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Civic entrepreneurial ecosystems: Smart city emergence in Kansas City

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Abstract Embedded between the broader fields of social and digital entrepreneurship, the concept of 'smart cities' can be conceptualized as a domain that is currently pre-paradigmatic—that is, one in which multiple yet unaligned models exist, marked by the absence of a single dominant one. Despite such shortcomings, there is a reflective similarity across ecosystems as the various players attempt to converge on a common understanding of the term smart city. The common objective of smart city implementation is to spark economic growth and social development, facilitated by collaborative dialogue and innovations in technology. We integrate theoretical lenses to explore the roles played by ecosystem actors, stakeholders, and socioeconomic and political agents in creating economic value and solving societal problems—particularly highlighting opportunities and challenges to bottom-up innovation from local entrepreneurs.

1. Introduction to smart cities

Starting with Google's deployment of its first gigabit fiber-to-the-home (FTTH) network, Kansas City serendipitously benefited from a sequence of strategic undertakings that propelled it into a partnership with Cisco's Smart+Connected Communities Framework on its way to making it North America's largest *smart city*. This emerging concept, which promises to address growing economic, social, and ecological concerns resulting from global urbanization, lacks a clear definition and framework. The Institute of Electrical and Electronics Engineers (IEEE) views a smart city as one encompassing technology, government, and society, while the Smart City Council defines it as one that has digital technology embedded across all city functions (Seta, Sen, Biswas, & Khare, 2015). Deakin and Al Waer (2011) adopt a technology-centric view of a smart city as an application of information and communications technology (ICT) in communities and governments to transform life and working environments in a region. On the other hand, the Centre of Regional Science (2007) takes a holistic and integrated view of the smart city: it is the implementation of ICT with active participation of citizens to achieve

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regional competitive advantage. For our study, we adopt the definition of smart city as a conceptual urban development model that underscores the utilization of human, social, and technological capital for the development of regions (Angelidou, 2014).

Owing to rapid urbanization, smart cities seem to be the way that cities will be organized in the next decade; they resemble a social movement that involves the government, citizens, businesses, and entrepreneurs. The areas of entrepreneurship within the smart city concept are largely unexplored in the academic literature. Scholars may opine that smart city research is a new fad, but we feel that it has legs and deserves exploration. Hence, we attempt to focus on entrepreneurship related to smart city initiatives in Kansas City and investigate the roles of different players as they seek to resolve the problems of urban service delivery, with added focus on opportunities and barriers for local entrepreneurs.

2. Genesis of the smart city with a special focus on Kansas City

Cities account for only 1% of the world's total land mass, yet half of the world's population lives in cities. In fact, two-thirds of Americans live in metropolitan areas that cover only 12% of the country's land mass, yet produce around 75% of its GDP (Katz & Bradley, 2013). This highlights the role of cities in development, growth, and degradation, as well as scholars' interest in cities (Sunny, 2014). Compounded by the technology-centric focus in nearly all forms of human conduct, the smart city[2] has emerged as a focal point of transdisciplinary studies, particularly in place-based and purpose-driven entrepreneurship in urban contexts (Cohen & Muñoz, 2015). Frameworks designed to understand and categorize smart cities risk becoming obsolete quickly if they fail to keep up with the rising trends.

When it comes to the narratives of entrepreneurship and innovation in the U.S., the coastal areas and big cities are often the ones that get highlighted (Kauffman Foundation, personal communication, 2016). The Kansas City area, shared by two states with a population of just over half a million, consists of a fair representation of demographic, economic, and sociopolitical mix of the U.S., appropriate for viewing smart city development unaffected by the extremes found on the two coasts. Thus, we initially focus on Kansas City in order to develop a theoretical framework that allows us to observe the contributions and roles of various institutions and actors on an emerging phenomenon, thereby encouraging scholars to propel forward the conversation around smart cities with attention to implications for local entrepreneurs.

The first place-based initiative in Kansas City was the Green Impact Zone, intended to transform and revitalize a distressed 150-block area in Kansas City (Muro, Rahman, & Liu, 2009). Starting in 2009 and funded primarily from the American Recovery and Reinvestment Act (ARRA), strategies used included a multi-sectoral, collaborative approach wherein solutions were integrated using data and information management to enhance the area's sustainability and economic vitality. As a cross-institutional undertaking, the initiative tried to extend the capacities of the neighborhood organizations through smart-grid projects with the local electric utility and renewed interest in urban transportation systems.

