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# Embeddedness of digital start-ups in development contexts: field experience from Latin America

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## ABSTRACT

Context is a key mediator of the relation between digital and development, including digital enterprise and development. Yet this mediation is little-understood in terms of contextual embeddedness. To address this gap, we analyse field evidence on digital start-ups in Latin America's four largest economies using the Triple Embeddedness Framework (TEF). We find digital start-ups have multiple, hybrid embeddedness: in product and digital sector regimes, in local and global industry regimes, and in their economic and socio-political environment. Successful digital start-ups have optimal embeddedness: strong enough to provide flows of knowledge and resources; not so strong as to constrain innovation. Positioning of global South digital start-ups on the relative periphery of the global economy has benefits; allowing ideas to flow in but offering some protection from external competition. Alongside this new conceptualisation of digital enterprise and development, conclusions are drawn for future research, government policy and business strategy.



## KEYWORDS

Digital start-up; digital economy; embeddedness; global South; Latin America


## 1. Introduction

There is a debate on the relationship between digital technologies and context. Some associate the digital with disembedding and disembeddedness: a releasing or an absence of the physical, institutional and relational ties that bind entities and activities to a particular context (Fisher, 2010; Friedman, 2005). Others have challenged this idea, seeing digitally-oriented activity as having important geographic or other contextual roots (Graham, 1998; Warschauer, 2004). This debate has touched all spheres of digital activity – digital politics, digital society – including our particular interest here, which is the digital economy and digital enterprises; defined as those producing digital goods and services. At one extreme, these may be seen to operate in some 'free-floating' cyberspace detached from other contexts; at the other, they are seen to have important connections to the local context (Matuschewski, 2006; McQuail, 2007).

There has been some carry-over of this general debate into research on digital in the international development context of countries in the global South: the contextual focus for this paper. While there has been general acknowledgement of the important relation between digital, development and

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context, there has been little written specifically on the ideas of dis/embeddedness despite this being a central means to conceptualize that relation. And there is next to nothing written on this with a focus on digital enterprise and development. This, despite the acknowledged and growing importance of the digital sector within the economic development of the global South (World Bank, 2016), and the acknowledged importance of embedding and disembedding to that economic development (Barber, 1995; Goodwin, 2018; Sandbrook, 2011). At present, we thus have too limited an understanding of the role of context in shaping digital enterprise in development contexts.

Our overall intention in this paper is therefore to make a theoretical contribution to the literature on digital and development. Specifically, we seek to conceptually understand the relation between embeddedness, digital enterprise and development. We select a theoretical model of embeddedness – the Triple Embeddedness Framework – not previously applied in this domain, and use it to analyze digital start-ups – defined here as recently-created enterprises that only produce digital products (goods or services) – in the global South, selecting examples from four Latin American countries. The work reported here concentrates on three main issues in order to ask the research question: what is the extent, nature and impact of embeddedness of Latin American digital start-ups? By addressing this, we contribute a new and theorized understanding of digital enterprise in development contexts.

We next review the notion of embeddedness, including the framework that was used to structure our enquiry, and its relation to digital enterprise in development contexts. Following an explanation of methods, our findings are presented, leading to a discussion and conclusions.

## 2. Digital enterprise, embeddedness and development

Looking specifically at the intersection of digitally-oriented activity and development contexts, many papers discuss the role of social context in shaping the use of information and communication technologies (ICTs) in the global South (e.g. Amankwah-Amoah & Hinson, 2019; Avgerou, 2010; Mosse & Byrne, 2005; Nemer, 2018) and there are calls for more context-relevant theorization (Andoh-Baidoo, 2017). Yet very few take the step of theorizing the relation between digital and development context through the explicit concept of embeddedness.

To understand that concept, we must turn briefly to broader literature on embeddedness and on digital and embeddedness. The idea of embeddedness is invariably associated with the work of Polanyi (e.g. 1944), despite his relatively limited use of the term (Beckert, 2009). It is typically defined as the shaping of economic activity by a broader context that includes – among other things – social structures, cognitions, culture and political institutions (Dacin et al., 1999). Polanyi (e.g. 1957) saw one process of capitalist development to be disembedding: the freeing of resources like labor and money from their socio-cultural ties through their commodification; thus making them more controllable (Wood et al., 2016).

Others have seen a similar process of disembedding at play as the result of the digitization of the economy: a commodification and virtualization that disembeds core components of economic activity (Kallinikos, 2006). This has been associated with quite broad-brush perspectives that use labels such as ‘weightless economy’ (Quah, 1999) or slogans like ‘death of distance’ and ‘world is flat’ (Cairncross, 2001; Friedman, 2005). This literature sometimes highlights disembedding from institutional ties; a de-institutionalization of economic activity. It also often interprets disembedding as relating to physical locality; a so-called de-territorialization of economic activity (Toal, 1999).

Others have argued that notions of disembedding associated with the growing digital economy are overblown. The critique has two main elements. First, that digital economic activity is not as disembedded as claimed, being still embedded in the two senses identified above: territorially embedded in a local physical space and institutionally embedded in a set of local institutions. Hence, for example, evidence that digital enterprises in Germany tend to cluster together and draw on physical interactions and on local infrastructural and educational institutions (Matuschewski, 2006). Second, that a re-embedding has occurred, particularly relating to a third type of embeddedness: within networks. A main driver of this notion has been Castells’ work (e.g. 2010) seeing digital

technology driving a shift from physical place to network space, and research thus finding virtual networking to be increasingly important to digital enterprise (Sigfusson & Chetty, 2013).

From this literature, we can see one dimension of debate about the digital economy relates to the *extent* of embeddedness, and a second relates to the *nature* of embeddedness with three different types identified: territorial, institutional and network. A further dimension relates to the *impact* of embeddedness, though here there is less disagreement. Embeddedness is understood to be a strength but also a constraint (Henderson et al., 2002; Isaac et al., 2019; Uzzi, 1997). For example, embeddedness provides economic and cultural resources – access to finance and skills and ideas, knowledge of customers, a sense of purpose and identity, etc. – and the institutional foundations necessary for commercial transactions to take place. On the other hand, embeddedness can constrain economic growth and innovation if it locks firms into particular processes and markets.

Armed with this understanding of embeddedness, we can turn back to the literature on digital and development; specifically the very few items that look explicitly at embeddedness. These have focused their discussion of extent, nature and impact of embeddedness particularly around differences between the context of global North and global South. For example, one thread looks at transfer of IT artifacts between these contexts: at the process of disembedding the artifact from a global North context and/or of re-embedding in a global South context (Breytenbach et al., 2013; Gizaw et al., 2017; Westrup & Liu, 2008). Another thread looks at the conflicts that arise when globalized activities – notably IT outsourcing – bring into contact knowledge, people and organizations embedded in the different contexts of global North and South (Nicholson & Sahay, 2004; Rai et al., 2009). Nature of embeddedness is understood mainly in terms of the difference in institutions, but partly in terms of global South countries being at the periphery of global networks of technology, knowledge, and other resources. Overall, though, the limited nature of explicit engagement with embeddedness has led to calls for more research on ICTs and embeddedness in contexts of development; particularly research that better-theorizes embeddedness (Avgerou, 2008; Ramadani et al., 2018).

