DOES EXTERNAL KNOWLEDGE ENHANCE COMPETITIVE ADVANTAGE?
A RESEARCH AGENDA ON IT OUTSOURCING PRACTICES

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"An ounce of information is worth a pound of data; an ounce of knowledge is worth a pound of information; an ounce of understanding is worth a pound of knowledge; and an ounce of wisdom is worth a pound of understanding [1]".

ABSTRACT

Since last two decades offshore outsourcing gaining fast momentum and now this new evolution of business process has achieved its maturity. Standardization of manufacturing sector is almost matured and now this sector is on the automation mode. Western firms in the service sector are very much eager to standardize their process and for multiple reasons, they are seeking external partner to achieve their goal. Modularity is the basic principle of standardization because standardization can not deliver any value if it is not flexible and agile. Modular, flexible and agile standardized systems can lead us towards the next stage of business process evolution which is, '*automation*'. Automation in service sector is envisaged since long but now it seems a reality due to the rapid advances in information technology. It seems very encouraging that the western firms are heading towards right direction in achieving competitiveness but question remains, if this achieved competency is sustainable? Is the achieved cost saving in short term, in any way over shadowing the long term and sustainable benefits? How well these western firms are prepared to face the turbulent business environment with out external help? This research will try to explore all the relevant venues to find the real situation on the ground.

This study is aimed to focus on the knowledge transfer process between Indian service providers and western service consumers. In short and mid-term, probably companies in western countries are achieving competitive advantage by off-shoring their IS / IT activities but this research will focus on long-term strategies. Will the service consumers continue to depend on service providers or will they adopt strategies to enhance their own capabilities through knowledge exchange? This research will try to uncover the short-term, mid-term and long-term strategies concerning IS off-shoring practices, adopted by the service consumer organizations in western countries. This research will further dig-in to evaluate consistency of those adopted strategies to economic theories. This research will be conducted in two phases. The first phase will be an exploratory and qualitative research. Data will be collected through the interviews of executives from both organizations: service consumer and service provider. The second phase will be a confirmatory and quantitative research. Data will be collected from the executives of service consumer and service provider through survey. This collected data will be matched by the previous qualitative data and finally after analyzing those data a conclusion can be derived.

Keywords: *External Knowledge, Knowledge Transfer, Offshore Outsourcing, Innovation, Competitive Advantage, Modularity, Flexibility, Absorptive Capacity.*

1. INTRODUCTION

IT outsourcing has been an accepted business practice for over two decades, it has shown remarkable increase in recent years and has been the engine of growth for the software and computer services sector (Miozzo and Grimshaw, 2005). In this high velocity and hyper competitive business environment, organizations are unable to follow the trend of rapid rate of technological change, sophistication, and variety of services within allocated budget. This is one of the reasons why organizations seek external and specialized partner (Miozzo and Grimshaw, 2005). It is argued that firms externalize their IT activities because they can save on costs, reduce risks and focus on their core competences (Lacity et al., 1994a). But research literature also highlighted some demerits, including excess fees, declining services, inability to adapt to changing business and technology needs, loss of power to monopoly suppliers and inability of the clients to manage the interface with the suppliers (Lacity and Hirschheim, 1995; Lacity and Willcocks, 2001 and Willcocks and Fitzgerald, 1994a).

Despite many demerits, we can see the forecasting report of Mckinsey, IDC and Forrester that the IT outsourcing trend is still continuing and growing. It is due to pressures on the organization's cost base and shortage of on-shore skilled resources (Ravichandran and Ahmed 1993). Deloitte Consulting revealed that the world's top 100 financial service providers have plans to relocate operations offshore, translating into a bottom line annual cost savings of US$138 billion (Business Times Malaysia 05/07/2003) . British Airways found that it saves nearly US$23 million a year for every 1000 jobs it relocates to India (Rae, S. Offshore re-sourcing: once adventurous now essential for financial services firms. IBM Business Consulting Services; 2002.).

Research has been done to examine the nature and impact of IT outsourcing (Buck-Lew, 1992; Lacity and Hirschheim, 1993; Loh and Venkatraman, 1992) and its implications for IT management (Grant, 1992; Huber, 1993; Quinn, 1992). However, less attention has been paid to IT outsourcing in the context of knowledge transfer, value creation and its implications for innovation. According to the Fred Niederman (2005), electronic commerce and knowledge transfer, both with strong information technology underpinnings, have recently been hot topics.