Later, to revitalize the city center, the Kansas City Downtown Transportation Development District was created in August 2012 with funded plans for a 2-mile streetcar after earlier efforts to create a metro- or city-wide rail transit system failed. The 2.2-mile downtown street car line became the focal point and ground zero of the public-private partnership between Cisco and the city, and marked the beginning of the smart city project in Kansas City. As mentioned earlier, Kansas City benefited from Google choosing to build, operate, and maintain a promising and scalable network solution called Google Fiber in 2011, which kicked off a renewed interest in technology and entrepreneurship among city stakeholders that put in a call for action through the Cisco Smart City framework a year later (Deacon, in press). The general reversal of high-tech activities from suburban tech parks back to the urban cities is evident from increased venture capital (VC) investments and startup activity. Lawrence, Kansas, located about 40 miles from Kansas City, lists atop New York City and Los Angeles for VC investments per 100,000 people and further legitimatized the support to initiate such smart city implementations (Florida & Mellander, 2014).

3. Municipal goals as antecedents

With rising urbanization, democratization of technology, and heightened collaboration, cities are becoming innovation hubs that can be viewed as a living laboratory for rapid experimentation. One

[2] Smart, in such contexts, means to have the ability to collect, retain, and apply information (Deacon, in press).

enabler for these flourishing ecosystems is the gradually changing role of local governments, from bureaucratic barriers to facilitators of open innovation (Cohen, Almirall, & Chesbrough, 2016). Cities are also pressured to be smarter, not just from isomorphic institutional pressures of other cities or regions in competition for resources, but to deal with increasing operational pressures (Snow, Håkonsson, & Obel, 2016). The overlapping interrelationships between such actors is admittedly complex, imposing on the city managers multiple and often conflicting objectives that imply trade-offs (Visnjic, Neely, Cennamo, & Visnjic, 2016).

The main objective of Kansas City local government is to improve citizen experiences, increase entrepreneurship, and make city hall run more efficiently (Garman & Stange, 2015). The city started by introducing a new transportation transit system, which resulted in a rise of small businesses around the transit tracks and stops. The city created an advisory council in mid-2015 to recommend policies for the ongoing management, collaboration, and implementation of smart city technology, including steps for smart city implementation through the KC Digital Roadmap. The council established metrics for evaluating the implementation of new smart city technology and designed applications to improve operational efficiency to reduce costs while improving citizen experiences. The aim of the city government is to demonstrate operational efficiency in service delivery and leverage resources and information across departments, such as through open data initiatives (e.g., data.kcmo.org and 311) as a signal of transparency to foster civic participation and trust in municipal government and reduced costs to the city (Tolbert & Mossberger, 2006). For example, San Francisco saves an estimated $1 million per year by opening an application programming interface (API) for 311 service requests that created access to real-time transit data and subsequently reduced 311 calls by 22% (Berrone, Ricart, & Carrasco, 2016).

3.1. Innovation and technology developments

With digital platforms and technologies, collective ways of pursuing entrepreneurship have emerged where opportunities are recognized and exploited through co-creation among diverse actors (Aldrich, 2014; Nambisan, in press). This also means that the locus of entrepreneurial agency, or the situational attributes of the ability to harness ideas and resources needed to develop them, is evolving to be more diverse and dynamic and can be concentrated into a common goal through the 4P framework: public sector (local governments), private corporations, and people partnerships (Muñoz & Cohen, 2016). Although this collaborative perspective can place an additional burden on the new group of entrepreneurs, it can motivate local entrepreneurs to recognize, evaluate, and exploit opportunities that are both sustainable and impactful within smart cities given that most of these opportunities lie at the intersection of the individual and community. Community-level collaboration concepts such as crowdfunding or crowdsourcing can aid in idea generation and evaluation (Muñoz & Cohen, 2016).

Cisco initially proposed the adoption of scalable solutions to take advantage of such communications technologies and "increase efficiencies, reduce costs, and enhance quality of life" (Falconer & Mitchell, 2012). This led Kansas City to define a smart city as one that "uses communication networks, wireless sensor technology and intelligent data management to make decisions in real time about infrastructure needs and services delivery" (Garman & Stange, 2015). Google Fiber's influence was noteworthy in the Green Impact Zone, where the staff met with the fiber team to enable more rapid diffusion of the high-speed internet service in the zone's periphery (Green Impact Zone of Missouri, 2012). Google Fiber also renewed interest in local entrepreneurship, particularly technology-based ventures, boosting the startup culture (Deacon, in press). Startup entrepreneurs considered broadband infrastructure and high-speed internet capability as prime factors in selecting a location for their startups, so offering gigabit speed uploads to a community can be critical for the expansion of the startup ecosystem. Since Google Fiber's rollout, more startups moved to the area (Kelly, 2012), among them New York City firm NexusHQ, which relocated its company headquarters to Kansas City (Velázquez, 2015).

