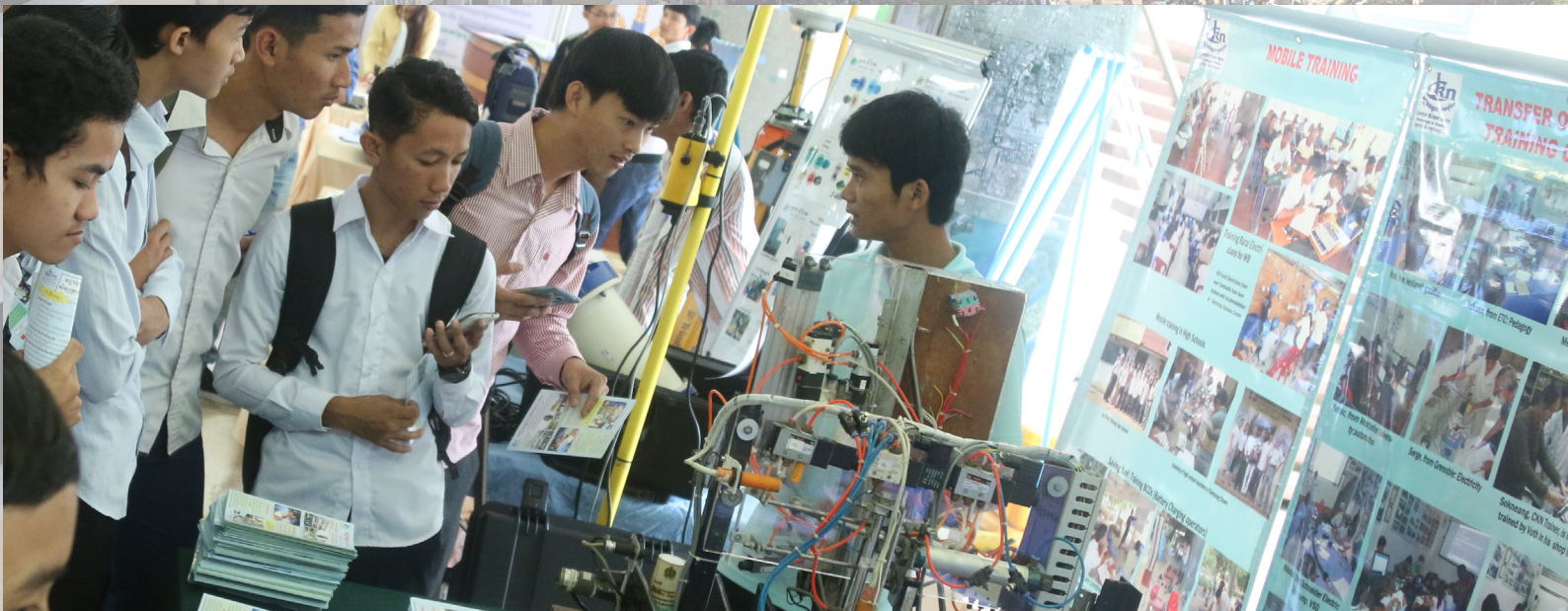




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Innovation and Entrepreneurship Ecosystem in Cambodia: The Roles of Academic Institutions



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Working Paper Series No. 118

October 2019

CDRI Working Paper Series No. 118

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CDRI
Cambodia Development Resource Institute

Phnom Penh, October 2019

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ISBN-13: 9789924500155

Citation:

Sothy Khieng, Sidney Mason and Seakleng Lim. 2019. *Innovation and Entrepreneurship Ecosystem in Cambodia: The Roles of Academic Institutions*. CDRI Working Paper Series No. 118. Phnom Penh: CDRI.

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Layout and cover design: Oum Chantha

Edited by: Susan E. Watkins

Printed and bound in Cambodia by Go Invent Media (GIM), Phnom Penh

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List of Abbreviations

CEO	chief executive officer
EE	entrepreneurial ecosystem
HEI	higher education institution
ICT	information and communication technology
IHPP	Impact Hub Phnom Penh
iLAB	innovation laboratory
NIPTICT	National Institute of Posts, Telecom and Information Communication Technology
NUM	National University of Management
PUC	Paññāsāstra University of Cambodia
R&D	research and development
RUPP	Royal University of Phnom Penh
SISU	Social Innovation Support Unit
SME	small and medium enterprise
TVET	technical vocational education and training
UP	University of Puthisastra

Abstract

Numerous studies have identified the importance of a healthy entrepreneurial ecosystem in stimulating and sustaining innovation and entrepreneurship. Local entrepreneurial ecosystems are made up of both formal and informal institutions, which include legal, economic, institutional, political, social and cultural factors. As well as providing various supports, including funding and incubation programs, higher education institutions create a space at the soft skills level that inspires entrepreneurial spirit and influences entrepreneurial orientation. Yet, although some studies have explored the development of the digital startup ecosystem and the role of universities in such development, meaningful literature and research overviewing the entrepreneurship and innovation landscape in Cambodia beyond the technology sector is lacking. This exploratory study addresses knowledge gaps in academic and policy debates that often failed to fully capture the dynamic and rapid development of the entrepreneurial ecosystem in Cambodia over the past five years. It presents and analyses qualitative data collected from semi-structured interviews with startup founders, business and academic leaders involved in entrepreneurship centres and innovation and entrepreneurship education in Phnom Penh, Cambodia. We found that the informal and micro nature of entrepreneurship in Cambodia necessitates professional development and education in business and management skills for entrepreneurs to grow their business. Universities are a pivotal actor in this regard, but experiences in France, Mexico, Singapore and the US show that it takes about two decades for university-based ecosystems to mature. Also needed is corresponding policy to ease transition from small entrepreneurial venture to more formal and high-growth oriented enterprise. This, in turn, calls for coordinated efforts by various policymaking bodies to strengthen entrepreneurship education.

