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Urbanness and Its Implications for Logistics Strategy: A Revised Perspective

William J. Rose
Iowa State University, wjrose@iastate.edu

Peter M. Ralston
Iowa State University, pralston@iastate.edu

Chad W. Autry
University of Tennessee

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Keywords

urban logistics, conceptual development, logistics strategy, urbanness

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Comments

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Abstract

Due to rapid urbanization, logistics providers are dealing with the conundrum of misaligned strategies for urban environments. Logistics providers often see the urbaneness of an activity region as a constraint, while at the same time urban actors view logistics activities within their immediate environment as disruption. These attitudes obscure the value that logistics can provide for urban areas. The current research synchronizes the notions of urban and logistics by reconceptualizing urbanness (i.e., an area's state of being urban) from the logistics service provider's perspective. Utilizing a conceptual abstraction technique, the concept of urbanness is revised and differentiated to redefine urban areas as value clusters looking to balance supply and demand globally while also providing access to service at the local urban level. Further, logistics service providers are seen as offering value to urban areas through network logistics and localized logistics. Identifying these differentiated value propositions suggest that transportation providers should respond to urbanness not as a constraint; but as a context where ambidextrous strategies provide the greatest return. Our conceptual revision of urbanness offers promising future avenues of research dealing with urban complexity and logistics providers value appropriation.

Introduction

Over the last two decades, scholars and practitioners alike have discussed our "urbanizing world" as though urbanization were a new thing (Brockerhoff 2000), but, with few exceptions, global urbanization has actually persisted since the first human settlements. People have gathered to form cities for thousands of years, for the purposes of seeking access to resources, social benefits, and security (Park and Peterson 2010). Though certain, strategic geographic spaces have been urbanizing for a while, the role of urban growth and development has drawn increasing attention from both logistics practitioners and researchers seeking the answers to business problems in recent years (Rose, Bell, Autry and Cherry 2017). Urban environments - primarily defined by population, physical land size, and population density (Brockerhoff 2000; Groves 2011) - are becoming more a more prevalent subject in logistics and supply chain management discourse recently due to the heightened growth of urban populations within existing cities, the recent formation of new cities where before none existed, the increase of shipment volume within developed or developing countries, and overall urbanization throughout the world (Cosgrove 2018; World Fact Book 2019).

Considering urban challenges for 2020 and beyond: perhaps none is more daunting for urban planners than logistics, and simultaneously, urban clusters present a paradox for many transportation providers - clusters are attractive to firms in that they often represent a large mass of customers, from shippers to end consumers, creating economies of scale, but at the same time, when the "urban" label is applied, it is often associated with costs and constraints to be minimized or avoided (Lagorio, Pinto and Golini 2016; Österle, Aditjandra, Vaghi, Grea and Zunder 2015). Additional complexity inheres as each urban market presents a unique setting with heightened, but variable, levels of congestion, physical space limitations, and restrictive routing and delivery

policies (Dablanc 2011). This incongruency is not easily overcome by transportation providers. While carriers generally pride themselves on their collaborative flexibility with customers (Crum 2015), most still often look for efficiencies above all else (Fawcett, Jin, Hofer, Waller and Brazhkin 2016), leading to a success trap where a current strategy (exploitation of operational efficiencies) takes precedence over potential opportunities to explore and adapt to new challenges (Chandrasekaran, Linderman and Schroeder 2012; Levinthal and March 1993). As a result, the association of urbanness with cost and necessary structural adjustment negate an area's potential value to the firm.

For firms willing to adapt logistical structures to urban markets, a vague definition of urbanness provides limited insight for strategy development and execution, further intensifying concerns about developing and sustaining operations in such areas. Researchers from numerous academic disciplines argue that common, measures-based definitions fail to encapsulate urbanness, calling for a more refined conceptualization (Bounoua, Nigro, Zhang, Thome and Lachir 2018; Gianotti, Getson, Hutyra and Kittredge 2016; Meerow, Newell and Stults 2016). The same challenges with urban's current definition and logistics applications have been highlighted in Rose et al. (2017).

In response, we examine the purpose and continued applicability of existing metrics, as related to logistics, to better understand what it means for an area to be "urban". Our study extends the literature by considering how a revised, economic-based conceptualization of urbanness, built on the ideas of demand/supply balance and timely accessibility, influences logistics theory and practice. A focus on the potential value of urbanness may better inform practitioners seeking expansion opportunities in growing markets and researchers studying the urban context. Finally, the research proposes a clear differentiation between exurban logistics strategy and scholarship,

which we label "network logistics", and that more closely associated with urbanness, or "localized logistics." In short, the purpose of this paper is to better conceptualize the relationship between the state of being urban – "urbanness" - and the logistics systems and structures required for organizations to succeed in such environments (c.f., MacInnis 2011).

We begin the remainder of the paper with a concise review of the conceptual development that underpins the modern conceptualization of urbanness. The next section discusses the relationship between urban, urbanness, and logistics, including the dual value of network and localized logistics. The following section offers a review of urban history which emphasizes the recent evolution of urban markets and the need for a revised value proposition to serve these markets. The next section integrates the theoretical perspectives of the Structure-Conduct-Performance (SCP) framework and organizational ambidexterity to explain how transportation providers can have a dual strategic focus when it comes to markets served and value delivery. The penultimate section addresses the paradox of urban logistics and why firms should distinguish between network and localized logistics strategy when serving urban markets. Finally, a section is dedicated to limitations of the current work and suggestions for a future research agenda centered on urbanness to further impact academic theory and business practice.

Conceptual Development

Conceptualization refers to "a process of abstract thinking involving the mental representation of an idea" (MacInnis 2011, p. 140). In response to previous calls for conceptual research in supply chain management to advance knowledge and proactively address real world challenges (Fawcett, Waller, Miller, Schwieterman, Hazen and Overstreet 2014), this work reconceptualizes the notion of "urbanness," as it pertains to logistics. Combining perspectives from

multiple disciplines and framing outcomes through relevant organizational theories, we examine mental representations of urbanness in logistics theory and practice. This effort leads to two separate epistemic goals: the revision and differentiation of an urbanness construct describing a geographic area, and a deeper understanding of its relationship with logistics strategy (MacInnis 2011).

First, we revise the urbanness construct within the logistical context. Revision involves examining an existing idea and providing an alternate representation (Mitchell and Clark 2019). Revision efforts may reveal or question existing assumptions and foundational premises or identify changes in firms or markets that the current conceptualization cannot accommodate (Chi 2008). Past revisions have enabled business researchers and practitioners to understand findings or activities related to logistics, marketing, and other interorganizational phenomena in new ways (Humphreys 2010; Maclnnis, Moorman and Jaworski 1991; Peter and Olson 1983). The growth of urban markets worldwide, in conjunction with changing customer demand patterns, supports a revised perspective of urbanness and logistics.