In 2012, a few technology enthusiasts created the Kansas City Startup Village (KCSV) in the first neighborhood where Google Fiber offered services. Dozens of local entrepreneurs and advocates crowded to channel their efforts to plan the future of the region. KCSV culminated in housing 25 local startup companies, hosting corporate leaders and delegations from over 40 countries to spark entrepreneurial growth in the region. One of the village's core values reads: "encourag[ing] innovation using next generation internet speeds (Google Fiber)." At the crossroads of local entrepreneurship and municipal action, LaunchKC was started, bringing in multiple companies and jobs to the city and arranging in-kind support for local entrepreneurs (Deacon, in press). On more established fronts, incumbents like Sprint, the fourth largest wireless network operator in the

nation, opened the Sprint Accelerator in 2015, stating that the "legacy of entrepreneurship, paired with the startup buzz catalyzed by Google Fiber, has created a collaborative, innovative working culture in KC" (Velázquez, 2015). With global headquarters less than 20 miles from the site, Sprint was also selected as the network provider for the 2.2-mile innovation district of the ARRA-funded streetcar project in the downtown area. This innovation district was lined with kiosks to garner engagement from citizens and individuals in the community; these districts are generally localized to a specific area of the city for more civic engagement and collaboration, characterized by bottom-up initiatives and participation for local actors to co-create solutions (Almirall et al., 2016). Located less than 15 miles away was Black and Veatch, the largest engineering and consulting firm in telecommunications (sixth largest in water) that moved to become a collaborator in smart water innovation solutions for a new smart city (Cisco, 2014). The Kauffman Foundation, a research oriented non-profit organization located less than 5 miles from the smart city epicenter, whose local presence has contributed to the collective legitimacy of the entrepreneurial community, had by 2011 partnered with Techstars, one of the foremost technology accelerators nationally to develop technological entrepreneurship locally (Solomon, 2015). Google Fiber set in motion a chain of events that in turn sparked potential for systematic value creation by urban stakeholders in Kansas City, enabled by the existing technology and knowledge base of the region.

3.1.1. Technology-enabled local entrepreneurship

A traditional public-private partnership between the City of Kansas City and Cisco (Townsend, 2013) developed a 'living lab' under Cisco's Smart+Connected Communities program for developing next generation 'internet of everything' products and services for the future. The Internet of Things (IoT) has created value in diverse domains such as healthcare, transportation, environmental sustainability, advertising, and brand management (Nambisan, in press). City administrations focus on such initiatives for public infrastructure and service provision, making this technological class an opportunity for them to solve their own problems. In an effort to do so, smart cities often emulated technology platforms by espousing open data conduits—opening up their data for local entrepreneurs to leverage and create solutions that lead to urban transformations resulting from joint effort between different ecosystem actors locally (Almirall et al., 2016). Living labs are designed to engage user-centered design practices using such data. The Kansas City Living Lab was thus conceived in 2013 in collaboration with Cisco and Think Big Partners, one of the prominent technology accelerators and co-working spaces in the city, the former's mission being to actively seek out the best emerging technological solutions that can be collaboratively validated for large-scale deployment at the commercial level. The technology innovations are not restricted to local or even national projects or ventures but are open to all global companies and technologies. In an interview with a partner of Think Big, who was also the Director of Accelerator & Technology who presented the KC Living Lab proposal to the City in 2014 with Cisco, it was not initially evident whether or not local entrepreneurs were the central figures in delivering solutions for the smart city. He stated that:

> We look at the infrastructure being deployed and programs run to develop new innovations on top of it is the economic development engine of the future . . . it's accelerating the disruption of industries that have been as traditional as traditional gets.

Innovative solutions for the city are developed when the smart city's technology infrastructure ties to the entrepreneurial ecosystem. Entrepreneurship is seen as the enabling factor in these initiatives, encouraged to develop new solutions for addressing current city processes and future challenges given the resilience, adaptation, and transformation enabled by a metropolitan area's absorbability to change (Eraydin & Tasan-Kok, 2012). The city, in regional and national competition with other cities, saw this as an opportunity to not only deliver more cost-effective services to its residents, but to be perceived as being on the forefront of technological advancement. The mayor of Kansas City added (Cisco, 2015): "The agreement we are entering today will improve the livability, connectivity, efficiency and economic vitality of Kansas City in ways we cannot yet even imagine, and for generations to come."