1. Introduction

Numerous studies have identified the importance of healthy entrepreneurial ecosystems (EEs) in stimulating and sustaining innovation and entrepreneurship (Stam and Spigel 2016; Lundvall 2010; Sternberg 2007). Local EEs are made up of both formal and informal institutions, which include legal, economic, institutional, political, social and cultural factors. Higher education institutions (HEIs) are crucial to these ecosystems (Spigel 2017; Kalyoncuoğlu, Aydintan and Göksel 2017). As well as providing various supports, which include funding and incubation programs, HEIs create a space at the soft skills level that inspires entrepreneurial spirit and influences entrepreneurial orientation (Secundo and Elia 2014; Ferrandiz, Fidel and Conchado 2018). Part of this support, and part of cultivating entrepreneurial spirit, is the development of entrepreneurial competencies and the inclusion of entrepreneurial initiatives in HEI curriculums. Yet, although media and research reports (Kem et al. 2019, 3) have explored the development of the digital startup ecosystem and the role of universities in such development (Sam and Dahles 2017), meaningful literature and research overviewing the entrepreneurship and innovation landscape in Cambodia beyond the technology sector is lacking (Lyne 2012).

By adopting a theoretical framework of entrepreneurship, and drawing from critical theory (Urbano et al. 2017), this report considers the importance of incubation and the development of a healthy ecosystem for entrepreneurship and innovation, as well as the factors that foster creativity and entrepreneurial activities and influence entrepreneurial orientation. To that end, the report investigates the extent to which HEIs drive and support innovation and entrepreneurship within Cambodia's entrepreneurial landscape. It presents and analyses qualitative data collected from semi-structured interviews with startup founders, business and academic leaders involved in entrepreneurship, and innovation and entrepreneurship education in Phnom Penh, Cambodia. The rest of the paper follows this structure. First we synthesise the recent literature on EE and the roles of universities, then elaborate on the research framework and design. The main discussion focuses on four emerging research themes: government and regulations, access to finance, talents and skills, and university-based innovation and intermediary organizations. We return to the literature and link our findings to the wider debate on EE. We conclude with some preliminary policy suggestions and directions for further studies.

2. Literature review

2.1 Understanding the entrepreneurship ecosystem

The concept of the entrepreneurial ecosystem has attracted a lot of attention and interest from academics, policymakers, practitioners and the broader business community due to it being "... a critical tool for creating resilient economies based on entrepreneurial innovation" (Spigel 2017, 49). In this section, we review recent and influential international research studies on entrepreneurial and innovation ecosystems, including the works of groups like Foster et al. (2013) of the World Economic Forum, the Global Babson Entrepreneurship Ecosystem Project by Isenberg (2011), and Spigel (2017; 2018).

An authoritative definition developed by Stam and Spigel (2016, 1) identifies EEs as "a set of interdependent actors and factors coordinated in such a way that they enable productive entrepreneurship within a particular territory". Similarly, but with more focus on interactions among actors and the processes of such interactions, the United Nations Conference on Trade and Development (UNCTAD 2010, 3) defines the EE as "a system of mutually beneficial and self-sustaining relationships involving institutions, people and processes that work together with the goal of creating entrepreneurial ventures". As one of the expected outputs of the EE,

entrepreneurial activity is considered “the process by which individuals create opportunities for innovation” (Stam and Spigel 2016, 2).

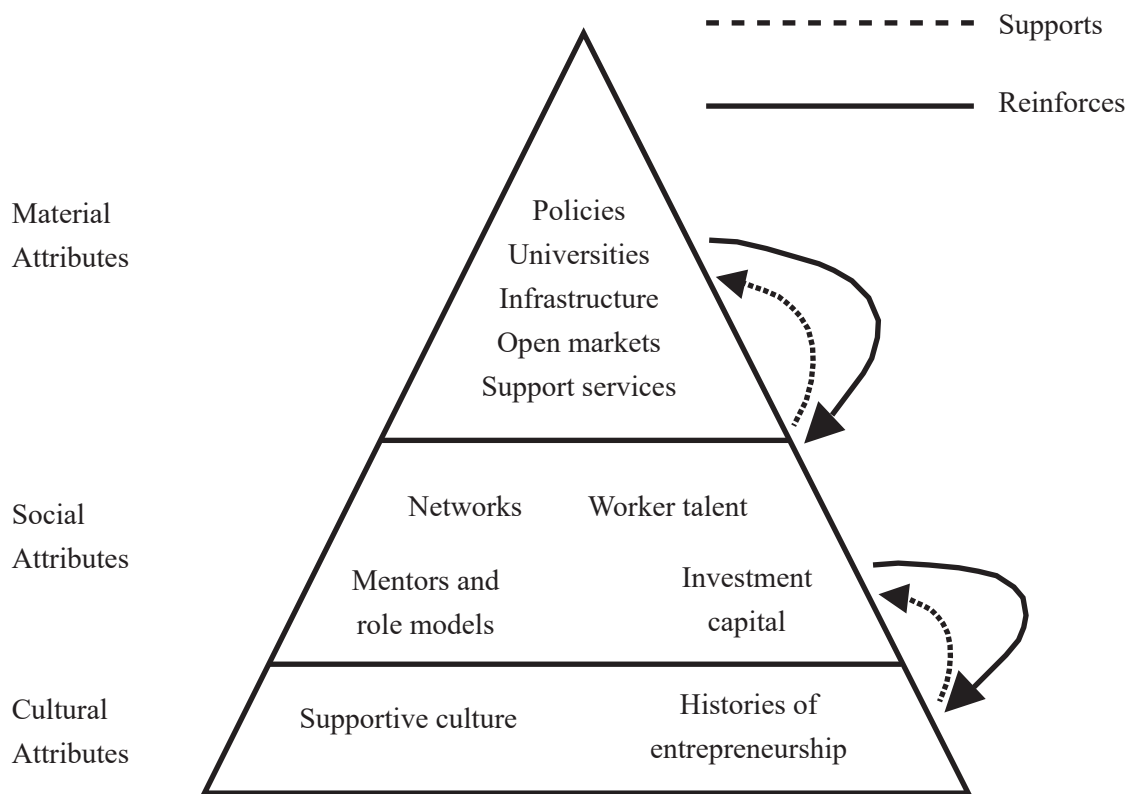
In the literature, EEs are associated with entrepreneurial environment (Malecki 2009), clusters and innovation systems (Feld 2012), entrepreneurial contexts (Rousseau and Fried 2001), city-region focus (Audretsch 2015) and high-growth firms (OECD 2010). Spigel (2018) offers a thorough review of these concepts that underlie research on EEs.

