

INNOVATION, LOGISTICS AND INTERNATIONALISATION: STRATEGIC PERSPECTIVE AND CULTURAL ASPECTS

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ABSTRACT

International integration and business networks have reshaped the world in a way that future business scenario is not completely foreseeable. Nevertheless effective and sustainable connection between globally located markets and sources will continually attribute strategic relevance to logistic systems. The present paper aims to address internationalisation, logistics and innovation considering a strategic perspective. It will approach logistic systems integration within current and forthcoming business scenarios. A descriptive model will be employed to support the holistic understanding of this socio-technical system. It will be argued that, in order to potentialise organisational learning and innovation, ever increasing levels of internationalisation within logistic systems and business networks should be aspired and supported.

RESUMO

A integração internacional e as redes de negócios têm remodelado o mundo de forma que cenários futuros não são completamente previsíveis. Não obstante, a conexão efetiva e sustentável entre mercados e fornecedores globalmente distribuídos continuará a creditar relevância estratégica aos sistemas logísticos. Esse artigo objetiva abordar internacionalização, logística e inovação sob uma perspectiva estratégica, bem como a integração dos sistemas logísticos em cenários atuais e futuros. Um modelo descritivo será utilizado para subsidiar a compreensão desses sistemas sócio-técnicos. Será defendido que, tendo como objetivo potencializar o aprendizado organizacional e a inovação, níveis crescentes de internacionalização nos sistemas logísticos e redes de negócios deveriam ser ambicionados e apoiados.

1. INTRODUCTION

The analysis of two fronts can help elucidating several decisions made in current global scenario: the quest for new and attractive markets and the search for high quality and low costs products and raw materials. Evolution in both fronts has boosted the globalisation of commerce and production, making material and information flows more dynamic – due to vibrant demand and supply – and structurally complex. Hence the effective and sustainable connection between markets and sources has attributed strategic relevance to logistic systems.

At the same time, continuous innovation trends – influencing both organisations' effectiveness and sustainability – have demanded fit, agile and responsive business systems. Nevertheless, in order to defend its competitive advantage organisations must have valuable, rare and imperfectly imitable or substitutable resources, competences and knowledge. Today's evolving marketplaces characterised by growing complexity and dynamic behaviour will favor organisations with suitable human capital.

The present paper aims to address internationalisation, logistics and innovation considering a strategic perspective. Through an exploratory approach logistic systems integration within current and forthcoming business scenarios will be addressed. A descriptive model will be employed to support the holistic understanding of this socio-technical system. Strategic

integration across diversified contexts, organisations and individuals along global supply chains might potentialise innovation and support positive effects on wealth creation and development. It will be argued that, in order to potentialise organisational learning and innovation, ever increasing levels of internationalisation within logistic systems and business networks should be aspired and supported.

2. INTERNATIONALISATION, FIT AND CONNECTION

International integration and business networks have reshaped the world in a way that future business scenario is not completely foreseeable. On this scene, due to the continuous identification and obtainment of new and attractive markets as well as high quality/low cost sources, current evolutionary routes lead to the development and further improvement of processes and networks designated to fit and connect demand and supply fronts.

The connective function has intensified strategic relevance of logistics. In a working definition, logistics comprises the strategic design of structures and policies as well as the decision making concerning material and information flows, aiming to support and enhance competitive advantage. It can be further argued that a supply chain is a network of organisations that are involved, through upstream and downstream linkages, in the diversified processes and activities that produce value in the form of products and services to the ultimate customer (Christopher, 1998).

Integration of demand and supply must be congruent with strategic choices that determine which activities and processes an organisation will perform and how they will be planned and coordinated. In fact, business strategy is about how to combine and fit activities and processes to obtain and sustain competitive advantage (Porter, 1996). Furthermore, competitive organisations have to be unique; and to generate and sustain uniqueness, their resources must be (Barney, 1991): (i) valuable, in the sense that it exploits opportunities and/or neutralises threats in firm's environment; (ii) rare among a firm's current and potential competitors; (iii) imperfectly imitable, either through unique historical conditions, causal ambiguity, or social complexity; and (iv) singular, without strategically equivalent substitutes.