This revised perspective of urbanness in logistics accompanies additional revision of logistics strategy. Scholarly differentiation breaks an existing abstract concept into smaller components to provide deeper insight for researchers and practitioners (MacInnis 2011). Differentiating researchers attempt to clarify an existing concept by uncovering its underlying dimensions and facets (Gardner and Schoen 1962; Gerring 1999). Accordingly, differentiation increases clarity and reduces confusion, enabling more precise measurement, theorizing, and management around a concept (Skilton 2011). Previous calls for differentiation in urban research highlight the need for clearer differentiation across urban environments (Florida 2002; Glückler

2007; Harris 1943) and associated logistics strategies (Alho and Abreu e Silva 2015; Rose et al. 2017).

Conceptual development changes how actors perceive an idea. Currently, urban logistics presents a paradox, both for urban actors and logistics professionals. Both sides recognize the importance of the other, but often focus on the costs associated with their presence. Reconceptualizing urbanness and logistics diminishes the urban logistics paradox observed by actors on both sides of the discussion.

Literature Review

Urban stakeholders and logistics professionals each encounter the urban logistics paradox, in part because both view urban logistics as a necessary evil. Existing urban logistics literature commonly describes "urban" or "urbanness" as a constraint to be overcome (Lagorio et al. 2016). Practitioners and researchers primarily associate urban areas with complexity, traffic, restrictive regulation, and even public backlash against commercial activity, including logistics (Blaine 1967; Crainic, Ricciardi and Storchi 2009). Likewise, many urban stakeholders view logistics operations as a form of societal disruption (Anderson, Allen and Browne 2005; Dablanc and Ross 2012). Urban design, planning, and management strategies often exclude logistics considerations (Muñuzuri, Larrañeta, Onieva and Cortés 2005) and urban citizens tend to focus on the increased traffic, pollutant and noise emissions, and general inconvenience associated with logistics operations (Anderson et al. 2005; Lindholm and Blinge 2014).

In response to logistics-related disruptions, local communities regularly constrain the logistics system through restrictive regulations and added scrutiny and costs (Ballantyne, Lindholm and Whiteing 2013). Furthermore, logistics professionals respond to these constraints

by avoiding 'urban" areas whenever possible and minimizing contact with urban systems when such contact becomes necessary (Rose, Mollenkopf, Autry and Williams Forthcoming). As a result, urban logistics literature often presents the relationship between urbanness and logistics as one of conflict, with negative interactions existing between urban systems and logistics operations forcing the two apart. Traditional approaches to logistics, especially those employed by larger multimarket providers, fail to incorporate urban factors, intensifying the conflict between urbanness and logistics (Montoya-Torres, Muñoz-Villamizar and Vega-Mejía 2016). Further complicating this already complex relationship, firms serving urban customers become stakeholders themselves, viewing the conflict from both sides. Definitions applied to the concept of urban/urbanness highlight the logistics-as-disruption and urban-as-constraint perspectives. For example, Muñuzuri et al (2005) define urban logistics as "[t]hose movements of goods that are affected by particularities associated to urban traffic and morphology" (p. 15) while Gammelgaard (2015) takes the view that city [~ urban] logistics includes "[a]ll coordinated measures comprising logistic collection and delivery activities of logistic service providers in urban areas that aim at the reduction or prevention of commercial traffic and its negative external effects" (p. 334). Urban logistics, therefore, attempts to minimize costs incurred either by the urban community or the logistics system.

The cost emphasis in urban logistics research belies the decision of many service providers to build and maintain an urban presence. Urban logistics strategy development requires that strategies and solutions not only minimize costs, but also create value for urban stakeholders (Park and Peterson 2010), i.e., logistics customers (Langley and Holcomb 1992) and firms (Ketchen and Hult 2007). Thus, when deciding whether or not to serve a geographic region or a specific customer

base, logistics providers should ask two questions: How can the firm add value to the customer or area? And how can the firm extract value from the customer or area?

Revising Urbanness as a Value-Adding Concept

To contribute to an urban area, logistics service providers should look beyond the constraining factors typically associated with urbanness and instead expand upon the benefits such areas provide. For instance, the US Census Bureau (Groves 2011) designates an area as urban when it meets or exceeds certain population and population density thresholds. These thresholds serve to operationalize a notion of urbanness, but they offer transportation providers little indication on how to deliver value. First, an urban area requires a large population. The population metric denotes a society large enough to support itself (García, Garmestani and Karunanithi 2011). A minimum population threshold determines the critical mass necessary to provide for the local community and sufficient demand for suppliers to draw value from their resources, skills, and abilities. The balance of supply and demand within an urban area also necessitates connection between supply and demand sources. A population density threshold, therefore, denotes the proximity necessary to allow the population to connect with one another. To ensure self-sustainability, the community must remain close enough to enable material and energy flows throughout the entire region (Meerow et al. 2016).

Urban areas, therefore, create value for citizens through ensuring a large enough population to provide for the diverse needs of the community, including resources, safety, and governance (Park and Peterson 2010) and by maintaining a basis of accessibility between providers and beneficiaries. Population and density metrics highlight the importance of supply, demand, and local accessibility within an urban area. Stakeholders draw value from urban systems through the

locally accessible supply and demand sources. Logistics, then, contributes to the urban system by enhancing the existing value of urbanness.

Differentiating Logistics Service Value

To better balance supply and demand and improve local accessibility within the urban paradigm, logistics systems provide two types of value to urban areas. The first logistical value type is a "network value" endowed upon the urban area by logistics operators who are connecting urban areas with one another. Exchanges between urban areas, whether contiguous or not and enabled by logistics service providers, reduce supply and demand imbalances within each.

Specifically, logistics operators contribute network value to an urban area by facilitating exchange between it and other urban areas, aligning closely with traditional logistics research. Furthermore, from an urban perspective, logistics providers draw network value from large, concentrated supply and demand centers viewed as nodes in national and global networks. The US interstate highway system illustrates the network value drawn from urban areas by logistics providers. Interstate highways connect cities, allowing efficient access to urban markets and suppliers, but they also allow logistics providers to avoid the urban areas as necessary (Garrison 1960) by relying heavily on regional carriers or urban consolidation centers to complete deliveries while capitalizing on long-distance, full truckload shipments (Cherrett, Allen, McLeod, Maynard, Hickford and Browne 2012).

This localized service represents the second type of logistics value contribution to an urban area. As logistics needs within an urban area, and the systems that enable such logistics operations, differ from those at the network level (Caramia, Dell'Olmo, Gentili and Mirchandani 2007), logistics providers can contribute localized value by connecting supply- and demand-providing

entities within a single urban system. While network logistics value ensures an individual urban market supply and demand balance through the redistribution of goods between urban areas, localized logistics value improves accessibility, reducing the costs associated with connecting entities within the area (Morris, Dumble and Wigan 1979; Moya-Gómez and García-Palomares 2017). Localized logistics service allows urban stakeholders to avoid the costs associated with navigating the urban area to collect or deliver goods, either to end consumers at their homes (Crainic et al. 2009) or through operations connected to local retailers and producers (Gammelgaard 2015). Localized logistics providers become part of the urban infrastructure, enabling and improving interconnected material and energy flows within urban area (Meerow et al. 2016).