There are different theories surrounding what factors make up the EE. An influential work by Isenberg (2011) identified six domains: conducive policy, finance, culture, supports, human capital and markets. In addressing the question of how EEs vary across the world, the World Economic Forum (Foster et al. 2013, 6–7) established a global framework that consists of eight pillars. Most of these pillars overlap to some extent the domains described by Isenberg, but add “major universities as catalysts” (Foster et al. 2013, 6–7). This international study reports that entrepreneurs consider three of the eight pillars – accessible markets, human capital/workforce, funding and finance – to be the most important. These different sets of factors form a measurement tool and framework for investigating the EE; however, these factors and actors work and relate to each other in different combinations and complexities across different regions and societies. EEs also change over time and space.

In earlier academic research, one framework commonly used for analysing the EE is the triple helix of university-industry-government interactions (Etzkowitz 2003). However, this popular model of relations, which includes businesses, government agencies and educational institutions (Etzkowitz 2003), and sophisticated approaches (see, for example, Isenberg 2011; Foster et al. 2013), prove not only inadequate but also less relevant for developing countries (Sam and Dahles 2017). This is due to several reasons. First, the private sector tends to be dependent on importing products and technologies from developed nations. Generally, industry collaborations with universities “are not considered a necessity” for industrial growth (Sam and Dahles 2017, 16–17), while most businesses are informal (unregistered) micro and small enterprises. Second, academic and research institutions, where the need for innovation is often recognised but little has been achieved, tend to apply imported knowledge. Third, because these ecosystem models were developed based on Western economic, social and political systems (Spigel 2018), they fail to acknowledge the roles of development partners and donor communities in countries that are heavily dependent on foreign assistance (Sam and Dahles 2017; Khieng and Dahles 2014).

In considering the relevance for developing countries of existing theoretical frameworks, Spigel (2017) suggests that EE analysis include socioeconomic, political and cultural factors, whether of a country or city, that are conducive (or otherwise) to startup development and growth. In such a model, EEs have three major attributes: cultural, social and material.

Figure 1: The entrepreneurial ecosystem



Source: Spigel 2017

Cultural attributes consist of cultural attitudes and histories of entrepreneurship. Attitudes and beliefs, such as acceptance of entrepreneurship as a career path, support entrepreneurial risk taking while success stories motivate young entrepreneurs to follow suit.

Social networks and social capital are commonly cited as important *social attributes*. Other social attributes encompass investment capital, mentors, and talented employees (i.e. both workers and managers) with technical proficiency and high tolerance for risk.

Universities, as a *material attribute*, create entrepreneurial opportunities through the commercialisation of the technologies developed in their laboratories either directly as startups or through partnerships with industry. They produce skilled graduates, instilling them with an entrepreneurial spirit and equipping them with the skills required to succeed in the workplace or to start and run their own business. Policy is another important material attribute that supports and encourages entrepreneurship through mechanisms such as tax arrangements, public investment, the ease of new business registration and related regulations.

The three attribute categories may overlap and reinforce one another, while the overall EE model can take different configurations and evolve through attribute interaction. Again, the benefits and interplay among the actors and attributes vary depending on geography or local specificities (Spigel 2018).

2.2 Universities as a hub within the entrepreneurial ecosystem

That HEIs provide an important hub within which entrepreneurial behaviour can be cultivated is reinforced by further literature. Indeed, Ferrandiz, Fidel and Conchado (2018) investigated the degree to which HEI-based entrepreneurial programs (which form as part of the EE) influence the entrepreneurial spirit and intent of students. Specifically, they examined the perceptions of entrepreneurial learning, mentorship received and the impact of the programs on entrepreneurial intentions in both the short and long run. Entrepreneurial programs in HEIs were found to have a positive impact on student entrepreneurial intentions, particularly in the medium run (Ferrandiz, Fidel and Conchado 2018).

A systematic review of research studies (Malecki 2018, 9) indicated that universities are one of the most important actors in the EE, second only to entrepreneurs themselves. In addition to training specialised and good citizens, the research and development office, university-industry relation office, social innovation lab, and incubation centre are examples of intermediary offices and organisations within universities that support HEIs' third mission of knowledge transfer to the private sector and society at large. In this way, they become entrepreneurial universities (Sam and van der Sijde 2014) or institutional entrepreneurs who are proactively “networking, shaping regional strategies and attempting to change local routines as well as national policies” (Raagmaa and Keerberg 2017, 270). However, a study of six university-based EEs (Rice, Fetters and Greene 2014) found that it took at least 20 years to develop a comprehensive ecosystem.