If this call is valid for the wider arena of ICTs, it is especially so for research on digital enterprises and development. It is widely acknowledged that digital enterprises play an important role in delivering both economic and social development (Bukht & Heeks, 2017; Jiménez & Zheng, 2018). To a lesser degree, it is acknowledged that context matters in determining the trajectory and development impact of such enterprises (Ngoasong, 2018; Rangaswamy & Nair, 2012; Salvador et al., 2005). Yet, once again, work explicitly conceptualizing the relation to context in terms of embeddedness has been very rare. Two papers trace the disembedding associated with commodification of labour – some of which is global South-based – in global production networks of digital work such as software development or online micro-tasks. One argues for a territorial disembeddedness (Flecker & Schonauer, 2016) while the other argues that some territorial embeddedness remains and that there is an embeddedness of digital work in social networks (Wood et al., 2016). Two other embeddedness-related papers look specifically at digital enterprise in the global South: one at digital entrepreneurs in China (Avgerou & Li, 2013); one at digital social enterprises in India (Sandeep & Ravishankar, 2015). The former argues that digital entrepreneurs are embedded in a mix of virtual and traditional social networks that support their economic activity. The latter argues that embeddedness in local social networks with access to local knowledge is necessary for digital enterprises in rural and peri-urban areas.

This development-specific literature, therefore, reflects the wider debates about the extent and impact of embeddedness of digital activity. In analyzing the nature of embeddedness it mainly looks only at territorial and network rather than institutional types of embeddedness. And it more generally reflects a lack of knowledge on embeddedness of digital enterprise in development contexts: only one paper (Avgerou & Li, 2013) specifically relates to this topic. Yet digital economies in the global South are already quite sizeable. For example, across Latin America as a whole, the digital economy (goods and services that are wholly or principally reliant on digital technologies) contributes at least 2.0% of GDP in each country and 3.2% of GDP in the larger economies that

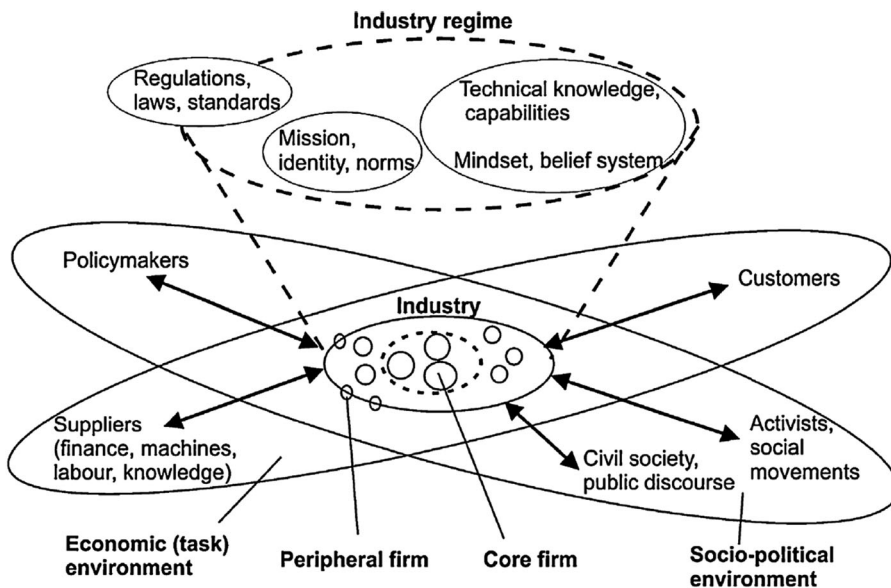
are the focus in this paper (ECLAC, 2013). Digital growth rates are also high with, for example, fixed broadband use in Latin America growing by 16% per year in the 2010s and mobile broadband use growing by 73% per year (Katz & Callorda, 2018) and hence 'the digital economy is, by far, the biggest opportunity the region may explore' (Caride, 2016). Given the growing importance of the sector and the demonstrated importance of embeddedness, this created a knowledge gap which was worthy of addressing, particularly the need for a theorized understanding of the relation between context, embeddedness and digital enterprise in the global South.

To deliver that theorization, there are various frameworks that might be used from the embeddedness literature. Early frameworks tend to be fairly uni-dimensional: for example Polanyi's original notion of embeddedness within socio-economic institutions (Polanyi, 1944), or Granovetter's (1985) discussion of embeddedness within social networks. Later models start to combine different senses of embeddedness; thus Zukin and DiMaggio (1990) incorporate both formal and informal institutions and network relations into their model of embeddedness. But here we use a more recent and more comprehensive approach that seeks to build on, and incorporate, earlier ideas: Geels' (2014) Triple Embeddedness Framework (TEF) (see Figure 1) which – as far as we are aware – has not yet been applied in the information systems domain, to digital and development, or to digital enterprise specifically.

The three domains of embeddedness are:

- Industry regime: 'industry-specific institutions that mediate perceptions and actions of firms-in-an-industry' (Geels, 2014, p. 267).
- Economic environment, which can be understood as that element of context represented by other actors in the supply chain.
- Socio-political environment: the context of other stakeholders which have an influence on an enterprise 'e.g. social movements, wider publics, media, policymakers' (Geels, 2014, p. 266).

In terms of the three types of embeddedness identified earlier – territorial, institutional, network – the TEF, therefore, focuses mainly on the latter two much more than the former. This was seen as



**Figure 1.** Triple embeddedness framework.

appropriate for digital enterprises which – due to their virtualized products and processes – are more limited in their connections to immediate physical place.

Drawing from an array of literature, the TEF identifies four forms of institution that can embed (Geels, 2014, p. 267):

- Functional-cognitive: technical knowledge and routines.
- Cultural-cognitive: mindsets that ‘constitute the nature of reality [and] shape interpretations of ... external environments.’
- Normative: ‘behavioural templates that specify ... appropriate behaviour ... shared identity ... societal purpose.’
- Formal-regulative: ‘regulations and policies ... laws ... guidelines or standards.’

The TEF considers network embeddedness particularly in terms of network position; for example, ‘core’ and ‘peripheral’ firms. These are understood in terms of strength of social relations and also in terms of institutions, with core firms creating or determining or shaping institutions, and peripheral firms being institution-takers rather than -makers. This makes peripheral firms less bound by institutional forces and social relations in the network. While this may be beneficial for enabling innovation, literature on digital and development tends to emphasize more the downsides of the lack of embeddedness that peripherality entails. For example, the lack of access to resources, knowledge, and markets for ICT actors in the global periphery (Ngoasong, 2018; Nicholson & Sahay, 2004; Westrup & Liu, 2008).