Localized logistics providers contribute value as part of the urban transportation system, but also draw value from the urban area as a stakeholder. Drivers in localized operations can get home daily, unlike many drivers in larger network operations (Stephenson and Fox 1996), and utilize local knowledge to improve logistics performance in spite of urban congestion and complexity (Rose et al. Forthcoming; Vieira, Fransoo and Carvalho 2015). Localized logistics services, therefore, allow firms to better respond to local demand and infrastructure fluctuations, providing a further competitive advantage over external actors seeking to apply network strategies to urban environments (Allen, Browne and Cherrett 2012). From this perspective, the constraints so often discussed in the urban logistics literature become a source of value for service providers that develop and execute localized logistics strategy.

In summary, by viewing urban logistics as a collaborative effort toward enhancing value for all involved instead of as a conflict among two necessary systems, urban logistics providers seeking to contribute at either the network or localized level can also extract value from urban

systems by virtue of their size and density. Interestingly, the symbiotic relationship between urban and logistics emerges throughout the history of both global urbanization and logistics operations and research.

The evolution of urban and logistics: A reemergence

The evolution of urbanness and logistics intertwine throughout much of history, with developments in one area positively influencing developments in the other. The urban logistics paradox, on the other hand, emerged relatively recently. Table 1 highlights the connection between urbanization and the logistics value, both network and localized, associated with each phase of urban development.

<<INSERT TABLE 1 HERE>>

When early societies came together in self-sufficient clusters, they were able to not only balance supply and demand but do so locally (García et al. 2011). These early settlements represent the first phase of urbanization (Kourtit, Nijkamp and Arribas 2012), when humans realized concentrated populations offered greater safety, resource access, and the opportunity to manage the community through local government (Park and Peterson 2010). From an economic standpoint, logistics activities in this phase connected farmers with the urban market (Kent and Flint 1997), allowing exurban actors to access a concentrated supply and demand center, the city, and reducing the investment required by citizens seeking necessary goods and services. This phase of urbanization allows for little to no distinction between localized and network value as local accessibility was ensured through the small geographic area necessary for populations that traveled

largely on foot or with carts. As a result, no distinction is made between local and network value in the earliest phases of urbanization and logistics strategy.

As urban populations and the number of settlements grew, different locations began to specialize at the urban level (Desrochers and Sautet 2008). To remain self-sufficient, these individual urban clusters had to connect to other urban areas with different specializations (Pitts 1978), resulting in the emergence of network logistics. Urban development during this period reflects the increasing relevance of network logistics, with major cities growing at network access points (Hesse 2013) such as river and sea ports (Pitts 1978), railroads (Atack, Bateman, Haines and Margo 2010), and canals (Turnbull 1987). Simultaneously, localized logistics services grew around connecting the urban population with the network access points while still enjoying the safety and resource benefits available in the urban area.

Throughout the first phase of urbanization, urban communities focused on self-sustenance, connecting with the network to balance internal supply and demand. The second phase of urbanization, coinciding with the Industrial Revolution, saw urban areas focus increasingly on production and network exchange (Kourtit et al. 2012). In this phase, cities became production hubs as well as population centers (Scott 2008). While network logistics operations required little change to accommodate increased production, network logistics value contribution increased dramatically as specialized and efficient production capacity exceeded local needs. At the same time, the Industrial Revolution also brought an urban population explosion, leading to geographic expansion of urban areas, but also saturated urban road networks and waste disposal systems unable to accommodate the increased population (Renaud 1987). As a result, localized logistics providers contributed value by decreasing accessibility costs and constraints within the urban area as connection to network access points became crucial for second phase cities.

The focus on network logistics over localized service continued well into the last century, exacerbated by a shift in urban geography and industry, following World War II. The war brought the United States out of the Great Depression and into an economic boom (Lacour and Puissant 2007) filling a global productivity void as Europe rebuilt. As a result, the U.S. became a consumer nation (Cohen 2004). In this phase, passenger transportation enabled access to urban areas, allowing urban stakeholders to avoid the negative impacts of urbanization while still enjoying the benefits. In this phase of "suburbanization" or "de-urbanization" people moved to suburbs where they could live in places that offered more space, cleaner air, and greater safety (Kasarda 1989; Lacour and Puissant 2007). As customers moved to the suburbs, heavy industry remained in many American urban centers (Whitehand 2001) and logistics providers had to serve both. During this time, network logistics operations and value changed little, but intra-urban networks became more complex, separating urban industrial centers and suburban residential areas.

This separation allowed carriers serving end consumers and retailers to avoid localized costs and constraints. Once again, the focus on network logistics emerged with the implementation of the US highway system, designed to connect cities to one another and allow passengers and freight transportation providers to avoid the city itself (Garrison 1960). As a result, distribution centers and intermodal locations moved away from city centers to the highways built around the cities, a phenomenon known as logistics sprawl (Dablanc and Ross 2012). Suburbanization and sprawl reduced the pressure on urban infrastructures, reducing negative interactions between overlapping urban sub-populations and enhanced local accessibility. As a result, localized logistics value, while still important, received less attention than network logistics value as networks grew nationally and internationally and urban areas experienced economic and population declines.

This further coincided with the growth of logistics as an academic discipline, as seen with the introduction of several academic logistics journals during this time (e.g. *Transportation Journal* in 1956, *International Journal of Physical Distribution & Logistics Management* in 1970, and *Journal of Business Logistics* in 1979). As a result, much of our academic understanding focuses on serving suburban consumers and connecting urban industrial hubs. Logistics as an academic discipline grew in the second wave of urbanization, after the urban exodus.

Following the residential exodus, the third phase of urbanization brought about industrial de-urbanization, with manufacturing operations moved from the urban core to less expensive rural locations (Neal 2011) or offshored to other countries (Ellram, Tate and Petersen 2013). During this phase, urban economies in developed countries began relying heavily on intangible resources, such as creative and financial services (Currid 2006). Furthermore, the rise of large-scale retailers, including Wal-Mart and Target, enhanced local access within the suburbs and urban periphery, leaving urban centers with small footprint, specialized retailers or no retail presence at all (Boyer, Prud'homme and Chung 2009; Neal 2006). Relocation of physical supply chains to less complex, under-capacitated areas further reduced the potential value contribution of localized logistics services at the same time that global commerce further enhanced the importance of network logistics value.

