RESEARCH ARTICLE

Conceptualising regional skills ecosystems: Reflections on four African cases

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Abstract

In this article we address the debate on regional skills formation systems in Africa. We draw on the social ecosystems model (SEM) developed by Hodgson and Spours to analyse data from four case studies that reflect the complexities of African economies, rural and urban, formal and informal. The SEM model helps us focus on the three dimensions of a strong skills ecosystem: collaboration between a range of actors, key institutions and system leaders within the region (the horizontal); top-down policies, regulations, and funding streams that enable or constrain the regional skills ecosystem (the vertical); and the points where these two interact, often through mediation activities. In the case of the last of these three, our cases point to the importance of nurturing organisations which can provide SEM leadership, particularly in more fragile ecosystems. Yet, in none of the cases, are public vocational institutions playing the strong anchor role envisaged in the model. The significance of the paper lies in three ways it develops the SEM in relation to regional skills ecosystems. First, we problematise the notion of a facilitatory state and place it within wider national and global webs of power. Second, we insist that the local or regional is always embedded in and networked into myriad national and international levels. This requires a more complex

understanding of how social skills ecosystems operate. Third, the notion of an anchor institution requires further elaboration. In most social ecosystems these institutions need to be built or strengthened and a clearer understanding is required of the processes of institutionalisation and what mechanisms make it possible to build this capacity and sustain it over time.

INTRODUCTION

Across Africa, vocational education and training (VET) is viewed by policy makers and international development agencies as a solution to pressing social and economic concerns. However, dominant approaches to VET in Africa are flawed (McGrath et al., 2020). Reflecting parallel governance turns in international development and VET policies in the 1990s (McGrath & Lugg, 2012), policy approaches focus on getting national skills systems 'right' at the expense of thinking about local and regional labour markets and skills formation systems. Theoretically, a focus on firms within the nation-state has long been the key unit of analysis as the default position of the political economy of skills tradition, notwithstanding recent efforts to build a more multi-scalar account (Emmenegger et al., 2019). Yet, there is a long-standing social science tradition, traceable at least to the work of Alfred Marshall (1890) on industrial districts and possibilities arising from thinking about local and/or regional economic development (e.g., Amin & Thrift, 2017; Florida, 2002; Porter, 1994).

In this paper, we draw on four case studies of VET activity in diverse African contexts to illustrate the potential and limitations for thinking about regional skills systems. The study was premised on an understanding that VET systems were not functioning effectively and that new approaches were required. This was informed by a number of critiques of traditional VET systems as being focused on the formal economy, insensitive to local context, and unable to address the challenges emerging from climate breakdown, new technologies and migration (UNESCO, 2016). VET varies comparatively across regional, political and economic contexts. In our case countries (South Africa and Uganda) we adopt an expanded notion of VET which accounts for colonial and post-colonial / post-apartheid impacts on VET and skills systems. We view VET as encompassing public and private VET provision (for-profit, not-for-profit, religious, secular, formal and non-formal), but also skills formation in the informal and subsistence economies. In response to these configurations, we began theorising the skills systems through a regional lens by drawing on a growing literature about skills ecosystems (e.g., Buchanan et al., 2017; Finegold, 1999; Hodgson & Spours, 2018). We draw particularly on the work of Spours and colleagues (Grainger & Spours, 2018; Hodgson & Spours, 2016, 2018; Spours, 2019) and their social ecosystem model (SEM) as this foregrounds a more regional, place-based model of skills development. Whilst this literature emerged in the Anglophone developed world (USA, Australia, UK) and initially in the most economically 'advanced' regions therein, we apply the SEM model as an analytical tool to the very different contexts of Uganda and South Africa. Their worlds of work are characterised by large urban informal and rural subsistence economies (alongside a substantial formal sector, both urban and rural, in the case of South Africa). Their respective states function in ways that are very distinct from each other and from the contexts in which skills ecosystems models were developed.

In what follows, we begin by summarising the methodological approach we have taken. Next, we highlight key elements in the skills ecosystems literature as it has evolved. We then focus on the approach of Hodgson and Spours as having the greatest potential to engage with our concerns and use their model to explore data from our four cases before asking what this approach tells us and where we might want to go next in developing this approach for other regional contexts.

METHODOLOGY

This paper draws on a three-year collaborative project between 20 researchers at four universities in Uganda, South Africa and England. We adopted a multi-case, multi-method approach, co-constructed by the team through a series of workshops, interspersed with extensive exploratory fieldwork. The approach to data collection had to be refined iteratively during more than a year of various COVID-related restrictions. The methodology was organised around case study locations that broadly reflected exemplars of diverse contexts and development trajectories, with state-led formal national VET systems that were deemed to be largely ineffective (McGrath et al., 2020). The cases were chosen to reflect a rural-urban spectrum, with different degrees of economic formality.