To summarize, then, the economic activity – enterprise start-ups – that forms our focus has two key features: these start-ups are digital (producing digital goods and services) and they are based in the global South (institutionally different and at the relative periphery of global networks). Our research investigation of these two features will be conceptualized according to the Triple Embeddedness Framework and guided by three areas of debate identified from our literature review, each of which reflects a gap in current knowledge:

- Extent of embeddedness: the degree to which digital start-ups in the global South are embedded or disembedded within their context.
- Nature of embeddedness: with two aspects to this – domains and types. From the TEF, we identify three domains of embeddedness: industry regime, economic environment, socio-political environment. Within those domains, are three types of embeddedness: territorial, institutional, and network.
- Impact of embeddedness: the outcome for the digital start-ups of the extent and nature of their embeddedness.

### 3. Research methods

We undertook a field study research strategy: ‘study of single or multiple and related processes/ phenomena in single or multiple organizations’ (Palvia et al., 2007, p. 2). This was selected because it is particularly appropriate for deductive research, as here, using an *a priori* defined set of concepts to be investigated through qualitative methods (Cavaye, 1996). The potential boundary for the study was all of Latin America but time and access constraints meant we focused on just four countries – Argentina, Brazil, Colombia and Mexico – the four largest economies which together account for around three-quarters of regional GDP (IMF, 2019). Given their importance to the future digital economy, we decided to focus on digital start-ups (DSs) defined, as noted above, as recently-created enterprises that only produce digital products (goods or services). We operationalized this by selecting enterprises less than three years old at the time of first contact. However, to ensure source triangulation, we also included in the field study other organizations that support or relate to digital start-ups.

In total, 40 organizations were incorporated into the study: 19 digital start-ups (for details see Appendix 1); five ‘accelerators’ which act to facilitate growth of digital start-ups; five digital economy investors; and 11 other actors from the broader socio-political and economic environment (government agencies, digital multinationals, and training, education and research agencies). There being no directory of digital start-ups, they and the other agencies were identified mainly by purposive sampling, partly using snowballing techniques. Semi-structured interviews were conducted in these organizations during 2013–2015 with 46 interviews conducted in total (six respondents were interviewed twice: for details see Appendix 2; note, the names of all organizations involved have been anonymized.). The interviews were conducted with senior managerial staff, who would best understand the relation between enterprise and context. Interviews were prepared following Myers and Newman’s (2007) guidelines with the questions based around the broad categories of the conceptual framework outlined above in order to provide a theory-based set of insights. Some method triangulation was incorporated through direct observation of four events: two ‘investors’ days’ at which DS entrepreneurs pitched business plans (one in Mexico, one in Argentina), and two ‘Start-up Weekends’ that were mainly training events for actual and potential digital entrepreneurs (one in Mexico, one in Colombia).

Data from the different sources and methods were transcribed as text and coded via NVivo using template analysis (King, 2012). Initial codes were created deductively on the basis of the TEF: industry regime e.g. regulations and mindsets; economic environment e.g. suppliers and customers; socio-political environment e.g. civil society and policymakers. However, there was then iteration – removal and addition of codes – as analysis proceeded. For example, as discussed below, codes emerged relating to four different types of industry regime: product and digital, local and global. This, therefore, provided a revised understanding of the relation between context, embeddedness and digital enterprise.

## 4. Findings

Per our approach to coding of field data, findings are presented in terms of the main domains of the Triple Embeddedness Framework, though taking into account inductively-emergent aspects of embeddedness.

### 4.1. Industry regime embeddedness: product and digital sector hybridity

As conceived and operationalized within the TEF, enterprises are embedded within a single industry regime. However, what emerged from fieldwork is that digital start-ups are different, and – to varying degrees – have a dual hybrid embeddedness that relates to two different industry regimes. They are embedded within a product sector that reflects the particular goods or services produced: for example, within the financial services sector *Investarg* enables online stock market investing; or within the recruitment sector *Domserv* operates a web service for hiring domestic employees. They are also all embedded within a cross-cutting digital sector: the population of firms that produce digital goods and services. The extent of institutional and relational forces and, hence, embeddedness, differs in these two sectors.

Typically the product sector is mature, having been in existence for decades. In such sectors, there exists a relatively formalized set of knowledge and regulations, there exists a common mindset and norms, and there exist well-established relationships (Nelson, 1994; Stringfellow & Maclean, 2014). As Geels (2014) notes, these forces act as a constraint on innovation: the more embedded a firm is, the more difficulty it will have in creating a different business model that relies on new institutions, relations, processes, etc.

In Argentina’s insurance sector, for example, for decades insurance was arranged by visiting an insurance agent; agents had offices geographically located to reach particular target markets. Alongside the physical investments in these offices and the relations of agents to insurance firms and



customers, the routine practices and standards of the industry fitted this model, and it was also a norm: 'There is also a culture of asking [an agent] ... it is part of the normal behaviour' (*Insurarg* e-entrepreneur). These forces – inertia of routines, taken-for-granted status of norms, lack of knowledge of alternatives, fear of losing invested resources and relations – all have lock-in effects that create a path dependency that constrains innovation (Geels, 2014). When the sons of the founder of one existing insurance firm began trialling a web presence for their father's firm, other firms and related actors in the insurance service sector sought to dissuade them, and also were unwilling to follow suit because of these effects: 'They all told us not to do it, that it was not going to work, that people were not going to sign on' (*Insurarg* e-entrepreneur). This suggests that digital start-ups must not be so embedded in their product sector that they cannot innovate. If they are, they would need to seek means to disembed. This is what the e-entrepreneurs behind *Insurarg* had to do: creating a new, separate digital start-up because of what they perceived as the strength of existing routines, norms and relations within their father's firm.

On the other hand, DSs must be sufficiently embedded in the product sector that they have enough power – sectoral social and knowledge capital, and other resources – to understand the sector, and to overcome the challenges that any start-up faces. Interviewees reported digital start-ups struggling or failing due to factors associated with weak embeddedness such as lack of sectoral knowledge or peripherality in terms of sectoral relationships. For example, online lens retail start-up *Optocol* lacked strong knowledge of and structural relations within the optometry sector. As a result, existing players were able to mobilize their relations: suppliers were persuaded not to sell lenses to *Optocol*, media contacts were used to put out negative publicity, and policymakers were lobbied to ban sales of lenses without a visit to an optician.

Some digital start-ups recognized their lack of product sector embeddedness and sought to compensate for it. *Advertarg* was set up by a serial digital entrepreneur to work in online advertising. This digital background enabled the start-up to develop a new form of 'intelligent' banner ads for web sites. While readily accepted by other digital firms, the start-up struggled to scale beyond this niche until *Advertarg* created new relations in the product sector: 'we did a pivot to reach the firms that wanted to place the ads, marketing agencies, public relationship firms, and media networks' (*Advertarg* e-entrepreneur). It partnered with these existing agencies who could 'translate' the product and package it alongside other marketing offerings for their traditional customer base.