To encourage entrepreneurship, the city started the Innovation Partnership Program, a 12-week program allowing aspiring entrepreneurs to work in close collaboration with the city, mostly on innovative prosocial opportunities toward achieving smart city goals. The strength of co-creating and developing the smart city ecosystem lies in the community being involved as a participant, while becoming innovative and creative through being connected and smart. Some of the city's planned pilot projects include deploying smart street lighting, video surveillance, sensing in environment or infrastructures,

and solutions for citizen engagement services mostly along the innovation district. Kansas City has planned to work on those pilot projects as well as a plan to install kiosks throughout the city for easy access to regular services, including applying for permits or paying fees (Sunny, 2014).

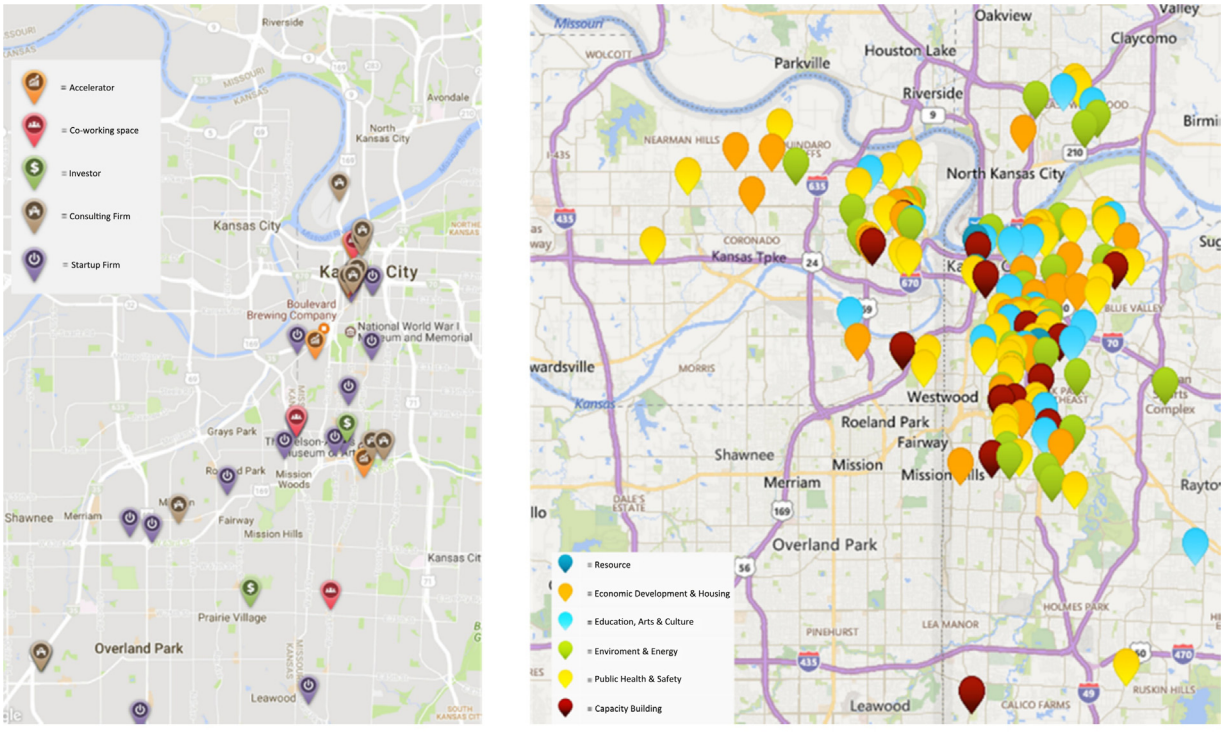
3.2. Civic entrepreneurship and societal outcomes

In addition to technological entrepreneurship, Google Fiber initiated social action by sponsoring the local chapter for Code for America, Code for KC. This group meets weekly and is comprised of local programmers who use their technological skills to solve social issues in safety, neighborhood parking, housing, and property zoning. One of their projects is the community mapping tool called CommunityKC, which lists ongoing and completed projects in capacity building, economic development, energy and environment, education and culture, health and safety, and resources (see Figure 1). Additionally, aspirations for additional external engagement were intended in the city's roadmap, including increased sharing of pertinent information for advances in entrepreneurship and innovation, workforce development and economic growth through greater access to data, and communication services that include broadband capabilities and free wi-fi.