The ability to innovate in the process as well as the product domain enhances a company's uniqueness. It is typically far easier for rivals to copy a product or service than to replicate the processes used to make or deliver it. Process innovation is becoming increasingly important. This is especially so in mature, commoditised, highly competitive industries, where the uniqueness of a company's processes can be a powerful differentiator from its rivals (EIU, 2007a).

Furthermore, the increasing development of information and communication technologies (ICT) is considered one of the main enablers of commercial and production activities internationalisation and, at the same time is reinforced by it. Regarding the implementation of supportive ICT is important to remark that: (i) strategic technologies should underpin (and be derived from) organisations' strategic objectives and (ii) successful information systems implementation normally requires major adaptations in how business operates internally and with external partners and stakeholders. Information systems can be supportive of change – extending and enhancing organisation strategic options, improving the quality of decision making and supporting innovation (Gunasekaran and Ngai, 2004). Nevertheless, people and firms' uniqueness (e.g. social and cognitive aspects) may represent barriers and need to be

better understood. Collaboration and the environment in which it takes place, both physical and virtual, is a key area where processes and systems meet head on with people with diversified background, education and experience (EU, 2006).

The advent and development of the new ICT have acted as inductor in the process of activity dispersion and hence made logistic flows more complex. The partnership between organisations that before was commanded basically by geographic proximity, today it is done through thematic networks, sometimes virtual, wherein the exchange of information and knowledge goes beyond the limitations of distances between them (Castells, 2002). They have provoked a revolution in planning/control forms, which brought about significant changes in organisational structures. This revolution has made possible for organisations to adopt integrated structures, such as the so called “network organisations” or complex arrangements of relationships among legally independent entities characterised by a collaborative and economically dependent behaviour.

The on-going removal of trade barriers and the quoted technological progresses in transportation as well as communication allowed many supply chains to expand out of their national borders, to exploit new markets and to locate business processes in different countries (Schary and Skjøtt-Larsen, 2001). Under such conditions, activities, processes and structures are interwoven worldwide, where they have to deal with multiple interrelations between actors situated in distinctive economic, political and social environments (Hülsmann et al., 2006). So, it can be argued that cultural, administrative (e.g. legal and regulatory issues), economical and technological scenario is more relevant in nation's trade integration than simply geographic distance (Ghemawat, 2001). The swift flow of information and materials has a vital function in these networks, impacting in the competitive insertion of countries.

Effective, sustainable and innovative processes connecting logistic partners within global supply chain have to take into account aspects like: long-term and systemic view, customer's complex and bounded behaviour, growing demands for service level (and expanded products), development of a suitable organisational structure, dependence on trustful partnership, suitable flow of information, and, finally, reliance on international cooperation and cross-cultural competences. Here, it will be argued that to achieve effectiveness is necessary to pursue efficacy – represented by a strategic approach, producing the right outputs in line with present and future market needs – and at the same time to quest efficiency – optimizing resources spent in achieving a desired effect. Furthermore sustainability concept embraces both: (i) keeping effectiveness along time and (ii) preserving (or even enhancing) economic, social and environmental resource base.

To align networks, culture and processes in support of a fast-moving organisation that can outperform its competitors, it is relevant to move beyond command-and-control paradigm towards a more organic approach – one that is holistic, omni-directional and interactive (EIU, 2007b). Business networks and logistic systems in an interwoven world characterised by cyclical opportunities and threats are distinctly challenging. The survivors will be the most innovative and adaptive, i.e. capable of identifying and absorbing useful knowledge and turning it into competitive advantage. This systemic concept will be circumscribed throughout the following argument.

3. SYSTEMIC PERSPECTIVE

Each organisation may be described as a three-fold system, derived and evolved from contextual, organisational and individual characteristics (Figure 1). Therefore, the integration of organisations in networks should properly assess and employ these attributes. Individuals working in organisations within diversified contexts influence and concomitantly are influenced by the existing context. It will be argued the existence of interlacement between individuals background and organisations performance. In many ways, the culture of an organisation is borrowed from and bound up with larger cultural processes associated with the organisation's environment. The most immediate source of outside influence on the organisational culture is the individuals (Hatch, 1997).

