine certain strategies. Moreover, it is characteristic for hierarchies to maintain the strategies formed at the foundation. Organisational learning seems to be a way to overcome this difficulty.

Key words: Organisational inertia, organisational learning, entrepreneurship, strategy

Introduction

According to classical economics the markets for input, output and financing limit the growth of a company. This challenge is an important reason to study strategic planning (Ansoff, 1965). The relationship between the concepts of *change*, *strategy* and *entrepreneurship* is crucial, since assuming a lack of change, combined with homogeneous elements in the production function, leaves no role for the entrepreneur to play (Schumpeter, 1934; Baumol, 2006). It is not only the limits of the markets, financing and economic recession that impede growth. For several decades it has been put forward that the entrepreneur as a person or a function may restrain the strategic options available. Several important issues relating to this limit are mentioned in Mason and Harvey (2013). One question is whether opportunities are objective realities, in an Austrian sense (Kirzner, 1973), or socially constructed (Plummer et al., 2007). Ambiguity concerning the *possibilities* of creating and changing the strategy in a hierarchy to encompass external changes has caused an ongoing debate concerning two different hypotheses. Hypothesis 1: development is a consequence of a change in strategies in hierarchies due to adaptation; and Hypothesis 2: development is a consequence of the survival of hierarchies with suitable existing strategies (subject to minor changes). Today—almost 50 years after the publication of Ansoff (1965)—there is still no agreement concerning the degree to which the entrepreneurial function can make sufficient adaptation to changed technical or social conditions.

In this article central arguments impeding strategy are put forward from an entrepreneurial point of view. The discussion is structured based on factors that impede change of strategy in a hierarchy, e.g. external barriers and institutional inertia. The latter is partly caused by limited rationality, and the fact that a hierarchy is also a coalition. These factors are of importance to the entrepreneur when carrying out the task of strategic management. The importance of learning is presented as part of a solution to the challenge of organisational slackness.

Organisational inertia

Several of the economic *theories of the firm* substantiate why the growth of firms is impeded. Jensen and Meckling (1976) advance the principal-agent argument;

Penrose (1959) emphasises the limited capacity of the management, while Leibenstein (1968) describes the employees' option of departing from the optimum. Theories with an evolutionary approach (Schumpeter, 1934; Nelson & Winter, 1982) advocate the importance of the routines of the firm. As a consequence of routines the fundamental business model or concept of the company is difficult to change, and the economic development results from the pressure of selection among companies and strategies, where the fitter (or fittest) survive. Several other approaches are based on the assumption that only a few possibilities exist to change the strategy, the concept or the vision. Klein (1996) argues from an Austrian point of view that the need for markets for intermediate goods places limits on the scale and scope of the organisation. Organisation theorists Thushman and Romanelli (1985) advance an intermediate attitude in their analyses of the development of hierarchies and in this regard the complex processes and ties between hierarchy and strategy. They describe the development of hierarchies as the result of two contrary forces: 1) constant, stabilising forces, and 2) periodical, changing forces. The stabilising forces are as a main rule dominating. Therefore stabilising periods with small marginal changes are of a comparatively long duration and imply an adaptation to the new circumstances. The stabilising forces are as a main rule dominating. Therefore stabilising periods with small marginal changes are of a comparatively long duration and imply an adaptation to the new circumstances. But external or internal reasons can occasionally cause the changing forces to be dominating. Thus the changes indicate frontiers between periods stamped by stability. It is the difficult task of the leaders of the firm to overcome inertia in order to change the hierarchy when external circumstances necessitate an adaptation to new conditions.

The question, then, concerning both the products and routines of the hierarchy, is to which degree changing the comparative advantage of the firm is possible in a manner similar to that described by, e.g. Ansoff (1965).

The problem put forward by the present argument can be boiled down to this question: Why do companies in stagnation or recession not, or more often, enter into trades in growth? The aim of the following is to emphasise certain difficulties facing the entrepreneur if a change of strategy is needed.

Establishment of strategies

Interest in the process from which strategies derive has been limited. First it is of importance to analyse the influence the circumstances at the time of foundation have on the establishment of strategies, and second the degree to which this influence is maintained subsequently. Initially, a hypothesis must be drawn up as to how a strategy arises by establishment of a hierarchy. Establishing a firm is realised from a more or less articulated concept or vision that expresses an idea of the firm and its aims. This phase, however, comprises neither hierarchy, procedures, routines or physical facilities. Kimberly (1979) compares the importance of the early development of the firm to the first years of human life. Formulating strategy is not only an analytically objective process that can take place without influence from the value norms and other conditions of those who construct the coalition of the firm (Cyert & March, 1963). The conception, belief systems and experience of the entrepreneurs who are the founders of the firm are decisive factors in the process of organising a hierarchy and routines. Especially the strategy of the firm is a token of the entrepreneur's background.

According to Schumpeter (1934) an entrepreneur's aim is to create an organisation (a 'monarchy') by realising a vision or a concept. This takes place, for example by creating a management organisational body and by employing staff that conform this concept. The entrepreneur has the opportunity to establish a hierarchy based on his own valuations and ideas regarding what management is and how it should be realised. This aspect is probably a motivating feature for entrepreneurs.

On the other hand, the entrepreneurs do not have the option of establishing a firm that is exclusively the product of original thinking (Simon, 1976). As described by Nelson and Winter (1982) the memory of the recently founded firm will be embedded within the individuals involved rather than in the structures and processes of the hierarchy. Entrepreneurs can also avoid the impossible task of deciding on every possible detail in connection with the establishment by using concepts, models and ideas that they can imitate. A number of studies substantiate that these ideas are a reflection of the entrepreneurs own background and earlier experience. Also, the professional leader's personal valuations are extremely important when choosing strategy (Hrebiniak & Joyce, 1985). Correspondingly, it appears from a number of research findings that the entrepreneur's attitudes are engrafted onto the hierarchy via the institutionalisation of roles and structures which reflect the entrepreneur's own evaluations and habits. In this way the entre-

preneurs' vision becomes an inheritance which is retained after his retirement from the hierarchy.

Realisation of the aim of a hierarchy implies the setting up of institutions and routines. Engaging staff, organising procedures and the distribution of influence will be stamped both by the entrepreneur as a person and the surrounding environment. Engaging staff and allocating the resources of the hierarchy establish the institutions and routines of the hierarchy in the firm. The creation of a comparative advantage is more than just a result of the entrepreneur's selection of a certain product and market. Before the establishing phase, the firm's product and market will often only be known as preliminary considerations (Dew et al., 2011). The concept or vision of the firm becomes institutionalised by certain activities that are considered highly prestigious and therefore receive resources and consideration. This is the exact manner in which a comparative advantage evolves. By copying well-known routines the firm obtains the same comparative advantages in the fields in question as the firms that are copied or used as paradigms. In addition, imitation reduces the risk involved compared to employing untried procedures. This is one of the advantages franchising offers. One of the drawbacks of copying, however, is that the entrepreneurs do not sufficiently reap the possible advantages of renewal that innovation offers.

A successfully concluded establishment phase is thus characterised by an institutionalisation of structures and processes. This does not mean that the structures and processes chosen are the most efficient or that every possible alternative has been considered. The entrepreneurs have sequentially examined a number of possibilities according to the principle of satisficing until they have found a satisfactory solution (Simon, 1976).

Imprinting from the environment

The entrepreneurs' background is not the only factor of importance to the characteristics of the organisation. The structure and processes of a hierarchy are at the same time products of the surrounding environment in the form of general cultural as well as business-specific institutions at the time of establishment. Chandler (1977) emphasises the importance of contemporary concrete historical and cultural factors on the development of hierarchies. The environment determines not only the needs that a hierarchy meets by establishing, for example a railway or production of goods, but also the internal structure of a company is due to the characteristics of the established hierarchies at the time. Stinchcombe (1965) concludes that hierarchies are stamped by the trade in question at the point of time when the hierarchies are established. Along this line Beckert (1999: 778) mentions the question "If organizational structures and strategies are shaped by institutional

environments, what is the role of 'strategic choice' (Child, 1972) in the management of organizations?"

