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Book

Private Sector Development in an Emerging World: Inclusive Policies and Strategies for the Formal and Informal Economy

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PRIVATE SECTOR DEVELOPMENT IN AN EMERGING WORLD

INCLUSIVE POLICIES AND STRATEGIES
FOR THE FORMAL AND INFORMAL ECONOMY

*Edited by Diederik de Boer, Harald Sander, Katharina Friz and
Antonella Anastasi*



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Diederik de Boer, Katharina Friz, Harald Sander and Antonella Anastasi

Introduction

The private sector in emerging economies is a key driver for economic growth. However, economic growth often goes hand-in-hand with growing inequalities, shrinking environmental space, insufficient employment generation, and increasing poverty. A broader concept of development needs to put the emphasis on inclusive and sustainable growth. To be inclusive, the improvements in the standard of living that come with economic growth must be widely shared among all groups in society. However, “to be inclusive, growth must also be sustainable. Sustainability means that the current path of consumption and social welfare can be sustained into the future of both current and future generations” (Cerra, 2022, p. 10).¹ The private sector plays a crucial role in promoting such an inclusive and sustainable growth. However, its activities are embedded in an institutional framework at the national, regional and global level, guided and at times misguided by policies. This book explores the interactions between private sector development, institutions and public policies in making growth and development truly inclusive and sustainable.

The private sector is regularly praised as the key engine of economic growth by multinational and national development institutions and agencies, such as the World Bank, regional development banks and bilateral donors. This belief has led to significant efforts to develop the private sector in developing countries. Development partners prioritize private sector development, governments are pushing — and occasionally are being pushed to prioritize — private sector development. However, in recent years, not least because of China’s economic rise, a debate on the complementary or even leading role of (industrial) policies, has made a forceful return. Such policies, as well appropriate institutions are now widely seen as key factors to promote not only economic success but also shared and sustainable prosperity in advanced and emerging economies alike.

This book does not attempt to act as an arbiter in market-versus-state debate, rather, it aims to take stock of this ongoing debate. It was inspired by a conference organised by the Maastricht School of Management in December 2021 on the occasion of its seventieth anniversary.² It brings together academics and practitioners to share their theoretical expertise and practical experience in the field on private sector de-

¹ The definition of inclusiveness is also based on Cerra (2022). For an excellent recent overview on “how to achieve inclusive growth” see the volume edited by Cerra et al. (2022) that brings together leading researchers in the field.

² MSM is an international management school with a strong focus on emerging economies. The school has worked on many development projects around the world and has trained many practitioners in both its academic program as well as in the various development projects. By drawing on the extensive MSM network, this book seeks to combine the expertise of the MSM’s academic staff,

velopment in emerging economies. The chapters presented in this book are reflecting this unique mix, allowing the reader to benefit from accessible overview chapters on recent theoretical insights on the role of policies and institutions, while linking it to the practice of private sector development projects in emerging markets. Thereby we hope to provide valuable reading to all interested in and affected by private sector development in emerging economies.

The book addresses private sector development in emerging economies from different angles. Part I explores the relative importance of private sector development for an inclusive society. Part II takes stock of the debate on the role of (industrial) policies and institutions, thus laying the groundwork for the subsequent practice-oriented analyses. In Part III, the relationships of skill development, (eco-) investment and innovation are discussed at both, a conceptual and a practical level. Part IV is dedicated to both, applicability and applications of the triple helix model, which highlights the interplay between government, educational institutions and the private sector for a sustainable and inclusive private sector development in emerging economies.

Part I opens with a chapter entitled “Private sector development for an inclusive society” by Diederik de Boer and Antonella Anastasi. In this chapter, they introduce a model for analysing the inclusive sustainable private sector development in emerging economies. The following chapter — written by Kaj Thomsson — reviews these issues from the perspective of recent theoretical and policy-guiding developments by scrutinizing “political economy and private sector development”. The third chapter in this part highlights the role of the informal sector, as often large parts of economic activities in emerging economies can be classified as informal, as argued by André Dellevoet and Stephanie Jones in their chapter “Informal business practices: norm or exception”.

The chapters presented in Part II take stock on the role of policies and institutions for inclusive private sector development. Ha-Yoon Chang, a well-known international expert in industrial policy distills in his contribution “Industrial policy: best practices for emerging economies” the key lessons for policies and the political economy set-up that can be drawn from the experience of countries which have been successful in stimulating a private sector development that has translated into substantial rises in productivity and standard of living. The contribution by Kwan S. Kim “Development of industrial policy in South Korea: the case of ‘from rags to riches’ with lessons for newly emerging nations” reinforces these points by providing insightful details of the amazing development story of South Korea. The chapter by Harald Sander, entitled “Towards inclusive industrial policy: taking stock of a debate in flux” extends on the insights of these two chapters by introducing the reader to the ongoing debate on making industrial policies work for creating an inclusive and sustainable society.

From the point of view of private businesses all this begs the question how inclusive business models as opposed to non-inclusive ones do function in practice, an issue discussed by André Dellevoet and Stephanie Jones in their chapter “Inclusiveness and small businesses in emerging markets”.