More recently, urban revitalization efforts have increased growth, especially in "sunshine cities", with fewer geographic boundaries and the ability to expand outward instead of upward (Storper and Manville 2006). Additionally, urban sprawl has encompassed large swaths of previously exurban land, increasing geographic area, but also population (Glaeser and Kahn 2004; Peiser 2001). Unfortunately, commercial urbanization has lagged behind residential urbanization,

resulting in consumers with purchasing power, but limited access to necessary resources (Boyer et al. 2009; Neal 2006).

With the re-urbanization trend, network logistics value remains relatively unchanged. Network logistics providers continue to utilize major highways, avoiding urban areas and serving populations through increasingly common consolidation centers (Anderson et al. 2005; Crainic et al. 2009; McDermott 1975). Localized logistics service providers, on the other hand, have enjoyed a resurgence. The rise of e-commerce and residential urbanization, without corresponding action from retailers, has created a certain "market sprawl", with smaller, more frequent deliveries increasing in both urban and suburban regions (Nemoto, Visser and Yoshimoto 2001). Increasing population and activity, accompanied by greater demand for speed, quality, and environmentally sustainable operations, have added difficulty to localized logistics service, but also increased the competitive advantage for successful localized logistics providers, enhancing opportunities for localized logistics value extraction.

Recent urbanization trends emphasize the reemergence of localized logistics value, but also give rise to the urban logistics paradox as logistics service providers attempt to expand network logistics strategies into urban settings. Alternatively, firms exploring urban opportunities can overcome the paradox by considering the two types of value and the influence of urbanness on each. A clear distinction between the network and localized value may reduce the undervaluation of urban opportunities and underscore the potential structural adaptations necessary in urban markets (Kortmann, Gelhard, Zimmermann and Piller 2014). Understanding urbanness from an economic value perspective shifts the question of urban expansion to whether or not firms can add and extract localized value based on the degree and type of urbanness displayed in a potential market.

Theoretical Foundation

The reemergence of urban logistics and the emergence of the associated paradox is a recent, but significant phenomenon. The proposed conceptualization of logistics value provides a new perspective for logistics service providers seeking to capitalize on new opportunities. The influence of logistics activities on both the balance of supply/demand (network value) and immediate access (localized value) incorporate the co-evolution of urbanness and logistics that existed prior to the urban exodus and the emergence of the urban logistics paradox. Therefore, we turn to theory to guide strategy development with a focus on value provision at both the network and localized level.

One theoretical perspective, the structure-conduct-performance framework (SCP) incorporates industry structure, including common logistics strategies, and market influences such as urbanness (Closs and Bolumole 2015; Porter 2008; Porter 1979). Transportation providers offer a similar mix of goods (eg. transportation, warehousing, expediting) homogenizing the logistics industry. On the other hand, firm specific responses to industry structure and service delivery represent efforts at practical differentiation (Bolumole, Closs and Rodammer 2015; Grawe, Chen and Daugherty 2009).

SCP, originally developed in industrial economics, argues that firms that assimilate industry factors into strategy achieve greater performance (Bain 1956; Mason 1939). Structure traditionally refers to firm strategy and industry composition, indicated by competitor and sales concentration, scale economies, and mobility entry/exit barriers (Lenz 1980; McGee and Thomas 1986). However, organizations that consider, and adapt to, their environments also enjoy differential performance gains (Chatain 2011; McKone-Sweet and Lee 2009). Similarly, firms gain

competitive advantage through understanding and responding to the supply chain by considering internal and external environmental factors (Bowersox and Daugherty 1995) and strategically integrating with supply chain partners (Ralston, Blackhurst, Cantor and Crum 2015). Supply chain and external environmental factors extend the hyper-focused industry specific origins of SCP (Hitt, Xu and Carnes 2016), enabling a holistic view of the business ecosystem (Teece 2007) and allowing firms to adapt strategies to structures influenced by more than a single competitive industry (Bamiatzi, Bozos, Cavusgil and Hult 2016; Han, Corsi and Grimm 2008; Reger, Duhaime and Stimpert 1992). These considerations allow firms to alter firm conduct. Essentially, structure influences firm operations and processes which can lead to firm performance.

Transportation providers facilitate supply chain connections and interact with forces and entities beyond the supply chain, necessitating a holistic view of the business ecosystem. Furthermore, logistics providers that serve urban areas encounter even greater challenges due to system complexity and forced interaction with a variety of stakeholders (McPhee, Paunonen, Ramji and Bookbinder 2015; Rose et al. 2017). Variations across urban areas in geography, infrastructure, regulation, and stakeholders preclude a one-size-fits-all approach to urban logistics (Rose et al. Forthcoming). Further supporting the inclusion of urbanness in the SCP framework, Porter (1995; 1997) discussed the integration of municipal environments, specifically urban inner-cities, as key facets in understanding possible firm performance in heterogeneous areas. Therefore, urban logistics service providers that respond to urbanness at the individual market level and consider its potential value to the firm enhance the likelihood of sustained success. As a result, urban logistics strategy development requires an understanding of the value available to customers, the firm, and other stakeholders in a specific urban market.

Strategic ambidexterity

As providers encounter multiple environments, a second theoretical foundation, organizational ambidexterity, further guides urban logistics development. Organizational ambidexterity refers to a firm's ability not only to meet current business demands but to simultaneously adapt to changing business environments (Duncan 1976; Gibson and Birkinshaw 2004). Ambidextrous organizations exploit firm competencies through economies of scale or efficient processes while also exploring new opportunities for innovation and additional revenue sources (March 1991; Yalcin, Chakravorty and Yun 2019). This duality would allow transportation providers the opportunity to develop strategy to account for both "traditional" and urban markets.

Firms seeking organizational ambidexterity reconcile internal tensions and conflicting demands in their task environments, developing capabilities that enable simultaneous exploration and exploitation (Raisch, Birkinshaw, Probst and Tushman 2009; Teece 2007). Firms providing functional, commodity-like goods or services, however, gain little from investing in new capabilities within their existing industry or environment. Organizations in these industries capitalize instead on structural ambidexterity (O'Reilly and Tushman 2013; O'Reilly and Tushman 2008), creating multiple structural units with a single, overarching strategic focus but designed to compete in distinct industries or environments. Structural ambidexterity enables autonomous, but integrated, approaches to leverage assets in separate competitive settings and achieve both firm and structural unit objectives (O'Reilly and Tushman 2013; Voss and Voss 2013).

SCP and organizational ambidexterity provide a framework to guide firms as they incorporate urbanness into logistics strategy. These foundations allow transportation providers to account for and operate within markets that utilize network logistics as well as localized logistics.

Figure 1 illustrates these complementary pursuits and the influence of both SCP and organizational ambidexterity.

<<INSERT FIGURE 1 HERE>>

Combining theoretical foundations in logistics research adds value by addressing growing supply chain challenges in specific contexts and environments (Stank, Pellathy, In, Mollenkopf and Bell 2017). Examining the influence of urbanness on logistics strategy through SCP and structural ambidexterity provides a guide for logistics decision-making.