2. KNOWLEDGE

The definition of knowledge is a matter of on-going debate among philosophers in the field of epistemology. Philosophical debates in general start with Plato's formulation of knowledge as "justified true belief" (Von Krogh et al. 2000). There is however no single agreed definition of knowledge presently, and there remain numerous competing theories. The term knowledge is also used to mean the confident understanding of a subject with the ability to use it for a specific purpose if appropriate. When we discuss knowledge in organizations, then we have to extend the philosophical lens to make it more appropriate to organization science. Davenport and Prusak's (2000) defines knowledge in the context of organization, *"Knowledge is a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of knowers. In organisations it often becomes embedded, not only in documents or repositories but also in organisational routines, processes, practices and norms"*.

There are many perspectives of knowledge exists in literature. Six major perspectives and their different approach vis a vis to IT / IS relationship has been described by Alavi and Liedner, (2001). These are data and information, state of mind, object, process, access to information and capability. Knowledge acquisition involves complex cognitive processes: perception, learning, communication, association and reasoning. Nonaka and Konno (1998), considers knowledge to be a dynamic human process of justifying personal belief toward the truth. According to Nonaka and Takeuchi (1995), knowledge creation is a spiraling process of interactions between explicit and tacit knowledge. The interactions between these kinds of knowledge lead to the creation of new knowledge. The SECI model proposed by Nonaka and Takeuchi (1995) combines the two categories (tacit and explicit) to make it possible to conceptualize its four conversion patterns, i.e. socialization, externalization, combination and internalization. IS research on knowledge process should not be limited to internal sources only, rather that any knowledge source, including vendors, suppliers, customers, public interest groups, government

agencies and others, that might be relevant to the business. This is further supported in the research that organizations can learn indirectly from the experience of other organizations (Agrote et al. 1990; Huber, 1991). Research on knowledge process is a product of many streams of research which includes: management of technology, the economics of innovation and information, resource-based view and organization learning. Organizational knowledge process is a part of the theory of the firm. There is no single theory of the firm but any theory which explains characteristics and behaviors of the firm in different real-world business scenario can be called a theory of the firm (Machlup, 1967). In this context, the knowledge management can be called as knowledge based theory of the firm which is well defined by Grant as 'knowledge-based view' due to the insufficient consensus to recognize it as a theory (Grant, 1996).

2.1. Knowledge Transfer

Knowledge transfer is defined as "the process through which one unit (e.g., group, department, or division) is affected by the experience of another" (Argote and Ingram, 2000, p 151). Knowledge transfer is becoming increasingly important in organizations (Argote and Ingram, 2000). The transfer of organizational knowledge, such as best practices, can be quite difficult to achieve. Increasingly decision-making and idea sharing are accomplished through computer networks (Strauss, 1996). Shared formal knowledge is a key to superior organizational performance, agility and success (Beckman, 1997). Empirical research indicates that organizations that can effectively transfer knowledge between and among units are more productive and more likely to survive than those that cannot transfer knowledge (Agrote et al. 1990; Baum and Ingram, 1998; Darr et al., 1995; Baum et al. 2000).

Knowledge transfer is more complex because knowledge resides in organizational members, tools, tasks, and their sub-networks (Argote and Ingram, 2000) and much knowledge in organizations is tacit or hard to articulate (Nonaka and Takeuchi, 1995). With the move of advanced economies and technology based organizations from a resource-based to a knowledge-based product and services, organizations have increasingly recognized 'knowledge' and 'innovation' as a significant driving forces of sustainable growth In this context the promotion of

'knowledge transfer' and ability to innovate has increasingly become a vital strategy for the firms.

Walsh and Ungson (1991) posited that there are five retention bins or repositories for knowledge in organizations: (a) individual members, (b) roles and organizational structures, (c) the organization's standard operating procedures and practices, (d) its culture, and (e) the physical structure of the workplace.