In Part III, the focus is on skills and R&D for private sector development. The relationships between skills development, (eco-) investment and innovation are discussed at both the conceptual and practical levels. In her contribution “The role of innovation and R&D for private sector development: an evolutionary theory perspective” Katharina Friz discusses the contribution of innovation and R&D for private sector development by looking at absorption capacities, skills and the relation to innovation and development through the lens of evolutionary theory. The following chapter, entitled “Vocational and skill training systems in India and Indonesia: a comparative analysis with an application to green sector skills” by Balakrishnan Chandrasekar, Rajiv Ranjan Thakur and Daru Setyorini discusses the importance of skills for private sector development by looking at the role of best practices for skills distribution in a comparative study of ‘technical vocational and skill training systems’. Huub Mudde extends on this by scrutinizing the role universities play in providing the right skill sets for prospective entrepreneurs in emerging market in his analysis of “Entrepreneurial universities in Ethiopia, Indonesia, and the Palestinian territories: impacting internal and external factors”. This also aligns to the subsequent chapter by Jeroen van Wijk, George Boateng and Huub Mudde, which explores how to redesign vocational curricula for “Aligning the vocational curriculum with job and business opportunities in Ghana’s chocolate and cocoa drink industry”.

Part IV focuses on the role and potential importance of an interplay between government policies, research and development activities at educational institutions for private sector development strategies in emerging economies. This complex relationship has originally been advanced by Henry Etzkovitz as the “Triple helix model” to understand and promote innovation. In his contribution “Technological informality as a development strategy: iconic Ikeja computer village at risk”, jointly written with John Andeoti, the applicability and usefulness of the Triple Helix Model for emerging economies is being discussed. Julius Gatune extends on this by making the case for “Triple helix as model for driving innovation”. The remaining three chapters in this part demonstrate how the Triple Helix Model can be applied in the emerging market context. Lu Zhen is applying “The triple helix model in the heterogeneous transitional Chinese economy: a comparative analysis of Zhejiang and Yunnan provinces”. Hans Nijhoff and Meine Pieter van Dijk explore “How triple helix ecosystems can support climate smart agriculture innovation uptake by farmers”, and Julius Gatune provides an instructive case by using the “Triple helix model for the rice value chain in Kenya”.

In sum, in the recent past we have seen the economic rise of some emerging economies, in particular in South-East Asia and, of course, China. A changing economic geography driven by climate challenges, the Covid-19 pandemic and geopolitical tectonic

shifts on the one side, but also a new spirit of innovativeness and developmental ambitions on the other side, may give rise to a new emerging economy, with the Global South playing an important role for shared and sustainable prosperity on both the global and local level.

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Part I: Private sector development for an inclusive society

1 Private sector development for an inclusive society

Abstract: This chapter introduces a model for analysing the inclusive sustainable private sector development in emerging economies. To develop this model, a framework based on cluster competitiveness is considered. For effective private sector development it is important to have a variety of private sector activities in order to have different pockets of power. In this way, 'a level playing field' can be better organised, resulting in more fair and equal competition (Acemoglu & Robinson, 2012). This model is composed of three layers: a base layer relating to three environmental foundation actors, a second layer consisting of four societal actors, and a third layer with five economic foundation actors. These layers are all crucial for the development of inclusive sustainable business, which is at the top of the pyramid. It is essential to develop the private sector in a way that it can provide for more decent jobs, absorb more youth into the workforce, and create the innovations needed for a sustainable society. Developing the private sector in the context of a shift towards a green economy could bring together two potentially conflicting objectives, i.e. creating a competitive private sector and (simultaneously) contributing to the development of a sustainable society. Building strong localised triple helix platforms (government, university, and business) is fundamental for developing a private sector that can contribute to the emergence of a sustainable society.

Keywords: Private sector development, emerging economies, inclusive sustainable business, sustainable society, cluster development, competitiveness

The private sector is an important prerequisite for development in both the Global South and the Global North. One of the biggest challenges is to make this development inclusive. Today, the gap between the rich and the poor is, in many countries, widening further due to the Covid-19 crisis (OECD, 2018), but also due to geopolitical instability and an increased focus on sustainability. The period of crisis inspired a new awareness for many stakeholders, as they started demanding a more sustainable and inclusive future. 'The current economic, environmental, and societal challenges such as the financial crisis, climate change, and social exclusion indicate that system-level reform is necessary in order to get back on track for smart, sustainable, and inclusive growth' (Lin & Chen, 2016).

This increasing awareness of environmental concerns along with societal and economic issues shows that a single-dimensional approach is no longer conceivable nor accurate. It is thus necessary to follow a multi-dimensional approach and involve all stakeholders to create a sustainable ecosystem. 'The only way to succeed in today's interdependent world is to embrace sustainability' (Savitz, 2006, p. xi).

The objective of development¹ is to produce a sustainable society. A society that creates wealth is just, safe, and inclusive, which is in line with Sen's five 'instrumental freedoms'² (Sen, 1999).³ Restrictions to freedoms hinder development, hence it becomes essential to remove the 'major sources of unfreedom: poverty as well as tyranny, poor economic opportunities as well as systematic social deprivation, neglect of public facilities as well as intolerance or overactivity of repressive states' (Sen, 1999, p. 3). A society that generates a living income for any current households without jeopardising the future generations will certainly need to balance present and future consumption.