Differentiating Urbanness and Differentiating Logistics

With urbanness traditionally defined through population, land size, and the resultant population density; one quickly realizes that these factors offer limited insight for logistics strategy and operations (Rose, Mollenkopf, Autry and Bell 2016). Instead, company perceptions should focus on factors of urbanness that directly impact logistics services (Griffis, Cooper, Goldsby and Closs 2004).

To better understand transportation provider perceptions of urban environments, representatives from eight regional and national TL or LTL companies were interviewed. These interviews reveal a tendency to focus on urban constraints as opposed to value-added opportunities. One transportation provider noted, "Urban areas are large metropolitan markets that typically are difficult to serve in some way through congestion, restricted routing, operating policies, or different asset needs." Additionally, several interviewees said they were urban agnostic and would consider serving any potential market. One transportation provider noted "We follow

the money", while another stated, "We go to work for our customers no matter the location". Though providers offered little insight on the benefits of urbanness, the urban-as-constraint perspective again emerged as practitioners also often identified urban areas to avoid. In many cases, the primary driver of avoidance would be congestion, improper current asset mix, or transportation restrictions thought too stringent to overcome. This conflict, being willing to consider all urban markets, but also knowing that certain areas were "too urban" indicates current strategies may limit opportunity to provide localized urban logistics value.

While transportation providers want to be responsive, competencies of delivery firms may not align with increased urbanness. As such, firms may need to develop complimentary firm strategies that maximize urban opportunities in network **and** localized logistics. A dual focus can expand service thresholds and increase marginal economic opportunity. While urbanness of particular markets may be too unique for a singularly focused firm, ambidexterity allows transportation providers to analyze challenges from multiple perspectives. Strategic ambidexterity provides a possible differential advantage in the homogenized space of logistics transportation and delivery. Firms that provide both network and localized logistics will have an idiosyncratic ability to deliver value beyond providers focused on only one service type. We highlight this value through operational conduct resultant from firm strategy.

Guided by organizational ambidexterity, urbanness thresholds inform firms seeking to pursue localized, network, or combination strategies. These thresholds help firms to assess whether or not to offer service in a given area and which type, or types, of service to offer. Figure 2 highlights the relationship between urban market factors and the network and localized thresholds associated with urban logistics strategy.

<<INSERT FIGURE 2 HERE>>

Traditional urban considerations from the network logistics perspective sometimes lead firms to make a round peg fit a square hole. Operational conduct is manipulated to limit functional inefficiencies. In "network logistics", the ambidextrous corollary would be exploitation. Firms work to decrease variance, standardize processes, and maximize operational efficiencies (Smith and Tushman 2005). Urbanness and its resulting inefficiencies therefore create a barrier to entry for firms seeking to apply network strategies at the localized level. In effect a ceiling threshold is met for the "network" strategy in many urban markets that cannot be overcome or is a point at which value delivered and associated costs exceed value derived.

However, areas beyond the network threshold may still provide opportunities for value extraction. The challenge for firms becomes more quickly adapting to forces within an industry and environment than traditional strategies may allow. Operational efficiency, the hallmark of the network logistics model, is only one means to achieving competitive success in the transportation industry. Complimentary strategies allow for alternative solutions to challenging problems (Ralston, LeMay and Opengart 2017). The ambidextrous compliment would be exploration. Exploration seeks new possibilities to create opportunities not currently considered within a company's strategic frame (Smith and Tushman 2005). Generating additional avenues for a firm to pursue is important in order for an organization to achieve firm objectives while also effectively meeting customer needs. Seeing structure differently is critical especially in an industry such as transportation where offerings are similar. Service continues to be the distinguishing feature of logistics providers; however, context is fully considered in order to appropriately influence conduct (Pellathy, In, Mollenkopf and Stank 2018).

Value delivery and extraction is necessary when providing for profit services. The current understanding of urbanness in logistics service delivery often results in missed or intentionally avoided opportunities. As urban environments and logistics operations evolve beyond 2020, such opportunities will become increasingly common. National and regional transportation providers may not be able to fully adapt existing strategy to new opportunities in urban markets. However, urbanization trends appear to be evolutionary, not temporary. As such, firms that respond to the challenges of today and tomorrow by adapting strategy gain additional opportunities to fully capture value. The current work suggests firms develop organizational ambidexterity and utilize the SCP framework as they tackle transportation challenges for 2020 and beyond.

Implications and Conclusion

Theoretical Contributions

Our study contributes to the growing dialogue related to the performance of logistics within the urban environment. The primary contribution comes from our revision of the urban concept. Our core thesis shifts urban from a label applied to different operationalizations (population, land use, density) of an area to a more precisely specified construct comprised of demand/supply balance and immediate accessibility dimensions. At the same time, the revised construct allows for utilization of traditional urban metrics that yield dimensionality beyond a simple "urban or not" calculus based on a population statistic. Thus, our revised urban concept allows for subsequent revision of the relationship between the notions of "urban" and "logistics."

From the logistics perspective, urban areas are often viewed as places where constraints confound efficient and effective operations, while from the urban ecology perspective, logistics operations are frequently thought of as disruptions to regular patterns of living and working.

Accordingly, our revision of the urban concept provides an opportunity to shift perspectives on this relationship toward a mutual realization of value-add for both sides. Logistics activities add value to urban areas by improving demand/supply balance in connecting the urban area to others in the network, which we call network value. Additionally, logistics can improve immediate accessibility within the urban area by connecting urban entities with one another locally. Finally, serving urban areas enables value-extraction for logistics service providers. The critical mass of demand and supply entities within an urban area provides economies of scale and simplifies the logistics network by enabling the establishment of large scale, concentrated demand and supply centers. For logistics providers working within the urban area, the value-extraction arises from the immediate accessibility of resources, space, and labor along with the dense concentration of demand and supply within the area itself.

Given the multiple dimensions of value add and extraction enabled by our reconceptualization, we further contribute by differentiating within logistics constructs. Logistics service providers offer network value, localized value, or both. A firm that provides one type of value may have difficulty adding or shifting to an operation that provides the other. This is a critical shortcoming of many transportation firms. Fully describing the distinction between network and localized logistics allows practitioners and scholars to move beyond basic competitive principles (i.e., different logistics capabilities are needed in urban areas; or operational processes change between urban markets). These ideas may have merit, but defining urban through demand/supply balance as well as access provides reasons why logistics solutions have to be different in urban areas versus non-urban areas. As a result, we add clarity to the core concept of logistics by differentiating meaningfully between exurban (network) logistics and urban (localized) logistics practices.