In Cambodia, some university-based intermediary offices for entrepreneurship and innovation have been established such as at the Institute of Technology of Cambodia (ITC), National University of Management (NUM), Royal University of Phnom Penh (RUPP) and the National Institute of Posts, Telecom and Information Communication Technology (NIPTITC). Most of these offices are relatively new and located in Phnom Penh. Cambodia's startup ecosystem (particularly in technology) is still at a nascent stage. Even so, over the last decade the startup scene has been dynamic and vibrant overall, underpinned by a strong culture of entrepreneurship. Being an entrepreneur is more socially accepted as a career path and HEIs seem to prepare students better for such careers. In the words of Kem et. al (2019, 3):

Universities and training institutes are introducing more entrepreneurship and technical programs while continuing to explore new curricula. Corporates are expressing more support and interest in start-ups to drive innovation and digitize business. At the policy level, the tech sector is a key part of the government's economic vision and more active support for the sector is emerging with new regulatory frameworks and resources. From the introduction of targeted business registration and tax policies, media initiatives such as the ICT and Women in Tech awards, facilities such as new innovation labs and national funds for innovation at over \$12M, policy initiatives are being introduced by multiple ministries.

This is a significant development considering that just five years ago innovation intermediaries were almost absent and university-industry collaborations mainly took place in a “very basic form of seeking jobs, internships and social event opportunities for students rather than in the shape of knowledge-based and innovation-focused collaboration as implied by the triple helix model” (Sam and Dahles 2017, 16). Policy discussion led by the Ministry of Education, Youth and Sport has significantly boosted innovation capabilities and performance, stating that “everyone has the potential to be an entrepreneur. It is our responsibility to give youth the opportunity to explore their potential and to prepare them for future endeavours” (MOEYS 2018). Entrepreneurship skills for youth has recently been included in education reform.

What roles do HEIs play in the process of developing entrepreneurship competencies, both formally and informally? How can entrepreneurship programs and incubation centres be introduced and sustained and how can they be made more effective? Certainly, innovation and entrepreneurialism are on the rise, but from where stems the influence? This study is most interested in the effects of educational background (as a formal institution) and the factors motivating informal entrepreneurship. What inspired or motivated informal entrepreneurs? Who are these entrepreneurs? The initiation of a new business venture is highly complex, with inspiration and influence likely stemming from a multitude of sources and experiences. The most influential factors behind entrepreneurial creativity cannot be determined in isolation from other institutions. However, this paper focuses on the extent of the roles that HEIs play in the development and interaction of formal and informal institutions (Smith 2016) and as a setting for entrepreneurship and innovation education and business and startup incubation.

3. Method and data analysis

A qualitative research approach was employed to explore understandings and observations of Cambodia's entrepreneurship ecosystem (EE) among various actors (chief executive officers, startup founders, entrepreneurs, researchers) and institutions (incubation and co-working spaces, and universities) within this ecosystem. In analysing these experiences through this bottom-up approach, consistent with the framework developed by Spigel (2016), we were able to investigate the ecosystem processes and functions that support entrepreneurship.

A particular focus was placed on perceptions surrounding the roles of HEIs in general and the roles they play within the EE specifically – how they help create a more conducive environment for promoting entrepreneurship and innovation capabilities. This approach was selected because the open-ended nature of qualitative semi-structured interviews allows space for participants' comments and descriptions, perceptions and beliefs. The mechanisms that underpin the challenges faced within the entrepreneurship and innovation ecosystem are complex and difficult to quantify. Qualitative research approaches lend researchers the opportunity to glean nuanced data that is rich in depth and detail (Walter 2013). This is integral for gauging the health and tracking the progress of a particularly complex and multidimensional ecosystem such as the one in Cambodia.

Although semi-structured interviews provided numerous insights into the health of the local entrepreneurship and innovation ecosystem, this qualitative method has several limitations. First, semi-structured interviews can be limiting in that social compliance and reflexivity can affect results (Walter 2013). Further, ecosystem health – which is largely perceptual – can be conceived of in a wide variety of ways. Individual experiences, broad cultural ideals and values, and social indicators such as age, gender and educational attainment can inform these variations. Beyond cultural relativism, research about innovation and entrepreneurship is further complicated by culturally accepted public discourses; how questions are interpreted by respondents and the questionable reliability and accuracy of self-reports. Despite these drawbacks, the semi-structured interviews allowed for particular insights into the EE in Cambodia.

The qualitative semi-structured interviews provided rich and meaningful insights into perceptions surrounding the complex innovation and entrepreneurship ecosystem in Cambodia. Both comparative and contrasted conclusions were drawn from the interviews, with participants underscoring both negative and positive dimensions of the ecosystem.

We interviewed 10 informants, including CEOs, directors, experts, startup founders, and entrepreneurs based in Phnom Penh. These elite interviews occurred in late 2018 at the informants' workplaces so that we could observe the environment and contexts of their businesses and organisations.

Notably, all of the participants had spent time abroad, through higher education, travel or as expatriates. Many of them stressed the importance of international experience in influencing and fostering a progressive entrepreneurial and innovative mindset. In the words of one participant, time abroad helps people to see the challenges in Cambodia “with fresh eyes”. HEIs offer students opportunities to go abroad through exchange programs, competitions, and regional and international events. These types of experiences can foster an entrepreneurial mindset.

4. The entrepreneurship and innovation ecosystem

4.1 Government, information, laws and regulations

A consistent barrier and challenge identified by nearly all participants was the lack of government transparency. Access to accurate, up-to-date information about laws and regulations was consistently highlighted as not only difficult, but also a barrier to the growth of entrepreneurship and innovation ecosystems in Cambodia.