According to the framework of McGrath and Argote (2000), knowledge is embedded in the three basic elements of organizations—members, tools, and tasks—and the various sub-networks formed by combining or crossing the basic elements. Members are the human components of organizations. Tools, including both hardware and software, are the technological component. Tasks reflect the organization's goals, intentions, and purposes.

2.2 Knowledge Integration

Knowledge integration process is very important when we deal with acquiring external knowledge and to use this knowledge to enhance innovation and competitive advantage. In IS outsourcing, there are two processes of integrating knowledge (Conner and Prahalad 1996). In the first process, service consumer could transfer their application domain knowledge, business process knowledge, and user information knowledge to the service provider which should be reflected by the software application. The service provider also must have in depth knowledge about the service consumer's existing IS infrastructure including source and target applications of the software application which is to be developed and / or maintained. Once the service provider has adopted the necessary domain knowledge of the service consumer, s/he would be able to specify the major functional requirements and would be able to perform the design, coding, implementation and testing. In the second process, the service consumer could take over majority of the requirements specification. This form of knowledge integration also called as knowledge substitution (Conner and Prahalad 1996).

Any organization that dynamically deals with a changing environment ought not only to process information efficiently but also create information and knowledge. Analyzing the

organization in terms of its design and capability to process information imposed by the environment no doubt constitutes an important approach to interpreting certain aspects of organizational activities. However, it can be argued that the organization's interaction with its environment, together with the means by which it creates and distributes information and knowledge, are more important when it comes to building an active and dynamic understanding of the organization. For example, innovation, which is a key form of organizational knowledge creation, cannot be explained sufficiently in terms of information processing or problem solving (Nonaka 2002). Innovation can be better understood as a process in which the organization creates and defines problems and then actively develops new knowledge to solve them. Also, innovation produced by one part of the organization in turn creates a stream of related information and knowledge, which might then trigger changes in the organization's wider knowledge systems. Such a sequence of innovation suggests that the organization should be studied from the viewpoint of how it creates information and knowledge, rather than with regard to how it processes these entities (Nonaka 2002).

3. INNOVATION, DE-VERTICALIZATION, MODULARITY AND FLEXIBILITY

The new business practice is shifting away from the traditional, relatively well understood sphere of the industrial age, towards the direction of information age. Now in this new horizon of business practices, where the border of the firm is expanding and the nature of business practices is evolving rapidly, it is important to re-think about underlying theories, concepts, and assumptions that form the basis to understand and define 'a firm' (Bettis and Hitt, 1995). In fact, this storm which is forcing the contemporary firm to change and re-structure is at least partly triggered by the rapid advances in information technology.

Innovation is directly or indirectly linked to the knowledge transfer (Cohen and Levinthal, 1990; Kogut and Zander, 1992; Tsai and Ghoshal, 1998), modularity (Baldwin and Clark, 1997), and de-verticalization (Langlois and Robertson, 1992; Miozzo and Grimshaw, 2005). A firm is considered to be de-verticalized if it competes in multiple products (Pitts and Hopkins, 1982), multiple

markets (Gort, 1962), or multiple industries (Berry, 1975). De-verticalization is the process of separating services and functions from a vertically integrated business. Adopting this evolution of business practices is not a choice but a necessity in order to operate more efficiently and to achieve better results by relying on partners to perform certain functions, rather than by maintaining control of these processes themselves.

A de-verticalized firm becomes more flexible in decision making and it becomes easier for firms to decide which process to include in its business portfolio and which process can be done externally. It is not logical to rule out the possibilities of negative impacts due to de-verticalization, but there are means to suppress those negative impacts and in this context, retaining 'absorptive capacity' can neutralize those negative impacts (Cohen and Levinthal, 1990; Nooteboom, 2003). In this high velocity and hyper competitive business environment, business process should be planned in an evolvable manner, in order to react to the changing environment. De-verticalization, modularization and agility is not a choice but a necessary strategic tool for all the contemporary organizations. Research on product modularity has a long history (Woolsey, 1994; Cusumano, 1991; von Hippel, 1994; Langlois and Robertson, 1992; and Utterback, 1994) and recent research is also addressing the issue of modular organization structure (Lei et al., 1996, Sanchez, 1995; Sanchez and Mahoney, 1996). Modular organization is a new paradigm which is addressing the need for a flexible and learning organization that continuously changes and solves problems through interconnected coordinated self-organizing process (Daft and Lewin, 1993).