Finally, while myriad publications have identified characteristics that allow us to differentiate across urban areas, including in the logistics context, our discussion of network and localized value supports existing calls for additional differentiation of urban environments (Álvarez, Prieto and Zofío 2014). Further, by providing a more generalizable urban concept, this differentiation becomes even more important for logistics theory and practice. Urbanness in general associates with a need for localized logistics, but variation between urban areas requires further differentiation across specific localized logistics strategies (Rose et al., 2017). The utilization of the SCP framework as well as strategic ambidexterity provide the foundation for explaining why and how logistics providers should distinguish between urban and non-urban areas and allow for the contextualization of each market served. This contextualization helps influence, but does not solely determine, firm strategy, or, through strategic ambidexterity, strategies affecting firm conduct. The resultant conduct as an outcome of dual strategies, can account for network versus localized differences thereby fundamentally, positively altering firm operations. These differences in conduct can contribute opportunity to firms providing performance wins not possible if distinctions between network and localized logistics did not exist.

Managerial Implications

Revising the urban concept to reflect the economic factors associated with large, dense populations, instead of defining the concept by the measures themselves, allows logistics providers to better understand the demand for service from an urban area. Urban centers need to balance supply and demand. They have a large enough community to do so, but specialization and variation within the community may require connection with a wider network. Urban areas also provide

value to their citizens by making provisions immediately accessible. Logistics service providers can therefore decrease the time and costs necessary for urban residents to get what they need. The revised urban concept further influences a revision of the relationship between urban and logistics. Planners and managers can minimize costs and constraints by avoiding an area. Urban actors can minimize disruption by protesting or regulating it out of existence. By shifting the focus to value sharing, logistics service providers can better evaluate opportunities in urban areas.

Differentiating between the two types of value provided by logistics, network and localized, further influences management decisions. In determining whether or not to serve an urban area or following a customer into an urban area, managers should determine what type of value they plan to add. For traditional network providers, following a customer to a new urban center may require an addition of a node to a network. This might include adding vehicles to the fleet or even leasing or buying warehouse space. Beyond that, little strategic or structural shift is necessary. For a network value provider, adding a node to the network does not require a change in conduct at all. The major shift happens with the addition of localized service to a network provider. When a traditionally network provider attempts to integrate localized service, this may necessitate structural ambidexterity. Existing structure and conduct may not result in performance gains when shifting to a localized strategy. Therefore, firms require multiple structures, for example adding more of the same type vehicle to a fleet (network) versus leasing a new type of fleet like straight trucks (localized). In this case, these dual structures still work toward the same objective (adding value).

Finally, differentiating between urban areas adds a further element of complexity to the structural ambidexterity discussion. Firms providing localized service in one area may require a completely different structure when adding localized service in another. Therefore, managers

seeking to add localized services to their portfolio should examine each urban opportunity separately and determine whether or not existing structures and conduct will enable sustained performance. If not, changes in structure are required.

Limitations and Future Research

The first limitation of our study is its purely conceptual design, without empirical data. A lack of empirical data is acceptable during paradigmatic shifts (Fawcett et al. 2014) and the revision and differentiation efforts rely heavily on previous empirical research to better conceptualize an existing idea (MacInnis 2011). Additionally, qualitative interviews were held with transportation providers to gauge their thoughts on the current role of urban within their companies' strategies. Future research, however, should quantitatively test the proposed conceptualizations of urban, logistics, and the relationship between the two.

Additionally, the urban conceptualization is built from the logistics perspective. The urban concept is represented across a wide array of disciplines and, while balancing demand and supply and ensuring immediate access may align well with academic efforts grounded in economics or engineering, the same may not hold with other disciplines. Therefore, this isomorphic conceptualization should be seen as a first step toward a more generalizable conceptualization of urban as a foundation for further theory development (Rousseau 2015).

Furthermore, the research relies heavily on organizational theories, SCP and organizational ambidexterity, to guide conceptual development. Urban researchers have relied on several theories, including systems theory, stakeholder theory, graph theory, and others. The current theories in the study apply well due to homogenous act of goods delivery across transportation

providers. However, examining the current conceptualization through alternate theoretical lenses may provide insight for further revision or conceptualization.

Finally, while the paper focuses on developing urban and logistics generally, we provide little detail on how to measure demand/supply balance, immediate accessibility, network and localized value, or the factors used to differentiate between logistics structures and urban environments. Future research should explore measures beyond population, land use, and population density to more clearly integrate urban factors into their work.

The differentiation between network and localized service and related structure opens several avenues for future research. Table 2 presents many such potential research opportunities for further clarifying the urban concept and integrating urbanness into research and strategy. For example, both McPhee et al. (2015) and Rose et al. (Forthcoming) discuss a vehicle routing method utilized in large cities but largely unexplored in the academic literature. This research not only illustrates potential advances in transportation and vehicle routing, but also highlights the importance of strategic ambidexterity with an urban specific method tailored to a specific environment.

<<INSERT TABLE 2 HERE>>

First, while traditional logistics strategy has focused heavily on network service provision, a growing body of urban logistics research also presents recommendations for localized structures and services. Research examining the similarities and differences between the two would offer insight for managers seeking structural ambidexterity and implementing network, localized, and hybrid structures. These findings could detail the complementarity of a strategic ambidexterity

approach to urbanness as well as identify the value provided to customers when firms account for network and localized logistics.

Another research avenue stemming from the distinction between network and localized logistics, and their potential combination, is understanding the financial capital requirements associated with urbanness. Localized logistics costs most certainly differ from network logistics, and transportation providers seeking to provide both service types will most certainly incur costs to augment their asset mix and meet separate value provision objectives. However, value extraction differs between network and localized logistics, potentially enhancing opportunities to save cost and increase revenue. In light of these differences, researchers should assess the funding sources transportation providers can and should secure as they pursue localized, network, or hybrid logistics structures.

Additionally, firms that differentiate between localized and network funding also distinguish between localized and network resources. While logistics service providers at any level require human resources, urbanness influences the abundance of skills, abilities, and qualifications available in a localized logistics workforce. And, acquiring the right employees for localized, network, or hybrid logistics service requires a more nuanced/non-generic employee search and training process. Future research should, therefore, investigate the similarities and differences between network and localized logistics employees, their desirable traits, and training management practices.

The influence of urbanness on employee differentiation is most visible when comparing network and localized drivers and the equipment they operate. For example, while motorized transportation provides access to cities across national and even international networks, alternative modes of transportation such as light electric vehicles, cargo tricycles, and even drones may

provide greater access with less impact on urban traffic congestion, parking, and pollutant emissions. Studies comparing the reduced speed or carrying capacity of such alternative transportation modes with the access and environmental benefits may provide deeper insight for practitioners and researchers alike as well as further differentiating between network and localized strategies.