Many participants detailed the consequences and setbacks faced during the early stages of startup, when they unwittingly violated laws and regulations that they had little to no awareness of. For example, one participant was heavily penalised for forfeiting their salary as CEO, which, they discovered, was illegal. It was noted that the expertise of lawyers and accountants was necessary to navigate the complex and often ambiguous legal and financial systems. Access to legal services and financial advice, however, necessitates access to funding. Overall regulations and policies should be simplified and far more lenient towards startups (KI2).

More work needs to be done on the regulatory framework. I think the government is starting to see this. It still costs too much to register a company. It takes a long time. There's still not a smooth process. They have been working on online registration and cleaning up the process. But they can do much more. I would love to see Cambodia become a startup destination.

One suggestion is to learn from the practical experiences of small startup nations, for instance, Estonia, Finland, Israel, Singapore and Sweden, which have digitised some processes through e-government.

4.2 Access to finance

The challenge of attracting investors was emphasised by at least seven interviewees who were involved in the technology sector, specifically in robotics, bioengineering and mobile applications. One participant who had launched a startup in North America and then moved to Cambodia highlighted cross-country differences in innovation and entrepreneurship ecosystems. He noted that had he launched his startup in Cambodia, it would not have developed to the extent it has today. This is due to the lack of opportunity and funding for young innovators in Cambodia.

The investment scene in Cambodia is very new, particularly investment in deep technology, such as robotics. It remains unexplored. We want and need Cambodian investors and backers. The problem is not a lack of financial resources. It's a lack of understanding. The problem is that investors in Cambodia are too short-term focused and do not have long-term goals. (KI2)

The founders of a tech company struggled to fund their business and had to get support from their family and dip into personal savings.

In the first year and a half, we did everything using our own money without funding. Even now we still have never got any funding or grants. We mainly do things out of our own pocket. That's why we currently have the business side that can generate income to run the programs we offer. (KI4)

Another startup founder described a similar experience:

The ecosystem in terms of policy and financial institutes was not very good when we started. For example, if we needed money, they either didn't believe us or they created high interest loans. (KI3)

The issue is also the same for co-investment:

The second problem is co-investment. When there's an idea, the person usually faces a shortage of funding [to get it off the ground]. Accessing funding in Cambodia is difficult, though there's more funding [available] now. (KI2)

One participant drew attention to the lack of representation of technology and innovation at government level. Better representation would further validate and mainstream technology and innovation in Cambodia, and help tackle the problem of investors neither trusting in nor knowing about technology and innovation ventures.

4.3 Talents and skills for entrepreneurship

We understand the association between education and entrepreneurship from our observations and literature review. All interviewees supported the important roles of HEIs in promoting the EE. In reality, however, these roles are limited for several reasons. First, "achieving a cohesive ecosystem for entrepreneurship is still a challenge" because of "bottlenecks in human resources", remarked the female CEO of a major company involved in agricultural technology and higher education (KI8). Another CEO and founder of a co-working space and incubator added:

We teach people to do what they're told. From pre-school to university, you are told what to learn and when to learn it based on an academic calendar. So, it shuts down the autonomous part of our brain. That's why people in the first three months of their job here are encouraged to read books, any book. It's one of their job requirements. After two to six months, some people become their own boss. (KI6)

Agreeing with the issue above, two senior educators also noted that, from the supply side, and particularly in the field of science and technology, "the way that they [students] learn [i.e. rote learning] does not encourage innovativeness" (KI9) and "stifles curiosity and risk-taking behaviours" (KI7).

We make a limited contribution to innovation and entrepreneurship in Cambodia. This is due to outdated teaching methods. Our HEI is still at Education 2.0 level, whereas HEIs in other parts of the world are at Education 4.0. Entrepreneurship and idea generation courses are not yet widely available to our students. (KI9)

The issues can also be viewed from the demand side. One interviewee pinpointed the issue of underused Cambodian talent, stating "there is a surplus of well-educated, well-trained people, such as engineers, working in jobs they are over-qualified for" (KI2). He gave the example of engineers working as welders. In this case, the market needs to be developed to absorb graduates into job placements that match their skills and qualifications.

A successful startup founder summarised the issues from both the supply and demand side succinctly: “there’s little communication” between HEIs and employers (KI3). The misalignment between what students are learning and what the realities are may be because “the university has to guess what the market needs.” Several public universities and intermediary organisations have already started to make small but significant steps to improve communication and build linkages between higher education provision and labour market opportunities. We look at the specific initiatives of these institutions in the next section.

4.4 Innovation at universities

We examined innovation in terms of curriculum, entrepreneurship support services and university-industry linkages at two academic institutions in Phnom Penh. Between 2017 and 2019, several large projects that support entrepreneurship, business incubation and university-industry relations were initiated at RUPP. The university’s engagement in supporting entrepreneurship started with its postgraduate program on Social Enterprise at the Faculty of Development Studies, an innovative solution for sustainable development, moving away from reliance on charitable and foreign aid to business mechanisms. Several national and international conferences on social enterprise and innovation have been held since 2011. Explicit entrepreneurship courses offered in at least three different faculties, and the government-funded Techo Start-up Centre, indicate a university-wide approach to supporting the EE. Box 1 summarises the rapid development and milestones of the innovation and entrepreneurship ecosystem at RUPP.

Box 1: Development of the entrepreneurial ecosystem at the Royal University of Phnom Penh (RUPP)

- **2011:** The Faculty of Development Studies establishes several courses on social entrepreneurship and innovation for its master’s degree program.
- **2013:** The Faculty of Engineering introduces several formal entrepreneurship courses – Technology Entrepreneurship, Business Management, and Entrepreneurship – and internships in industry for undergraduates. The faculty and its three departments establish good foundations for industry engagement in research, curriculum development and internship.
- **2017:** Under the Southeast Asia Social Innovation Project, the Social Innovation Support Unit (SISU) is established as “a hub for research, education and training, incubation and dialogue on social enterprise, cooperatives, social innovation, corporate social responsibility and broader social economy organisations in Cambodia and the region.” The mission of SISU is to help social entrepreneurs and other social changemakers (including government, non-government and private sector actors) to contribute to a sustainable and inclusive economy in Cambodia. SISU is managed and hosted by the Faculty of Development Studies.