As we are moving away from industrial age and heading towards information age, now it is time to study the modularity in business process and in IT / IS architecture which remained under explored. The advantage of modularity is well described in the Herbert Simon's article on the architecture of complexity (Simon, 1962). Those components which must interact with each other in a complex manner should be isolated in a module, which can only interact with the rest of the system through an interface. Complexity is the enemy of reliability but this complexity can be managed through modular, flexible and agile design in systems sciences. Modularity can be achieved by a modular architecture design, creating a nearly

independent system of loosely coupled components. Modularity exponentially increases the number of possible configurations achievable from a given set of inputs, greatly increasing the flexibility of a system (Schilling, 2000). In systems engineering modularity in design is an approach that sub-divides a system into smaller parts (modules), which can be independently created and then used in different systems to drive multiple functionalities. Systems are supposed to have a high degree of modularity when their components can be disaggregated and recombined into new configurations, possibly substituting various new components into the new configuration with little loss of functionality (Langlois, 1992; Sanchez, 1995).

There are many definitions of modularity (Baldwin and Clark, 1997; Langlois and Robertson, 1995; Sanchez and Mahoney, 1996; Tiwana, 2008) but these definitions are partly relevant to the domain of IS research. In this research we are not willing to adventure in defining modularity. The main essence of modularity is flexibility, agility which we found in almost all the literature dealing with modularity. So, one of the focuses of this research will be to analyze the level of flexibility and agility in western firms. A Delphi study report organized by *Society for Information Management*, suggests that according to senior IT executives, development of a flexible and responsive IT infrastructure was the most important issue of IT management (Brancheau et al.1996). According to one of the report published in *Information Week* suggests that creating a strong and flexible IT infrastructure emerged as the number one priority among the 150 IT managers it surveyed (Information Week, January 11, 1999). One characteristic, IT infrastructure flexibility, has captured the attention of researchers and practitioners (Byrd and Turner, 2000).

In the research literature we found that knowledge transfer and innovation is well explained by the absorptive capacity theory. Although knowledge transfer, innovation, modularity and agility are directly related to each other (Baldwin and Clark, 1997; Cohen and Levinthal, 1990; Gulati et al. 2000; March and Simon, 1958; Ross and Beath, 2006; Tiwana, 2008; von Hippel, 1988) but no research yet explains the relationship between modularity and absorptive capacity (Fig. 1). This is the reason why we think that exploring modularity in the context of

absorptive capacity is not only a relevant task but it is very important and urgent task because modularity is being exercised in every aspect of new business environment including production, organization and information systems. This research will help to advance absorptive capacity theory a little further and it will also help to explain the relationship of modularity, innovation and knowledge transfer in the context of absorptive capacity.

4. THEORETICAL FRAMING

Western firms should pay attention to absorb technical knowledge of service provider in order to strengthen their own capability. Even if the service consumer, outsource all of its IS functions, it is necessary to keep a certain level of technical infrastructure and understanding on IS architectural knowledge. On the other hand service provider should also learn domain knowledge, functional knowledge and business process knowledge of the client. Acquiring and mastering this knowledge in mid-term will help to improve the success rate and will reduce the cost of any future outsourcing projects. Knowledge and the process of its transfer between two organizations are better explained by Grant, M. C. in his proposed '*Knowledge Based View*' (KBV) of the firm (1996). *Knowledge Based View* of the firm is a theoretical perspective originating from the *Resource Based View* of the firm (Grant 1996). RBV views the firm as a collection of productive resources (Penrose 1959; Wernerfelt 1984; Barney 1991). KBV considers knowledge as the critical input in production and as the primary source of value of the firm (Grant 1996). KBV has been widely acknowledged as a suitable theoretical background to study knowledge in organizations.