The first case, the eThekwini Metropolitan region, is a large urban conurbation with significant levels of industrialisation, in the KwaZulu-Natal (KZN) province of South Africa. The South African state had embarked on a series of major development programmes, attempting to leverage the strategic gateway function of the port and airport, through extensive logistics and transport infrastructure development. These programmes included an explicit skills dimension. Within this, we focused on the maritime sector, otherwise referred to as the Blue or Oceans Economy. The second South African case was the rural area around Alice, a small town in the Eastern Cape province with a focus on small-scale agriculture, and particularly a learning network centred on water conservation. Third, the Bunyoro-Kitara Kingdom of Western Uganda, centred on Hoima, where a longstanding tradition of subsistence agriculture has recently been confronted by oil exploration. This potential resource extraction has generated a range of direct and indirect activity including the construction of an airport, development in the hospitality sector, and a refinery and pipeline under construction. Finally, the city of Gulu in Northern Uganda, formerly the centre of international humanitarian efforts in the wake of the infamous Lord's Resistance Army conflict and now attempting to develop economically with the assistance of multiple NGOs, whilst remote from much formal economic activity in East Africa. Here we focused on the intersections between the formal and informal economy in a context in which significant social stress had been experienced.

Across the sites, various methods were used: both face-to-face and online interviews and focus groups (with learners and staff in vocational institutions, employers in the formal and informal sectors, civil society actors and youth); participatory action research with community groups and VET college staff; analysis of social media interactions in learning networks; surveys of lecturers and analysis of policy texts. In all cases, team members had been involved in skills development activities prior to the research and made use of the insights gained to reflect critically on these diverse cases.

THE SKILLS ECOSYSTEM CONCEPT

The skills ecosystems literature is conventionally dated to Finegold's 1999 paper, which draws on his earlier work on high and low skill equilibria (Finegold & Soskice, 1988). Skills ecosystems

are regional or sectoral configurations of skills formation (Buchanan et al., 2017). They place attention on networks and connections between various actors. The skills ecosystems perspective leads to a focus on context and connectors, those individuals and organisations who bring people into cooperation when competition might otherwise be more natural. It grows out of and exists within the wider political economy of skills literature, but problematises its assumption about the unit of analysis, that of the firm within a national economy. Instead, the approach focuses on sectoral and regional levels, much like the regional innovation system literature (Lund & Karlsen, 2020). Like the much older industrial districts literature, this initially focused on empirical studies of high skill spatial-sectoral clusters, such as Silicon Valley. More recently, Buchanan and Spours (both with various colleagues) have moved towards a more intermediate skills level approach. However, the literature is concentrated on Anglophone OECD states, though there are parallel concerns regarding a different scalar focus in other traditions (e.g., Emmenegger et al., 2019; Wiemann & Fuchs, 2018).

Moving away from a high skills orientation, Hodgson and Spours develop a more place-based "comprehensive ecosystem model that emphasises education/employer co-production of skills for an inclusive and more equal community that also links working and living" (2018, p. 4). This shift to *social* ecosystems foregrounds certain value propositions that move away from approaches that privilege economic growth to an approach that envisages the "bringing together of a wide range of social partners around the relationship between working, living and learning", i.e., recognising that economic activity and its associated skills needs are embedded within wider social, spatial and ecological contexts. The approach favours and offers a more inclusive model of social collaboration that sees "a particular role for local anchor institutions, such as further education colleges, that can facilitate 'citizen pathways' to new jobs and sustainable living" (Hodgson & Spours, 2018, p. 3). The SEM therefore represents prospective theorising with a strong normative underpinning.

The SEM draws on a theoretical framework that emerges from Finegold, together with a spatial adaptation of Bronfenbrenner's human ecological systems (1979), and the addition of a third element, concepts of "mediators and ecosystem leadership" (Hodgson & Spours, 2018, p. 4). They offer this as an alternative to "the increasingly worn-out neoliberal binaries of marketisation and managerial state, and as a movement towards a more collaborative, devolved, networked and civil society concept of governance and leadership" (Hodgson & Spours, 2018, p. 6). The SEM uses the four core elements that Finegold (1999) highlights: (i) 'catalysts' which can trigger development; (ii) 'nourishment' to provide a stream of new talent; (iii) a 'supportive environment' and (iv) 'interdependence' between the ecosystem actors. It relates the four elements horizontally and vertically through system leadership and common mission (the mediation space). This forms the foundation of the SEM and three key concepts.

First, 'facilitating verticalities' are those policies and actors that are intended to support learning, living and working. These include, but are not limited to, national/regional development policies, approaches to decentralisation, industrial and labour market policies, and education and training policies and associated funding streams and resources. These verticalities are often top-down.

Second, 'collaborative horizontalities' are the networks between various actors at the local level. As with the wider industrial district tradition, there is an emphasis on collaboration between actors rather than competition. In Hodgson and Spours' account, which is more strongly grounded in education than other versions, educational organisations, particularly vocational and higher ones, are emphasised as key to this dimension of the model. Spours (2019) argues

strongly that SEM flourishing is dependent on this network-building as it provides the supportive environment that enables institution building.