The Faculty of Development Studies introduces undergraduate courses on entrepreneurship and cooperatives.

- **2019:** The Techo Sen Startup Centre is launched as a national agency to serve as an incubator, accelerator, research and development centre, and internship program. Located on RUPP campus but serving all universities by linking them with industry, this Centre serves as a venue for students to do internship, research and have access to mentors. In addition to supports for students, small and medium enterprises also stand to benefit from the centre’s services. In the same year, the University-Industry Cooperation Centre (UICC), funded by the European Union, is established. The aim of UICC is to equip students “with entrepreneurship skills, innovation skills, cross-cultural competence, and employability skills” and establish comprehensive university-industry linkages in Cambodia.

NUM, a public HEI specialising in business training, introduced some of the earliest innovation programs in the country. Its innovation laboratory (NUM iLab), together with its undergraduate and postgraduate entrepreneurship programs, business model competition, and university-industry collaboration in curriculum development (teaching and learning), laid strong foundations for NUM's entrepreneurial ecosystem (Box 2). The pioneer of the iLab and entrepreneurship programs illustrated how the iLab brings together the innovation programs at NUM:

We have the master's program, an undergraduate program, and we have this facility. For master's only, we will most likely use our event space for the 25 candidates. So, I expect we will run a lot of physical programs from this space because it's better than our other classrooms. We have access to 3D printing. So, if students want to make prototypes, we can organise sessions on 3D printing for them. We can do sessions on virtual reality and expose them to the technological trends and have them do projects and prototyping. That's how this part of the room will come into the program (KI10).

Box 2: The entrepreneurial ecosystem at the National University of Management (NUM)

NUM's vision is to be the leading university in Cambodia in entrepreneurship and innovation. To that end, it has launched two new academic programs – a four-year undergraduate program on entrepreneurship and innovation, and a one-year master's program on global innovation management –and established partnerships with multinational companies through seminars and training on innovation.

- The innovation lab (iLab) serves as an incubator and a venue for the National Business Model Competition. It offers state-of-the-art office space and technologies, including 3D printing for rapid prototyping and virtual reality for teaching and learning. Part of the regional network of the Social Innovation Support Unit, it is an example of a public-private partnership between NUM and Smart Axiata, a major telecom company.
- iLab hosts several startups. Book Bank was started by MSK, a second-year student in International Business. Her aim was to promote the culture of reading across the country by providing a book loan and delivery service. Multi-award winning Demine Robotics was developed by RCY during his 4th year design project to make demining work in Cambodia safe and more efficient. This robotic solution is now being used in Canada and Cambodia.
- The National Business Model Competition is an entrepreneurship competition for university students and recent graduates in the fields of technology, medicine/healthcare, education, agriculture and general business. The event is one of the longest running competitions in Cambodia and has raised awareness and excitement among many undergraduates in Phnom Penh.

In addition to the initiatives of RUPP and NUM, there are efforts to support entrepreneurship and innovation at the Institute of Technology of Cambodia (ITC), Paragon International University (PIC), University of Puthisastra (UP), Paññāsāstra University of Cambodia (PUC), and the National Institute of Posts, Telecoms and Information Communication Technology (NIPTICT). In addition to its Centre for Research and Innovation and university-industry linkage office, ITC recently launched an incubation centre (dubbed Techno Incubation Space). PIC has a dedicated hub for entrepreneurship, UP runs hackathons and makerthons, and PUC runs a social business model competition. NIPTICT is building an innovation centre for ICT research and translation. The Royal University of Law and Economics, under its French Cooperation Program, now offers a master's degree in Entrepreneurship and Project Management.

4.5 Intermediary and business organisations

As intermediaries, two outstanding business support organisations have also started taking initiatives on education and reaching out to HEIs to promote technology exchange and innovation. One of them is the homegrown collaborative workplace and business incubator, SmallWorld Cambodia, whose CEO and co-founder (RT) promotes on the job training and further education among its members and reaches out to university communities (Box 3).

Box 3: Start-up community and supports for entrepreneurship at SmallWorld Cambodia

Founded in 2011 as a co-working space, SmallWorld has grown to be a combination of vibrant startup community, seed equity investments, venture building (Koompi computer software), and research and development. SmallWorld supports digitalisation and entrepreneurship development at the Institute of Technology of Cambodia and Norton University, and is actively building partnerships with universities for research and innovation (intellectual property) commercialisation and changing students and academics' mindsets. The founder of SmallWorld wants to "give universities a taste of real-world collaboration ... Doing so helps guarantee that talent [acquisition] in the next four to five years will be more about quality than quantity." To him, "university is a place where people have to find themselves, not do what they're told. People should go to university because they can meet people, future co-founders, and make connections and not because they can get a certificate (degree)." Born out of frustration with current higher education situations, SmallWorld is piloting an apprenticeship program where university students can learn both digital and entrepreneurship skills with mentors while the best will have the opportunity to join one of the community's startups such as Codingate, Bookmebus or Toursanak.

Another intermediary is Impact Hub Phnom Penh (IHPP), which serves as a co-working space and business incubator, as part of Impact Hub Global Network providing support for entrepreneurial community development. IHPP is arguably the most active platform for business incubation and acceleration programs, attracting interest from foundations, United Nations organisations, and corporations that actively support such programs (Box 4). Including SmallWorld and IHPP, the number of co-working spaces had increased to 17 in late 2018, with more than 500 desks for startups (Kem et al. 2019).