Figure 1. The missing link of the puzzle.
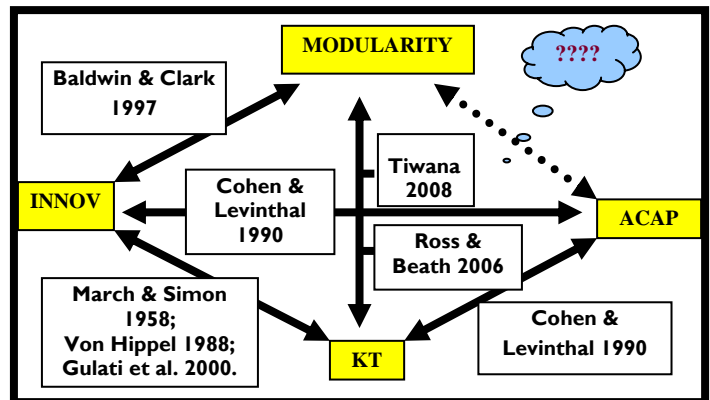
When we study knowledge and its transfer between two parties, it is obvious that one party disseminates its knowledge and the other absorbs it and vice-versa. In this situation, to facilitate an effective and efficient knowledge transfer process, both organizations need to have higher level of *'Absorptive Capacity.'* Because offshore outsourcing brings about the challenges of integrating technical knowledge, domain knowledge, functional knowledge and business process knowledge (Beath and Walker 1998; Tiwana 2003). The higher the level of *'Absorptive Capacity',* the lower the knowledge transfer cost in offshore outsourcing (Winkler et al. 2008).

At the organizational level, March and Simon (1958) suggested, most innovation result from borrowing rather than invention. With regard to external relationships, von Hippel (1988) has shown the importance for innovation of close relationships with buyers and suppliers. Research suggests that an important source for competitive advantage lies in organizations external relationships (Gulati et al. 2000) and outside sources of knowledge are often critical to the innovation process because a firm's *'Absorptive Capacity'* is critical to its innovative capacity, it is firm's ability to recognize the value of new, external knowledge, assimilate it, and apply it to commercial ends (Cohen and Levinthal, 1990). There are three distinct but complementary capabilities that compose a firm's absorptive capacity. These are acquisition, assimilation, and exploitation (Cohen and Levinthal 1990).

Acquisition refers to *a firm's capability to identify and acquire externally generated knowledge that is critical to its operations (Zahra and George, 2002).*

Assimilation *refers to the firm's routines and processes that allow it to analyze process, interpret, and understand the information obtained from external sources* (Zahra and George, 2002).

Exploitation *as an organizational capability is based on the routines that allow firms to refine, extend, and leverage existing competencies or to create new ones by incorporating acquired and transformed knowledge into its operations* (Zahra and George, 2002).

In the context of ACAP, acquisition construct is stressing the need of importing external knowledge to enhance internal capability. Prior research also indicates the importance of importing external knowledge (Mowery et al.1996; Kim 1998). Acquisition is very much similar to the first two constructs of NEBIC (Net-Enabled Business Innovation Cycle) theory (Wheeler, 2002). In NEBIC theory, Wheeler proposed four constructs. These are choosing the emerging technology (ET), matching it with economic opportunities (EO), executing business innovation for growth (BI), and finally, assessing customer value (CV). The first two constructs of NEBIC 'choosing' and 'matching' is similar to the first two construct of ACAP: 'acquisition' and 'assimilation'. *At the organization level, assimilation describes the organizational routines stretching from an initial awareness of an innovation to its possible formal adoption as a full-scale deployment in an organization* (Fichman, 1992, and 2000; Fichman, and Kemerer, 1999). The above mentioned quotes, which explains in details about *assimilation,* clarify it further that '*acquisition*' and '*assimilation'* can be considered as same as the first and second construct of NEBIC theory: choosing emerging technology and matching with economic opportunity.

Now the third construct of ACAP *exploitation* is very much similar to the last two constructs of NEBIC theory: business innovation for growth and customer value. Kim (1998) suggests that modified knowledge enhances the ability to solve problems. *Exploitation of* ACAP and business innovation for growth and business value of NEBIC is executing the acquired external knowledge (technical) and (created business) resources to achieve business innovation and growth. This business innovation and growth will enhance customer value or competitive advantage. "*Reviewing prior research, we observe that most empirical studies show significant relationships between 'Absorptive Capacity' and innovative output and other outcomes that pertain to creating a competitive advantage"* (Zahra and George, 2002). We can interpret from the above remarks that the outcome of '*Absorptive Capacity*' is innovation and competitive advantage. In the same way, the outcome of NEBIC theory is also innovation for growth and customer value. We posit that competitive advantage is a value, created for the customers.