Third, 'mediation'[1] refers to the points of connection between these two dimensions. These include mediating individuals and organisations that connect horizontal networks and activities with the verticalities that facilitate and enhance skills development. Leadership of the ecosystem is vital in this mediation space. Hodgson and Spours argue further that social-ecosystemic skills planning leadership should be place-based and should involve capability to define the problem terrain, and the goal of inclusive sustainable social, economic and educational development.

The SEM is a model, and thus needs to be examined in relation to contextual conditions. Spours argues that it should be considered as a *long-term project* in which continued effort is required to "understand the configuration of forces needed for the flourishing of such a system and the nurturing of complex relationships over time" (Spours, 2019, p. 19). This literature has recently been applied explicitly to South Africa through Lotz-Sisitka's (2020) study of the extended public works programme. There are also resonances of the approach in the work of Kraak (e.g., 2009), who introduced the low skill equilibrium notion to South Africa in the early 1990s, and in more recent sectoral-spatial work by McGrath (2015) and Wedekind and Mutereko (2016) and Wedekind (2019). Both sectoral and spatial perspectives are also evident in the South African approach to development planning. This paper contributes to more recent attempts to apply and adapt skills ecosystems thinking in more diverse regional contexts (e.g., Brown, 2020; Lotz-Sisitka, 2020).

In the sections that follow we discuss each of the four cases drawing on the SEM to explore the dynamics of the actual or emergent skills system. We provide a brief description of the regional context before analysing the degree to which the skills ecosystem aligns with the features of the SEM.

SOUTH AFRICA

The first two cases are located in South Africa. The country is marked by the legacies of colonialism and Apartheid, extreme levels of inequality, disparities across geographic regions in terms of infrastructure and economic development, and major social challenges including high levels of youth unemployment, health and social care. Since the first democratic elections in 1994 the state has attempted to redress these inequalities and challenges through ongoing policy interventions, development strategies and social programmes, but economic growth and social cohesion remain weak.

eThekwini: A planned regional development agenda

The first case focuses on the eThekwini Metropolitan area in the province of KwaZulu-Natal (KZN), which includes the industrialised port city of Durban. It is strategically located on the eastern seaboard of southern Africa and acts as the key import and export point for the South African economic heartland, as well as neighbouring countries. The eThekwini Metropolitan area has experienced rapid population growth and is South Africa's third largest city with a population of over 3 million people. The local metropolitan council is of sufficient status to have membership of the global metro network, C-40. While the city has a large formal sector, it also has high levels of youth unemployment and dependence on various social grants.

eThekwini has had myriad economic and skills focused interventions. Parallel initiatives by a range of state actors at national, provincial and local level aim to stimulate economic activity, and many have an explicit skills development dimension. Specifically, the National Development Plan (Republic of South Africa, 2012) included a focus on large-scale infrastructure projects that sought to strengthen the economic capacity of specific regions to catalyse further development. An infrastructure development plan focused on port expansion, transport and logistics capacity on the corridor between KZN and the Gauteng province, coupled with the eThekwini Special Economic Zone, an associated TradePort and new international airport. Sectoral strategies were intended to realise the potential of being a coastal nation with opportunities for trade, shipping, exploitation of marine life, and tourism.

In various ways, these interventions represent 'facilitating verticalities'. For example, the Oceans Economy Phakisa strategy focused on wider skills demand that could be unlocked through better institutional collaboration. State-owned enterprises were to be central to this, although the government also encouraged participation by the private sector. Additionally, our mapping of the case revealed that several other actors generate facilitating verticalities in the ecosystem and are connected to specific institutions on the horizontal axis. These included provincial and municipal level coordinating structures, regulatory bodies and a company established to oversee developments in the Special Economic Zone.

The regional skills ecosystem also includes a range of actors operating on the horizontal axis. There are a number of higher education institutions, TVET colleges and a public schooling system that includes a small elite sector. The region also includes many enterprises engaged in skill development. Amongst the most significant are the state-owned enterprises, particularly Transnet, which has an in-house school that trains new and existing staff. In the private sector, there are various shipping lines, and small, medium and large maritime-related services companies with training programmes. There is also a strong presence of private training providers, both specialist and generalist. Moreover, relevant training is subject to a complex set of national and international regulatory bodies.

Significant in attempting to mediate the space between the vertical and horizontal was the presence of a set of industry-wide bodies who were key to helping build relationships, such as the eThekwini Maritime Cluster, established by the Metropolitan Council. This was established to play an activating role in the mediation space, potentially facilitating the creation of a common mission and purpose and offering elements of strategic leadership. However, VET has not been a priority action area for the Cluster.