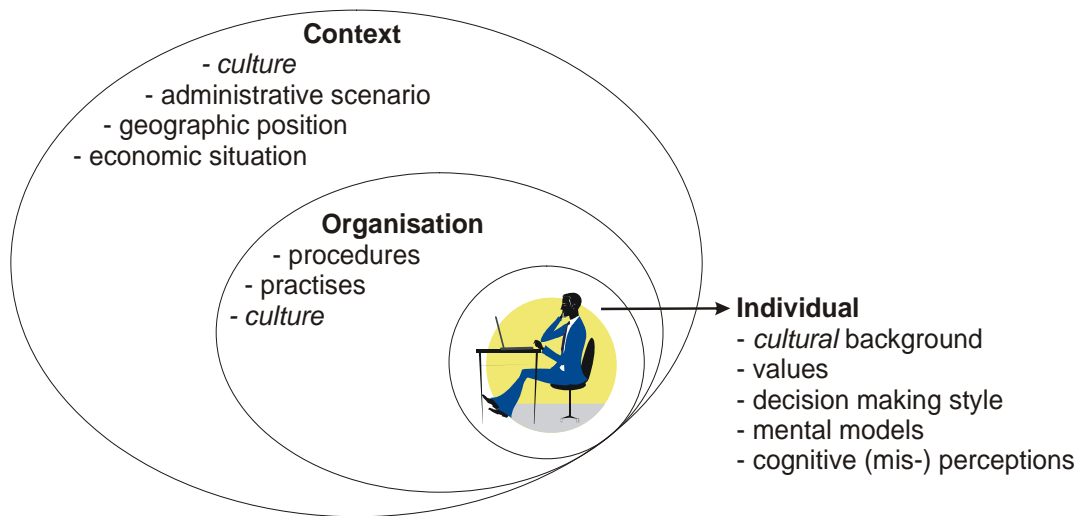


Figure 1: Systemic perspective

From this perspective, some preliminary conclusions are that: threats and opportunities might rise; information and material flow, knowledge management as well as inter-organisational learning processes might be affected (i.e. improved or impaired). Evolutionary, institutional and sociological perspectives converge in the view that individual and organisational behavior tends to be governed by engrained, taken-for-granted patterns – routines. Increasingly, economists studying institutions are coming around to the notion that institutions evolve (Nelson and Winter, 2002).

In fact, the strategic integration along global supply chains depends on trustful partnership, and is also closely dependent on international cooperation and cross-cultural competences. Dense, informal networks and strongly embedded gatekeepers increase the effective flow of information and recombinant potential of the organisation (Fleming, 2001). Moreover, the multiplicity of existing mental models, deeply ingrained assumptions, generalizations that influence how people take actions (Senge, 1990), is closely related to previous background and current environment.

Human capital is especially relevant considering the complex and dynamic environments in which logistic systems take place. People at various organisational levels, with diversified culture and background, are in charge of designing, planning and managing logistic activities and process, like: sourcing and procurement, inbound and outbound transportation management, fleet management, warehousing, materials handling, order fulfilment, logistics

network design, inventory management, supply/demand planning, as well as the management of third party logistics services providers. To learn how to obtain competitive advantage from quoted diversity might provide a differential skill. In a congruent view, intra-organisational learning has long been researched but much remains unknown about inter-organisational learning (Hülsmann *et al.*, 2005).

Furthermore, internationalisation creates a need to know how managers in different parts of the world make decisions and how differences in their socialisation as well as business environments may affect both their decision-making processes and the choice that they make (Martinsons and Davison, 2006). On this context, organisational learning and congruent knowledge management perspectives has become one of the strategic employments of information technology. However in today's competitive environments many companies still lack a suitable framework for effectively managing tacit and explicit knowledge life cycles (Gunasekaran and Ngai, 2004).

Knowledge can be understood as an assemblage's interpretation and only by associating information with meaning could it become useful to the organisation. Organisations need to develop cultures where their members are encouraged to share knowledge in order to gain a strategic advantage. Specifically regarding to logistic networks, competitive advantage and a long-term evolution could be created by developing knowledge that is embedded in the cooperation context and thus hard to imitate (Hülsmann *et al.*, 2005). Therefore, the impact of contextual and organisational culture (Gray and Densten, 2005) in knowledge management requires further research. The positioning of knowledge assets at the center stage in networks is aligned with strategic management literature, which claims knowledge as the primary resource.