Beyond the role of technology in urban connectivity (Chourabi et al., 2012), access to information was equally key for regional workforce and economic development as longitudinal data has shown that internet use at home and work leads to higher wages (DiMaggio & Bonikowski, 2008). The societal importance of internet use, particularly for human development in terms of civic, economic, and employment services, has been covered in literature (Mossberger, Tolbert, & McNeal, 2007) and Google's approach is being used as a model for the private sector to follow (Deacon, in press). For instance, officials at Google Fiber solicited public opinion and involvement through collaboration with local agents in co-creating a roadmap.

Sparked by such initiatives, citizens and user communities leveraged this ecosystem to design innovative scenarios for themselves enabled by ICT (Komninos, Pallot, & Schaffers, 2013). The benefits to cities and the ability to enhance productivity have been well documented and include such things as pooling of the labor market, sharing of inputs, and technological and information spillovers (Rosenthal & Strange, 2003). Thus, for Kansas City, municipal objectives leveraged

Figure 1. Traditional and social entrepreneurship activity in the smart city periphery



(a) Traditional (b) Social

Source: http://map.fwdkc.co/; http://communitykc.org/

regional capabilities to enhance economic development under the smart city paradigm—creating an urban ecosystem geared toward civic value through entrepreneurship.

4. The role of entrepreneurs

A new class of technology-based entrepreneurs—urban entrepreneurs—has emerged. These actors engage local, civic markets not only as consumers but also as user-producers, leveraging access to technological knowledge, tools, and capabilities to tackle civic projects and ushering in a revolution (Dougherty, 2016; Hagel, Brown, & Kulasooriya, 2014) that aims to integrate the different frameworks espoused earlier and to address trade-offs.

Through the lens of trade-offs, we can look at the civic drive to deliver social goods through organizations that use business to finance their service-oriented programs, like non-profits or government services. Traditional for-profit ventures that have a vested secondary interest in social impacts are also included through their role in providing city services, as are the cross-sector organizations that function as hybrids and are trying to solve urban problems. Such entrepreneurs recognize opportunities in similar ways with an emphasis on prior or special knowledge, but local civic entrepreneurs are more likely to recognize opportunities to solve social problems, especially if the smart city is prioritizing the problems for them. In terms of the leveraging of resources, entrepreneurs access capital by offering a financial return for a given amount of financial risk but, in the smart city context, most entrepreneurs instead offer an opportunity to solve a social problem in which financial returns are not readily clear and neither is the solution's sustainability. This is further complicated by the fact that social and environmental impacts are problematic and ways to gauge performance measurement are still lacking (Austin, Stevenson, & Wei-Skillern, 2006). Hence, it could be challenging for social ventures to operate and scale while trying to balance financial and social missions, especially in a context where the city is a customer as well as a developmental partner. Which, then, is the primary goal: place-based social impact or short-term economic gains? Such dual focus results in ambiguity for entrepreneurs (Townsend & Hart, 2008), which can be partially resolved through the theoretical lens of entrepreneurial ecosystems wherein entrepreneurs can leverage systemic relations in value creation for multiple community stakeholders with divergent goals that have implications for civic endeavors in the urban context.

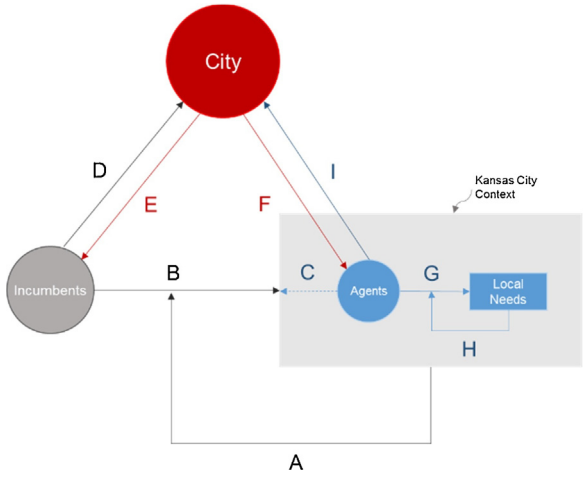
4.1. Entrepreneurial ecosystem in civic context