The three public TVET colleges in the region do not offer maritime-specific occupational training, although there are logistics-related courses and those targeting more general sector-related trades such as welding, boiler-making and catering. However, the sense is that for these colleges and their students, access to the maritime sector remains a challenge. Reasons for this include difficulties accessing employers, skills and equipment.

The Department of Higher Education and Training (DHET) has responded by designating a TVET college, albeit outside the metropolitan area, as a centre of excellence with a new maritime academy. The Academy in this public sector college is an example of new qualifications and a new organisational setting developed as a response to bolstering the maritime sector and labour supply chain with students from previously disadvantaged backgrounds. This programme was a collaborative project between the DHET, the South African Maritime Safety Authority and the National Skills Fund, as per the ambitions of the Oceans Operation Phakisa. A college-led initiative to introduce a boat-building (e.g., yachts and small marine craft) qualification has also been developed in collaboration with the Maritime Cluster.

While both initiatives are responses to the national agenda, and demonstrate mediation between facilitating verticalities and horizontal actors, our case study suggested that they, and other initiatives, remain small and largely disconnected from the labour market, and are in competition with private or in-company providers. The qualifications, which conform to national programme design criteria, were not developed in consultation with local employers.

Similarly, a local secondary school designated as a maritime school by the Department of Basic Education is a response to the policy imperatives, but few of the other actors in the maritime ecosystem were aware of this and there was no sense that the subjects offered in this school provided any access to related programmes.

The above examples illustrate how national, regional and local dynamics are marked by pockets of fragmented coordination between actors in various parts of the skills terrain. There are skills policies that act as facilitating verticalities in terms of directly influencing, regulating and coordinating the skills decisions and practices of various actors, but not to the degree envisioned in the original developmental state rhetoric that birthed these policy initiatives. Rather, the regional and local dynamics appeared to be shaped by the siloed relations of actors each driven by their own set of specific interests and ethos, with some silos larger than others. The horizontal axis has a multitude of actors, but evidence of collaboration is scarce despite the deliberate intentions of several local actors to facilitate this. There appears to be a dearth of strong leadership and the absence of an anchor institution.

Alice

Alice, in marked contrast to eThekwini, is a small town in the Eastern Cape province of South Africa, part of the former homeland[2] of Ciskei, surrounded by subsistence farming, with considerable out-migration for work and increasing informalisation of local employment (Kavese, 2015). Land policies under colonialism and the Apartheid system resulted in an agricultural sector that is bifurcated spatially, and along largely racial lines. The growth of the informal economy, relative to the formal economy, and the possibility of small-scale commercial farming are central to the conceptualisation of the future of VET in this case.

The town of Alice has a rich endowment of historically-significant educational institutions, including Lovedale School and the University of Fort Hare, the most prominent historical black education providers in southern Africa. Within the case study area there is also a tertiary agricultural college under the Department of Agriculture, Forestry and Fisheries (DAFF) and a public TVET college.

The actors on the vertical axis are primarily state institutions concerned with natural resources and community development, rather than industrial skills policies. These include DAFF, the Department of Rural Development and Land Reform, the National Youth Development Agency and the Water Research Commission. Additionally, policymakers, both current and historical, are represented through various and often discordant policies that exert influence on the region. These are widely experienced as top-down processes. At the policy apex sits the National Development Plan, mentioned above, with several provincial, local and sector specific iterations adding to the facilitating verticalities.

However, above all this lies a set of economic, social and ecological dynamics which influence all aspects of the system. These include macroeconomic trends in unemployment, economic growth and climate change. Agriculture and rural development in the area are also profoundly shaped by the domination of the food system by supermarketisation, i.e., corporate supply chains, standards, packaging and logistics systems that effectively exclude small- and medium-sized

farmers. This has produced a spatially separate high-skills ecosystem that exists in direct competition to the smallholder farmers, both for economic and knowledge resources.

The gap between the agri-industrial and subsistence agricultural systems pulls against the notion of mediating institutions as they typically find themselves forced to choose between supporting two separate systems. The agricultural college has traditionally been focused on supplying agricultural extension officers. Although these are supposed to service all farmers, there has been a predominant focus on the needs of larger scale producers. Moreover, the TVET college delivers a curriculum that is largely indistinguishable from urban colleges, despite the radically different labour market context.

However, there have been recent attempts to support innovative smallholder farmers as an emergent third space within the agri-food system in the Alice area. One example of an initiative in this regard has brought together a range of local actors in a network established initially to facilitate learning about rainwater harvesting (Pesanayi & Weaver, 2016). Educational materials developed by the Water Research Commission were a catalyst for the emergence of a learning network that involved facilitation by Rhodes University, drew in agricultural college lecturers, extension officers and local farmers, and became a self-sustaining community of practice which has led to ongoing formal and non-formal skills development. Through the various processes and structures put in place by network members, opportunities for different actors within the region to engage in activities in the mediation space were opened up and encouraged. For instance, this has resulted in curricular redesign work at the agricultural college that is more locally focused on the needs of smallholders and cooperatives.