To achieve all this, strong inclusive institutions are needed (Boettke & Fink, 2011; Acemoglu & Robinson, 2012). It is crucial to have functioning, consistent, dependable institutions for a modern economic system (North, 1990). Institutions play a fundamental role in driving national competitiveness: 'the home country's institutional framework determines the capacity to compete in the global arena' (Buitrago, Barbosa Camargo & Cala Vitery, 2021, p. 928). Hence, the institutional framework is relevant to seek economic development and prosperity (Acemoglu et al., 2001). 'Institutions are the rules of the game in a society', they are a human construct to limit, regulate and mould human interaction; 'they structure incentives in human exchange, whether political, social, or economic' (North, 1990, p. 4). Effective institutions need to be inclusive, securing property rights as well as providing equal labour chances, social security and civil rights to everyone (Jakšić & Jakšić, 2018). In this regard, Acemoglu & Robinson (2012) explain how inclusive institutions are vital for a sustainable growth, which under extractive institutions⁴ would not be likely in the long-term. Hence, inclusive development is strictly linked to inclusive institutions. De Hann (2015) emphasises 'the need to make institutions, formal and informal, an integral part of our understanding of growth, and inform policies that promote growth and inclusion simultaneously' (De Hann, 2015, p. 606).

Meanwhile, Gupta et al. (2015) — in their elaborated theory of inclusive development — argue that the focus of inclusive development is on the 'social and ecological aspects of sustainable development' (Gupta et al., 2015, p. 553) as they consider the essential value of the environmental services for the poor's needs. They conclude that

¹ Development here is defined as a matter of guided modernisation. Hereby, different factors play a role in a framework consisting of an economic sphere, a political system, a government apparatus and a social structure (WRR, 2010, p. 81)

² These include political freedom, economic facilities, social opportunities, guarantees of transparency and openness, and protective security (see Sen, 1999).

³ Referring to the UN World Summit for Social Development in Copenhagen in 1995, it is relevant to stress that an inclusive society "must be based on respect for all human rights and fundamental freedoms, cultural and religious diversity, social justice and the special needs of vulnerable and disadvantaged groups, democratic participation and the rule of law" (UN, 1995, p. 65).

⁴ To explain 'extractive institutions', we refer to Acemoglu & Robinson (2012), as they consider 'extractive economic institutions synergistically linked to extractive political institutions, which concentrate power in hands of few' (p. 430). They explain how growth under extractive institutions will not be sustained and will be short lived.

'inclusive development will only be brought about through genuine interactive governance that provides the instruments and creates the conditions for adaptive learning and the empowerment of marginalised people' (Gupta et al., 2015, p. 553).

Economic operations are central to a vibrant society as it will necessarily need to consume a variety of goods and services, which will need to be produced and distributed. Production can be at household level, by government and also by firms. The arrangement where government plays the central role (or the only player) in production and distribution of goods has created mixed results. There is now a consensus that the private sector should take the leading role in the production of goods and services with the government focusing on the production of public goods and services including regulating the private sector (OECD, 2012).

Even in the production of public goods and services, the private sector is becoming increasingly active through Public Private Partnerships (PPPs). Indeed, increasingly the private sector is being lionised as the engine of economic growth (Miyamoto & Chiofalo, 2017). In line with this, significant efforts have been directed to develop the private sector in many emerging economies. Development partners are prioritising private sector development,⁵ and governments are being pushed to prioritise private sector development and are giving incentives to attract private sector foreign direct investment (FDI).

However, this has not been uncontested. Indeed, the economic success of China largely through the use of state-owned enterprises (SOEs) has also shown that government can still play an important role in the production of private goods and services (García-Herrero & Ng, 2021; see also Lin et al., 2020). Even in the developed capitalist world, a debate on the role of government is being re-opened, and Mazzucato (2018) has made an impassioned argument that in the US the government has played a key role in the development of the many technologies that are today associated with the private sector.

The role of both government and private sector need to be balanced, with the balance being determined by the context of each country. More crucially, both government- and private sector-driven growth can greatly miss the goal of building sustainable societies. Private sector firms by design are seeking to improve the return to their shareholders (Friedman, 1970), but in this pursuit they risk acting at the expense of the wider society. It has happened that without effective regulation the private sector will tend to privatisate the benefit of the business while socialising the cost (for example, not taking the environmental cost into consideration). At the extreme, big monopolies have been known to capture policy.

⁵ Private Sector Development (PSD) is defined as 'the range of strategies aiming to establish markets that function vibrantly and fairly, providing economic opportunities of quality to poor people at scale' (DCED, n.d.). PSD ultimate goal is to promote economic growth, sustainability, create employment opportunities, reduce inequality and improve people's welfare, while strengthening the private sector (Muhamad, Heshmati, & Khayyat, 2020).

Currently, in the Global North, the rise of private sector business on the back of deregulation and a growing knowledge economy has been accompanied by growing inequalities (Piketty, 2017). A lack of responsibility here is perhaps best exemplified by the rise of huge platform monopolies e.g. Facebook, which are showing a lack of public interest by having its platform also spreading disinformation and problematic content just for profit (Lauer, 2021). These platforms are also using their immense power to thwart attempts for regulation (see Berjikian, 2019). Indeed, a strong private sector can be a challenge to the achievement of a sustainable society, just as much as a centralized and strong government can be a hindrance.

Analysing the private sector in emerging economies

It is broadly theorised and accepted that stable macroeconomic frameworks and policies promote sustainable growth as private sector investment choices can be made within a steadier environment (Bleaney, 1996; Fischer, 1992). Bleaney's study shows that 'policy-induced macroeconomic instability is an important negative influence on investment and growth in developing countries. Poor macroeconomic policy appears to be associated with low growth for a given rate of investment, and possibly also with a lower rate of investment' (Bleaney, 1996, p. 476).