Furthermore, competences may be derived from different kinds of knowledge within an organisation. Some competences appear to depend on know-how—practical, hands-on forms of knowledge gained through incremental improvements to products and processes. Other competences depend on know-why—theoretical forms of understanding that enable the creation of new kinds of products and processes. Further forms of competence seem to come from a firm's know-what—a strategic form of understanding about the value-creating purposes to which available know-how and know-why forms of knowledge may be applied (Sanchez, 2004).

The infrastructure for knowledge management has to integrate aspects of cooperation and competition with regard to the relationships of the corresponding enterprises. Moreover knowledge may also be used for establishing trust networks or new cooperation relations between enterprises (Langer *et al.*, 2006). Finally, it is important to note that knowledge management is restricted by various sociological and technological boundaries (Langer *et al.*, 2006). Especially, cultural learning barriers play an important role as diverse perceptions of reality are shaped by different organisational cultures and lead to diverse interpretations of knowledge (Hülsmann *et al.*, 2005).

On this scene, the systemic perspective is generally oriented toward the long-term view and that is why inter-relations (e.g. delays and feedbacks) loops are so important (Senge, 1990). On this background, systems thinking are iterative learning processes in which a reductionist, narrow, short-run, static view of the world is replaced with a holistic, broad, long-term,

dynamic view, reinventing our policies and institutions accordingly (Sterman, 2006). Systems thinking require us to examine issues from multiple perspectives, to expand the boundaries of our mental models, to consider the long-term consequences of our actions, including their environmental, cultural, and moral implications (Sterman, 2002).

So, the interaction of stakeholders through logistic systems (e.g. global supply chain) could be studied and improved with the application of a long-term learning strategy. Then, strategic integration and knowledge management practises across individuals and organisations might subsidise learning (Figure 2), in its most effective form, e.g. double-loop/long-term learning. Therefore it would be possible to approach, understand and support the enhancement of structures, decision rules and policies; affecting in a constructive form the decision making process *adaptiveness*.

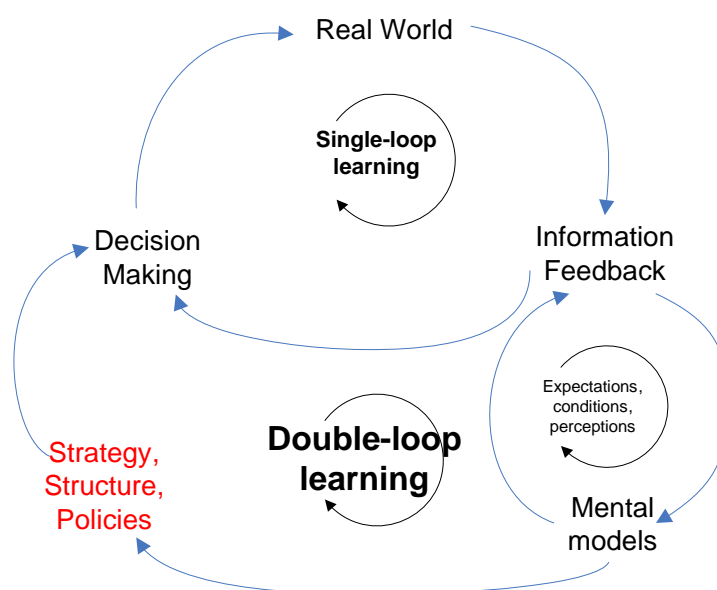


Figure 2: Double-loop learning process (adapted from Sterman 2006)

In fact, it is important to be capable of seeing the forest and the trees, of seeing information in terms of broad and detailed patterns. And only by seeing both can business respond powerfully to challenges in the field of complex systems (Senge, 1990).