Figure 2. A Model of Theoretical Framing.
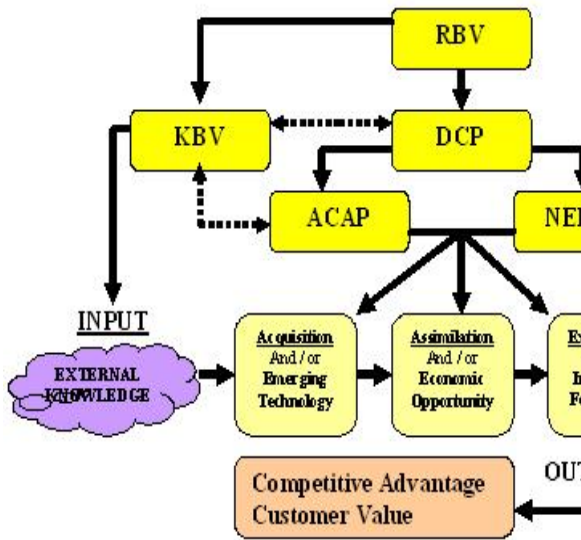
eventually enhance innovation and business value. We shall try to uncover the effective process of knowledge transfer, barriers in knowledge transfer, and benefits of knowledge transfer from both sides; i.e. service consumer and service provider.

This research can study the role of knowledge transfer on IS outsourcing agreements. Based on the five IS body of knowledge (BoK), this research can also focus on the knowledge transfer between two and/or multiple organizations. The first three BoK, *technology knowledge*, *application domain knowledge*, and *systems development process knowledge* is proposed by Freeman (1991). *Technology knowledge* refers to knowledge associated with understanding the types of hardware and software available and how and where they might be applied. *Application domain knowledge* refers to knowledge about the application domain for which an information system is built. *Systems development process knowledge* refers to the tools, techniques, methods, approaches and principles used in systems development. Jones and Walsham (1992) added a fourth: '*organizational knowledge*', which they see as distinct from application domain knowledge. Organizational knowledge is knowledge about the social and economic processes in the organizational contexts in which the IS is to be developed and used. A fifth category, '*IS application knowledge*', has been introduced by Iivari, J. et al. (2004). This is the knowledge about typical IT applications, their structure, functionality, behavior and use, in a given application domain. It includes the knowledge of possibilities to support activities in the intra- and inter-organizational context by IS applications in a specific application domain.

NEBIC is an applied dynamic capability theory which has application in dynamic industry context, such as in net-enabled businesses. The four constructs of NEBIC indicates that the outcome will be customer value which is the competitive advantage. "*We posit that potential capacity provides firms with the strategic flexibility and the degrees of freedom to adapt and evolve in high-velocity environments. By doing so, potential capacity allows firms to sustain a competitive advantage even in a dynamic industry context. These outcomes reflect a firm's realized capacity*" (Zahra and George, 2002). The above remark indicates that the outcome of '*Absorptive Capacity*' also the same as NEBIC.

The concept of creating, coding, storing, distributing, exchanging, integrating and using knowledge in organization is not new, but management practice is becoming increasingly more knowledge focused (Collison and Parcell, 2001). '*Absorptive Capacity*' is an extension of Dynamic Capabilities and RBV. NEBIC is also an extension of Dynamic Capabilities and RBV. Interestingly, KBV is also derived from RBV. All those theories discussed above, belongs to RBV family.

Figure 3. Conceptual model.