By providing an enabling environment, a suitable regulatory framework and macroeconomic stability, a government can play an important role in the process of inclusive growth (Zulkhibri, 2018). As Zulkhibri reflects on how a co-operative effort of different players is essential to promote inclusive growth, he defines the role played by the private sector as 'catalytic'. 'The private sector is and must be a source of economic growth, employment and opportunity. No inclusive growth strategy can succeed without the support of the private sector, with initiatives such as public-private partnerships playing a key role in creating productive jobs' (Zulkhibri, 2018, p. 48).⁶

When considering inclusive development in emerging economies one should 'question societal, political and economic processes and arrangements, and ask ourselves the questions: who benefits or not, and why, and how can the marginalised be empowered?' (Gupta et al., 2015, p. 553).

In order to analyse the inclusive development of the private sector in emerging economies, it is suggested to use a framework that is based on promoting cluster competitiveness (USAID, 2003). This model is composed of three layers: the first layer relates to three environmental foundation actors, the second layer consisting of four

⁶ 'To achieve the ultimate goal of poverty eradication and inclusive growth, policymakers need to reflect on policies and collaboration mechanisms for enabling private sector actors to make a contribution to sustained economic and industrial growth and job creation, and to achieve shared progress in a socially inclusive manner' (Zulkhibri, p. 49).

societal actors, and the third one comprising five economic foundation actors. These three layers are all crucial for the creation of inclusive sustainable businesses, which is at the top of the pyramid. The circle around the pyramid stands for the development of the market, which is dynamic and depends on the performance of the three environmental foundation actors, on the quality and inclusiveness of the four basic societal actors and the five basic economic foundation actors (see Figure 1). Figure 1 then depicts inclusive sustainable private sector development.

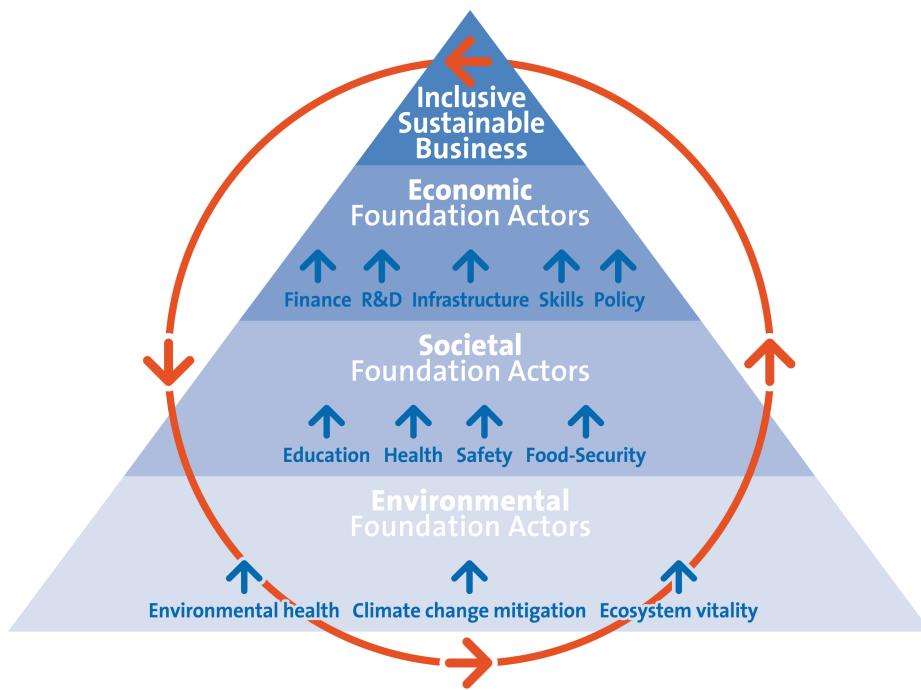


Figure 1: 3-layers model of inclusive sustainable private sector development.⁷
(Source: Compiled by the authors)

Hence, for a comprehensive analysis of the private sector in the Global South, it is essential to address and look at the overall state of the environment, health, education, security and food-safety. In this model, inclusivity and sustainability go hand-in-hand, as one cannot exist without the other. In order to face persistent inequalities and deep-rooted inequities, social sustainability needs to be considered along with

⁷ This model has been conceived for emerging economies. This model can be a tool for analysing the layers of sustainable cooperation for development as it sits in the middle between the public and the private sector catering for an inclusive sustainable private sector.

economic and environmental sustainability. 'To address the challenges of the 21st century, including climate change, conflict, the need for sustainable growth, inequality, and erosion of the social fabric, it is critical to elevate social sustainability as a key pillar of development and an equal partner with economic and environmental sustainability' (Barron, Cord, Cuesta, Espinoza, Larson, & Woolcock, 2023, p. xxxi).

The basis of the pyramid presents three *Environmental foundation actors*:⁸ environmental health, climate change mitigation and ecosystem vitality. Living in an interdependent world, doing business cannot be regarded as an isolated notion. To create this model, it was essential to consider also the concept of sustainability, which 'means operating a business in a way that causes minimal harm to living creatures and that does not deplete but rather restores and enriches the environment' (Savitz, 2006, p. x). Aware of how significant it is to consider the interactions between the economic, societal, and environmental subsystems in order to develop a balanced sustainable development approach (Mamipoor, Yahoo & Jalavandi, 2019), the basis of the pyramid stands as a crucial pre-requisite for the next layers. Without the necessary resources for livelihood no societies could survive: a threat to the environment is a threat to human survival. Only integrating environmental considerations into the development-oriented efforts, is it possible to open the path to sustainable development.