UGANDA

The final two cases are located in Uganda. Uganda also carries the legacy of colonialism, but also of a series of conflicts in northern Uganda (c.1981–2005). The majority of Ugandans depend on rural small-scale agriculture, though there has also been a period of rapid urbanisation around Kampala and smaller towns. Inequality and poverty have increased in recent years, and gender inequality is particularly apparent in agriculture where women constitute a large proportion of the workforce, but lack corresponding ownership rights.

Gulu

The third case focused on the City of Gulu and the Acholi sub-region of Northern Uganda. Through the early part of this century, Gulu was affected by the Lord's Resistance Army insurgency and then became the hub of a major international humanitarian effort as peace returned. Gulu gained city status in 2020, and there is a sense of a community attempting to construct a new development imaginary. Agriculture is a key sector but there are significant issues of environmental degradation and land poverty. Non-agricultural employment opportunities are constrained, and the formal sector remains very small, with larger markets very distant.

The vertical dimension of the Gulu skills ecosystems is highly complex. Nationally, the Ministry of Education and Sports (MoES) is responsible for VET policy and practice. However, skills policies to date have been characterised as poorly implemented and highly contradictory (GIZ, 2015; MoES, 2019). Local VET actors recognised various changes in the curriculum, but participants consistently spoke of the overly hierarchical nature of the VET system which did

not create space for stakeholder voice. Local government is also adjusting to city status and one of its key developmental roles is identifying participants for donor programmes. This leads it to play a gatekeeping rather than catalytic role. Various public and private VET institutes were originally donor-funded in the region in response to the humanitarian crisis, with mandates reflecting the need for social support (e.g., dealing with trauma) as well as more traditional market-responsive skills development. Many international actors remain present in the regional skills system, and a shift to more conventional vocational programme thinking has occurred.

On the horizontal axis, Uganda is characterised by a large number of very small skills providers, both in the public and private sectors. This contributes to a weak and poorly coordinated system (GIZ, 2015; Ministry of Energy and Mineral Development (MEMD), 2015; MoES, 2019). Whilst there has been a recent expansion of the public system, our data strongly suggest that donors, industry and communities have more faith in certain well-established private providers. Horizontal engagement amongst providers or involving national actors is limited. However, this is an area in which Gulu appears to be an emergent site of promising practices.

Gulu University is consciously seeking to be an anchor institution. It is part of, and catalyses, a wider network of organisations and young people collaborating horizontally on VET and livelihood opportunities. It is actively seeking to develop networks in agriculture and medicine with interested businesses, local government, vocational providers, and NGOs, primarily through research and projects across the formal and informal spectrum. This network also includes the Ker Kwaro Acholi, the traditional authority, which is keen to facilitate bottom-up, holistic development. However, it lacks capacity and is heavily dependent on external funding.

A legacy of colonialism is that education is regarded as a route out of poverty into white collar jobs. Consequently, Uganda has a powerful historically grounded narrative that VET is for 'failures' (Zeelen et al., 2010). This weakens local connectivities around skills. However, the regional youth and livelihoods alliance described above is working hard to change this mindset through a programme of awareness-raising, including regular youth 'learning cafes' (transformed into a radio series under lockdown). There is also the growing presence of recent university graduates emerging as strong community leaders with a vision of lifelong learning.

Finally, there is some evidence of adaptation and innovation at VET institutions. This includes offering their own certification as they believe this is more relevant to business needs than the national curriculum. Indeed, some business owners have also entered the training market due to a lack of available workers with the right combination of technical, business and social skills. Some business owners now take student apprentices from local VET institutions. Others were in the process of getting their training certified as a vocational qualification with the Directorate of Industrial Training, which also illustrates a degree of state-based facilitation on the vertical dimension. There is evidence too of greater adaptation to the local environment, and of introducing a stronger focus on career counselling. However, cross-institutional learning remains limited. Moreover, it is apparent that private institutions are more able to innovate than public ones as the public system remains highly centralised and poorly equipped to be facilitative.

Hoima

The Bunyoro-Kitara kingdom in Western Uganda, centred on Hoima, is the site of major oil and gas discoveries. An oil refinery and pipeline are under construction, as is a new international

airport and also several roads. New hotels and banks have opened. Yet, the region has historically been remote from political and economic power and is characterised by subsistence agriculture, with educational levels below the national average. Given the huge contrasts between the size of the oil and gas investment and the socio-economic status of the region, the situation is highly dynamic.

The vertical dimension of the skills ecosystems is highly complex. There is a fractious relationship between the government and major international oil companies (IOCs). A taxation dispute resulted in one of several delays to the project. Nonetheless, national content policy has been developed and, with donor funding and international consultant authorship, an oil sector skills plan produced (MEMD, 2015). Much of this policy remains poorly aligned. Most concretely, the hope that oil will bring local jobs led to the establishment of a national 'centre of excellence' for oil sector training.