Box 4: Entrepreneurial supports at Impact Hub Phnom Penh (IHPP)

- Under its Southeast Asian Social Innovation project, IHPP in 2017/18 signed a memorandum of understanding with the Faculty of Development Studies at RUPP. The aim was to identify areas for social innovation and exchange of staff and resources. IHPP is now working closely with RUPP to pilot an e-learning entrepreneurship program.
- The Hub Entrepreneurs Club offers masterclasses, access to mentors, and an extensive network through its mentorship program.
- IHPP prioritises mentorship and works to educate next-generation changemakers across Cambodia, prompting it to launch a free Khmer-language e-learning program in entrepreneurship and leadership, the first of its kind in Cambodia. The program focuses on developing entrepreneurial mindsets by using innovative approaches to scale up and sustain local impacts.
- Other distinguished entrepreneurship support programs include:



5. Discussion of results

This exploratory research into the perceptions of entrepreneurs, academics and business community representatives has provided a brief overview of policy, financing, talent and skills within the Cambodian entrepreneurial ecosystem (EE). It has also provided examples of innovation at universities, and of practical and mutually beneficial interactions between different actors. These factors exemplify different cultural, social and material attributes, and their interrelationships, within Cambodia's EE (Spigel 2017). Among these attributes and relationships, the current supports for innovation and entrepreneurship at universities, including incubation and startup centres, entrepreneurship courses and industry linkage offices, illustrate a university-based EE (Malecki 2018). In addition, formal and informal relationships and partnerships between universities and other stakeholders including intermediaries, business organisations and government agencies is another sign of the triple helix at work.

In **cultural attributes**, we found that people are risk averse, mainly because of traditional Cambodian approaches to parenting and education which do not necessarily encourage asking questions and risk-taking behaviour. Earlier studies also indicated that this risk aversion constrains innovation. Indeed, research (Lyne, Ngin and Santoyo-Rio 2013) found innovation and risk appetite to be the exception, rather than the rule, across Cambodia. There is a general "avoidance of risky enterprise in favour of expansive social investments and ... higher education through which one moves into the professions rather than business" (Smith-Hefner 1995, 158).

However, the bustling startup events (more than 20 held in 2018 alone), the 25 innovation and co-working spaces, and the popularisation of startup entrepreneurship via social and traditional media and the success stories of entrepreneurs and business role models, are all indicative of a shift in mindset among Cambodian youth. Entrepreneurship is becoming a career option, according to a large research study on Cambodia's tech startup ecosystem (Kem et al. 2019).

In **social attributes**, the roles of networks, mentorship and role models, worker talents, and investment capital are key highlights of our research findings. Although young local entrepreneurial role models and innovation centres have provided some support, including mentorship and apprenticeship for university students and would-be entrepreneurs, these coaching supports are limited in scale and structure.

Almost all participants recognised that many businesses struggle to find workers and managers with the right skills and talents, as well as the difficulty of addressing this issue, as similarly revealed in Kem et al. (2019). In the words of an academic cited in Sam and Dales (2017, 17), "industry wants us to produce qualified graduates, but it does not want to have any involvement. It just waits to recruit qualified graduates". Such lack of dialogue between education and training providers, industry leaders and employers does not provide information and direction about the needs and supplies of graduates. This results in both a lack of skilled graduates in some occupations and an oversupply in others.

Access to investment capital and funding was raised as another major challenge for startup founders. In general, understanding about the needs of early-stage and growing startups among investors, including co-investors and angel investors, is often low. Formal financing for startups from credit institutions is also lacking. However, media and research reports (Kem et al. 2019) indicate the government has solid plans to improve this situation. For one thing, a specialised state-owned bank for small and medium enterprises (SMEs) (the SME Bank) is set to launch later in 2019. Second, the government's Entrepreneurship Promotion Fund is to boost startups with an annual budget of USD5 million. Further, development partners and foundations such as

the United Nations Development Programme and the Toyota Foundation, as well as emerging local investment platforms such as SmallWorld and *the Smart Axiata Digital Innovation Fund*, are dedicated to making a positive social impact. Such platforms, including ARUN LLC (an independent Japanese social investment fund), UBERIS (supports exceptional early-stage entrepreneurs in the lower Mekong region) and Insitor (invests venture capital funding into startups in emerging and frontier markets throughout Asia), are actively supporting business startups in Cambodia and the region. Overall, we expect the investment landscape to improve due to currency stability, ease of capital flow and market openness (Kem et al. 2019).

In **material attributes**, we examined university-based entrepreneurial ecosystems at RUPP and NUM because of their important roles in the national ecosystem (Spigel 2017; Malecki 2018; Kalyoncuoğlu, Aydintan and Goksel 2017). Contrary to some perceptions and a large body of literature (Sam and Dahles 2017; Sam 2017), there have been significant developments on improving the EE within the university environment. For one thing, there exist academic modules and numerous events on innovation and entrepreneurship across many universities. As indicated earlier, in 2018 alone, more than 20 startup programs for university students and graduates were organised. Moreover, due to better external, public and private sector funding, university-industry linkages have gained interest and commitment from institutional leaders. In particular, we have documented formal and active partnerships between academic institutions, intermediary organisations and the private sector (ITC-SmallWorld, RUPP-Impact Hub, NUM-Smart Axiata) in curriculum development, networking and resource sharing. These partnerships build both formal and informal networks for entrepreneurship. Intermediary organisations (e.g. SmallWorld, Impact Hub, incubation and startup centres, industry-university relations offices), in addition to their technology and entrepreneurial support services, help bridge the communication gap and forge partnerships between education and business institutions.