Hence, sustainable development⁹ requires an integrated approach, which combines environmental concerns with economic considerations. This is in line with the Intergovernmental Panel on Climate Change (IPCC) report of 2023 which focuses on 'the close linkages between climate change adaptation, mitigation, ecosystem health, human well-being and sustainable development'¹⁰ (IPCC, 2023, p. 3).

The environmental foundation actors are based on the Environmental Performance Index (EPI); the data on environmental health, climate change mitigation and ecosystem vitality can help policymakers to address critical policy objectives, and adopt related agendas aimed at enhancing 'the environmental well-being of their citizens and the health of the ecosystems on which all life depends' (Wolf et al., 2022, p. 1). More

⁸ The basis of our pyramid refers to the Environmental Performance Index; the EPI condenses data on many sustainability issues into one score per country. The 2022 EPI framework is a very relevant and comprehensive index concerning critical environmental issues. <https://epi.yale.edu/epi-results/2022/component/epi>

⁹ The Brundtland report articulated a broadly acknowledged definition of sustainable development, calling up to the commitment and responsibility of all the parties: 'humanity has the ability to make development sustainable to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own need' (UN, 1987, p. 15).

¹⁰ 'Climate change has reduced food security and affected water security due to warming, changing precipitation patterns, reduction and loss of cryospheric elements, and greater frequency and intensity of climatic extremes, thereby hindering efforts to meet Sustainable Development Goals' (IPCC, 2023, p. 15).

specifically, *environmental health*¹¹ relates the effectiveness of the protection from environmental health risks for the population. *Climate change mitigation*¹² mostly refers to CO2 and greenhouse gas emissions, and the progress against global climate change, which jeopardises human health and safety. *Ecosystem vitality*¹³ refers to the ecosystem preservation and protection.

In the next layer of the pyramid, the *four societal actors* include: access to health facilities, access to education, safety, and food-security in the region. In the Global North, the lower layer is often taken for granted – but in emerging economies they are not necessarily an expected precondition, yet they are of crucial importance.

First of all, access to *health facilities* is of great importance for private sector development in emerging economies. The World Health Organization states in a report by the Commission on Macroeconomics and Health how relevant a healthy workforce is for attracting FDI (WHO, 2001). Moreover, Alsan, Bloom and Canning (2006) show that 'health is an integral component of human capital for developing countries and suggest that the payoff to improved population health is also likely to include an elevated rate of FDI inflows' (Alsan, Bloom & Canning, 2006, p. 626). A healthy workforce is an advantage for a firm, to enhance firm productivity and attract FDI inflows. Consequently, foreign investors may avoid areas in the world where disease is widespread and where access to healthcare is inadequate and not inclusive. In general, 'good health has a positive, sizable, and statistically significant effect on aggregate output' (Bloom, Canning, & Sevilla, 2004). Other findings concur that 'physical and mental health have a crucial role in the readiness of an individual to achieve high efficiency, flexibility and innovativeness and his/her reaction to the highly competitive and stressful work environment. Thus, to efficiently use and improve its human capital, every organisation and nation should focus on continuous and systematic management of this valuable resource' (Rađenović & Krstić, 2017). Therefore, access to health facilities is important for private sector development in order to sustain the productivity of the business (WHO, 2001).

Furthermore, the level of and access to basic *education* is also essential to private sector development in emerging economies. Private sector development relies on education in order to have a workforce that is able first and foremost to read and write. Nguyen (2009) identifies education as a core of a country's competitiveness; he considers educated human resources as the most significant aspect. In his opinion, two elements

¹¹ It includes the following indicators: air quality, sanitation and drinking water, waste management and heavy metals exposure.

¹² It encompasses the following indicators: adjusted emission growth rates for four greenhouse gases (CO2, CH4, F-gases, and N2O) and one climate pollutant (black carbon); projected greenhouse gas emissions in 2050; growth rate in CO2 emissions from land cover; greenhouse gas intensity growth rate; and greenhouse gas emissions per capita.

¹³ It embraces six indicators: biodiversity and habitat, ecosystem services, fisheries, acid rain, agriculture, and water resources.

of the quality of human resources need consideration and investment: health and education (see also Samans et al., 2017). 'Investment in education has become the prerequisite for any nation wanting to develop technology, productivity, competitiveness and economic growth' (Nguyen, p. 46). A lesson learned is that countries that are committed to improve education and training progressed significantly in terms of human development and economic growth. Education is considered 'one of the most powerful and proven vehicles for sustainable development' (Wamsler, 2020, p. 113). In line with the UN's SDGs approach, it represents 'both an end and a means' (Wamsler, p. 113), intended to ensure the right to inclusive and equitable education to everyone, and offer lifelong educational opportunities.

A third societal foundation actor also crucial for private sector development is *safety*, defined as the absence of violence/terrorism,¹⁴ which measures the likelihood that the government will be destabilised or overthrown by unconstitutional or violent means, including politically-motivated violence and terrorism. 'Violent conflicts can lead to deprivation and poverty which in turn could lead to resource depletion, infectious diseases, education deficits, etc.' (United Nations, 2009, p. 7). In general, safety is essential to feel secure enough to invest or to trade in or with a business. If there is no safety, no inclusive private sector can be developed.