The state has played some facilitating role through the investments noted above (although the funding was largely external). However, overall, the state appears quite distant. Local government is weak, and the kingdom only has cultural status. Thus, one interviewee characterised the Hoima community as "orphaned citizenry". There is little sense of leadership of a regional developmental state. Moreover, the national level also is not always the key locus of power. Rather, aid dependence combined with the IOCs' resources means that much that happens regionally is shaped extra-nationally.

Oil also has its own sectoral dynamics that make vertical facilitation more complex and limited. First, oil investments bring very few local jobs, and are extremely time-bound. Rather, professional and artisanal labour largely is internationally mobile. Most local jobs are elsewhere in the value chain, e.g., catering, transportation and security. Second, oil price volatility easily results in postponements of final investment decisions by several years. This makes skills planning exceedingly difficult, as Uganda experienced.

With these delays, there is a sense in the region that oil plays a shadow role. Beyond the IOCs and donors, the local skills ecosystem is much more concerned with the agricultural sector and with the traditional vocational trades. Providers are small and modestly resourced. Whilst national policy calls for them to be employer-led, there are very few medium-to-large employers with which to engage. Given the new hotels and the possibilities of oil-related catering jobs, it is notable that there are no formal catering skills providers regionally. As in Gulu, there is a legacy of anti-vocational attitudes but here it is not being addressed through the activism around youth futures seen in Gulu.

There is little sense of facilitation of collaboration, particularly amongst providers, on the horizontal axis, or of ecosystemic leadership. Indeed, one of the outcomes of our research are ongoing conversations about developing a regional association of VET lecturers. Regarding skills for oil, the most significant intermediary actor is the donor-funded Skills for Oil and Gas in Africa (SOGA) programme. SOGA identified the lack of collaboration as a key weakness of East African national skills systems:

> a key problem ... is that there is a weak set of institutional arrangements that should ensure a more effective relationship between supply and demand. (GIZ, 2015, p. 23)

SOGA works both to develop infrastructure in selected local institutions and to build lecturer capacity in several trades. Here it worked closely with one Hoima-based provider.

However, this is not to suggest that either this provider or the oil skills centre of excellence can be classed as 'anchor institutions'. The latter has a mandate to work with other provider

institutions, but its local reach is limited, providing technological qualifications primarily to locals. However, it does not appear to have close relationships with the main employers or donors. SOGA's favoured institution is faith-based and is also a trusted provider for several donors. However, this institution's infrastructure and ability to train directly for the industry is limited. Moreover, SOGA is not aimed at bringing the horizontal and vertical together in the sense that it does not aim to implement national policies and build national (public) systems, mindful of the bad track record of donor interventions in these areas (GIZ, 2015). Nor is it a conduit upwards of messages from the horizontal axis. Rather, it bridges between private actors and locals as individual clients. It prioritises neither national qualifications nor public institutions. Thus, its ability to facilitate mediation activity is limited.

DISCUSSION

The SEM provided us with an analytical tool to understand the regional skills systems in the four cases and, perhaps more significantly, pointed to absences. Through this process, we have developed the model to better describe the multiscalar, post colonial/post apartheid nature of the regional ecosystems represented in our cases.

In distinguishing between the two axes, the SEM helps to highlight the roles played by a range of actors and institutions and how these might shape interactions that facilitate place-based, socially just work opportunities that enhance living through learning. Its stress on the vertical dimension as key to facilitating skills development generates important questions regarding the extent to which policies, systems and investments are impacting on local skills development. Whilst Hodgson and Spours offer a normative reading of what facilitating verticalities could be and should do, the use of the lens across our four cases points to both limitations and possibilities regarding the vertical dimension.

Uganda and South Africa provide vastly different models of how a state operates rhetorically and practically to that envisaged in the SEM. In the former, the state remains largely adept at deploying political control but is far less capable in terms of either policy coordination or implementation of sectoral policies. New VET policies have emerged recently but there is no reason to think that these will be implemented more effectively than their predecessors. In the development field, the Ugandan state is heavily aid-dependent. Several key policy documents are externally funded and/or authored, whilst much implementation activity is either funded or delivered by 'development partners'. Also, in the Hoima case the IOCs are central and operate to timescales and make decisions that pay little heed to national considerations but have major consequences for Uganda. Beneath the nation state, there is little sense of a regional development agenda, although the recent move to city status in both locations and nascent developmental efforts by traditional authorities may point to the very early stages of such a vision. The Ugandan cases perhaps illustrate the absence of state-driven facilitating interactions on the vertical dimension.