This last example shows that digital start-ups are also embedded within the digital sector: a cross-cutting industry regime of digital enterprises. As discussed further in the next section, the digital sector – unlike the product sector – has only recently come into existence. In terms of actors, it is barely a decade or so old, and therefore institutions and network relations are still in process of formation. However, digital start-ups are still embedded in the digital sector to the extent that they can then draw from it. For example, in order to begin operations, *Insurarg*, *Optocol* and *Advertarg* and the other DS interviewees had all drawn knowledge from the digital sector – business ideas, processes, technologies – and they had drawn digital skills in the form of staff that they hired.

Overall, then, the digital start-ups we interviewed demonstrated a hybrid embeddedness in both product and digital sectors. That is, their economic activity was uniquely shaped by the combined and intersecting embeddedness within the two sectors. As an example, *Insurarg* showed this in terms of both institutions and relations. Its processes and service offerings combined technical knowledge and routines from the two sectors, and its structural partnerships combined digital and product sector actors; something which it directly recognized:

"One of the things that defined our leadership was that we had two very solid bases in the two things we saw as key ... the digital and the insurance foundations ... The two [worlds] are too complex and you cannot rely only on one ... A great part of our success was to combine these two worlds ... to understand the game rules of two worlds which are very different and to not break up with anyone." (*Insurarg* e-entrepreneur)



## 4.2. Industry regime embeddedness: local and global hybridity

To understand the digital sector in more detail, we analyzed the emergence of its institutions. There are two main sources of these institutions into which firms may embed: local and global.

### 4.2.1. Local sources

Local sources include 'core' digital firms: those few that survived or emerged from the dotcom crash of the early 2000s in Latin America to become regional leaders. Interviewees identified examples of Mercado Libre, Despegar, and Globant. These have created a series of institutions that have given existence and form to the Latin American digital sector. This institutionalization process has been facilitated by the creation of digital accelerators: organizations with the specific purpose of enabling digital enterprises to grow. Finally, as the number of digital start-ups has grown, e-entrepreneurs themselves have taken sector-forming actions.

In a number of cases, institution-formation has organizational substance and therefore relates to both institutional and network aspects of embeddedness:

- creation of national digital entrepreneur associations, which have been launched in Argentina, Mexico and Colombia;
- creation of informal communities of practice based around specific technologies or techniques or enterprise types and locations, such as the support group of 11 e-entrepreneurs created by the *Affiliarg* founder and peers;
- holding workshops, hackathons and similar events, such as the hackathons undertaken in sixteen Mexican cities that helped to develop a community of those working on digital app development.

These in turn build cultural-cognitive and normative forces: a common language in talking about the digital sector, a common mindset about digital enterprise, a sectoral identity, some cooperative norms, etc. Functional-cognitive foundations are built by sharing ideas and knowledge, which have increasingly circulated through the sectoral organizations noted above. They have also circulated through the accelerators which provide explicit training events, but which also informally share more tacit knowledge, and through the core digital firms when staff break off to set up their own DSs. For example, the *Advertarg* founder stated, 'I think that ... spending six years in Mercado Libre ... it was like an MBA in start-ups ... So, I had the experience of how to launch a start-up.' More generally, core firms and accelerators act as hubs within the digital sector that build network relations. They link out to sources of skills and knowledge (e.g. universities), sources of finance (e.g. angel and venture investors), sources of custom (e.g. large organizations), and sources of formal-regulative institutions (e.g. policy makers in local and national government). As an example of the latter, a *Servglob* manager stated, 'Some emblematic firms like Mercado Libre engage [with policy] ... you can find more interaction because of specific reforms that are taking place in network neutrality and copyright regulations.' All of this provides institutional and network form to the digital sector, into which DSs can become embedded.

### 4.2.2. Global sources

Notwithstanding this recent upward curve of structural formation – in terms of creation of institutions and organizational network relations – in the digital sectors of Latin American countries, local sources have been historically weak.

In comparison with product sectors, for example, there are fewer formal digital sector organizations, joint events and activities, fewer long-standing actors and repositories of knowledge, fewer regulations and standards, etc. Part of the solution – or perhaps part of the underlying problem – has been extensive use of external sources of institution formation. In particular, this has come from the global core for the digital economy: the United States. Part of this relates to functional-

cognitive institutions in the form of technical knowledge and routines; particularly the use of Lean Start-up (including related techniques like Business Model Canvas) (Blank, 2013; Osterwalder & Pigneur, 2010).

Lean Start-up is a framework or more precisely a methodology for enterprise start-up that originates in the US, and it had been used by virtually all of the digital start-ups interviewed for this research. Its dissemination into the Latin American digital economy has been facilitated by a number of intermediaries. Some are US-based, such as the non-profit organization UP Global (taken over by Techstars in 2015) which has run a series of events around Latin America such as 'Start-up Weekends,' based around the Lean Start-up methodology. Others are Latin America-based, with local accelerators such as *Accelbra* in Brazil providing similar training workshops and also arranging mentoring on start-up methodologies for local e-entrepreneurs. Likewise some national government programs – such as Apps.co in Colombia – have arranged for US trainers to come in to teach Lean Start-up. As a result, Lean Start-up and Business Model Canvas had become institutionalized as the 'industry recipe' for digital start-ups in Latin America: entrepreneurs, accelerators, investors all expected to see the rapid cycles of product development, market testing, pivoting, and feedback loops prescribed by these frameworks. For example, *Accelbra* would only support entrepreneurs through early phases when they might be struggling if they followed the recipe: 'If you don't follow the methodology, which is Lean Start-up ... you are out' (*Accelbra* manager).

In addition, some Latin American digital start-ups had built their whole business model on imitation of US digital businesses. As the *Ventarg* venture capital manager noted: 'Mercadolibre.com was based on eBay, Despegar.com was based on Orbitz ... Restorando is based on Open Table, Best City is like Amazon.' e-Entrepreneurs admitted they had copied specific US businesses and transplanted them for Latin American markets. For example, the *Affiliarg* e-entrepreneur stated that he got the idea for his online deals marketplace from the US: 'I was inspired by the business model of [US car marketplace] Truecar and made some adaptations for Latin America.' Alongside visits to the US and looking at US businesses online, other formal channels for this type of knowledge transfer from the US to Latin America include media sites such as Hacker News and TechCrunch, to which the great majority of e-entrepreneurs subscribed.

These various means for flows of knowledge did more than just transfer functional-cognitive knowledge; they also transferred other institutional forces into Latin America. Those involved in digital business came to share cultural-cognitive worldviews drawn from the US. Interviewees evidenced a common mindset, for example, around expectations of success and failure more characteristic of the US than of Latin America. There were greater expectations of success – the *Accelbra* manager was looking for growth rates of 25 percent per annum or above – but also greater allowance for failure than found more typically in Latin America. There was also development of common normative values. A common hemispheric identity of digital enterprise was reflected in interviewees' associating themselves with American digital entrepreneurs and an American digital economy. Interviewees also commented on physical identities, such as the US-origin 'dress-down' norms found at digital sector events – even those run by government – which diverged from broader business norms in the region. The *Finanmex* entrepreneur commented on a digital enterprise event he had attended:

I was last week in the [event] and a guy arrived and started talking about the clothing you have to use as an entrepreneur ... He said that you couldn't wear a jacket and a tie because you would be seen as if you were coming from a bank, that you had to wear a t-shirt, a jacket and sneakers.