Culture has influenced both the collective forest and the individual trees, and nevertheless is one of today's most important sources of diversity. In fact, management deals with a reality that is man-made, people build organisations according to their values, and societies are composed of institutions and organisations that reflect the dominant values within their culture (Hofstede, 1984). Culture is the collective programming of the mind which distinguishes the members of one group or society from those of another. It is also a system of values, beliefs, assumptions and norms, shared among a group of people (Hofstede, 1984). Culture as shared meaning, understanding, values, belief systems, or knowledge depends upon both community and diversity (Hatch, 1997).

Human nature is not uniform; it is moulded by history, geography, religion, climate, and tradition – influences that create culture. Peoples around the globe have different values, beliefs, and customs, behave differently and create societies with different institutional

systems (Samuelson, 2001). The more fundamental the grouping, the deeper the culture, the greater its influence on members' values and beliefs, and the less the members are aware of this influence (Di Stefano and Maznevski, 2003).

Culture, although basically resident in people's minds, becomes crystallized in the institutions and tangible products of a society, which reinforce the mental programmes in their turn (Hofstede, 1984). Management within a society is very much constrained by its cultural diversity and context, because it is not effective to coordinate the actions of people without understanding their values, beliefs, and expressions (Hofstede, 1984). The general point is not that some societies are completely impervious to commercial incentives or international influences such as trade, investment, and technology. It is that some cultures promote commerce and enterprise differently (Samuelson, 2001).

It has been empirically supported that the element of diversity is a decisive driver for innovation (Fleming, 2004). Therefore, it can be argued that suitable diversity and learning processes, notwithstanding several interpretations, are relevant sources of competitive advantage thereby enabling/potentialising innovativeness in current scenario. The organisation should exploit these variances with effective selection processes, strong socialization norms, deep experience, scientific knowledge and method. This search and select iterative process can also be applied to the creation of novelty in other contexts (Nelson and Winter, 1982), marketplaces and national scenes. Moreover socio-psychological research (Nemeth, 1986) demonstrated that exposure to a diversity of opinions encourages divergent thinking and generates more creative solutions.

Furthermore, innovation activity results from interactive relationships between institutional and organisational elements of science, technology and business, which together could be called systems of innovation (Sundbo 1998). Thus a networked view could represent current interconnected complex systems in a better way. Expected benefits derived from a networked view normally comprise: acquisition of institutional relevance, access to new/wider markets and knowledge, share of risks and resources, optimisation of complementary skills and capacities which would allow each entity to focus on its core competencies while keeping a high level of agility (Camarinha-Matos and Afsarmanesh, 2006).

In a congruent manner macro-logistic approach (Novaes and Frazzon, 2005) claim that research in the transport and logistic sector, being currently carried out in specific areas, on an independent basis, should integrate academy and actors/stakeholders across private and public sector. In fact, research efforts and infrastructure; workforce education and technical skills are the main direct drivers of innovation (EIU, 2007a).

Also relevant, and even more difficult to handle, the indirect drivers of innovation – the broad economic, social and political factors that facilitate (or hinder) innovation activity – can be summarised as follow (EIU, 2007a): political and macroeconomic stability, institutional framework, regulatory environment, tax regime, flexibility of the labour market, openness of national economy to foreign investment, ease of hiring foreign nationals, openness of national culture to foreign influence, access to investment finance, protection of intellectual property, and popular attitudes towards scientific advancements. Hence it will be argued that macro-logistics initiatives should comprise coordinated and networked collaboration between private and public actors and stakeholders, that properly seed, deal with and profit from diversity and

complementarity of resources, competences and knowledge.

On this context, absorptive capacity construct (Cohen and Levinthal, 1990) emphasises that successful knowledge identification and acquisition require the receiver to possess suitable knowledge base and skills to assimilate new information. Based on this foundation logistic system's potential absorptive capacity (Zahra and George, 2002) will argumentatively embody the proposed strategic perspective.

3. AWARENESS AND INTEGRATION

Logistic systems and business networks strategic integration in current fast-moving scenario as well as the diversity impact on competitive advantage will be circumscribed through a descriptive model. Potential absorptive capacity (Zahra and George, 2002) is increasingly relevant in dynamic marketplaces where abundance of information does not necessarily leads to strategic knowledge. In fact, the scenario in which logistic systems within global supply chains take place could be also characterised by the challenging international environment and the diversified national contexts.