Businesses do not evolve in a vacuum, a fact which underlies the relational embeddedness of firms and other players within an ecosystem (Moore, 1993). The entrepreneurial ecosystem is viewed as an emerging metaphor (Feld, 2012; Isenberg, 2010) in explaining and promoting entrepreneurial development that rests on its ability to highlight interdependencies between organizations and their environment, and to provide an alternative way to conceptualize specialization, coevolution, and creation of value (Adner & Kapoor, 2010). Such an ecosystem can also be conceptualized as "a diverse set of interdependent actors within a geographic region that influences the formation and eventual trajectory of the entire group of actors and potentially the economy as a whole" (Cohen, 2006, p. 2—3). Combining Spigel's (2017) work on the entrepreneurial ecosystem and Campbell's (2004) framework, we can visualize the smart city ecosystem as a set of interconnected actors, such as *agents* (entrepreneurs), *decision makers* (policymakers and bureaucrats), *framers* (technology providers, supplier networks, markets), and *constituents* (citizens, investors, labor). These actors formally and informally coalesce to link, leverage, and mediate critical information within the local entrepreneurial environment, as well as govern its performance and modulate its flow.

4.2. Interaction of ecosystem actors

There is debate about how entrepreneurs choose between modes of opportunity recognition and exploitation (Shepherd, Williams, & Patzelt, 2015). While incumbents have specific routines and schemas for decision making, entrepreneurs possess deficiencies in routines and sensemaking at this level. This, however, may enable entrepreneurs to recognize new ways of solving problems with local resources. Given their routines, incumbent technology vendors may be risk-averse when entering new locations since they lack regional knowledge of urban problems (see Figure 2). This void requires bottom-up support from regional community groups or entrepreneurs to guide the incumbent technology vendor's search process for product fit (A). For example, Cisco, IBM, and other infrastructure vendors espouse more generic frameworks, using local groups as a distribution channel (B); this may necessitate strategic partnerships (C). In the scenario of smart cities, vendors may lack local legitimacy, but will possess the capabilities, technological track record, and scale to provide

Figure 2. Interaction of ecosystem actors



sufficient infrastructural support to meet city objectives for efficient service delivery (D). In the process, cities become viable ongoing markets for these vendor's key products and systems (E), in line with the movement's core definition.

With this added technological connectivity, smart cities are able to provide better information in the form of data access and knowledge to their local entrepreneurs (F). In turn, these entrepreneurs can mobilize agents and endeavor to solve local problems. Big data is an integral part of the smart city infrastructure (Deacon, in press). Enabled by new technologies (C), the additional city-level information imparted by big data (G) allows local entrepreneurs to conduct more effective search processes (H) for entrepreneurial opportunities. In the process, the city also benefits from added entrepreneurial activity or increased levels of entrepreneurship as an outcome (I). As the head of KC Digital Drive noted (Deacon, in press): "many nodes of activity are needed for an innovation community to thrive."

4.3. Opportunities for entrepreneurs in smart cities

Entrepreneurs, both nascent and corporate, are encouraged to adopt strategies that utilize or analyze open data consistent with the city's goals (Berrone et al., 2016). There seems to be an abundance of data at the city level that is being made available to all through open data portals by the local city governments (Berrone et al., 2016). While big data was once a luxury available only to the large enterprises, it is now available to smaller organizations and individuals. Each data point provides an opportunity to gain greater understanding of problems faced by the general populace, develop personalized strategies to address these problems, and mitigate them so that the standard of living is enhanced in the areas. However, even though there is an abundance of information readily available, there are problems associated with it in Kansas City: a lack of technical ICT skills on a large scale to deal with the big data and the inability to see the big picture regarding the design as to how the raw data can be used. Though the open data platform has triggered some developmental activities by third parties of apps to provide novel services to the citizens, these efforts are primarily project-based rather than venture-based, resulting in a disbanding of the project once the objective has been achieved (Cohen et al., 2016). A sustainable and legitimate business model has yet to appear, which can make such developmental opportunities easily recognizable and exploitable on a long-term basis by aspiring entrepreneurs. For instance, a lot of marketing data could be made available to the marketers and aspiring entrepreneurs by providing data interfaces that show greater understanding of potential customers and develop personalized marketing strategies for engagement. With the IPP, the Kansas City, Missouri (KCMO) government has already led aspiring entrepreneurs to identify, evaluate, and exploit prosocial opportunities that align with the concept of big data or the sharing economy. On the flip side, such prosocial work—which is primarily driven by social obligations and meeting needs of people—may impede the scalability of ventures.

