



Environmental complexity related information for the assessment of country logistics environments: Implications for spatial transaction costs and foreign location attractiveness



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ABSTRACT

With on-going fragmentation and distribution of production and consumption across geographical space, information about national logistics systems is becoming increasingly important to decision makers in internationally operating firms and organisations. While continuing research on country logistics assessment generates some of this information, its relevance for the decision makers, and relationship to their unpredictability from foreign national logistics systems remains indefinite.

This paper identifies and categorises the relevant, available information on country logistics environments by using a content analysis approach. We demonstrate the immensity and nature of this information, are able to confirm the changing spatial transaction cost structures, and to reflect upon the overall conditions of information-related complexity and globalisation in the environment. Besides making a contribution to the further development of the spatial impedance factors and measures that form the basis for decision maker unpredictability, the paper offers an alternative approach for measuring the importance of transportation costs in industrial location, and offers a useful lens to distinguish between the emerging literatures on national logistics systems. Finally the paper also offers practical implications on location attractiveness for investment promotion agencies and other public sector agencies for business development and cluster growth.

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1. Introduction

Policy makers face the task of making their countries logistics friendly locations as part of the growing importance of attracting multinational corporations (MNCs) into their cities and regions. In this regard it is quite common to benchmark country logistics performance through reports like the “*State of Logistics Report*”, *Global Connectedness Index* (GCI) and *Logistics Performance Index* (LPI). However investment promotion agencies (IPAs) that assist in the task of investment attraction experience that business decision-makers do not find it enough to assess logistical capabilities with the time, cost, quality information like custom clearance times and infrastructure quality, contained in these reports. Amongst other things it is felt that the information is standardised (ECORYS, 2013), is insufficient for representing particular business needs (Köksalan et al., 2013; Kent, 2010), and thus constitutes incomplete assessments for decision makers. Indeed, in a United Nations policy brief Zanatta et al. (2006) highlight such informa-

tion asymmetry and the IPA investor-servicing role in this context in order to reduce the unpredictability from the country environment that is faced by decision makers (UNCTAD, 2013).

Research on country assessment with respect to logistics considerations has already shown that this unpredictability is related to geographic complexity (Hesse and Rodrigue, 2004; Kinra and Kotzab, 2008). Location assessment of country logistics environments is thus a decision process where MNCs assess and locate by maximising their risk-adjusted profits (Oum and Park, 2004), through information gathering and comparison of location attributes (Ekenstedt, 2004). With increased globalisation, this information availability and requirements on foreign locations will only become more pronounced, and culminate into higher spatial transaction costs and complexity (McCann, 2008). Firms and its decision makers will utilise non-standardised sources (Feenstra et al., 2002),¹ will display an overall preference for information of a ‘soft’, unquantifiable nature (Daft and Weick, 1984), and country

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¹ Feenstra et al. (2002) bring out the role of this information-related uncertainty in the context of outsourcing from China, where personalised sources play a role in dealing with this uncertainty e.g. through the creation of welfare gains.

assessments will also become complicated as a result. However, we are unable to conclude on this important information-driven complexity (McCann and Mudambi, 2004) because we are generally unaware about the information characteristics *i.e.* availability, relevance, nature and usage, of decision-makers in extant research. While some important work has been done on the assessment of country logistics environments, and the overall determinants of firm location (e.g. Oum and Park, 2004; Bowersox et al., 2003; Bookbinder and Tan, 2003; Memedovic et al., 2008; Hesse and Rodrigue, 2004; Rodrigue and Notteboom, 2010), we still require a better understanding about the relevant spatial impedance factors, and their information measures related to the complexity in foreign location assessment.

The purpose of this study is to identify, categorise and to bring out the heuristic nature of the relevant information related to the environmental complexity faced by decision makers from country logistics environments. The paper shows the magnitude of the relevant country-level information that is available to decision makers in the logistics industry, and mirrors its quantity, variety and qualitative nature as an indicator of the overall complexity of the environment. We show that this information is made available under the main spatial transaction cost categories, and can furthermore identify 187 different types of information measures falling under 17 decision factors that are not just relevant, but also important. The study performs a content analysis for the identification of the information measures and subsequently employs expert opinions for overcoming redundancy in the measures, and for content validation. The study has research implications for examining the role and importance of national transport and institutional costs-related information, and decision maker unpredictability, in the assessment of foreign locations. The study also has practical implications for IPAs and other special purpose public agencies for business development and cluster growth. The findings can be used to better understand the information requirements of decision-makers on national logistics systems, and for the design and implementation of place attractiveness² initiatives. The paper now starts with a discussion of the theory that leads into the description of our theoretical framework. Next, the methodology is discussed, followed by a presentation of our findings. Finally we conclude with a discussion of our main results, and the implications for research and practice.