As urbanness alters financial, labor, and equipment considerations, physical structures must foster a connection between network and localized logistics. Previous literature has discussed the operational benefits of certain transition points, specifically urban consolidation centers (Muñuzuri et al., 2005; Allen, Browne, Woodburn, and Leonardi, 2012). Unfortunately, little discussion centers on the strategic importance of integrating this transition into network design strategies. In response, future research should examine the structures implemented to transition from network to localized logistics, including utilizing space in existing facilities, adding standalone consolidation and distribution centers, and even incorporating the customer into the logistics system with pick-up points such as parcel lockers. Understanding where network and localized logistics systems connect and even overlap will aid logistics service providers in determining the boundaries of their own operations.

To distinguish between network and localized logistics, this research proposes an economic conceptualization of urbanness, informed by common indicators including population, land use, and population density. At the same time, urban cultural and structural changes increase the distance between residential areas and economic centers within urban areas, limiting the usefulness of population-based measures to distinguish between localized and network structures and strategies. Therefore, future research should explore alternate indicators of urbanness and their applicability in building and executing network, localized, and hybrid logistics strategies. By

tailoring the conceptualization and measurement of urbanness to a logistics perspective, researchers can better justify the importance of urban logistics as a specialized area for research and inform practitioners seeking to improve or expand their own operations.

Conclusion

A wide body of academic work views urban through a set of metrics but revising the urban concept to more accurately portray what is measured instead of the measures themselves further influences revision of logistics research and practice and its relationship with urban areas. Several firms provide examples of structural ambidexterity built around network and localized service. For example, JB Hunt providers "Final Mile Service" to several urban locations in the US, Dollar General has unveiled its DGX as a separate entity to serve urban populations, and even UPS and Fedex differentiate between network and localized operations with local services integrating drones and bicycles that would provide little value from a network perspective.

Urban logistics is not a paradox or a necessary evil. Instead, urbanization represents a valuable opportunity for logistics professionals that view urbanness as a reflection of difference instead of difficulty. The coming years promise to bring about major changes in urban areas and associated logistics requirements. Urban areas in transition will likely continue to reshape localized services and influence network logistics providers through 2020 and beyond.

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TABLES AND FIGURES

Table 1. The Parallel Evolution of Urbanness and Logistics

Phase	Urban Development	Network Logistics Value	Localized Logistics Value
Early Urban Centers	First permanent human settlements emerged with a primary focus on meeting community needs.	Contribution: Minimal; self-contained, self-sustaining urban centers required minimal logistics networks. Extraction: Self-contained, self-sustaining urban centers required little network logistics.	Contribution: Connecting outlying areas such as farms to the urban center and connecting various sub-areas to one another Extraction: Permanent settlements offered improved infrastructure and concentrated supply and demand centers, enabling greater efficiency for both suppliers and customers
Urban Networks	Commerce between urban settlements allowed specialization at the urban level. Cities connected to a network beyond their own urban center and peripheral regions	Contribution: Connect cities throughout the network (port to port) balance supply and demand and ensure local access. Extraction: Demand for goods, resources, and customers beyond local markets has led to the rise of network logistics providers (merchants, ships, etc.).	Contribution: Perpetuate farm-to-market connection as well as connecting internal locations to each other and network access points (ports). Extraction: Provide logistics service while enjoying the relative safety, community, and resource density benefits of the urban area.
Industrial Revolution	Urban areas became production centers. Population explosion as rural dwellers moved to cities for increased opportunities.	Contribution: Continue to connect cities throughout the network (port to port) balancing supply and demand and ensuring local access.	Contribution: Connected internal locations to network access points (ports). Connected various districts (manufacturing, marketplace, etc.) to one another.

		Extraction: Gained a competitive advantage through connectivity and enjoyed greater economies of scale with increased production.	Extraction: Urban sprawl increased local accessibility costs, creating more opportunities for localized logistics value extraction.
Urban Expansion	Suburbanization occurs as the US becomes a consumer nation. Highway systems built to allow network providers to easily connect cities while avoiding urbanness.	Contribution: Urban expansion allows for network logistics operations between suburbs as well as the city network. International commercial growth requires further network logistics. Extraction: Urban expansion creates multiple network points within individual urban areas while allowing avoidance of localized logistics requirements.	Contribution: Decrease in contribution with de-urbanization and introduction of the highway system. Extraction: Fewer opportunities for growth and value extraction.
Revitalization/Market Sprawl Localized Service competition	Urban revitalization	Contribution: Fewer opportunities as urbanness is viewed as a constraint. Extraction: E-commerce opens new markets for local residents, requiring increased network movement	Contribution: Market sprawl within urban areas creates a greater need for localized services. Extraction: Greater demand for localized services from local consumers as well as large firms seeking to serve urban markets.

Table 2: Network and localized logistics future research – potential areas for extension

Main Area	Logistics research topics	Possible extensions	Methodologies	Existing Literature
Measurement	Establish and measure urbanness as a logistics related concept	Explore potential indicators of urbanness and their association with logistics strategy and operations	Econometric modeling, Geographic Information Systems (GIS) analysis, Simulation	Taniguchi and van der Heijden, 2000; Ambrosini and Routhier, 2004; Russo and Comi, 2011; Morana and Gonzalez-Feliu 2015
	Explore the impact of urbanness on logistics performance and objectives	Investigate performance measures utilized in localized logistics service	Case studies, Surveys	
	Integrate multiple stakeholder perspectives into logistics strategy and performance measurement	Examine how various stakeholder groups define demand/supply balance and immediate accessibility	Surveys	
Finance	Identify the financial requirements of network and localized logistics related to transportation servicing	Examine the cost and accounting structure required to support localized logistics and compare this with network logistics financial management	Case studies, Secondary data	Hill and Birkinshaw, 2012; Carnovale, Rogers, and Yeniyurt, 2019; Rose et al. Forthcoming
	Examine capital funding sources in network and localized logistics	Explore financial avenues available for localized logistics initiatives (i.e. municipal grants, public-private partnerships, etc.) and compare them with funding available in network logistics	Archival data, Case studies, Surveys	
	Determine financial implications of real estate needs and property lease/own composition to support network and localized logistics	Identify expenses associated with various approaches to urbanness in specific locales through matching real estate/operational facility needs with site/building availability and costs	Econometric modeling, Optimization, Simulation	