5. Barriers to local civic entrepreneurship

The most significant barriers to adopting smart city solutions are the multiparty or multilevel processes for cities (Falconer & Mitchell, 2012), in which different stakeholders, departments, and groups with divergent goals are given an equal say in the planning process. The disruption to current workflows for stakeholders unevenly hampers ongoing processes, which may be under more than one department, making a top-down decision consensus unlikely. Many areas of government are still locked in on legacy systems and incumbent inertia, at times from the change drivers themselves. It is for these reasons that the advancement of digital cities requires leaders who inspire the pursuit of economic, social, and environmental sustainability, as well as governments, industries, cities, and citizens who collaborate in a way that leverages ideas and solutions and

strengthens social capital by being digitally inclusive[3] (Hodgkinson, 2011).

Ecosystem orchestration can be challenging in smart city contexts largely due to inherent bureaucratic methods adopted by the local governments and the lack of flexibility to change their approach based on emergent circumstances (Cohen et al., 2016). As seen in the earlier section, entrepreneurs began on smaller projects but limited scale and scope in hackathons and other events made idea generation an end in itself. This potentially explains why the number of ventures created from data projects has been limited and why entrepreneurial activity ends upon achievement of project objectives (Cohen et al., 2016). Access to, and the control of data, has been a strategic asset for municipal actors in cities, often favoring incumbent or dominant players and thereby constraining user-driven social innovations (Almirall et al., 2016). Beyond municipal coding semantics, which are not uniform or standardized, the technological solutions espoused by incumbents within the digital IoT landscape are in silos, further fragmenting the reach of solutions to users and limiting access to local actors. Large IT companies that have access to useful data at times do not open them due to privacy concerns. These technical limitations in standards, combined with small local markets and lack of risk capital, can put unrealistic expectations on local entrepreneurs who in turn do not see a clear value in using or offering data-driven solutions. Such burdens and complexities facing nascent urban entrepreneurs may cause them to shy away from such undertakings (Muñoz & Cohen, 2016). More serious entrepreneurs are also engaged in small-scale prototyping to leverage the idea to solve a civic problem. However, these local entrepreneurs who are embedded in collaborative networks also generally lack the formalized capital that most corporate innovators like the incumbents are likely to possess. Even with well-functioning laboratories, inventive or creative problem solving does not readily occur for corporate leaders given that they lack the local context of the earlier groups (Browder, Aldrich, & Bradley, 2017). What they lack on that front, they make up for in terms of legitimacy and access to the resources and capital that local entrepreneurs lack. For actors in municipal governance, legitimacy and experience can be more important than the innovativeness often characterized by local startups.

[3] Digital inclusion refers to making technology accessible to all residents in a community and is at the core of the transformation of the smart city initiatives (Deacon, in press).

Thus, the incumbent corporations and local entrepreneurs form a sporadic relationship where opportunity exploration (i.e., recognition and discovery) is detached from opportunity exploitation. From the city's perspective, developing such population-level capabilities with collaborative initiatives leads to increased economic growth and activity, but it may not care whether it is incumbent corporations or local entrepreneurs who are responsible for it. Corporations, through opportunity exploitation, and a city, through increased efficiency in service delivery or economic growth, both benefit from such forms of innovation. However, even though local entrepreneurs can aide in the commercialization of a solution, it does not necessarily mean that new, sustainable ventures are formalized or created. In other words, local entrepreneurs are increasingly leveraging the democratization of innovation to create artifacts, rather than attempting to commercialize those (Browder et al., 2017). If the goal of such civic entrepreneurship is to spark innovative, bottom-up growth from local agents, such forms have only seen limited success—as is the case in Kansas City.

As an example, the situation of a technology entrepreneur involved in transportation-related smart city projects explains the tension between the experience of incumbents and the innovation of local entrepreneurs and young startups, in that the city systematically preferred experience over innovation. Initially, his idea was to bring an internet-style business model to public infrastructure, as he had seen how the city was unable to extend budgets for ICT projects with public infrastructure crumbling. With technology vendors getting uneasy about uncertainty in financing projects post installation or not knowing how to recover revenue, consulting firms that possess this know-how are generally unwilling to collaborate on smaller projects that the startups work on. The city best leverages this shortcoming by having local entrepreneurs in smaller projects become the source of innovation, only to be harvested and scaled by incumbents, making it large enough for consulting firms to then take on. In this regard, he felt that the city "is not just a passive facilitator, but active orchestrator in harvesting local innovation from startups, and giving it to risk-averse incumbents." In addition, that lack of innovation may kill incumbents over time, but not before their practices take a lot of startups down with them. The entrepreneur hoped to see a future in which the KCMO lives up to its moniker of being smart—specifically, by being an able user of innovative technology and not masking old technology in a new name.