Institutional inertia

According to Mintzberg and Waters (1982) there is a general tendency for strategies not to change, but to remain unchanged for a number of years. In addition, the circumstances surrounding a change of strategies are so complex and multifaceted that systematic analysis is difficult. The choices made in connection with the establishment of a hierarchy will have a permanent influence on the characteristics of the hierarchy in question and impede utilisation of the strategic possibilities in subsequent phases. Well recognised is the fact that leaders of hierarchies facing new problems have a tendency to apply well-known solutions (Cohen et al., 1972; March, 1981). This can be ascribed based on a tendency to solve problems using original reflections as a starting point and to retain existing routines.

An investigation of the entrepreneur's role during the process of establishment in a number of firms led to the conclusion that the entrepreneur's original ideas concerning the future development and aims of the firm gradually became institutions (conventions and rules) in the firms (Schein, 1985). Moreover the established institutionalised ideas continued to remain in force, also when the firms outgrew the size where the ideas in question ceased to be suitable. Thus institutionalised ideas appear to survive the replacement of personnel. Two important reasons for institutional inertia are limited rationality and the hierarchy as a coalition in equilibrium.

Limited Rationality

The evolution of the institutions and routines of a hierarchy is not only a question of efficiency, but also the possibility of overcoming institutional opportunism under limited rationality (Williamson & Ouchi, 1981). The processes of selection and perception limit the aspects of possible strategies the entrepreneur takes into consideration (Starbuck, 1976). DiMaggio and Powell (1983) state that some decisions within a company often depend on processes that resemble rituals more than rationality. Starbuck (1982) even maintains there is an ideological influence on hierarchies in essential fields and writes that the structure and technology of hierarchies can best be described as 'primarily arbitrary'. In other words technology and procedures in a firm are related not only to the outer world by rational processes of decision but rather often by imitation and the managers' standard of values.

The coalition as equilibrium

During the formation phase, the fundamental coalitions of the hierarchy of importance of the initial strategic plans are worked out. The entrepreneurs maintain the dominance of their own personal kind of human capital in the hierarchy by engaging managers with the same kind of human capital. The entrepreneurs' selection of staff consequently has a determining effect on the strategic choices made. The relative influence of the departments that have come into existence during the establishment phase subsequently contributes to maintaining the strategy formed. Often the leaders of a hierarchy find it suitable to engage staff with a homogeneous background, e.g. individuals with a certain degree from a certain educational institution (Kohtamäki et al., 2012). The managers engaged by the entrepreneur will be in charge of engagements and promotions where people with equivalent qualifications and attitudes are preferred. Therefore the patterns of influence in a hierarchy are not only the result of earlier choices, but also an indicator of the tendency of future decisions. A mutual understanding is derived from this process that will become part of the established routines and system of human capital in the hierarchy. On the other hand a tendency to hierarchal introspection might turn up that entails difficulties in receiving and employing new information, which is necessary in a turbulent market.

Organisational learning

Two central concepts related to entrepreneurship are alertness and learning (Kirzner, 1973). The concept of alertness covers an understanding of the market as a process. Opportunity seeking fits with organisational and individual learning. According to Rae and Carswell (2001) and subsequent research along these lines, learning seems to be an important factor for overcoming different kinds of organisational inertia. Rae and Carswell (2001: 152) mention four important principles or focus areas of organisational learning:

- vision, decision-making and planning;
- growing the business by being close to the market;
- balancing between control and 'letting go';
- managing through people.

A recent study by Kohtamäki et al. (2012: 171) concludes that "participative strategic planning helps company management to commit personnel to strategy implementation that in turn positively affects company performance". A similar study involving interviews with Danish entrepreneurs and leaders of companies

confirm this conclusion and the importance of the concept of organisational learning in overcoming embedded organisational inertia.

Summary

This article reviews certain organisational and strategic barriers as factors that restrict the growth of hierarchies. In this connection it is maintained that the impeding factors are of importance when the strategy is changed and should not be ignored when analysing entrepreneurship and strategy. The learning perspective is proposed as one of the means to overcome impeding factors.

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References

- Ansoff, H.I. (1965) *Corporate Strategy*. New York: McGraw-Hill.
- Baumol, W.J. (2006) 'Textbook entrepreneurship: Comment on Johansson', *Economic Journal Watch*, 3(1), pp.133-136.
- Beckert, J. (1999) 'Agency, Entrepreneurs, and institutional change. The role of strategic choice and institutionalized practices in organizations', *Organization Studies*, 20(5), pp. 777-799.
- Chandler, A.D. (1977) *The Visible Hand: The Managerial Revolution in American Business*. Cambridge: Belknap/Harvard University Press.

- Cohen, M.D., J.G. March & J.P. Olsen (1972) 'A garbage can model of organizational choice', *Administrative Science Quarterly*, 17(1), pp. 1- 25.
- Cyert, R.M. & J.G. March (1963) *A Behavioral Theory of the Firm*. New Jersey: Prentice - Hall.
- Dew, N., S. Read, S. Sarasvathy & R. Wiltbank (2011) 'On the entrepreneurial genesis of new markets: Effectual transformations versus causal search and selection', *Journal of Evolutionary Economics* 21(2), pp. 231-253.
- DiMaggio, P.J. & W.W. Powell (1983) 'The iron cage revisited, institutional isomorphism and collective rationality in organizational fields', *American Sociological Review*, 48(2), 147- 160.
- Hrebiniak, L.G. & W. Joyce (1985) 'Organizational adaption, strategic choice and environmental determinism', *Administrative Science Quarterly*, 30(3), pp. 336- 349.
- Jensen, M.C. & W.H. Meckling (1976) 'Theory of the firm: Managerial behavior, agency costs and capital structure', *Journal of Financial Economics*, 3 (4), pp. 305- 60.
- Kimberly, J.R. (1979) 'Issues in the creation of organizations, Initiation, innovation, and institutionalization', *Academy of Management Journal*, 22 (3), pp. 437- 457.
- Kirzner, I.M. (1973) *Competition and Entrepreneurship*. Chicago and London: The University of Chicago Press.
- Klein, P.G. (1996) 'Economic calculation and the limits of organization', *The Review of Austrian Economics*, 9(2), pp. 3-28.
- Kohtamäki, M., S. Kraus, M. Mäkelä & M. Rönkkö (2012) 'The role of personnel commitment to strategy implementation and organisational learning within the relationship between strategic planning and company performance', *International Journal of Entrepreneurial Behaviour & Research*, 18(2), pp. 159-178.
- Leibenstein, H. (1968) 'Entrepreneurship and development', *American Economic Review*, 58(2), pp. 72- 83.
- March, J.G. (1981) 'Footnotes to organizational change', *Administrative Science Quarterly*, 26(4), pp. 563- 577.
- Mason, C. & C. Harvey (2013) 'Entrepreneurship: Contexts, opportunities and processes', *Business History*, 55(1), pp. 1-8.
- Mintzberg, H. & J. Waters (1982) 'Tracking strategy in an entrepreneurial firm', *Academy of Management Journal*, 25 (3), pp. 465- 499.

Short Research Papers on Knowledge, Innovation and Enterprise

Nelson, R.R. & S.G. Winter (1982) *An Evolutionary Theory of Economic Change*. Cambridge: Harvard University Press.

Penrose, E. (1959) *The Theory of the Growth of the Firm*, Oxford: Basil Blackwell.