5. RESEARCH OBJECTIVE

This research can focus to investigate outsourcing relationship in the context of knowledge transfer, modularity and innovation. This research can further investigate if acquired knowledge from the external sources could
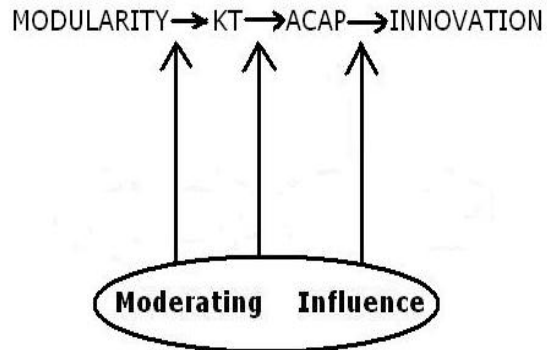
6.   RESEARCH METHODOLOGY

Qualitative methods are used to generate new theorems or improve existing ones. Quantitative methods used to measure and analyze causal relationships between variables within the framework of independent values. Mix method (Qualitative and Quantitative) seems to be the best available option for this kind of research in terms of validity. If we apply any one of these two methods then the obtained research result will be weaker and challengeable. In this research, these two distinct methods will be used as complementary to each other. Finally, mixed methods are united in their shared commitment to understand and improve the human condition, their common goal to disseminate knowledge for practical uses, and their mutual dedication to rigor, conscience, and the critical process of investigation (Reichardt, and Rallis, 2002). This research can be conducted in two phases. The first phase will be an exploratory and qualitative research. The second phase will be a confirmatory and quantitative research.

6.1.   Qualitative Method

Qualitative data are able to preserve chronological flow, show which events lead to which consequences and derive rich explanations (Miles, and Huberman, 1994). In the first phase, this research topic required contextually rich descriptions with emphasis on language rather than numbers, with a focus on social relationships rather than variables, the qualitative data collection technique was preferred (Maxwell, 1996). Exploratory interview is intended to expand the researcher's knowledge of areas about which little is known. The open-ended, semi-structured and exploratory interview format allows the researcher maximum flexibility in exploring any topic in depth and in covering new topics as they arise. Knowledgeable people from the domain such as CIO, Project Manager should be selected as key informant. There is a need to investigate at least 10 companies in Benelux of different sectors who are engaged in outsourcing contracts. Data should be collected through the interviews of executives from both organizations: service consumer and service provider.

6.2.   Quantitative Method

The quantitative method proposes to measure and analyze dependent and independent variables within a model. According to the positivism which supports empirical research since all phenomena can be reduced to empirical indicators that represent truth. This fact is due to the existence of one truth and is independent of human perception. Therefore, the investigator and the thing investigated are independent entities. Hence, quantitative research methods work with data in numerical form collected from a representative sample and analyzed usually through statistical methods. The ultimate objective is to identify the dependent and independent variables, eliminating inadequate variables, and in this way reduce the complexity of the problem so that the initial hypothesis can be confirmed or discarded. Data should be collected from the executives of service consumer and service provider through survey. This collected data should be matched by the previous qualitative data and finally after analyzing those data a conclusion can be derived.

7.   PHILOSOPHICAL ASSUMPTIONS

A researcher should make explicit both the ontological and epistemological assumptions before embarking on any research project (Antonio, 2009). In interpretive qualitative research, the ontological assumption is that social reality is locally and specifically constructed (Guba and Lincoln, 1994). So the ontological question should be related to the form and nature of the reality and what is there to study and to be known further through human actions and interactions (Orlikowski and Baroudi, 1991). Social reality is based on people's definition of it (Neuman, 1997). The epistemological question relates to the nature of the relationship between the knower and what can be known (Guba and Lincoln, 1994). This must be addressed in a consistent way with the ontological view. The interpretive researcher's epistemological assumption is that findings are literally created as the investigation proceeds (Guba and Lincoln, 1994). The interpretive epistemological assumption is further clarified as 'the understanding of social reality requires understanding of how practices and meanings are formed and informed by the language and tacit norms shared by humans working towards some shared goal' (Orlikowski and Baroudi, 1991). Interviewing one particular participant would give insights from that participant's perspective only,

which may be insufficient, or even misleading, because it will reflect only his/her personal and intimate experiences with the phenomenon.