A final significant aspect for the development of the private sector is *food security*. As defined by the United Nations Committee on World Food Security, that is achieved when everyone has at all times 'physical, social, and economic access to sufficient, safe, and nutritious food that meets their food preferences and dietary needs for an active and healthy life' (FAO, 1996). Slimane, Huchet and Zitouna (2013) consider how decision-makers in emerging economies can find food security to be a challenging issue, as it is closely linked to social stability in these areas, where poverty can reach very high levels (Slimane, Huchet & Zitouna, 2013, p. 51). Torrero (2014) firmly believes in the crucial role of food security for a country's economic growth. 'Without a country-owned and country-driven food security strategy, there will be obstacles and additional costs to global, regional and country level economic growth. Countries with very high levels of poverty and chronic malnutrition face limitations in human capital development, which is required to achieve sustainable growth' (Torrero, 2014, para. 1-2). Overall, food security¹⁵ is considered a precondition for economic development, as hunger can impact labour productivity and as a consequence, that can cause a reduction of per capita GDP and weakens the potential for private sector development. In line with Sen (1999), poverty can be seen as 'a deprivation of

¹⁴ The index is an average of several other indexes from the Economist Intelligence Unit, the World Economic Forum, and the Political Risk Services, among others.

¹⁵ 'Today, the concept of food security is generally understood to incorporate four main components: availability, access, utilisation, and stability; although some see stability as a separate cross cutting factor. For a state of food security to exist, all of these components must be sufficiently present'. See <https://foodsource.org.uk/building-blocks/what-food-security#FSBB31>

basic capabilities (. . .). Deprivation of elementary capabilities can be reflected in premature mortality, significant undernourishment (especially of children), persistent morbidity, widespread illiteracy' (Sen, 1999, p. 20). Sometimes a fifth societal foundation actor is mentioned, i.e. shelter. But in this model 'shelter' is considered part of safety, health and food-security (this can relate to Maslow's hierarchy of needs model; see Maslow, 1943; Bowen, 2021).

The next layer consists of the *five economic foundation actors*. These are policies (legal, judicial, etc.), skills, R&D, infrastructure and access to finance. Each of these actors for private sector development need to be inclusive, in other words inequalities should not reach levels that are excluding people from important economic foundation actors. In terms of income per person, that means also that income equalities should not be too large as it creates exclusion (Acemoglu & Robinson, 2012).

First of all, the access to *skills*. Skills are required for private sector development (see for instance UNDP, 2017). Without construction workers there are no roads, without laboratory-workers there are no new medicines, etc. When reflecting on skills development, it is relevant to emphasise that the acquisition of skills needs to be aligned with the demand of the workplace; skills are considered valuable if they match labour market requirements, and the opportunity to obtain skills needs to be broadly available for as many as possible. In terms of the quality of skills, having vocational training centres providing skills that are not needed by society is unfortunately happening too often (Lange, Hofmann, & Di Cara, 2020). In emerging economies, youth unemployment can be linked – among other causes – to lack of 'the right set of skills needed by employers or for starting their own business' (Mudde & van Deuren, 2020, p. 8). Furthermore, human capital development positively influences economic growth, as highly skilled workforce brings new ideas, technological innovations and technical expertise, which consequently improves labour productivity (Pradhan & Abraham, 2002; Anochiwa & Maduka, 2014).

The second economic foundation actor for private sector development relates to *R&D*; innovations should be available and steered towards inclusivity. More than before R&D should be targeting an inclusive society. Here also inclusivity touches upon sustainability as climate-change is impacting on all of us and new technologies need to be anyhow inclusive (Lederman & Maloney, 2003).

The third economic foundation actor relates to inclusive supportive *policies* for private sector development (UNCTAD, 2021). Policies need to be supportive to private sector development and provide a level playing field and therefore be inclusive. This level playing field relates to pluralism, which can be the foundation of a growing middle class. In this way, not merely exclusive elites will be able to develop their businesses further (Acemoglu & Robinson, 2012).

The fourth economic foundation actor is *infrastructure*, which is crucial for private sector development as without roads, water, communication and air infrastructure, goods and people cannot be linked to the markets. As companies need energy, water, transport, and so on to produce goods and services, adequate infrastructure needs to be

in place, otherwise productive capacity would be compromised (Miyamoto & Chiofalo, 2016). A deficiency in infrastructure services poses a significant barrier to growth and development. In this context, inclusivity is also very relevant, as cities need to offer access to schools, hospitals and other services, including sanitation services (e.g. safe drinking-water, etc.) to all individuals. 'The key challenge is therefore to provide high quality and efficient infrastructure systems that can support more inclusive and higher economic growth' (Asian Development Bank, 2012, p. iii).

Access to finance is the fifth economic foundation actor. Access to financial institutions should be available for as many people as possible. Finance is often the blood-line of businesses, as without sound and accessible financial resources there is no development (World Bank, 2022). 'A well-functioning financial system and a vigorous private sector are important drivers of growth and poverty reduction. Finance is central to private sector development and vice versa' (World Bank, 2022). Micro-credit plays a significant role here, although this should not be abused, the credit should be affordable and not cause an unbearable poverty trap (Finch & Kocieniewski, 2022).

These so-called *economic foundation actors* can only be helpful if a country (or a region) has strong societal foundation actors and is supported by robust environmental policies. If this is the case, inclusive private sector development in emerging economies can be effective, as 'inequalities of income, education, training opportunities, and health tend to feed each other, and also reduce productivity and growth' (Samans et al., 2017, p. 11). Furthermore, the OECD (2018) shows that the impact of inequalities on individual opportunities tend to reduce 'labour quality, undermine productivity diffusion, aggregate productivity and growth – foundations of higher multidimensional living standards' (Samans et al., 2017, p. 91).