There were even some signs of US influence on formal-regulative institutions in the region. For example, Google had set up Google Policy which includes policy advocacy among its activities in the region; supporting laws on issues such as e-business and intellectual property rights that would tend towards regulative convergence between Latin America and the US.

### 4.2.3. Hybridity

As a result of this, the digital start-ups in Latin America have a second type of dual hybrid embeddedness: they are embedded in a mix of local and global digital sector institutions. They draw knowledge, worldviews, values, and regulations from the local context but they also draw these same institutional components directly from the global/US context (and indirectly given the identified US influence on Latin American accelerators, training programs, government policies and other local context institutions). An alternative interpretation, then, would be that this represents a partial disembeddedness from the local context. This was often observed in the interviews, with US terms and ideas and businesses frequently referred to, and with the US perceived as the aspirational utopia: Silicon Valley as the promised land that a lucky few might one day reach. As the *Accelbra* manager stated, 'I always tell [e-entrepreneurs] ... you should move to the United States – now! Because the ecosystem of the United States is ready to support innovation and disruptive products, especially in "The Valley".'

## 4.3. Economic and socio-political environment embeddedness

The Triple Embeddedness Framework describes three domains into which enterprises are embedded: industry regime, economic environment, socio-political environment. While the boundaries of the three domains are fuzzy, the findings above have particularly sought to discuss the industry regimes (digital and product, local and global) into which Latin American digital start-ups are (partly) embedded. But they are also embedded into their economic environment and their socio-political environment, as we now explore further.

Embeddedness in the local economic environment is something of a mixed blessing. For example, in comparative terms, GDP per capita levels and digital connectivity levels are lower in Latin America than in the global North, which constrains the size of – and opportunities in – the local digital economy (OECD, 2017). However, there is a growing middle class in Latin America that is increasingly digitally connected, and this provides the main market and future opportunity for digital start-ups. Knowledge of this consumer group, knowledge of markets and supply chains in product and digital sectors, and broader knowledge of economic institutions in Latin America has been the foundation for all of the digital start-ups. As an example, a change in the law in Colombia led to a sudden increase in the number of older, second-hand cars being bought and run, and a demand from middle-class owners for trustworthy spare parts and servicing. Recognition of this opportunity underpinned the creation of the *Autocol* digital start-up which provides online booking of repairs and servicing with guaranteed parts sourced online and fitted by certified auto-service partners.

This local institutional knowledge and broader embeddedness in organizational relations have acted as a barrier to external competitors. Interviewees cited examples of US and other global North digital firms that had failed or struggled to enter the Latin American market because they lacked local knowledge or partners. Of course, that works two ways: digital enterprises built on specific local knowledge/relations and a market niche would themselves struggle to internationalize. *Autocol*, for instance, was built on specific knowledge of the auto-service supply chain and actors in Colombia, and a specific niche created by a government regulation ('Pico y Placa') that restricts cars in main Colombian cities based on licence plate numbers. *Autocol*'s knowledge, connections, and the niche did not exist outside Colombia. Having said this, roughly one-third of the digital start-ups had been able to use their local economic base as a source of wider competitive advantage in order to serve overseas customers. Typically this applied to those offering non-location-specific digital services like education or online marketing, and able to work in English as well as Spanish and Portuguese.

There was a somewhat similar sense in relation to investment. Local economic embeddedness – again institutional knowledge and network relations – gave digital start-ups access to finance at various points in their lives: conception-stage investment from family or friends; early-stage investment from government grants or local seed investors; growth-stage investment from venture capitalists. In

some cases, this investment would come from external sources; typically from the US. US investors were reported rather reluctant to invest direct in DSs; saying they lacked knowledge of Latin American markets and other institutions, and they lacked trust in those they did not know and work with directly:

for [US investors] to invest in Latin America was something crazy; in Silicon Valley, they want to be close to the start-up, to be able to go and see what the guy doing the Power Point is working on in his garage. (*Langlatam* e-entrepreneur)

Such investments were thus generally brokered via national accelerators or by larger digital firms in the local market: actors with whom US investors did have historical relationships and did trust.

US funding ebbed and flowed depending on the stability of those markets. Inherent institutional instabilities in Latin America have led to periods of economic instability, including currency devaluation (Reyes & Sawyer, 2016). The intermediaries working with US investors reported this had dissuaded potential digital economy investors and/or made them shift only into lower-risk investments. Institutional constraints have also hampered local investment: 'Because there have not been many cases in Colombia of investment in start-ups, the investors do not know how to value a company' (*Autocol* e-entrepreneur); 'The investors here invest their money in real estate, and they tell you: "to invest money in a project like yours, I'd better wait until it is more mature"' (*Mex-accel* manager). The limited history and small size of the digital economy means there is limited knowledge among investors. This involves not just a lack of technical knowledge of how to value digital enterprises and the tendency to use traditional valuation methods which discourage investment, but also a lack of case study narratives among investors of successful investments. In addition, the high attrition rate of digital start-ups is problematic in some countries where complexity or risk of liability and bankruptcy legislation steers investment into safer, more traditional sectors. One investment fund manager reflected on the implications of legislation in Argentina:

"Investors have such a giant liability. People can come and sue and take their house; because, as a stockholder of a company you may need to respond to the [digital start-up's] obligations with your personal property. And with such a high mortality rate in the Internet industry, suddenly an angry customer who is not in his right mind can take everything from you." (*Fundarg* manager)

This last point can also be seen as an example of political embeddedness: the way in which digital start-ups are enmeshed in the formal-regulative policy institutions of their context. There is evidence of benefits as national governments in the sample of Latin American countries have sought to promote the digital economy. ICT infrastructure policy has accelerated the digital foundations necessary for the start-ups and their markets through a mix of deregulation, encouragement of competition, reduced taxes, but also interventions including subsidies such as universal service funding, and broad-scale programs for ICT skills training (Gallego & Gutierrez, 2015). More specifically there have been digital economy policies that have been almost entirely state interventions. An example is the Apps.co program of the Ministry of ICT in Colombia. As noted above, this has provided training programs to build higher-level skills such as programming or Lean Start-up. It has also run digital enterprise networking events to help build relations, and mentoring programs that build relations but also help share knowledge, ideas and norms. In all four Latin American countries, there were similar government-run programs and events.