Logistic system's potential absorptive capacity refers to the capability of recognising the value of new information, assimilate and integrate it in order to be applied to commercial ends. It is segmented in identification and obtainment (influenced by awareness), and integration (long-term learning). The integrative segment could be characterised by the aims of creating new competences and tacit/explicit knowledge, changing ingrained mental models and evolving strategic flexibility. In fact, the scenario in which logistic systems take place is characterised by challenging international environment and diversified national contexts. Individuals' background provides essential awareness to sense and deal with external circumstances and knowledge. The descriptive model (Figure 3) aspires to connect the constructive elements, enhancing the understanding of this socio-technical system.

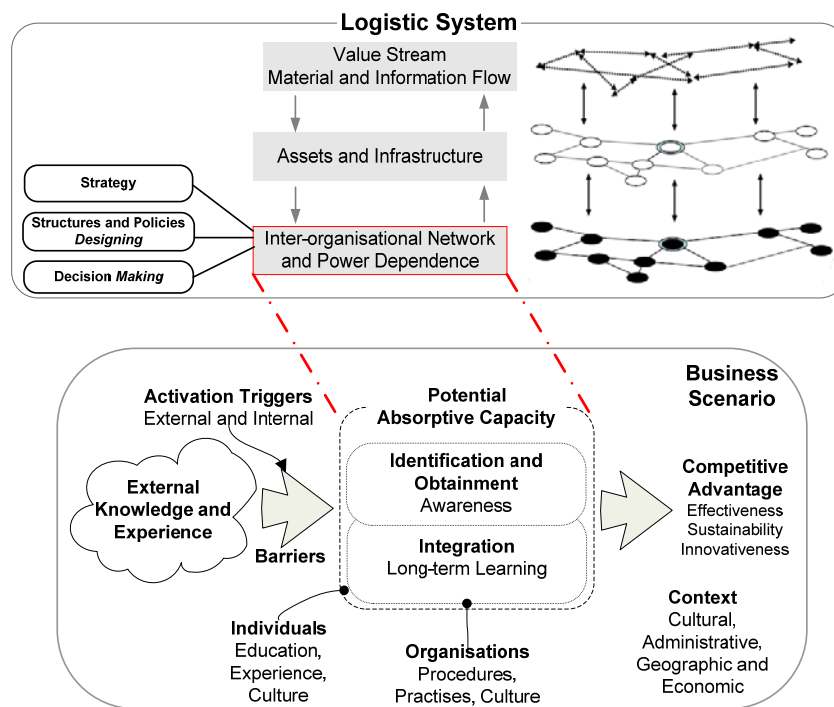


Figure 3: Descriptive model

Logistic systems (Peck, 2005) are composed by different levels and related universe of actions, i.e. decision making, structures and policies design as well as strategy. The way this structure influences systems' potential absorptive capacity would be one of the main questions to be eventually answered. Potential absorptive capacity (identification/obtainment and integration steps) is directed towards sustaining business forefront position. First of all, to introduce this analysis it is relevant to remark the existing trade off between overlap (to enable internal communication) and diversity (to potentialize the comprehension of outside information). Both characteristics of knowledge structures are beneficial and needed (Cohen and Levinthal 1990) in today's business scenario. So, the referred construct deals, directly or indirectly, with diversity and complementarity of knowledge and experience.

External knowledge comprises a broad range of elements, mainly external data, information, tacit and explicit knowledge as well as experience. Currently, it has on one hand gained amplitude and scale (abundance of information) but on the other hand has evolved in a structurally complex and dynamic fashion. Internal and external activation triggers are events that motivate and compel the system to respond. Moreover, individuals have central role in influencing knowledge search patterns and awareness, activation of triggers as well as the knowledge integration.

Logistic systems' strategy should envision and support (private and public sectors) implementation of suitable structures, policies and decision making processes. In fact, shared infrastructure and services, the conjoint impacts of material and information flows as well as inter-organisational networks and power dependencies justify the demand for a macro-logistic view, which can contemplate such effects in an integrated and systemic manner (Novaes and Frazzon, 2005).