7.1. Multiple Case Study Research

Case study research method is particularly well suited to IS research, since the object of this discipline is the study of information systems in organizations, and 'interest has shifted to organizational rather than technical issues' (Benbasat et al. 1987). Case study research is the most widely used qualitative research method in information systems research (Orlikowski and Baroudi, 1991; Myers, 1997), and is well suited to understanding the interactions between information technology related innovations and organizational contexts (Peta et al. 1998). Case study research is an appropriate research strategy where a contemporary phenomenon is to be studied in its natural context (Benbasat et al., 1987; Yin, 1994) and the focus is on understanding the dynamics present in single settings (Eisenhardt, 1989). Multiple case studies can strengthen research findings in the way that multiple experiments strengthen experimental research findings (Benbasat et al. 1987; Yin 1994).

8. RESEARCH QUESTIONS

Six research questions have been derived from above discussion on theoretical framing. The research questions used to guide this research will help to fulfill the research objective. A questionnaire of approximately thirty sub-questions should be prepared to facilitate semi-structured interview on the basis of seven under mentioned research questions.

(RQ1)
Why 'knowledge transfer' should be an objective at the start of the outsourcing agreement?

(RQ2)
How mechanisms were used to facilitate knowledge transfer?

(RQ3)
How knowledge transfer taken place?

(RQ4)
How modularity facilitate knowledge transfer process?

(RQ5)
Why it is important to modularize the system?

(RQ6)
How to transform systems architecture into modularization?

(RQ7)
How flexibility and agility can be achieved through modularized system?

8.1. The Unit of Analysis and Theoretical Sampling

The unit of analysis will be individual projects in multiple organizations

8.2. Sampling Procedure

Sampling procedure should be based on theoretical sampling. Selection of organization should be based on the ability of the organization to offer relevant and useful information required to conduct this research fruitfully.

8.3. Induction and Deduction
The difference between an inductive and a deductive method relates to 'pacing'; if the researcher looks at data first and then forms the hypotheses (inductive), or if the researcher forms the hypotheses first by conjecture and then seeks research data to verify the deduction (deductive). An inductive approach begins with experiences of each individual where the focus is on "full understanding of individual cases before those unique cases are combined or aggregated" (Patton, 1990). So the qualitative part of this research should be inductive and the quantitative part should be deductive.

8.4. Recording and Transcribing Interviews

All interviews will be recorded (with the permission of the interviewee) using digital technology. The recorded information then professionally transcribed and turned into analyzable text using Nvivo, ATLAS.ti or similar tool to code and analyze the data and to collect memos. For example, while proceeding through open coding of a particular interview for the first time, it would be wise to load the primary document onto Nvivo or ATLAS.ti and

simultaneously play the MP3 version of the interview on the computer. This will have two effects: first, it will improve recollection and mental activity (the interview will be recreated with sound, not just words), which increases the production of memos and second, it will also allow the correction of transcription errors.

9. CONTRIBUTION, CONCLUSION, AND FUTURE RESEARCH DIRECTION

In chapter 2 of this paper, we have discussed in details about knowledge transfer and its important components. In chapter 3, we have discussed about de-verticalization, modularity, flexibility and innovation. We succeeded to establish a clear link between knowledge transfer, innovation, modularity, and flexibility which are with in the premise of absorptive capacity theory research (Cohen and Levinthal, 1990). In our knowledge, this type research will be first of its kind to study knowledge transfer, modularity, flexibility, and innovation in an offshore outsourcing context.

The findings of this research will help to address the missing link on modularity and absorptive capacity. Modularity and its phenomenon are not well explained by any theory. As Schilling (2000) describes, *I do not claim, by any means, to provide a general modular systems theory in its final state…(p.313).* In this paper, we are suggesting to explore the possibility to study modularity using the lens of Absorptive Capacity theory. Through in-depth literature review, we were able to establish indirect link between modularity and Absorptive Capacity theory. The scope and boundary of Absorptive Capacity theory will be further expanded if direct link between modularity and Absorptive Capacity theory can be established in any future research. Research on Modularity in the domain of Information Systems is very contemporary. The widely used definition of modularity (Baldwin and Clark, 1997) is too general and probably more suitable in the domain of product modularity. Information systems research scholars should introduce a domain specific definition of modularity. We, in this paper, envisage exploring the possibility to study modularity using the lens of *Absorptive Capacity.* Probably the outcome could shed more lights on the scope and limitations of *Absorptive Capacity.* This research will further contribute in guiding the practitioners to get insight on the impacts of modularity on innovation.

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