The ideal private sector

An ideal private sector is providing wealth creation for society in a manner that is inclusive and is not polluting nor further harming the environment and is as much as possible circular.

Furthermore, the ideal private sector is well-balanced between the three actors at play: the government, the business and the civil society (including universities), whereby the element of checks and balances at all levels is crucial. Without these checks and balances the society and government are becoming more prone to corruption (World Bank, 2021). Nobody should be above the rules set to organise society, and society itself should establish checks and balances even applicable for top-leaders. Strong institutions are thus required, as they need to be capable to resist strong pressures from stakeholders. Only then can a thriving private sector contribute to a prosperous economy and society. The effective balance in power and in production of

goods and services is key for achieving a sustainable society. Each needs to play its role and all actions need to be orchestrated through various institutions.

Whatever the required balance, the end outcome of activities should be sustainable development, the sustainable production and consumption of goods and services. As goods and services are scarce, significant efforts are needed to convert natural and human capital into sustainable goods and services. These challenges need to be overcome by innovations.¹⁶ Innovations in technologies and products, in processes, in business models as well as social and political innovations are important drivers for economic development and growth (Aghion & Howitt, 1998). The profitability of private sector investment in innovation is largely determined by an institutional framework, which thus has an effect on the progress and direction of technological change (Grossman & Helpmann, 1994). Smit et al. (2022) argue that 'because growth is necessary for the world to achieve greater sustainability and inclusion, companies will necessarily play a vital role' (p. 18). They highlight that to play this role, companies will have to pursue new innovation strategies and collaborate with government stakeholders. Government intervention can steer incentives and public resources to sustainability and inclusion. Another important aspect they consider is 'business-led innovation', which can accelerate growth, leading to more spending, saving, and investing. 'Innovation can also make inclusion and sustainability more "affordable"' (Smit et al., pp. 14–15) by reducing the cost of products and services.

As for inclusion in emerging economies, Smit et al. stress how billions of people still struggle to meet basic needs, and their rate of life expectancy, child mortality, and gender parity in labour force participation is not satisfactory. We agree with Smit et al. that 'this decade will be decisive in laying the foundation for a sustainable, inclusive, and growing future' (p. 8), it will be crucial to strive for inclusive sustainable business.

Emerging economies have to face the challenges of continuous catching-up with developed countries, which 'means that countries need to constantly reconfigure their institutions to induce, coordinate, and upgrade the FSAs'¹⁷ of domestic firms to successfully engage with GVCs and MNEs¹⁸ (Anand et al., 2021, p. 554). Generalisation of innovations and their commercialisation require concerted efforts by government, business and research to ensure that skills and talent are made available, research and development happen, and entrepreneurs are able to see opportunities and leverage knowledge to exploit them. An important prerequisite in providing innovation is an approach whereby businesses, government and universities are working in a platform together for innovation – the so-called triple helix platforms.

¹⁶ Concerning innovation in emerging economies see also Gorodnichenko, Svejnar, & Terrell, 2010.

¹⁷ Firm-specific advantages (FSAs).

¹⁸ These acronyms respectively refer to: Global Value Chains and Multinational Enterprises.

The case for developing the private sector

The private sector plays a key role in the production of goods and services and is a key player in enabling innovations to happen. A well-functioning economy will require a strong private sector (balanced by a capable state and a well-functioning civil society). However, in emerging economies not only does the private sector tend to be very weak but there is also a high incidence of an informal sector. Often 90% of the jobs in the Global South belongs to this sector (Benjamin & Mbaye, 2014). The negative side of this predominance is that the informal sector¹⁹ is largely characterised by low productivity, thus it is increasingly perceived as an obstacle to sustainable development (Deléchat & Medina, 2020). For this reason, the majority of workers can be classified as ‘working poor’.²⁰ The sector cannot often provide decent jobs, a key building block of creating a sustainable society resulting in still high unemployment rates in emerging economies (Lange, Hofmann, & Di Cara, 2020).

There is therefore a case for developing the private sector in a way that it can provide for more decent jobs, absorb more youth into the workplace and create the innovations needed for a sustainable society. This could be done in the context of a shift towards a green economy,²¹ focusing on non-fossil fuel energy sources and also focusing on an accelerated digitalisation process, using digital tools to make sustainable impacts (European Commission, 2022). This will pose several challenges due to the sheer level of needed innovation, but it also has the potential to provide rapid development due to the potential for leapfrogging provided by the new paradigm shifts.

In developing the private sector, the key objective is to create a competitive private sector, which simultaneously contributes to the development of a sustainable society. These two objectives are potentially in conflict with each other. Competitiveness can sometimes mean low salaries, poor working conditions, the so-called ‘race to the bottom’²² (very prevalent in global textile industries), which is the opposite of what it means to build a sustainable society. Decent jobs providing good livelihoods are essential. Therefore, competitiveness will require a strong emphasis on innovations to create high productivity jobs. The private sector should also contribute to local economic development and this means greater collaboration with other actors (local government, other industries, academia, etc.) in order to build strong clusters. In this regard, build-

¹⁹ The ‘informal sector’ here refers to self-financed, under-capitalised, small-scale, unskilled labour-intensive production. An alternative definition is a ‘process of income generation’ that is ‘unregulated by the institutions of society, in a legal and social environment in which similar activities are regulated’ (Pratap & Quintin, 2006).

²⁰ For example, in Africa about 70% of workers are in highly vulnerable jobs and almost two thirds are working poor (Lange, Hofmann, & Di Cara, 2020).