2. Theory

Logistics management includes all activities in the planning, implementation and control of the forward and reverse flows and storage of goods, services and related information between the point of origin and the point of consumption (CSCMP: Council of Supply Chain Management Professionals). The aggregated costs associated with these activities are termed as logistics costs and though closely related, these are more than just transportation costs because logistics also includes warehousing, packaging & materials handling, and inventory control activities. These can be direct costs that are usually visible e.g. freight and other shipment related rates, or indirect in the sense of qualitative dimensions like speed, timeliness and quality that may have cost implications (McCann, 1998). Foreign countries affect these logistics costs by posing geographical complexity that arises in foreign expansion and the spatial fragmentation of supply chain activities (Hesse and Rodrigue, 2004; Kinra and Kotzab, 2008).

Country logistics assessments, which come about through the measurement of logistics attributes, may then be understood as a

repository of information on either direct or indirect spatial impedance cost estimates that form the basis for firm and decision-maker unpredictability. The logistics attributes, also interchangeably referred to as determinants or factors (Ekenstedt, 2004), are essentially the logistics-related location factors or determinants of FDI that ultimately determine the attractiveness and choice of the location. These determinants, factors or attributes, can be assessed using varied (information) measures (Hesse and Rodrigue, 2004), and affect different spatial transaction cost categories (McCann, 2008). However, there will be a proliferation of these information measures due to increased complexity in the current environment, which will worsen spatial unpredictability, and this aspect will significantly reflect in the importance of certain cost categories over others in the assessments (McCann, 2008). Moreover, given the complexity a majority of these information measures should also be of what Daft and Weick (1984) call a soft, qualitative nature. The following review will now seek to identify these important distinctions in the existing literature on country logistics assessment. We will try restricting the review to those studies that have adopted a comparative lens that considers the persisting geographical differences (see Rodrigue and Notteboom, 2010).

The literature on country logistics assessment aligns well with the different perspectives on location research in international economics, economic geography, and strategy and international business (see Beugelsdijk et al., 2010). Studies that adopt an international trade and economics orientation in the literature typically seek to bring out the role of logistics in national competitiveness and trade facilitation. Bowersox et al. (2003), and later Rodrigues et al. (2005), argue for the assessment of logistics expenditures across countries. However the approach relies on the importance of direct transportation and shipment-related costs, and arrives at a composite total logistics cost measure, which is then used to rank the countries. The problem with measuring these costs is that they are highly correlated with global economic cycles, represent debatable measurements of direct transport costs (McCann, 1998), and inventory carrying costs (Cooke, 2013), and are difficult to aggregate for numerous economies (Bowersox et al., 2003). Moreover, the traditionally important transport cost component has consistently been going down for businesses over the last 50 years (McCann, 2008; Hesse and Rodrigue, 2004). Direct transportation and shipment-related costs may therefore not be highly uncertain for companies in the current environment, and are best considered as an appendix to uncertainty from other types of spatial impedance factors (Ekenstedt, 2004). Bookbinder and Tan (2003) display a similar orientation when providing a comparative assessment of Asian and European logistics systems. Although their approach takes into consideration a broader set of measures (than just transport cost-related), it largely relies on rearranging existing archival data on location, and does not as yet confirm the relevance and importance of the adopted data for logistics.

Bagchi (2001) also shows a similar orientation on assessment wherein the country's logistics competence is assumed to aid in national development and trade facilitation. Although their study makes a stride by illustrating some spatial impedance cost categories, and some illustrative decision factors and information measures that are arbitrarily assigned weights, it yet remains at the level of a viewpoint. Memedovic et al. (2008) therefore argue for the empirical measurement of logistics performance across countries, based upon a mix of direct and induced cost measures that are more likely to capture the uncertainty of international locations for business decision makers. However, their approach presupposes that spatial unpredictability can wholly be captured by perceptions of international trade intermediaries, when in fact such an approach has often resulted in incomplete environmental assessments (e.g. Kleinfeld, 2010; Kent, 2010). Moreover, as Memedovic et al. (2008) acknowledge, the uncertainty regarding

² A recent study by Bagchi et al. (2014) has established the connection between location competences in supply chain factors and their attractiveness as FDI destinations, though this has been performed in the "supply" environment context, and not in logistics.

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