The threats are not completely unwarranted, as incumbents may bring legitimate advantages through tested experience and expertise. The CIO at KCMO mentioned that the city wants technology from firms who will survive for decades to come and provide dedicated maintenance and support to large infrastructures. This may not include most startup companies due to inherent risks of their products or systems not surviving over time in their current form. The balance to be reached is one of note: High-risk innovation from startups may be distrusted, while experience and trustworthiness from incumbents may lack true innovation.

6. Discussion and future research agenda

We discussed the various lenses used to visualize the emergence of a smart city in Kansas City and pondered the role of entrepreneurship at the individual or firm level in this development. We simultaneously questioned of the contextual role of a smart city in entrepreneurship development, particularly in the use of information and communication technologies to impact social or environmental aspects of city life. While the collective cohesion and social movement toward a smart city realization is commendable, we have to be critical of whether the transition is in reality a win-win for all parties. The first phase of coordination efforts for the Kansas City smart city project has marginalized entrepreneurs by limiting them to volunteering for specific projects of little scope and left their engagement to later stages; more understanding on the entrepreneurs' intention, role, and motivation is key. Figure 1 shows startup activity and societal outcomes-based project activity near the smart city epicenter—the innovation district. Perhaps the reason why we have not seen a substantial growth in the traditional sense is because the information collected is not processed in a way that is meaningful for the majority of local entrepreneurs. As the head of KC Digital Drive noted: "We are hard at work building infrastructure, first to record so much data, and then to build the apparatus to process that data."

Smart city frameworks will be implemented in many more cities to cater to a growing urban population. However, with increasing resource constraints and continual technology disruptions, scholars need to have a deeper understanding of the dynamics among the various ecosystem actors. This can be more challenging if the goals of the various actors are misaligned or under-articulated. Various entrepreneurship theories can be used to understand the dynamics and mechanisms of the collaborating players, particularly new ventures by local entrepreneurs.

Our article emphasizes the role of context, as observed, and does not espouse a predictive theory on smart city antecedents or the likelihood of technology adoption within that context. As the city governance projects and develops Kansas City as the platform for innovation, the city itself becomes the quasi-experimental setting in which experiments involving innovation and open data efforts are being carried out in real time. Cisco's Smart City Framework equally urges academics to focus more on implementation mechanisms than on normative analysis of perceived impacts or effects, elaborating further that focusing too much on the why instead of the how will slow down the adoption of much-needed smart city solutions and endeavors (Falconer & Mitchell, 2012). Kansas City's Digital Roadmap also echoes this notion and calls for partnerships with local institutions and theorists in order to observe how entrepreneurs can best test solutions within the technological infrastructure backdrop of the city (City of Kansas City, 2014). Taken together, this forms the motivation for our article.

Some hurdles and questions still remain. We were able to observe contextual conditions under which incumbents turn to local entrepreneurs for potential sources of innovation to merge civic and technological entrepreneurship. Should policy makers incentivize incumbent corporations to scale innovative solutions from local entrepreneurs with existing capabilities to the civic context or enable a more secondary role, highlighting the local entrepreneurs instead by giving them the ability to scale their civic innovations for social impact? In doing so, we speculate about what affects economic growth from an urban policy standpoint, particularly the role cities and policy makers should play. As an integrator of city services (Visnjic et al., 2016), municipalities and city managers should rethink the signal they inadvertently send to a local entrepreneurial community they claim to support by being risk-averse or pro-incumbent.

Since the municipal decision makers set the stage for smart city activities, it makes sense as to why more socially oriented, project-based entrepreneurial pursuits by community groups were observed rather than formalized firms leveraging opportunities. However, after the first wave of zeal in community projects sparked by the smart city, the long-term engagement of local entrepreneurs is not clear. As for truly scalable and sustainable solutions to contextual urban problems, better business models that infuse resources within collaborations in the ecosystem actors are crucially

needed. Over time, the role of traditional technology entrepreneurship will thus become more salient for civic value and wealth creation within the smart city ecosystem in the urban context.

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