Our review of policies, as another determinant of EE under material attributes, shed light on recent government policies and plans, which offer some hope for regulatory reform to create a more conducive and supportive environment for entrepreneurship. One such policy is the tax incentive for new SMEs in certain sectors who meet certain criteria, for up to five years. SME promotion, entrepreneurship and innovation are explicit intentions set out in other national policies, including but not limited to Industrial Development Policy 2015–25, Technical and Vocational Education and Training Policy, Policy on Science, Technology, Education, Mathematics (STEM), National Science Technology and Innovation Policy, and Rectangular Strategy IV 2018–23. Mechanisms to improve the business climate, such as the annual Government-Private Sector Forum, also promote regular dialogues between policymakers and the private sector.

Table 1: Synthesis of different attributes of the entrepreneurial ecosystem in Cambodia

Attribute	Synthesis
Cultural supportive cultures and histories of entrepreneurship	<ul style="list-style-type: none"> - Lack of history of entrepreneurship - Young people are risk-averse in general due to traditional parenting and education and the mindset of pursuing a profession through higher education degrees than engaging in business - However, young people are now more willing to accept entrepreneurship as a career; - The media and education/training institutions play a major role in popularising business model competitions and entrepreneurship
Social networks, mentors and role models, worker talents, and investment capital	<ul style="list-style-type: none"> - Emerging young homegrown role models inspire and provide entrepreneurial and mentorship support to young people - Mentorship and apprenticeship supports from many stakeholders including ministries (Education, Labour and Vocational Training, Economy and Finance), academic institutions, private businesses, and intermediaries (e.g. Impact Hub Phnom Penh and SmallWorld) - Poor understanding among investors about financing startups - A specialised state-owned bank for SMEs (the SME Bank) is set to launch later in 2019 - The government’s Entrepreneurship Promotion Fund is set to boost startups with an annual budget of USD5 million
Material policies, universities, infrastructure, open market, support services	<ul style="list-style-type: none"> - Legal and financial systems are often complex and ambiguous - Regulations and policies should be simplified and far more lenient towards startups - Recent establishment of university-based incubation and startup centres and industry linkage offices (for example, at RUPP, NUM, ITC and NIPTICT); - Academic modules and events on innovation and entrepreneurship across multiple universities - More than 20 startup programs for university students and graduates organised in 2018 - Formal and active partnerships between academic institutions, intermediaries and the private sector (e.g. ITC-SmallWorld, RUPP-Impact Hub, NUM-Smart) in curriculum development, networking and resource sharing help build both formal and informal entrepreneurship networks - Three to five years of tax incentives for new SMEs in certain sectors that meet certain criteria - Other supportive national policies for SMEs and entrepreneurship (Industrial Development Policy, Technical and Vocational Education and Training Policy, STEM (Science, Technology, Engineering, Mathematics) Policy, Science Technology and Innovation Policy, and Rectangular Strategy IV) - Regular dialogues between policymakers and the private sector (e.g. annual Government-Private Sector Forum) - To drive it forward, Cambodia’s entrepreneurship ecosystem requires enlightened leadership and a well-thought-out package of policy and regulations

6. Conclusion and future research directions

To conclude, this exploratory report has addressed knowledge gaps in academic and policy debates that failed to capture the dynamic and rapid development of the entrepreneurial ecosystem in Cambodia over the past five years. Universities are a pivotal actor, but experiences in France, Mexico, Singapore and the US show that it takes about two decades for such ecosystems to mature. In order to create a conducive and sustainable entrepreneurial ecosystem, and to ensure a positive impact on the business community, academics, youth (from technical and business skills to self-employment) and society at large (by addressing social, health, and environmental problems), it is necessary to have a body responsible for overseeing and managing the evolution of the ecosystem (Isenberg 2011). Usually, this body must have the mandate, competencies, motivation and ambition, independence and accountability, and ability to experiment as well as launch and scale up startups. The informal and micro nature of entrepreneurship in Cambodia necessitates professional development and education in business and management skills for entrepreneurs to grow their business. It also needs corresponding policy to ease transition from small entrepreneurial venture to more formal and high-growth oriented enterprise (UNCTAD 2010, 5). This, in turn, calls for coordinated efforts by various policy-making bodies to strengthen entrepreneurship education.

Reflections on methodology and research directions

The operationalisation of the entrepreneurial ecosystem (EE) into broad cultural, social and material attributes suggested by (Spigel 2017) proved practical and useful. By adapting this framework, we approached entrepreneurship from a political economy perspective. This enabled us to address the problems of theoretical and conceptual framing in previous studies (Etzkowitz 2003; Sam 2017) that used the triple helix and more complex domains of EE (Isenberg 2011), which are poorly suited for understanding the EEs now emerging in foreign-aid dependent countries.

However, the small numbers of stakeholder interviews and case studies do not provide a complete picture of Cambodia's EE at the national level. The insights gleaned from our research mostly reflect the situation in a particular region, in this case Phnom Penh city. Research using a combination of surveys, interviews and case studies would deepen and broaden understanding of the national EE. An interesting policy research question is: Are there multiple ecosystems for different sectors and groups? Detailed mapping of the informal social networks that shape EEs would be useful for building and sustaining networks conducive to entrepreneurship. Regarding mentorship and similar support services, it would be worth looking into the motivational factors that drive entrepreneurs and CEOs to contribute to building the EE. Finally, future research studies should explore possible short-cuts or leapfrog strategies for universities in developing countries with a youth dividend to build their entrepreneurial and innovation ecosystems.

Acknowledgements

The authors would like to thank the Swedish International Development Cooperation Agency (Sida) for its generous financial support that made this project possible. We convey our gratitude to all informants who were kind enough to spare their time to share with us their insights on the topic. Our sincere thanks go to Susan E. Watkins for her diligent editing of this paper, thoughtful comments and constructive suggestions.

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