Plummer, L.A., J.M. Haynie & J. Godesiabois (2007) 'An essay on the origins of entrepreneurial opportunity', *Small Business Economics*, 28(2), pp. 363-379.

Rae, D. & M. Carswell (2001) 'Towards a conceptual understanding of entrepreneurial learning', *Journal of Small Business and Enterprise Development*, 8(2), pp. 150-158.

Schein, E. (1985) *Organizational Culture and Leadership*. San Francisco: Jossey-Bass.

Schumpeter, J.A. (1934) *The Theory of Economic Development*. Reprinted 1978. Oxford, New York: Oxford University Press.

Simon, H.A. (1976) *Administrative Behavior. A Study of Decision-Making Processes in Administrative Organization*. Third edition. With New Introduction. (First edition 1947). New York: The Free Press.

Starbuck, W.H. (1976) 'Organizations and their environments'. In M.D. Dunette (Ed.) *Handbook of Industrial and Organizational Psychology*. Chicago: Rand-McNally.

Starbuck, W.H. (1982) 'Congealing oil: Inventing ideologies to justify acting ideologies out', *Journal of Management Studies*, 19(1), pp. 3-27.

Stinchcombe, A.L. (1965) 'Social structure and organizations'. In J.G. March (Ed.) *Handbook of Organizations*. Chicago: Rand-McNally.

Tushman, M.L. & E. Romanelli (1985) 'Organization Evolution: A Metamorphosis Model of Convergence and Reorientation'. In L. L. Cummings & B.M. Staw (Eds.), *Research in Organizational Behavior*, vol. 7: 171-222. Greenwich, CT: JAI Press.

Williamson, O.E. & W.G. Ouchi (1981) 'The markets and hierarchies program of research, origins, implications, prospects'. In Andrew Van de Ven & William Joyce (Eds.) *Perspectives on Organization Design and Behavior*. New York: John Wiley & Sons.

JØRGEN RAVN ELKJÆR

RADKA PETROVA IVANOVA

ERP SYSTEMS AS A TOOL FOR INCREASING COMPETITIVENESS OF MODERN ORGANISATIONS

Abstract

Resource planning represents a necessary but not a sufficient condition for the competitiveness of an organisation, regardless of its scope of activity. The purpose of the paper is to disclose the need for applying the modern information systems for planning such as the ERP systems. These systems provide the integration of traditional production systems MRP II with CAD / CAM / CAE and PDM. As a result, it is achieved the realization of the concept of product life-cycle management (PLM). ERP systems enable the planning and modelling of business processes, their management at all levels of the company as well as the development of relations and cooperation with other organisations.

Key words: ERP, resource planning, organisations

Introduction

Resource planning in each manufacturing firm represents an important prerequisite for its effective performance and for increasing its competitiveness. The required tool for accomplishing these goals is the application of proper modern methods and systems. The Enterprise Resource Planning (ERP) systems can be defined as one of these systems according to the contemporary academic and empirical research. Therefore the present paper aims to focus on examining the ERP systems and especially to highlight their advantages and benefits for application within the process of organizing company activities and management as a whole.

Origin and purpose of ERP

For the stated above paper aims we would point out that the ERP can be defined generally as a way for information and organization process integration in one single system. According to APICS Dictionary ERP can be defined as a method for the effective planning and control of all resources and an accounting-oriented information system for indentifying and planning the enterprise wide resources needed to take, make, ship and account for customer orders in manufacturing,

distributions or service company¹.

From a historical point of view the ERP systems arise as a development of systems for manufacturing resource planning (MRP II), that were introduced in the manufacturing companies in the early 80-ies of XX-century. While ERP focus on questions how to plan, shape, measure and increase productivity, the main issues of MRP II are the following: what to produce, what materials are needed and what the needed quantities are. Therefore the ERP systems enable planning and shaping the business processes as well as their management at all levels of the company. One of the benefits of the ERP systems is the fact that they enable linking of the three management levels, namely²:

- *Upper management level*—through ERP it is possible to model and manage resources and to analyze the various alternatives for their distribution. On the other hand ERP enables finance planning, marketing activities and sales;
- *Middle management level*—establishing of a production plan, planning of capacity utilization and material needs (bill of materials);
- *Low management level*—planning the supplies for the different working places, including the tools and establishment of work task, control of manufacturing activities and calculation of production costs.

Benefits of ERP Systems

We have to emphasize the fact that the ERP systems enable the integration of the traditional manufacturing models MRP II with CAD/ CAM/ CAE and PLM (product life-cycle management) as well as the integration of models for supply chain management (SCM). Each of the mentioned above terms will be further discussed in more detail.

With regards to this we would like to point out that computer-aided design (CAD) aims to create the needed documentation for mechanical, electrical or electronic products using a specific software, for example in device construction, machine building, automotive industry, aircraft construction, dental medicine as well as in architecture, construction engineering, etc.

Concerning computer-aided manufacturing (CAM) computer-based software tools are used to assist engineers and machinists in manufacturing or prototyping product components. Its primary purpose is to create a faster production process and components with more precise dimensions and material consistency, which in some cases, uses only the required amount of raw material (thus minimizing waste), while simultaneously reducing energy consumption. CAM is a programming tool that makes it possible to manufacture physical models using computer-aided design (CAD) programs.

1. Cox III, J. F. and Blackstone (2002) APICS Dictionary. Tenth Ed., p. 39.

2. СТО (2006) Еволюцията на ИТ в производствения сектор – от ERP и PLM до системи за управление на технологичните процеси, 3, pp 1-4.

Computer-aided engineering (CAE) or system for engineering analysis enables the use of information technology as a support tool for engineers in their tasks such as analysis, simulation, design, manufacture, planning, diagnosis, and repair.

Regarding product data management (PDM) it should be mentioned that it represents the use of software or other tools to track and control data related to a particular product. The data tracked usually involves the technical specifications of the product, specifications for manufacture and development, and the types of materials that will be required to produce the good. The use of product data management enables company to track the various costs associated with the creation and launch of a product. Product data management is part of product life cycle management, and is primarily used by engineers. As an integration tool connecting many different areas, PDM manages product data throughout the enterprise, ensuring that the right information is available to the right person at the right time and in the right form. In this way, PDM improves communication and cooperation among diverse groups, and forms the basis for organizations to restructure their product-development processes and institute initiatives such as concurrent engineering and collaborative product development.

Concerning product lifecycle management (PLM) we would point out that it represents the process of managing the entire lifecycle of a product from its conception, through design and manufacture, to service and disposal. PLM integrates people, data, processes and business systems and provides a product information backbone for companies and their extended enterprise.

Product lifecycle management is one of the four cornerstones of a corporation's information technology structure³. All companies need to manage communications and information with their customers (CRM), their suppliers (SCM), their resources within the enterprise (ERP) and their planning (SDLC). In addition, manufacturing engineering companies have to develop, describe, manage and communicate information about their products also.

Moreover, we have to emphasize the fact that the integration is an extremely important part of ERP's. Actually ERP's main goal is to integrate data and processes from all areas of an organization and unify it for easy access and work flow. ERP's usually accomplish integration by creating one single database that employs multiple software modules providing different areas of an organization with various business functions.

Although the ideal configuration would be one ERP system for an entire organization, many larger organizations usually create an ERP system and then build upon the system and external interface for other stand alone systems which might be more powerful and perform better in fulfilling an organizations needs. Usually this type of configuration can be time-consuming and does require lots of labour hours.