There has also been funding provision. Sometimes this has been direct, as for example in the case of the *Databra* DS in Brazil: 'We have benefited from programmes launched by the government ... It is amazing that one country ... be willing to give you money to launch a private enterprise.' In other cases, funding runs through accelerators: 'Start-up Brazil ... co-invests with the accelerators and I think that makes more sense because it really motivates us to invest ... and I think that we help them to be more selective, we can improve the use of resources' (*Accelatom* manager). Further, government has itself helped to create this type of institution, as one Mexican interviewee evidenced:

Now more incubators and accelerators are appearing thanks to the INADEM [National Institute of Entrepreneurs] ... They give accelerators up to fifty million pesos [c.US\$2.6m], so that we put in the other fifty per cent and start

generating investment funds. That has attracted about twenty funds in the last semester and a record number of accelerators were created. (*Mexacel* manager)

This government 'stamp of approval' on the digital sector was therefore seen to help reduce some of the perceived risks mentioned earlier.

Thus government actions have directly supported formation of individual enterprises; indirectly acted 'as a catalyst in weak and embryonic ecosystems, leveraging or creating institutional infrastructure and the actors that bring them to life' (Kantis et al., 2012, p. 39); and even more indirectly raised and legitimized the profile of digital start-ups helping, for example, to encourage others to invest.

But political embeddedness also has its downsides. Complex labor laws were cited by some of the e-entrepreneurs as making it less likely that they hire new staff. Weak or outdated intellectual property protection arose as a concern for those seeking to protect the apps they had developed. For example, in Brazil, 'Federal law is interfering in the market dictating what type of IP you can use and apply' (*Accelbra* manager). Intermediaries dealing with investment also identified problems with what they saw as business-unfriendly bankruptcy laws and ineffective judicial enforcement systems. They argued these institutional forces acted as a disincentive to investment, imposed additional costs on enterprises and compelled them to shape themselves to these forces, as the *Accelbra* manager again exemplified, 'If you don't have a business model that can work well in the bureaucracy of your country, you just don't have a business model.' Higher risks and lower rates of investment were also linked to the vulnerabilities of political institutions more broadly in Latin America which bring periods of political as well as macro-economic instability (Biglaiser & Staats, 2010). As an example, problems in Brazil under then-President Dilma Rousseff were seen to be reducing investment and channelling existing investments towards more traditional enterprises.

Finally, knowledge of the local social environment was essential for the digital start-ups: of course knowledge of Spanish and/or Portuguese but, beyond that, interviewees mentioned country-specific accents and idioms that help make a connection with local consumers, and build business. Trust was also repeatedly mentioned by interviewees: something that particularly tends to be in short supply when national institutions are relatively weak (Martinez & Williams, 2010). In combination with local market knowledge, working to build trust meant different things: for some digital start-ups, it meant working with established partners in the product sector; for others, it meant incorporating human intermediaries into transaction chains since customers were used to human contact.

But general lack of trust could also provide a space for innovation. In the *Autocol* example already cited, a key problem for consumers was their lack of trust in auto-servicing firms and the lack of knowledge and circulating information about quality of parts and servicing. Identifying these institutional weaknesses, *Autocol* was able to build an online business which created an institution of trust. Similarly, Easy Taxi has been able to expand its online Uber-like business into a number of Latin American markets partly because local taxis were not trusted due to safety fears (Gomez-Morantes et al., 2019). So while, in general, institutional shortcomings in Latin America constrain digital start-ups, they sometimes highlight a business opportunity.

## 5. Discussion

We now discuss findings in light of earlier literature, based on the three components of our research question: extent, nature and impact of embeddedness.

### 5.1. Extent of embeddedness

General literature about the extent of embeddedness argues both for and against the idea of a dis-embedded digital economy (e.g. Cairncross, 2001; Matuschewski, 2006). However, prior work with a development focus has emphasized the embeddedness of digital enterprise in the global South (Avgerou & Li, 2013; Sandeep & Ravishankar, 2015). Our findings reinforce this emphasis. There

was little support for the disembeddedness argument. At most, these Latin American digital start-ups can be read as partly disembedded from certain institutional environments such as their local industry regimes. The greater weight of our evidence was for embeddedness. But the findings presented here go beyond earlier work by exposing other aspects of embeddedness, which we discuss next; including returning later to the issue of the extent of embeddedness.

## 5.2. Nature of embeddedness

Prior work on digital enterprise, embeddedness and development has tended to be rather unidimensional in its understanding of domains of embeddedness: focusing on either economic or social context (Avgerou & Li, 2013; Flecker & Schonauer, 2016; Sandeep & Ravishankar, 2015; Wood et al., 2016). The conceptualization used here offers a fuller picture. We found evidence that the start-ups we studied are embedded in all three of the Triple Embeddedness Framework (Geels 2014) domains: industry regimes, economic environment, and socio-political environment. This multiple embeddedness in the three TEF domains can be understood as hybrid embeddedness. By this, we mean that there are specific influences arising on the digital enterprises because they sit at the intersection of different components of context: technical knowledge, worldviews, norms, regulations and relations from industry regimes shape the activities of e-entrepreneurs and their enterprises; the economic environment shapes their markets and funding; so too do features of the socio-political environment such as wider policy, language and trust.

Recognition of this domain hybridity is inherent to the TEF. However, alongside this domain hybridity, the digital start-ups were seen to have two other forms of hybrid embeddedness. First, was a sectoral hybridity, with the DSs embedded at the intersection of both a more-established product sector and a less-established, emergent digital sector. Second, was a scalar hybridity, with DSs embedded more-strongly in their local (national) context and less-strongly in a global (US-oriented) context. These are emergent findings: not anticipated from the original review of literature.

We did identify from the wider literature various types of embeddedness that operate within these domains: territorial, institutional (functional-cognitive, cultural-cognitive, normative, and formal-regulative), and network (core, periphery). We can now examine each in relation to its role within earlier research on digital enterprise and development.

Taking the first type, little evidence emerged of physical embeddedness in an actual locale. There were physical elements but they were transient: the meeting of an association, or attendance at a Start-up Weekend. The absence of a territorial component within the TEF meant this was not a clear thread in our interview schedules: the 'local' and ideas of place were both understood and analyzed here largely in terms of the national context of institutions and network relations. It is possible that a different approach could have exposed a greater role for physical embeddedness of digital enterprises, as earlier work has suggested (Wood et al., 2016). However, this did not emerge from our more open interview responses or from other evidence sources.

Analyzing the second type of embeddedness – institutional embeddedness – there has been little prior literature linking this to digital enterprises in the global South, though it was a thread in the wider literature on ICTs and development (Avgerou, 2010). We did identify a relative lack of institutions within the local digital sector. Yet, as we have seen, institutions of all four kinds – functional-cognitive, cultural-cognitive, normative, and formal-regulative – are required if enterprises and their broader sectors are to function. So, especially in the last decade or so, there has been a necessary process of institution formation in Latin American digital economies. Local actors have worked to create these institutions; for example, government has set up policies and organizations; entrepreneurs and accelerators have created communities, groups and events; local associations have created norms and shared technical knowledge. But institutional forms have also been drafted in from outside, especially from the US: technical ideas, business models, start-up methodologies, digital sector norms and aspirations and identity, even policy templates.