By contrast, the South African state is more powerful and comparatively capable, though highly unevenly so (Mamdani, 1996). The eThekwini case has been significantly shaped by national aspirations to be a developmental state, and emerges from multiple major policy initiatives around the ocean economy and infrastructural development. Notionally, this is undergirded by a provincial government and a significant metropolitan authority. Each state level, together with a range of state actors, such as regulatory bodies, signal vertically into the ecosystem. These signals are intended to be facilitating verticalities. However, implementational capacity and influence appear far weaker than policy capacity, as is typical in South Africa. Consequently, these multiple

signals generate activity and responses in an uncoordinated and, sometimes, contradictory fashion. The skills development aspect has been largely neglected. Even where skills are prioritised, there is a powerful sense of needing to rely on private providers to help deliver programme objectives rather than addressing wider national skills goals.

The state also is visibly present in the Alice case, and (vertical) policies still shape its contours. However, there is also a sense of certain spaces being opened up by the relative absence of the state. For instance, the relative autonomy afforded the agricultural college by a comparatively absent DAFF allowed it to engage in curriculum processes at a local level that were not possible for TVET colleges in eThekwini. The case also sees a relative absence of other levels of the state, in contrast to eThekwini where the provincial and municipal governments are actors, at least in terms of contributing to the complexity of policies and jurisdictions. International partners are not a major feature in either South African case, but large, national firms (including parastatals) are clearly important in eThekwini, where meeting international skills standards is important, as in Hoima.

On the horizontal dimension, the keyword in the SEM is collaborative. This directs attention not just at which institutions and other actors are present but their patterns of interaction. In each case, some institutions are more central to activities, with others more marginal or entirely absent. The nature of interactions between institutions and wider stakeholders also is important. In Alice, there is a strong sense of a small core group of institutions but also the relative absence of other apparently significant providers. Here, the learning network offers a particularly strong example of central involvement of community actors. Amongst those present, communication appears strong. In Gulu, there are signs of attempts to build a network of actors that includes diverse sets of both public and private providers, and other stakeholders, but this network is very new and fragile. In eThekwini, the public TVET college is envisaged as a principal ecosystem element, although the programme appears both to be a bolt-on to its overall activities and it is not seeking to play a coordination role with the rest of the public providers. Here, the national decision to locate this programme geographically outside the core region has had a negative impact on coordination in the metropolitan area. There is little sense of wider community involvement in the eThekwini maritime ecosystem. In Hoima, too, there is limited coordination, and large gaps between providers and community, on the one hand, and providers and IOCs, on the other. In both cases, meeting industry's immediate skills needs appears to have taken precedence over expanding the depth and breadth of the skills ecosystem.

The SEM does not adequately differentiate between local actors on the horizontal axis. While institutions may be present in local or regional spaces, many have strong connections and lines of control outside the immediate locale. These affect their ability to collaborate. Local formal educational providers are often beholden to national ministries, international examination bodies, corporate owners and so forth that determine the degree of control they have over curriculum or the ability to collaborate rather than compete. Similarly, larger companies may have a local presence but with management directives from elsewhere, sometimes outside the country. Where these employers have in-house training capacity, this is not always readily available to other actors if there is no regulatory requirement or incentive to collaborate. Furthermore, while the model is premised on enhancing learning for working and living, it does not in itself highlight activity in the ecosystem that might be detrimental to sustainable living. Thus, it enables us to explore the potential of the Hoima case without highlighting the fundamentally problematic nature of new fossil fuel extraction activity for the planet.

Finally, the model is also useful for its stress on mediation mechanisms, and the related notions of local anchor institutions and skills ecosystem leadership. Spours argues that local

"network-building has to progress to institution-building because the future stability of the SEM will depend not only on networks and relationships, but also on strong inclusive anchor organisations" (2019, p. 16). Drawing on the work of Stringer et al. (2006), Spours further explains that anchor organisations/institutions play a significant and recognised role in a locality by making a "strategic contribution to the local economy and supporting a sense of local identity" (2019, p. 17). His ideas resonate with Buchanan et al. (2020) who explored VET anchor institutions as enablers of economic and social renewal in communities in Wales. Buchanan cautions, however, that anchor institution is a limiting category when it is over generalised because it then obscures the diversity of engagement that institutions have with local society and business communities. He explains, "all anchors are, in their different ways, valuable insofar as they provide foundational services; but the intellectual and political task is to understand how they are valuable in different ways so that we can build on their diverse capacities" (p. 31). This is central to building regional skills ecosystems. However, institutions need to have credibility and capacity to play an anchoring role, and this is constrained or enabled by the historical legacies those institutions carry. The SEM does not necessarily help to identify and challenge these, and therefore an explicit engagement with local history is key.