An ideal ERP system is when a single database is utilized and contains all data

Evans, M. (2009) "The PLM Debate". Cambashi. http://www.cambashi.com/research/plm_debate/plm_scm.htm.

for various software modules. These software modules can include: Manufacturing (some of the functions include; engineering, capacity, workflow management, quality control, bills of material, manufacturing process, etc.); Financials (accounts payable, accounts receivable, fixed assets, general ledger and cash management, etc.); Human Resources (benefits, training, payroll, time and attendance, etc.); Supply Chain Management (inventory, supply chain planning, supplier scheduling, claim processing, order entry, purchasing, etc.); Projects (costing, billing, activity management, time and expense, etc.); Customer Relationship Management (sales and marketing, service, commissions, customer contact, calls center support, etc.); Data Warehouse (usually this is a module that can be accessed by an organizations customers, suppliers and employees).

Before ERP systems, each department in an organization would most likely have their own computer system, data and database. Unfortunately, many of these systems would not be able to communicate with one another or need to store or rewrite data to make it possible for cross computer system communication. For instance, the financials of a company were on a separate computer system than the human resources system, making it more intensive and complicated to process certain functions.

Once an ERP system is in place, usually all aspects of an organization can work in harmony instead of every single system needing to be compatible with each other. For large organizations, the results are the increased productivity and less types of software.

Main Sources of Inefficiency

Having in mind all stated above, we could conclude that introduction of ERP systems aims to eliminate entirely the following main sources of inefficiency:

Overproduction—as a result of applying the philosophy of push production based on forecasting of sales changes during previous time periods. As a more appropriate principle it is recommended the pull production principle, that is a production based on the real market needs (lean manufacturing).

Time-wasting—due to a lack of synchronization between material supply, information flows, equipment and tools, rather than to achieve a just-in-time organization, that is a resource availability at the given moment in order to be used for production needs.

Problems with transportation—the lack of safety concerning supplies of different resources leads to excess stock in many companies (available quantities exceed the necessary ones).

Removal of “unnecessary” processes—that do not add any value but just slow the general production process and therefore they have to be eliminated, for instance the lack of proper initial production of a given product requires its return to the pro-

duction process and its improvement in order to gain the desired quality.

Overstock that leads to providing of additional financial resources and respectively diminishes the free cash-flows and increases the costs for maintenance of stock availabilities and lowers the profitability of financial resources.

Defects of goods and services —the customer complaints worsen the company image and require extra resources for coping with them or resources for new production.

Unnecessary movements that concern the removal of unfinished production from one depot/ store to another, before entering the next production stage. It results in a greater production time and increase of total cost of production.

Underestimating of human resources—a significant disadvantage of the human resource management is the underestimation of mental, creative and physical abilities of the employees that leads to ineffective workflow operations, including high levels of staff turnover.

Based on the above arguments we would conclude that the introduction of ERP systems in the contemporary manufacturing companies will enable them to improve the ongoing processes and their management as a whole. However, ERP systems introduction requires serious investments that would be justified with the increased competitiveness of the company. Accomplishing the goals for a higher market share and stronger market positions cannot be done without the use of modern tools and systems.

Conclusions

ERP system represents a group of standardized modules that gather and manage information into a single database. Actually the centralized database is an appropriate tool for analyzing and extracting information, including advance measures for avoiding mistakes in future. The ERP system spreads over the following fields: finance, human resources, production, logistics, etc. At the same time it enables the management of customer orders, stock management and supplies, planning of production schedules, operations management, dispatch control of production, calculation of production cost, complaint management (claims), project management, financial and accounting activities, sales and documentation flows.

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References

Бойчев, Ал. Софтуерът за планиране на корпоративните ресурси е по-скоро неизследвана територия за българския бизнес // <http://www.capital.bg>, 2009

Еволюцията на ИТ в производствения сектор – от ERP и PLM до системи за управление на технологичните процеси // СЮ, бр. 3, 2006

Ширлетов, Ал. Гъвкаво производство – японската формула за успеха. // СЮ, Технологии, бр. 4, 2005

APICS Dictionary. Editors J. F. Cox III, J. H. Blackstone, Tenth Ed., 2002

Crow, K. Product Data Management/Product Information Management. DRM Associates // <http://www.npd-solutions.com/pdm.html>, 2009

Evans, M. The PLM Debate. Cambashi // http://www.cambashi.com/research/plm_debate/plm_scm.htm, <http://www.balkanservices.com>, 2009

VLADIMÍR VRECIÓN

FUNDAMENTAL CAUSES OF FINANCIAL AND ECONOMIC CRISIS AND ITS OVERCOMING: THE LOGIC OF MARKET ECONOMY AND HOW WE SUBVERT IT

Abstract

The article deals with the fundamental methodological and theoretical ideas of market economy. The logical core of the market economy (ME) and its functioning is briefly described. From these logical bases of ME basic principles of its right functioning are deduced. And from there is deduced how the contemporary practice of ME and market society disturbs, subverts these principles. The consequence of such disturbing of the logical core of the ME could be its partial and even total collapse. The current financial and economical crisis is a warning example. It is necessary to implement and to restore in practice fundamental principles of market economy in order to resort present crisis and to avoid future great - even fatal risks. And this will be mainly the role of states and international institutions.

Key words: free market, financial crisis, economical crisis, methodological analysis, free exchange, information, symmetry, risk, overcoming of crisis, long-range forecast

Introduction

The mechanism of market economy (ME) is very simple and it could be effective. It represents its advantage and potential benefit. It is built on a few simple, logically necessary, unavoidable relations. But the contemporary practice subverted the principles of its functioning. The basic building block, the essential relation of ME is free-exchange instantiated in the relation of purchase and sale. If the exchange is really free, it takes place only if it is advantageous for both sides of exchange. Only such exchange acts as the right self-regulator and the moving force for desirable development of economy. Thus it affects by a balanced objectification

of profile of the needs of the buyers motivates and profiles a desirable structure and capacities of economy. To guarantee this free exchange, so essential for ME, after bourgeois revolutions some prerequisite social (political, civic, state and legal) mechanisms were given rise to. Because of the violation of free exchange, of its dynamic balance, indispensable information completeness and symmetry, the very basics of ME are being distorted; its principles are being subverted. The distortion of the free exchange directly deforms self-regulative functioning of ME (i.e. "Invisible hands" can't work)) what sooner or later must end by its distortion in a great extend or even by the collapse of the whole ME and capitalist society. The serious symptom is contemporary crisis (but also, such symptoms for the future probably more serious mostly ecological crises are e.g. the traffic collapses in cities). The contemporary practice of ME and civic and political society esp. lack of proper, truth information and different kinds of pressures on the parties of the exchange constrains, distorts or destroys the free character of exchange. There are both objective and subjective contributing factors:

- Distorting are disinformation about money in exchange and non - transparent financial practices (mortgages, loans) on the side of sellers that mainly have caused contemporary global financial and economical crisis.
- The growing technological complexity and sophistication of products and their use in society tends to require better and broader knowledge and education of buyers and we see a growth of discrepancy between general education, culture and required technical and/or scientific knowledge of the buyers.

This objective but for the ME negative trend is deliberately used, abused and amplified by biased advertising, medial and political manipulation. The objectivity of decision-making, esp. on the side of the buyers, is subverted by disturbing and limiting their objective perception of the object of exchange, the all of its relevant qualities, incl. consequences of its long-term (worrying example is cosmetics etc) and mass use (motorism, tourism etc). It can causes even substantially worse economic crisis in future (after 15-20 years). The main goal of the article is to show on solid methodological and theoretical base how esp. information asymmetry and deceiving in the relation of purchase and sale destroy ultimate bases of ME It is main reason of contemporary crisis and crises in future Restoration and abidance of this symmetry and honesty is fundamental presumption for overcoming of present crisis and for restoration of stability of world economy. It could be done by means of the states and (objective and honest) international bodies that must be properly organized.

For a deeper scientific insight into the ME and its fundamental problems a deeper methodological approach is needed. It is also fully valid for the economy

that there's nothing more practical than a good theory. And the good theory cannot be created without a good methodology.