Resource Management	Evaluate the role of urbanness in driver training and management	Examine driver hiring, retention, and training practices to distinguish between characteristics sought after in localized versus network logistics drivers	Case studies, Survey methods	Browne, Allen, and Attlassy, 2007; Abreu e Silva and Alho, 2017; Wensing, Sternbeck, and Kuhn, 2018
	Examine the automobile equipment requirements associated with urbanness and localized logistics operations	Identify equipment appropriate for localized logistics service and compare this with that used in network logistics	Field experiments, Case studies, Simulation	
	Evaluate facility needs associated with a network and localized logistics operational approach	Compare operational needs associated with network and localized logistics including dock doors versus parcel loading zones and shipping unit mix (i.e. pallets vs. parcels).	Case studies, Optimization, Simulation	
	Evaluate the influence of urbanness on safety.	Identify the safety policies associated with localized logistics and individual compliance with such policies. Further, identify the costs associated with compliance/non-compliance with safety regulations and policies.	Field experiments, Econometric analysis	
Transportation	Evaluate the impact of urbanness on vehicle routing methods and outcomes	Integrate the values associated with urbanness, demand/supply balance and immediate accessibility, into existing vehicle routing models	Econometric analysis, Simulation modeling	Muñuzuri et al., 2005; Savelsbergh and van Woensel, 2016; Muñuzuri, Cuberos, Abaurrea, and Escudero, 2017; Rose et al. Forthcoming
	Integrate strategic ambidexterity into vehicle routing decisions	Develop multi-tiered vehicle routing methods that include both network and localized logistics operations	Econometric analysis	
	Address the importance of parking in determining immediate access within an urban area	Examine the availability and utilization of parking, loading, and unloading areas relative to customer locations and its impact on localized logistics performance	GIS Analysis, Simulation modeling	
	Examine the influence of localized logistics on the urban environment	Evaluate the impact of urban traffic, parking, and complexity on pollutant and noise emissions and identify alternative	GIS Analysis, Simulation modeling	

		strategies and equipment that may decrease such negative impacts.		
Network Design	Evaluate the interface between network and localized logistics services	Identify connection points where logistics systems shift from network to localized operations and the impact of these interfaces on overall logistics performance	Archival data, GIS analysis	Marcucci and Danielis,, 2008; Rose, Bell, Autry, and Cherry 2017; Björklund and Johansson, 2018
	Identify and assess various network, localized, and hybrid logistics strategies	Compare combinations of pure network and pure localized logistics service providers with firms that utilize an ambidextrous strategy	Case studies, Archival data	
	Examine the role of the customer in localized logistics strategies	Investigate innovations that enhance the role of customers as a part of the distribution system, such as parcel lockers or pick-up points	GIS analysis, Scenario-based experiments, Surveys	
	Examine the influence of urbanness on localized logistics network design	Identify factors associated with urbanness that impact localized network design, including real estate prices, tax structures, zoning regulations, and neighborhood selection	Archival data, GIS analysis, Surveys	
Strategic Orientation	Evaluate the influence of strategic ambidexterity on fleet management decisions with a focus on expansion into urban environments	Compare various fleet mixes, including vehicle types and ownership (owned, dedicated, crowdsourced) across network and localized logistics operations.	Case studies, Simulation	Ketchen and Hult, 2007; Raisch et al., 2009; Yalcin, Chakravorty, and Yun, 2019
	Address the influence of urbanization and de-urbanization trends on strategic exploration activities	Examine changes in urbanness indicators over time and compare those with firm decisions on entering or sustaining localized logistics operations in specific areas	Case studies, Econometric models, GIS analysis	
	Examine the role strategic ambidexterity plays in providing customer value	Identify new customers served or the improvement of service to existing customers as a result of strategic ambidexterity	Case studies, Surveys	

Figure 1: Revising Urbanness and Differentiating Logistics Strategy

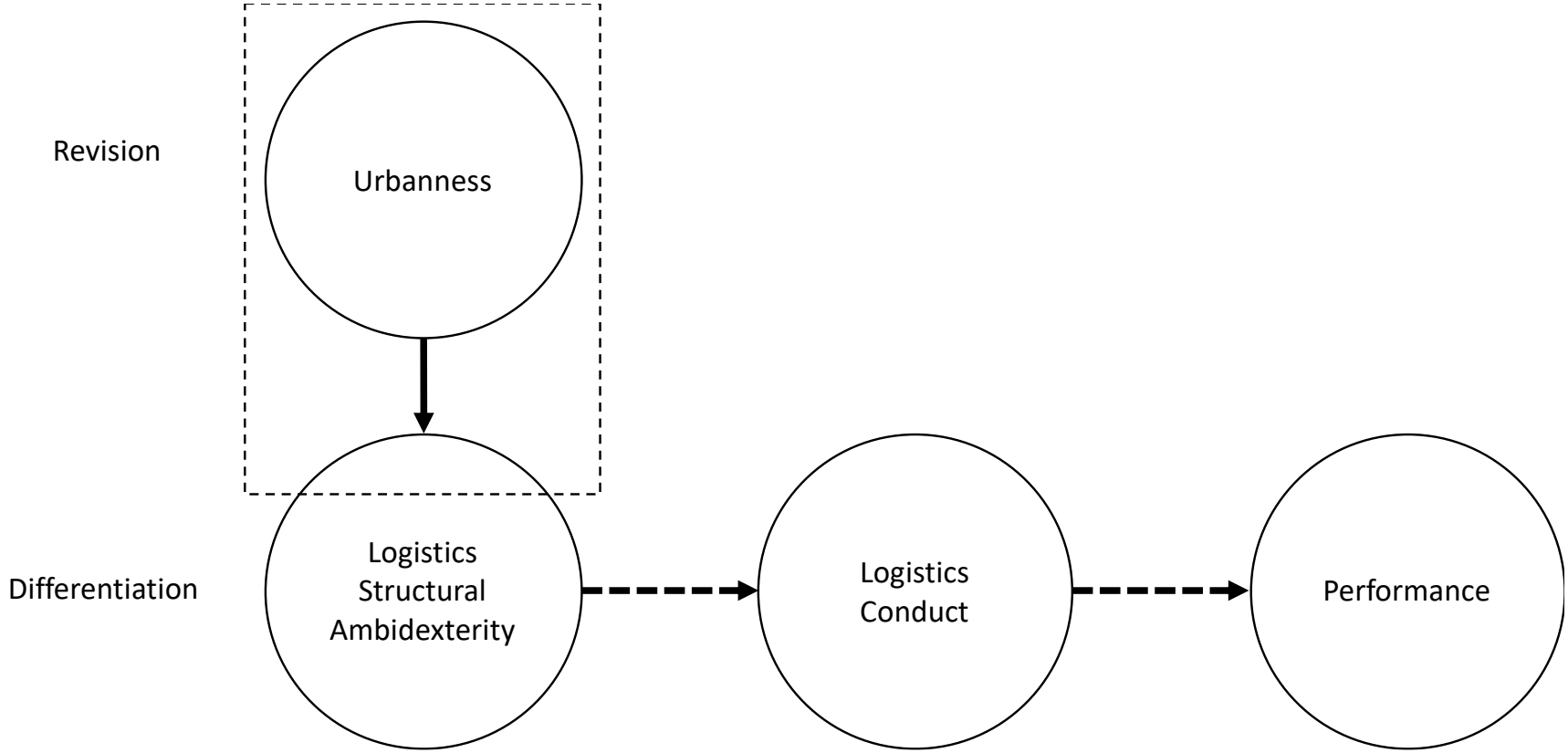

Figure 2: Dual Strategy Implementation Thresholds