Then, we can turn to the third type of embeddedness: network embeddedness. Our study supported earlier findings on the importance of social networks to digital enterprise in the global South (Avgerou & Li, 2013; Sandeep & Ravishankar, 2015; Wood et al., 2016). We saw this especially in the value of links to other economic actors and the importance of trust. But we were also able to analyze network embeddedness using Geels' (2014) language of core and periphery.

We can analyze this most clearly in global terms. From this perspective, the US is the core of the digital economy, and Latin American digital sectors are on the periphery. The US has been an institution-maker and Latin America an institution-taker if we think of all the types of knowledge, norms, policy forms, etc. that flow from global North to global South. US actors have also been responsible for some level of resource inflows such as skills and finance. We found a key role has been played by intermediary organizations. Some of these are what we could call 'core-periphery' intermediaries like UP Global or Google Policy: actors based in the US core stepping in to connect with actors within Latin American markets. Others – such as accelerators and government agencies – are 'periphery-core' intermediaries: Latin America-based organizations stepping out to connect with US actors. While not previously discussed in the small embeddedness literature on digital enterprise and development, the presence of intermediaries linking between local and global networks is noted in wider literature such as that on IT outsourcing to countries of the global South (Nicholson & Sahay, 2004; Rai et al., 2009).

Some of this earlier literature saw peripherality as problematic, highlighting difficulties for IT outsourcing and IT transfer to those countries (Nicholson & Sahay, 2004; Westrup & Liu, 2008). This was echoed by some of our findings. The tendency for institutions to flow from core to periphery reflects the relative institutional shortcomings of the Latin American digital economy: a relative institutional vacuum into which US institutions will move. And we saw other disadvantages of the institutional shortcomings associated with economies more on the global periphery<sup>1</sup>: instabilities, uncertainties and absences that all appear to constrain levels of digital start-up, investment, growth, etc.

However, our findings suggest peripherality is not solely problematic. One can interpret the evidence presented above by envisioning a 'semi-permeable membrane' around Latin America's digital economies. Institutions – at least in the form of knowledge flows – move fairly readily from core to periphery across that membrane, assisted by the intermediaries that act as transport points. But flow in the opposite direction is more constrained. Lack of outflowing knowledge and relations limits foreign investment but it also partly protects local economies from competition – only those who are embedded inside the membrane understand local institutions well enough to compete. And understanding those local institutions means understanding both their strengths but also their shortcomings; shortcomings which can sometimes be commuted into digital business opportunities as start-ups replace weak existing institutions with stronger digital versions.

### 5.3. Impact of embeddedness

Lastly, we can reflect on the third main area of discussion from the literature: the impact of embeddedness, though this was found to be completely intertwined with questions of the extent of embeddedness. The incipient – relatively weak or absent – nature of institutions and relations in the digital sector is mirrored by the typical strength of institutions and relations within the product sectors in which digital start-ups operate. As Geels (2014) predicts, strong embeddedness within those institutions is generally a barrier to innovation: a mutual interactive process of institution-formation and behavior-shaping means that long-term incumbents have limited incentive to innovate and limited ability to do so. Hybridity here has been an asset for many DSs. Being partly embedded in two sectors, they are not fully embedded in either (or, where they are strongly embedded in the product sector, they have taken actions to partly disembed themselves, as in the case of *Insurarg*). They have been able to cross-fertilize knowledge and other institutional forms from one sector to the other (often globally sourced in the case of the digital sector). But that disembeddedness



must not be too great: again, we saw examples of relatively-disembedded enterprises struggling or failing as a result of their lack of knowledge, relations, norms, etc.

The concept of ‘optimal embeddedness’ therefore emerges: those digital start-ups that succeed do so because they are neither too heavily embedded nor too heavily disembedded (we could call this ‘Goldilocks embeddedness’ if it is ‘just right’). While not used in any of the literature on digital enterprise and development that we reviewed, this could be seen as implicit to the idea that embeddedness can be both a strength (e.g. Sandeep & Ravishankar, 2015) and a constraint (e.g. Flecker & Schonauer, 2016). The clearest evidence of optimal embeddedness related to the product sector: an environment of mature institutions in which successful DSs were not so core that they are trapped as if in institutional concrete, but not so peripheral that they lacked access to circuits of knowledge and capital and other resources. We could also understand optimal embeddedness in other terms. In relation to the digital sector, institutions and relations are relatively formative so enterprises are not yet constrained by being too-strongly embedded in this sector. In local/global terms, DSs that were internationally successful were sufficiently embedded in their local markets to understand them and to build a business, but not so embedded that they could not transfer their services or business model into overseas markets. In socio-political environment terms, being embedded in a context of relatively weak (i.e. low-trust) institutions provided a business opportunity for those who could create new, digital institutions that were trustworthy.

## 6. Conclusions

Seeking to build a more conceptualized understanding of the relation between digital enterprise and global South contexts, we chose to focus on the idea of embeddedness and selected a theorization not yet used in the domain of ICTs and development: the Triple Embeddedness Framework. This was a specific response to lack of knowledge around digital enterprise and embeddedness in development contexts. It was also a response to the more general call for more and more-conceptualized work on digital and embeddedness in international development (Avgerou, 2008; Ramadani et al., 2018). We used the TEF to address a research question that looked at three debated issues: extent, nature and impact of embeddedness. We investigated these in relation to digital enterprises in the global South; specifically studying a set of digital start-ups based in four Latin American countries.

Looking at extent of embeddedness, the greater weight of our evidence was about the embeddedness of these enterprises in multiple domains and involving multiple types. While this would be consistent with most prior literature on digital enterprise and development (Avgerou & Li, 2013; Sandeep & Ravishankar, 2015; Wood et al., 2016), we also found some level of disembeddedness to be present. This, therefore, led to a key original contribution: the emergent concept of ‘optimal embeddedness.’ This was a level of embeddedness associated with successful digital start-ups: strong enough to provide essential institutional support to digital enterprises but not so strong as to trigger lock-in effects that were seen to constrain innovation.

In terms of the nature of embeddedness, we found these global South digital enterprises to be embedded in multiple domains. From this first application of the Triple Embeddedness Framework (Geels 2014) to digital enterprise, the evidence showed embeddedness in the three domains of industry regime, economic environment and socio-political environment. While this is an original finding in relation to digital enterprise, we make a further contribution because, beyond this, we found a need for further disaggregation that saw these digital enterprises embedded in both product sector and cross-cutting digital sector industry regimes, and in both a local and global scale of industry regime. More than just being an example of multiple embeddedness, we identified a second emergent concept: that these enterprises experience ‘hybrid embeddedness.’ This means that there is an institutional intersection and even cross-fertilization between the sub-domains, with examples of both sectoral and scalar hybridity being demonstrated.