Methodology of Economy

One of the most general methodological ideas of science is, that the all in this universe is built on principles of logical simplicity, logical unavoidability and elegance—beauty, and the all relatively stable parts of reality are built on relations of polarity and symmetry. These ideas could substantially contribute at the analysis of logical core of market economy (ME.) and its functioning. The ME is methodologically suitable subject for such methodological approach because its mechanism clearly shows signs of logical simplicity, logical unavoidability and elegance. But in this article we'll be looking at the postulates of polarity and symmetry in ME only.

We label this general methodological approach as a general theoretical - logical method (GTLM). Its use in research of the ME means, that if we try to find the logical core of ME, which would eventually imply general laws of ME, we have to find and analyze at first the simplest and the oldest social relation, which came into being as historically first in the phenomenon (called now) ME. The "Big Bang" for the ME was the appearing of a general equivalent = money, which enabled the first social relation to come into being—the relation of purchase and sale, in the other words, relation of exchange of money for goods (products, services).

The relation of purchase and sale represents the microstructure of ME. It is the primal building block of ME. This can also be seen as an instance of the before mentioned general principle of simplicity. It is not by chance that similar general theoretical and logical procedure (GTLM), was at least implicitly used by the great economists, who have elaborated sufficiently complete, logical and practically useful theories of ME (Smith, A., Friedman, [1], [2], [3] and some others).

From the very beginning of the ME the structure of the relation of purchase and sale has been the same. This relation shows general features characteristic for any (relatively) stable material, energetic, dynamic structures. Among these features they are especially the features of polarity and symmetry. The polarity and symmetry are necessary requirements for creating of any, even relative, dynamic stability of a phenomenon. In our case the relation of exchange requires this polarity and symmetry not only for the own existence but also for creating of *relative, dynamic stability* of the whole ME which is built on this primary relation.

Logical core of the market economy

The relation of purchase and sale (its basic, most widespread form—type I, see further) is built on the relations of polarity and symmetry, in other words the polarity and symmetry between the buyer and the seller. (which is in principle the same as the

polarity of particles in the microstructure of matter). The buyers and sellers are “attracted” by interest in a product (its purchase/sale/) and at the same time “repelled” by the opposite interest in the price of the product. These forces = interests, polar and in principle symmetrical, create this relation. Intensity of these counteracting interests is being balanced and stabilized during the deal of free exchange. A particular balance of interests is created by negotiating the exchange (esp. price) of the product, i.e. negotiating a particular symmetry of exchange.

In the macroeconomic scope, numerous buyer-seller relations of a special kind of product are stabilized in an abstract dynamic equilibrium—in a certain tolerance of general price. We say, that the value law enables us to state an average (probabilistic) price of product from a number of relations of the free exchange relations of a given ME in a given time.

The value of law is an abstraction—it is an attribute of generally valid methodological principles, that we can see in it elements valid in the physical principles of quantum indeterminacy and locality (deeply analyzed in both theoretical physics and mathematics—but methodologically applicable also in theory of ME). It means, that even in ME there are phenomena (commodities, customers, parties of exchange etc) quantified and we = observers can these quantity perceive only with some probability and we don't always have to consider the ME of the whole state or world but only adequate local surroundings of a particular exchange. We can consider that as the “principles of the indeterminacy and locality in economy”.

The polarity and symmetry of individual relations of purchase and sale are also the necessary prerequisites of necessary stability of ME segments and the whole ME in their aggregation. This stability is of course relative to the place of exchange, product development and it changes dynamically in time.

The methodological criterion (applicable also in economy), whether we have grasped the real core of a phenomenon is that we can speak about it in a simple and clear manner. Undue complexity and of course obscurity is always a sign, that we have some factual or logical lack of knowledge about the phenomenon (or that we lie). Let's add that a well grasped phenomena can be visualized and this visualization (usually in some level of simplification) drawn. Thus, the primal and simplest relation in ME is a relation between two subjects: the seller (S) and the buyer (B), their structured values, interests, features etc. are depicted by the structured oblongs. The subject of exchange will be marked as (G) =goods, its various properties are marked by a structured circle around G.

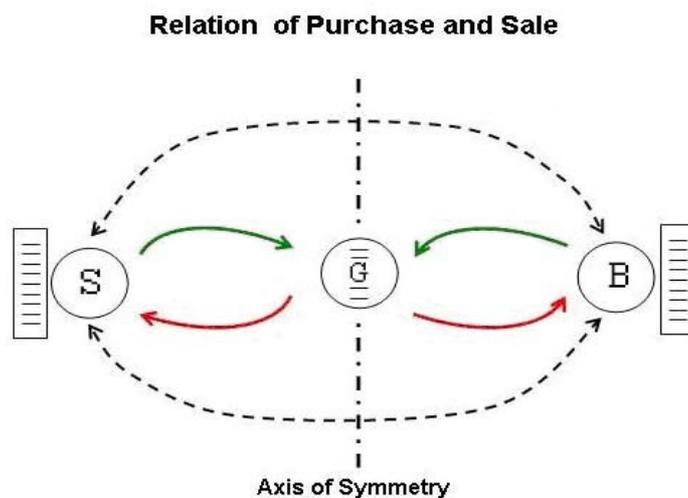


Figure 1—relationship between purchase and sales

This relation is created on a polar symmetry (the perpendicular line in G marks its axis) which is the condition for its existence, balance and stability. Polar symmetry means, that there is a stable counteraction of at least two forces of two entities (e.g. gravity \leftrightarrow centrifugal force). The relation between S and B is polar, S and B are two entities between them counteract some partial attracting and repulsing relations – forces. B is attracted to S by his interest in goods, which will satisfy his needs, S is attracted to B by his interest to gain the general equivalent—money—in exchange for his goods, to satisfy his other needs. Both parties are thus "attracted" due to their needs, due to complementarity of needs. This "attraction" is marked green. At the same time S and B are being "repelled" from each other by their opposing interest in price of the goods: S is interested in maximization of price and B in its minimization—this relation is marked red. The both of these counteracting interests are of course relative, influencing by state of the market, psychological and other factors.

These elements create polarity of relation and this relation must be in principle symmetrical esp. in the aspect of forces (attractive and repulsive) to create needed stability. During asymmetrical compensation of needs and interests (e.g. because of pressure, which deforms these attractive and repulsive forces from the outside), such exchanges either don't take place at all or necessarily are disbanded soon.

Initiated by axiology the needs and interests of the seller (S) and the purchaser (P) (whose structure are marked by structured rectangles at S and P), their relation of exchange is accomplished by physical “intermediators”, i.e. by language or other communication means (being marked by the outer bows) and space transfer of goods towards P and of money towards S.

The exchange is implemented when the relations between S and P are balanced (by the mentioned “forces” - even only in subjective appraisal of S and P). The exchange is reached and the relation ceases to exist (the legal implications of the accomplished exchange we left aside here). The exchange is fulfilled in the point of balanced interests and influences of S and P. The balance is a result of a fundamental symmetry in the construction of the examined relation of purchase and sale. In the market economy the relations of exchange concerning concrete types of commodities (money is also a commodity) represent a mass phenomena and by continual averaging out (even by a subjective estimations) the law of value and price movement function. The elementary primary relation of ME—the relation of purchase and sale—can be further analyzed in many regards. Since Chamhurapi’s times we recognize 4 kinds of the purchase-sale and/or money spending relations. They differ one from another according to whose money is spent and for whom:

Relation of Purchase and Sale

whose money	for whom spent	
	for you	for somebody else
yours	I. +	II. +
of somebody else	III. +	IV. -

Figure 2: relation of purchase and sale

In order to evaluate these particular kinds of purchase and sale, first of all we have to define the criterion of evaluation according to which they act positively or negatively regarding ME development. As for ME this criterion can be probably best defined by our demand: to have economy that creates maximum of needs that are

subsequently satisfied by it as much as possible. Thus, when evaluating, we consider how much a particular kind of relation (or any economical element) contributes to such demanded economy.