There is a sense that the Alice case has important strengths because of the presence of nationally funded education providers. Importantly, both institutions have unusual levels of autonomy. Similar institutions are less well-developed in the other cases, although Gulu University is seeking to be an anchor and a leader. Here we see the possibilities that might arise in regional skills systems where greater autonomy enables institutions to be *adaptive*. Where VET arrangements are agile and low-cost enough to be responsive to the dynamic opportunism and uncertainty that characterises an increasingly *in*formal employment landscape, publicly funded institutions could use networks of mutual knowledge exchange. This could facilitate the provision of regional skills in ways that go beyond or complement what is prescribed in formalised qualifications based on rigid curricula. In both Hoima and eThekwini, certain existing institutions have been supported towards delivering higher skills, whilst others have been built specifically. However, the regulated and formal nature of the occupations limit the space for adaptation. Yet, neither case had emerging, let alone strong, anchor institutions and key education institutions' ecosystemic influence is limited. In Hoima too, there is the particular example of SOGA, which was clearly envisaged as substituting for a gap in coordinating capacity. However, we have suggested that it does not have a mandate to bring together the horizontal layer to be more responsive to the vertical. These case examples illustrate that where top-down communication is weak, there is even less evidence of bottom-up transfer of messages, an important characteristic of successful ecosystems in the literature. Moreover, some actors at this level are clearly acting as gatekeepers or are using their position to extract rents from the horizontal level.

There is clear evidence of skills system leadership in the Gulu case, and there is considerable good work going on in bringing together actors at the horizontal level, which is showing signs of innovation. However, the networks are still emerging, and the entire process lacks sustainability, largely being funded by donors and by considerable voluntary labour from activists within the network. Whilst Gulu University can be described as at least an emergent anchor institution, it is not clear how much of this depends on the personal commitment of the current Vice Chancellor, and how far this work is being institutionalised. In the eThekwini case, the Maritime Cluster is envisaged as playing a mediating role, but without clear leadership it appears to at best be a connection point with limited evidence of coordination and mediation.

All stakeholders we engaged with across the cases felt that regional VET networks were important and a necessary development, because present connections are informal, disparate and

dependent on insecure funding. There is a general lack of coordination around what is being done by who, which is inefficient, repetitive and leads to competition for funds. A forum to bring stakeholders together could serve the regional skills ecosystem through feedback loops and create space for innovation in the field. This points to questions about how anchor institutions and skills system leadership are created and maintained, particularly in resource-poor settings.

CONCLUSIONS

The SEM is a useful tool when thinking about regional skills formation systems. It has helped us tell the story of four quite different skills ecosystems. As shown above, the model focuses on three dimensions necessary for a strong skills ecosystem: vertical structures and policies that facilitate the regional skills ecosystem; anchor institutions and patterns of collaboration at the horizontal level; and system leaders who help bind the two levels together in the mediation space.

The model enables us to provide a rich story of the complexities of these three dimensions on the ground. In none of the cases are they fully developed but the model allows us to identify both limitations and possibilities. If, indeed, mediation between the vertical and horizontal is key, then our cases point to the importance of nurturing organisations who can provide regional skills ecosystem leadership, particularly in more fragile ecosystems. Crucially, in none are public vocational institutions playing the strong anchor role envisaged in the model.

The notion of the state that is behind the model appears to be a kind of developmental state that is working for the good of the people. While appealing, this belies the challenges of recognising the power interests that play themselves out in the state (Mamdani, 1996). These challenges include the degree to which the state is locked into multilateral systems and policy discourses and, crucially, how colonial and post-colonial legacies influence the nature of the state. This is evident in questions about state capacity and the role of aid in the South, and how ecosystems are also shaped by power, corruption and gatekeeping. In the Gulu case for example, traditional authorities aspire to be development actors, though their role remains limited. The model thus needs a more nuanced understanding of the state to make sense of the facilitating but also potentially disrupting role that the state can play in a regional ecosystem.

The nature of the economy, and indeed the very definition of work and its attendant skills requirements needs further elaboration within the model. Whilst the eThekwini case is comparable with some northern contexts with large, formal actors, the other three cases point to far more heterogenous economies and labour markets with complex mixtures of subsistence agriculture, informal enterprises and formal companies, as well as a far more complex mix of vocational learning providers. The very definition of a vocational institution requires further examination.

While the focus on the regional is a welcome shift from national system analysis, as has been shown in the case studies, the local or regional is always embedded in and networked into myriad national and international levels. Therefore, we argue for a more complex understanding of both the axes that recognises the multiscalar and context-specific nature of regional skill systems.

The notion of an anchor institution requires elaboration along the lines that Spours and Buchanan are articulating in their most recent work. In most skills ecosystems these institutions need to be built or strengthened and we therefore need a clearer understanding of the processes of institutionalisation and what mechanisms make it possible to build this capacity and sustain it over time.

Finally, Hodgson and Spours (2018) point towards, but do not fully achieve, a vision of skills ecosystems that includes thinking about skills for life as well as work, and a concern

with environmental sustainability. An expanded version of the account needs to take these ambitions further and point towards a model of socially inclusive (e.g., gender, disability) skills ecosystems for just transitions, a strand central to the project that this research is based on.

ENDNOTES

¹ Some iterations of the SEM refer to this as 45° activity (Spours, 2019).

² Homelands or Bantustans were parts of South Africa reserved for black Africans under the colonial and Apartheid system. These regions remain significantly less developed than regions historically designated for white South Africans.

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