We established three types of embeddedness from the wider literature: territorial, institutional and network. We found little evidence of physical embeddedness in an actual locale and findings were instead oriented towards institutions and networks. The earlier review found little use of an institutional lens to analyze embeddedness of digital enterprises in the global South. Our analysis of institutional embeddedness is thus also an extension of past research. We showed how different forms of institutional embeddedness – functional-cognitive, cultural-cognitive, normative and formal-regulative – all played a role in shaping the activity of the Latin American digital start-ups.

Our work reinforced previous findings (Avgerou & Li, 2013; Sandeep & Ravishankar, 2015) on the importance of network relations for digital enterprise in the global South. These digital start-ups were embedded in the space of networks: in a set of relationships mediated offline and online with accelerators, investors, government agencies, suppliers, customers and other sources of knowledge and resources. We extended earlier work by investigating not just network relations but also network position. We highlighted the role of core actors such as accelerators within local industry regimes, but also saw networks on a broader scale in which Latin America was peripheral to a global (US-centered) core. From that perspective, actors such as accelerators then appeared as intermediaries between that global core and the local periphery.

As well as identifying the importance of intermediation in understanding embeddedness, our work also challenged earlier ideas about the downsides of peripherality for enterprise in the global South. While these were seen, resulting from weaker institutions and relational ties, they were less than anticipated. We contributed the emergent concept of the ‘semi-permeable membrane.’ Ideas and some other resources could flow in to assist the start-ups but they had some relative protection from external competition, and could even find business opportunities in the weaknesses of local institutions.

Though we have necessarily referred to it already, we turn finally to the issue of the impact of embeddedness. Consistent with some past literature (Sandeep & Ravishankar, 2015), we found positive impacts of embeddedness on digital enterprise. Embeddedness has allowed these global South digital start-ups access to vital assets including financial capital for investment, knowledge capital (business models, digital innovations, understanding of customers and regulations, etc.) for innovation, and social capital for access to markets and other resources. But the concept of optimal embeddedness reflects not just this positive impact, but also the negative impact of institutional and network lock-in that was shown to constrain entrepreneurship and innovation. Optimal embeddedness means being partly embedded within context but also partly disembedded from context. Alongside hybrid embeddedness, this latter has allowed these digital start-ups to combine knowledge and other resources across sectors and across scales. This capability has underpinned their innovation, flexibility and growth and, for some, internationalization of operations.

In sum, through this first application of the Triple Embeddedness Framework to global South digital enterprises, we have demonstrated a new way for digital-and-development researchers to theorize the relation between digital enterprise and context. We have shown support for the small body of earlier literature by demonstrating the importance of embeddedness to this form of digitally-oriented economic activity. We have, though, extended past work in four ways; offering researchers and others a much richer understanding of the relation between digital enterprise and development context. Through the concept of optimal embeddedness, we have shown the importance of both relative embeddedness and disembeddedness to these digital enterprises. Through the concept of hybrid embeddedness, we have shown the complex pattern of embeddedness of global South digital enterprise. And we have shown the importance of this hybridity – both sectoral and scalar – and its consequent potential value through cross-fertilization between domains. We have shown the importance of a broader range of elements of embeddedness: the three domains of the TEF, and further types of embeddedness, particularly the role of network position and institutional embeddedness. Lastly, we have given some insight into the way in which embeddedness is influenced by specific features of digital start-ups in the global South; notably their relative peripherality in economic terms that is partly protected.

A limitation of our work is that this represents an inductive first exposure for these conceptual extensions. This helps shape a future agenda for researchers looking to study digital enterprise and development. Further research will be needed to investigate the presence – or absence – of our conceptual extensions in other settings. In addition, the Triple Embeddedness Framework was a useful starting architecture for understanding the embeddedness of digital start-ups in Latin America. While its constituent elements are drawn from prior embeddedness literature, it for the first time brings together in one framework all key embeddedness concepts for understanding enterprises and their sectors; concepts which were all of demonstrable relevance here. It also provides in one frame the locus for application of cross-cutting ideas: both existing ones such as core and periphery, and emergent ones such as hybrid and optimal embeddedness. Without the TEF, then, we would not have been able to present a full picture of the experiences of these digital start-ups. We, therefore, hope to see further research applying the TEF to other types and location of global South digital enterprise.

But the TEF has limitations. Some of these, such as the absence of territorial embeddedness, were not particularly problematic here. Others had to be addressed by modifying the application of the Framework, with this type of enterprise requiring a more complex conception of embeddedness; particularly in understanding the industry regime. It is this modified version of the Framework that we recommend for future research on digital enterprise. The sectoral hybridity that arises from digitality requires two industry regimes to be analyzed. The scalar hybridity that arises from peripherality requires multiple scales of industry regime to be analyzed. Our findings have also been shown to complexify the ideas of core and periphery with, for example, local accelerators being peripheral to the core (US/global) industry regime, but core to the peripheral (national/Latin American) industry regimes. Thus any analysis of network position needs to add in the notion of intermediaries given they were seen to be essential to institutional flow between the different contexts into which Latin American digital start-ups were partly embedded, and particularly to the central process highlighted in the study: the flow of knowledge. Such analysis could seek to draw on network science to provide a more quantified understanding of network positionality and relationships. This could be a one element in moving from the explanatory use of the Framework, as here, to a more predictive application.

Finally, we may consider the practical implications of this work for key practitioner stakeholders. Governments in Latin America have been relatively supportive of digital start-ups; implicitly recognizing the need for institution formation within the digital sector and developing a set of interventions that have enabled this. This certainly needs to continue. As reflected in the partial global embeddedness of DSs, local digital sector institutions in the global South are still relatively weak, and government can particularly recognize the value of network intermediaries that are themselves institution builders and relation builders both within the local digital economy and between local and global digital economies. The hybrid sectoral embeddedness of digital enterprises is harder to address but it reflects a broader issue: that the notion of a bounded digital economy is giving way to a bleeding of the digital economy into all product sectors. Hence, that product sector policy must increasingly become digitally literate, and recognize the hybridity seen on the ground.

One strategic implication for Latin American digital start-ups is their need to recognize the nature of their embeddedness. For example, to recognize the optimal embeddedness ‘sweet spot’ and self-analyze the extent of constraint and freedom imposed by embeddedness in both digital and product sectors. Another implication is the applicability of business ideas, of business strategies, and of business methodologies like Lean Start-up which are all accessible because of the DSs’ partial global/US embeddedness. These assume relatively mature and stable institutional contexts; enabling a focus solely on the economics across a single supply chain. This assumption mismatched the complexity of sitting at the intersection of two sectors, and the relative volatility of being embedded within a global South institutional environment. Thus, Lean Start-up needs to be re-scoped to take a broader bi-sectoral and economic and socio-political environment remit, with the start-up process understood to be more contingent due to institutional shortcomings that are often found in global South settings.

## Note

1. Latin American economies are perhaps better thought of as 'semi-periphery,' but for simplicity we will just focus here on their relative peripherality vis-a-vis the US.

## Disclosure statement

No potential conflict of interest was reported by the author(s).

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