Evaluating by mentioned criterion, the most effective of these relations is relation I (that is why marked in red). If I buy something for myself paying with my own money, I perform the utmost effort for as low expenses as possible (marked by +) to acquire an optimal (maximal) utility value (marked by +, too). Then by + we mark rational, effective acting and by—we do the opposite in accordance with the criterion described above. So, in relation I, my attempt is to minimize expenses and maximize acquired utility value. The functioning and self-regulation of free market economics is based on this relation.

Although ME theory does not actually work with the general concept of “utility value” it becomes necessary even for ME itself that the purchaser is equipped with as much knowledge as possible about the selling goods not only from the point of view of his individualized utility values but also the general utility values of such goods. It becomes increasingly important to know how the bought goods influence life not only of buyer but of the whole society and in addition in a long-term horizon (e.g. cosmetics etc) and at mass use (e.g. cars etc). (According to author’s experience, e.g. the ex post discovered individualized and also general utility value of his bought car in Tokyo was zero if not even negative—and it could be only worse in future. And it is not by chance that automobile industry was strongly hit by contemporary crisis). This is supported by many reasons and it could be here generalized and abbreviated by formula “to keep sustainable economical growth”.

The information symmetry between S and P is the prerequisite of a correct running of relation I. S must be objectively informed about the quantity and the quality of the money received and P must be objectively informed about the quantity and the quality of the goods received. The symmetry (and actually the existence) of relation I demands that the truth about commodities exchanged be an economical imperative. The truth about commodities exchanged, thus, is not only an ethical demand but also the immanent economical category—imperative in ME.

At the same time, the logic (and namely the mutual polarity) of relation I implies that the selfinterest of S and P is the foundation stone of ME. S and P must try to get the maximum from the other side of the exchange for the minimum of their own assets if they want sufficiently exist in the environment of ME. All the moralistic theses about great altruism are, thus, in contradiction to the “iron logic” of the ME.

The relation I. is worse from the point of view of mentioned criterion of ME. It can be demonstrated for example by buying your work colleagues birthday presents. You try to minimize the expenses (+) but you do not care so much about the utility values, design etc the given things (-). That is why the birthday present you have got have seldom some utility value for you and you mostly do not know

what with them .

According to the relation III, when somebody invites you for a dinner you do not try to minimize the expenses (-) but you choose your dish carefully (+). The relation IV is effective least. Somebody who spends somebody else's money for somebody else is not (vitaly, deeply because it is not his money) interested in minimizing the expenses (that is why marked by-). At the same time he is not interested (vitaly, deeply and in addition he normally cannot know well the needs of somebody else) in maximizing the utility value that is bought (again -). And yet more, there is an opportunity for various kinds of deception, corruption in both directions (towards the source of money as well to the recipient of the value). And exactly this is the relation that represents the basis of state economics, state funds spending.

The state, in fact represented by a group of bureaucrats, obtains money from taxpayers - citizens, enterprises and it spend it for other citizens, institutions, companies etc. The most of the bureaucrats can't be personally vitaly interested in the maximal purposeful money spending. In addition the feasibility of various kinds of manipulations and corruption is an inseparable part of relation IV logic. Many politicians and bureaucrats are magnetically attracted by this possibility (so to say the opportunity makes the thief). Therefore the corruption, thefts are integrally incorporated into "iron logic" of the relation IV i.e. also into the state money spending. The responsible state (and also big companies) must therefore permanently and carefully organize anticorruption activities. In addition the state is basically an anonymous subject and as the owner and supporter of institutions, as a services provider, as property keeper and investor has necessarily lower work efficiency in comparison with an individual private keeper, entrepreneur.

The mentioned rules valid for individual (buyer, seller) are also valid *mutatis mutandis* for private enterprise. The more is applied the relation I into the all its activities, the more efficient the enterprise is. The employees of a small company are able nearly to identify themselves with company and act there according to the relation I. (The number of employees of such "beautiful firm" is maximally 100, also psychologically we can have maximally this number of closer acquaintances.) That is why "the small is beautiful" in ME. Therefore the bigger companies are better to divide into smaller units, each of them to be managed financially separately.

Yet others principal truths, laws, can be deduced from the analysis of this basic "foundation" relation of the ME. A society, an economics that function maximally on the implementation of the relation I, i.e. *Leistungsgesellschaft*, with the really free and fair market are naturally wanted by the strong, i.e. able, health,, young, hardworking etc. individuals. On the contrary the old, sick, or somehow disabled people tend to a socialized, redistribution-oriented society i.e. to the society based on relation IV. With that in mind, it is then quite natural and not unethical if you

change your politically-economical opinions and convictions even radically, from the right (relation I) to the left (IV) and vice versa according to your individual circumstances and abilities throughout your life. The similar pendulum behavior can be said about the collective subjects, nations and states. If the subjective and objective conditions are favorable, they tend to the relation I., if not, then to the relation IV. These pendulum changes could have deep and long-term influences in a nation's or state's life and can be clearly observed in history. Let us now look at the types of purchase and sale (I – IV) also as far as polarity and symmetry are concerned:

- The relation I is polar and symmetrical and that is the main reason why it legitimately represents the building relation of ME.
- The relation II is non-polar and asymmetrical. S is interested in minimization of price of the “given” product and P (actually the one who gets) is interested in maximization of value of the given product G but this as well as the price cannot be normally influenced by his will.
- The relation III is the inversed relation of relation II and therefore it is valid vice versa the same as above.

The relations II and III then cannot be the “building” relations, core stones of any economy. Being asymmetrical, they can never become holders of any long-term balance, stability or even self-regulation by their own. In ME they act only marginally, being additional and “derived” from the dominant relation I. Moreover, these relations must be regulated, checked, though only afterwards and externally by participants of relation I. (A company checks its salesman's expenses, a father checks his children's pocket money spending etc.)

The relation IV is symmetrical but non-polar (or possibly very little polar). It represents the relation in which the attractive force (towards the goods for somebody else) and also the centrifugal force (towards the price – it is paid by somebody else's money) are very weak. This relation of symmetry is in fact the symmetry of “unconcern” towards the goods and the price.

Should this relation has a polarity and a symmetry “strong enough” to be the stable and balanced relation of a stable economy and society (and thus become similar to relation I), its polarity and polar symmetry must be brought to economy “from outside” by non-economy forces: by moral-political means, by power forces. The relation IV alone can't function well as a self-regulator of economy. As for the relation I representing the building relation of ME it is crucial to monitor and protect its polarity and its versatile symmetry, which is important role of civic society and the state.

The above said implies that ME is prone to various threats. The constant threat of ME is an excessive usage of relation IV in economy. The much worse threat is that the symmetry and the polarity of relation I, both of them representing the

prerequisites of a dynamic stability of ME, are being more and more disrupted.

Nowadays, this basic relation is being disrupted namely by information asymmetry, above all by the lack of truth information about money and in future about the selling goods on the side of the buyers connected with bias advertising and yet by subsidy, dumping etc. The symmetry (in terms of mathematical theory of groups) means that if changing the relations in a phenomenon, there are some relations that cannot be changed - which unfortunately is actually happening in ME. Moreover, the disruption of polarity and symmetry in the basic ME relation implies that ME function without sufficient self-regulation. Then it is necessary for the states and international bodies to take corrective (now unfortunately sometime unsystematic) measures concerning ME. The role of civic society as well as of the states is to assure really free character of exchange i.e. that the purchase-sale relations will be really free, fair, independent, polar and symmetrical. Otherwise the market economy would be doomed to end up in various "traps", where it would be confronted in longer run namely with the ecological limits.