Social and physical technologies coordinated under evolving – i.e. differentiation, selection and amplification process – business plans (Beinhocker, 2006) play a central role in today's economy. Innovation can be viewed as complex processes arising out of systemic interaction between actors and stakeholders involved in the production, diffusion and use of new and economically-useful knowledge (Nelson, 1993). This approach sees innovation as an iterative matching of technical possibilities to market opportunities via market and non-market interactions, feedbacks and learning processes throughout research and development (R&D), production and logistic networks; rather than as a one-way, linear flow from R&D to new products (Foxon *et al.*, 2005). In fact, path- and context-dependent innovation in current interwoven world impregnated with external knowledge, characterised by fast-evolving / cyclical opportunities and threats is distinctly challenging.

The application of knowledge in a novel way for economic benefit is becoming increasingly important for both private and public sectors. Innovation has a beneficial impact on both national economic growth and on corporate performance (EIU, 2007a). Furthermore, the return of investments on innovation is estimated to be higher in developing than in developed countries (EIU, 2007a). This fact reflects that domestic innovation activity in developing countries tends to facilitate the absorption of imported international technology. Thus they benefit from their internal innovativeness as well as the spillover effect of foreign innovations (EIU, 2007a).

Logistics is strategic within innovation and evolutionary economics due to its connective function that makes information and knowledge flow possible, supports collaboration and potentially feeds national and international cross-pollination. In fact, strategic integration across global marketplace comprising diversified contexts, organisations and individuals subsidises learning and thus potentialises innovation. Therefore it is argued that, in order to obtain these effects along global supply chains throughout global marketplace, internationalisation and congruent international diversity within logistic systems and business networks should be strategically aspired and supported.

4. CONCLUSION

This paper aimed to address internationalisation, logistics and innovation considering a strategic perspective. Manufacturing and logistics within global supply chains are facing new challenges and, to cope with them they have to consider influences coming from contextual aspects, organisations involved and individuals. It was argued that, taking into account current challenging scenario, in order to enhance wealth creation, internationalisation should be aspired and supported.

At the same time, to cope with evolving international challenges, organisations have to take into account effects derived from distant (culturally, administratively, economically and geographically speaking) contexts, involved partners and individuals (i.e. human capital). Cultural aspects are interlaced within these three perspectives. In fact, strategic integration across diversified contexts, organisations and individuals along global supply chains might also potentialise competitive advantage through both path- and context-dependent innovation.

On the theoretical side, system thinking is an iterative learning process in which a reductionist, narrow, short-run, static view of the world is replaced with a holistic, broad, long-term and dynamic view (Sterman 2006). On this basis, systems thinking can help understanding systems by revealing which underlying structures and policies exist, how complex problems are generated and which/how factors influence them over time (Senge 1990) and space. Nevertheless long-term learning process and resulting continuous adaptation within global marketplaces should take into account agents' role and background, historical aspects, the context in which they takes place as well as existing intra- and inter-organisational culture.

Prosperity in a complex world will come to life within interwoven organisation's networks that properly deal with diversity and complementarity of knowledge, resources and competences. Private sector is the ultimate engines of innovation, but there is much that public sector can do to kick-start the process. Nevertheless, it is public policy that determines much of the environment within which firms can be innovative (EIU, 2007a). Then, together with this suitable business context, internationalised logistic systems and business networks could better support wealth creation and consequent national development.

It is acknowledged the lack of empirical data due to the exploratory, systemic and strategic approach here undertaken. Nevertheless, this weakness could be overcome through future applied research. This research shall be carried out through investigative studies concerning to what extent logistic systems and business networks handle and support innovation and regional development.

The following potential business partners could be cited: (i) manufacturing – agents in supply and demand fronts acting within global scenario (international sourcing and/or distribution); (ii) service – logistic providers with international operations, partnerships or acquisitions; (iii) systems developers – business information systems with interface to international business applications; and (iv) agents and stakeholders (public and private sectors) within regional development frameworks engaged within strategic integration.

Finally, there is an extensive literature regarding evolving adaptive systems and diversity (e.g. cultural diversity), but an integrative (and interdisciplinary) model coping with logistics' peculiarities seems to be still missing. It is argued that further theoretic deepening on the proposed descriptive model would be feasible and the potential outcome promising.

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