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References

Smith, A. 1930. *The Wealth of Nations*, /1776/, Methuen & Co., Ltd.

Friedman, M., & Friedman, R. 1980. *Free to Choose*. Harcourt Brace Jovanovich, New York, London. ISBN 0-15-133481-1
Friedman, M. : *Capitalism and Freedom*, University of Chicago Press, 1962.

Short Research Papers on Knowledge, Innovation and Enterprise

ADEL MOHAMMED QATAWNEH

THE IMPORTANCE OF KNOWLEDGE INNOVATION FOR EXTERNAL AUDIT IN ANTI CORRUPTION EFFORTS IN JORDAN: AN EMPIRICAL STUDY OF COMMERCIAL BANKS LISTED ON THE AMMAN STOCK EXCHANGE

Abstract

This paper examines the importance of knowledge innovation in external auditing on anti corruption on the Jordanian banks that are listed on the Amman Stock Exchange (ASE). The importance of this study emanates from the need to recognize knowledge innovation for external audit and anti corruption as key to the development and growth Jordanian-owned commercial banks. Key external audit variables include reliability of financial data, relevantly of financial data, consistency of the financial data, full disclosure of financial data and protecting the rights of investors. To achieve the objectives of the study, a questionnaire was designed and distributed to the society of the Jordanian commercial banks that are listed on the Amman Stock Exchange. The data analysis finds that commercial banks in Jordan are positive about the importance of Knowledge innovation for external audit on anti corruption. They agree on the benefit of Knowledge innovation for external audit on anti corruption. The statistical analysis showed that Knowledge innovation for external audit had a positive impact on the anti corruption and that external audit has a significantly statistical relationship with anti corruption, reliability of financial data, consistency of the financial data, full disclosure of financial data and protecting the rights of investors.

Key Words: Knowledge innovation, External audit, Anti corruption, Amman Stock Exchange (ASE).

Introduction

Already, External audit is playing a more prominent role in organizational. Coordination and innovation are crucial for companies, In addition to external audit

knowledge, stakeholders expect external audit to improve their anti-bribery and anti-corruption compliance programs to detect and prevent. Innovation is the use of new knowledge to offer a new product or service that companies want. It is invention plus commercialization (Freeman, 1982; Roberts, 1988). According to Porter, (1990) innovation is a new way of doing things that is commercialized. The new knowledge (Afuah, 1998) can be technological or market related. Technological knowledge refers to components, processes, and linkages that contribute to an output. Amidon (2002) defines the fundamentals of knowledge as data, information, then knowledge. She notes, "Data is a base representation of fact, information is data with context, and knowledge is information with meaning... fully actionable." It is not by coincidence that "knowledge" is used so heavily in the descriptions of innovation.

Davenport and Prusak (1998) defined knowledge as a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information.

Knowledge includes two aspects, 'managing' the knowledge that already exists in the organization, as well as enhancing the ability to create 'new knowledge'. When the management of knowledge is introduced it is the past events that are harnessed to promote and facilitate the innovation process. Knowledge deals with the creation, acquisition, integration, distribution, and application of knowledge to improve the operation effectiveness and competitive advantage of an organization. Knowledge innovation is providing the right information to the right people at the right time. Most companies that have knowledge programs emphasize knowledge sharing and integration which is what is referred to as first generation knowledge management.

Companies are now just beginning to put more effort in the knowledge innovation programs in the area of knowledge creation and learning which is referred to as second generation knowledge management (McElory, 2003).

In order to stimulate the invention part of innovation the organization needs to have innovation mechanisms that support knowledge creation, sharing, and integration. Thus, innovation is one of the objectives of an effective knowledge innovation program. The importance arises from the need to recognize the Knowledge innovation for external audit and anti corruption as the development in the world of business, the variables that will be affected by external audit innovation include: Reliability of financial data, relevantly of financial data, Consistency of the financial data, Full disclosure of financial data and protecting the rights of investors.

Study Problems

Due to the lack of researches addressing the importance of Knowledge innovation for external audit on anti corruption particularly in Jordan, this study attempts to

answer the following questions:

1. What is the importance of knowledge innovation for external audit on reliability of financial data?
2. What is the importance of knowledge innovation for external audit on relevancy of financial data?
3. What is the importance of knowledge innovation for external audit on consistency of financial data?
4. What is the importance of knowledge innovation for external audit on full disclosure of financial data?
5. What is the importance of knowledge innovation for external audit in protecting the rights of investors?

Study objectives

1. To identify the concept of knowledge innovation for external audit and anti corruption in Jordanian Bank companies.
2. To examine the relationship between knowledge innovation for external audit and reliability of financial data in Jordanian Bank companies.
3. To examine the relationship between knowledge innovation for external audit and relevancy of financial data in Jordanian Bank companies.
4. To examine the relationship between knowledge innovation for external audit and consistency of financial data in Jordanian Bank companies.
5. To examine the relationship between knowledge innovation for external audit and full disclosure of financial data in Jordanian Bank companies.
6. To examine the relationship between knowledge innovation for external audit and protecting the rights of investors in Jordanian Bank companies.

Methodology

The population of the study includes all commercial Bank companies are listed in Amman Stock Exchange in Jordan. The study included the financial managers working in the 13 bank companies In order to achieve the objectives, the study will adopt the following methodology and structure:

1. Conducting exploratory study.
2. Developing thesis proposal as the primary model of the thesis.
3. Developing the questionnaire.
4. Collecting data through the questionnaire and other data collection method.

5. Carrying out a statistical analysis.
6. Developing the final form of the study.
7. Writing up the conclusion and recommendations.

Hypotheses

H₁: there is a statistical significant relationship between knowledge innovation for external audit and anti corruption in Jordanian Bank companies.

H₁: there is a statistical significant relationship between knowledge innovation for external audit and reliability of financial data in Jordanian Bank companies.

H₁: there is a statistical significant relationship between knowledge innovation for external audit and relevantly of financial data in Jordanian Bank companies.

H₁: there is a statistical significant relationship between knowledge innovation for external audit and full disclosure of financial data in Jordanian Bank companies.

H₁: there is a statistical significant relationship between knowledge innovation for external audit and protecting the rights of investors in Jordanian Bank companies.

Literature review

Newell, Huang, Galliers and Pan, (2003) examines the simultaneous implementation within a single organization of two contemporary managerial information systems—Enterprise Resource Planning (ERP) and Knowledge Management (KM). Exploring their simultaneous deployment within an organization provides an opportunity to examine the resulting interactions and impacts. More specifically, we examine their combined influence on improving organizational efficiency, flexibility, two outcomes which traditional organizational theory suggests are incompatible. Through an interpretative case study, the research confirms that: the two systems can be implemented in tandem to good effect. complementarity between the two systems is possible, although this is not an automatic outcome, it has to be fostered.

Rennie, Morina (1999), Knowledge-based companies have suffered from the failure of the traditional financial reporting system to reflect knowledge assets on the balance sheet. Because of the level of uncertainty associated with knowledge-related expenditures, accountants normally must classify them as expenses. This system was not unreasonable in the past, when assets were primarily tangible and it was normally clear what role these assets would play in providing benefits to the

organization. In recent times, however, knowledge assets and other "soft" assets have been increasingly important to success. We need a mechanism that will reduce the need to make these capitalization /expense decisions prematurely. I discuss the benefits of creating a new financial statement containing expenditures for which status as an asset or expense has not yet been resolved.

Stewart, Munro, (2007) , This article uses an experimental design to examine the impact of audit committee existence, the frequency of audit committee meetings and the auditor's attendance at meetings on aspects of the external audit. We developed a hypothetical scenario involving a company with a newly formed audit committee and we varied the number of times the audit committee met each year and the audit partner's attendance at the meetings. In the first version of the instrument, participants were advised that the committee met twice a year and the partner was required to attend both meetings. In the second version, the audit committee met six times a year, and the partner was required to attend only the first and last meetings of the year. In the third version, the audit committee met six times a year, and the partner was required to attend all meetings. We chose this design in order to measure the expected impact of these factors on audit risk, audit efficiency, audit testing, auditor–client conflict resolution, audit quality and audit fees.

Results Analysis

First hypothesis

There is a statistical significant relationship between knowledge innovation for external audit and anti-corruption in Jordanian commercial banks

For testing this hypothesis F- test was done using SPSS and the following results were calculated: The correlation value = 0.47 between knowledge innovation for external audit and anti-corruption , and the correlation is statistically significant, therefore we accept the H_1 hypothesis which states that there is a relationship between knowledge innovation for external audit and anti-corruption .

Second hypothesis

There is a statistical significant relationship between knowledge innovation for external audit and reliability of financial data in Jordanian Bank companies

For testing this hypothesis F- test was done using SPSS and the following results were calculated: The correlation value = 0.61 between knowledge innovation for external audit and reliability of financial data , and the correlation is statistically

significant, therefore we accept the H_1 hypothesis which states that there is a relationship between knowledge innovation for external audit and reliability of financial data.

Third hypothesis

There is a statistical significant relationship between knowledge innovation for external audit and relevantly of financial data in Jordanian Bank companies

For testing this hypothesis F- test was done using SPSS and the following results were calculated: The correlation value = 0.32 between knowledge innovation for external audit and relevantly of financial data , and the correlation is statistically significant, therefore we accept the H_1 hypothesis which states that there is a relationship between knowledge innovation for external audit and relevantly of financial data.

Fourth hypothesis

There is a statistical significant relationship between knowledge innovation for external audit and full disclosure of financial data in Jordanian Bank companies

For testing this hypothesis F- test was done using SPSS and the following results were calculated: The correlation value = 0.76 between knowledge innovation for external audit and full disclosure of financial data , and the correlation is statistically significant, therefore we accept the H_1 hypothesis which states that there is a relationship between knowledge innovation for external audit and full disclosure of financial data of financial data.

Fifth hypothesis

There is a statistical significant relationship between knowledge innovation for external audit and protecting the rights of investors in Jordanian commercial banks

For testing this hypothesis F- test was done using SPSS and the following results were calculated: The correlation value = 0.87 between knowledge innovation for external audit and protecting the rights of investors , and the correlation is statistically significant, therefore we accept the H_1 hypothesis which states that there is a relationship between knowledge innovation for external audit and protecting the rights of investors.

Conclusions

This paper concluded the following:

Knowledge innovation for external audit had a statistically significant importance for Reliability of financial data, relevantly of financial data, Consistency of the financial data, Full disclosure of financial data and protecting the rights of investors.

Knowledge innovation for external audit had a statistically significant importance for reliability of financial data by refers to the accuracy with which the financial data is reported. The company needs to understand the importance of innovation for external audit the financial transaction so that the transaction is recorded accurately in the financial records. Financial statement users want to know that information reported is accurate and can be trusted.

Knowledge innovation for external audit had a statistically significant importance for relevantly of financial data. The knowledge innovation for external audit make financial statements relevant is to provide financial information that the user can work with to make financial decisions.

The consistent, full disclosure for financial data is very important, based on responses received from the initial consultation according to external audit standards.

The investors are looking to protect their investments, the knowledge innovation for external audit had a statistically significant importance for the protecting the rights of investors.

Recommendations

The study recommends the following:

- It is important for Jordanian companies to focus in the advancement of the knowledge innovation for external audit especially with regards to aspects related for Banks in order to keep up with the reliability of financial data, relevantly of financial data, Consistency of the financial data, Full disclosure of financial data and protecting the rights of investors.
- Continued follow-up the latest developments in knowledge innovation for external audit in order to benefits from the services offered by using knowledge innovation for external audit for financial reporting users in Jordanian companies.

- It also recommend that conducting more studies concerning the conceptual framework for both knowledge innovation for external audit and anticorruption.

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References

- Afuah, A. (1998). *Innovation Management: Strategies, Implementation, and Profits*. New York, NY: Oxford University Press, Ch. 2.
- Allen, K. R. (2003). *Bringing New Technologies to Market*, Prentice Hall.
- Amidon, D. M. (2002). *The Innovation Superhighway: Harnessing Intellectual Capital for Collaborative Advantage*, Butterworth-Heinemann
- Anon (2002). "Inspiring Innovation", *Harvard Business School Review*, 80(8), 39
- Bower J. L. & Christensen C. M. (1995). "Disruptive Technologies: Catching the Wave" *Harvard Business Review*, Jan-Feb
- Chesbrough, H. (2003). *Where Are Your New Ideas Coming From?*, Darwin Magazine, May edition.
- Christensen C. M. (1997). *The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail*, Harvard Business School Press
- Davenport T. H. & Prusak L. (1998). *Working Knowledge-How Organizations Manage What They Know*, Harvard Business School Press
- Freeman, C. (1982). *The Economics of Industrial Innovation*, Cambridge, MA, MIT Press
- Gossain S. & Kandiah G. (1998). *Reinventing value: The new business ecosystem*, *Strategy & Leadership*, 26(5), 28-33.
- Hargadon A. & Sutton R. I. (2000). *Building an Innovation Factory*, *Harvard Business Review*, May-June, 157-166.

Short Research Papers on Knowledge, Innovation and Enterprise

- Knapp, E. & Yo, D. (1999). Understanding Organizational Culture, Knowledge Management Review, (7), March/April
- McElroy M. W. (2003). The New Knowledge Management- Complexity, Learning, and Sustainable Innovation, Butterworth Heinemann
- O'Reilly III C. & Tushman M. L. (1997). Using Culture for Strategic Advantage: Promoting Innovation through Social Control, Managing Strategic Innovation and Change, Oxford University Press.
- Porter M. E. (1990). The Competitive Advantage of Nations. New York, Free Press, 780.
- Rennie, Morina (1999), Accounting for knowledge assets: do we need a new financial statement? International Journal of Technology Management, Volume 18, Numbers 5-6, July 1999 , pp. 648-659(12) DOI: <http://dx.doi.org/10.1504/IJTM.1999.002794>
- Roberts, E. B. (1988). What We've Learned: Managing Invention and Innovation, Research Technology Management, 31(1), 1-29
- Rumizen M. (2002). The Complete Idiot's Guide to Knowledge Management, OLW Publishing
- Saint-Onge H. & Wallace D. (2003). Leveraging Communities of Practice for Strategic Advantage, Butterworth Heinemann
- Senge, P. M. (1990). The Fifth Discipline: The Art and Practice of the Learning Organization, New York, Currency Doubleday.
- Stewart, Munro, (2007), The Impact of Audit Committee Existence and Audit Committee Meeting Frequency on the External Audit: Perceptions of Australian Auditors, International Journal of Auditing, Volume 11, Issue 1, pages 51–69, March 2007, DOI: 10.1111/j.1099-1123.2007.00356.x
- Sutton R. I. (2002). Weird Ideas That Spark Innovation, Sloan Management Review, Winter
- Tidd J. & Bessant J. & Pavitt K. (2002). Managing Innovation: Integrating Technological, Market, and Organizational Change, 2nd Edition, John Wiley & Sons
- Von Knogh G. & Ichijo K. & Nonaka, I. (2000). Enabling knowledge creation: How to unlock the mystery of tacit knowledge and release the power of innovation, New York: Oxford University Press.