²¹ See UNEP, Green Economy, available at <https://www.unep.org/regions/asia-and-pacific/regional-initiatives/supporting-resource-efficiency/green-economy>

²² See also Oatley (2019).

ing strong localised triple helix platforms (government, university, business) (Etzkowitz & Leydesdorff, 2000) – that enable durable partnerships while also driving innovation and entrepreneurship – is considered fundamental for developing a private sector that can contribute to the emergence of a sustainable society.

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Kaj Thomsson

2 Political economy and private sector development: An overview of background features and recent research

Abstract: In this paper, we trace out the political and institutional characteristics that provide the underpinnings of private sector development in particular, and to some extent economic development more generally. We start by introducing and reviewing the general political economy literature, with focus on the antecedents within economics that lead up to the vibrant political economy research of the last three decades. We then zoom in on two specific aspects of political economy of importance for private sector development: (political) institutions and state capacity. We end the chapter by covering some recent research that aims to directly explore the political economy aspects of private sector development.

Keywords: Political economy, private sector development, institutions, state capacity

This chapter is inspired by research collaborations and conversations with Luciana Cingolani, Tobias Broich, Rose Camille Vincent. The thinking around topics related to this chapter is also influenced by many conversations on these topics with the Adam Szirmai, who sadly passed away two years ago. When, in this chapter, recent work with Tobias Broich is referenced, we have decided to keep Adam as co-author, as many of the ideas behind the updated working paper Broich, Szirmai and Thomsson (2022) were developed while he was still alive and involved. This paper, and work in progress, provides the basis for the subsection on the roots of state capacity in particular.

Introduction: The development of political economy

Using current terminology, *political economy* typically refers to one of two things, either the study of the intersection, and interaction, between political and economic forces, or the study of politics using theories and methodological tools from economics. Both of these, individually and in combination, are vibrant areas of research today. However, the field of political economy — if one chooses to call it a field — has a long and winding trajectory from the 18th century until today. In this chapter, we will first provide some background to the development of political economy, then zoom in on how we might use recent research in this field to map out some of the underpinnings of private sector development. We will not analyse private sector development itself in detail — that is left for other chapters of the book. Rather, we will aim to provide a better understanding of the political and institutional underpinnings

that need to be in place, for there to be an environment within which a vibrant private sector can emerge and thrive.

If we go far enough back, political economy was used as an umbrella term encompassing much of what we today think of as economics, political science and related social sciences, exemplified by the work of some of the most influential 18th and 19th century scholars such as Thomas Malthus, David Ricardo and Adam Smith. Economics was at that time both synonymous with political economy, and a broader field than what it later has become. The 20th century saw a shift both towards a different use of the term political economy, and a narrowing of the field we (now) think of as economics. Economics became, throughout the 20th century, increasingly characterised by a set of analytical tools, and by mathematical modelling, with Paul Samuelson's book *Foundations of Economic Analysis* from 1947, as well as the textbook *Economics: An Introductory Analysis* from 1948, together with Kenneth Arrow's *Social Choice and Individual Values* from 1951, as perhaps the most well-known and influential works.

During this time of increasing mathematical formalisation, the intersection between political and economic forces, and the role of politics more generally, was incorporated into economics mostly in stylised, abstract and somewhat marginal ways. Governments were typically included in these frameworks either as benevolent welfare maximisers, or as neutral vehicles for reaching optimal outcomes in normative analyses. Inside the field, what in hindsight might be seen as the strongest criticism of this approach to economics was based explicitly on the lack of careful analysis of political incentives, politicians, bureaucrats and the state. The so-called *public choice school*, represented perhaps most famously through *The Calculus of Consent* by James Buchanan and Gordon Tullock, published in 1962, used the (mid-20th century) modern tools of economics to study 'politics without romance', as Buchanan himself put it.

Buchanan and Tullock, and other public choice scholars such as Duncan Black, Anthony Downs and Mancur Olson, were both products of mainstream 20th century economics while criticising it for being overly simplistic and naïve in its thinking around politics and power. However, neither mainstream economics nor the public choice school had private sector development included at its core. The public choice scholars were certainly concerned about the health of the private sector, but most of their work simply focused on different levels, mostly politics at the national level. One may, perhaps, read the public choice school as implicitly analysing the political economy of private sector development by trying to understand the burden on the rest of society, including the private sector, imposed by inefficiencies of the political system, and the challenges created by self-interested politicians with limited interest in the overall health of the economy. However, most of the work of these public choice scholars was focused on the political process itself.

While some of the public choice scholars likely would contest such a characterisation, public choice theory was broadly perceived to have a conservative or libertarian leaning, with individual politicians and bureaucrats typically portrayed as inefficiency-creating rent-seekers. In the 1990s, this largely negative view of the role of gov-

ernment held by public choice scholars gradually gave way to a different perspective and a different way to study politics and politicians within economics. The term political economy again became commonplace and came to represent a more neutral approach to the study of government and political processes within economics. Drawing on some of the core insights of public choice while incorporating new developments in economics, including game theory and new econometrics techniques, a new generation of economists brought the study of politics — and the intersection between economic and political forces — back to the forefront in mainstream economics.¹

The strand of research incorporating politics into economics in new ways that emerged in the 1990s, sometimes referred to as *new political economy*, focused on issues such as electoral competition between political parties, voter turnout and voter behaviour, electoral accountability, the importance of electoral rules and their importance for policy outcomes, the impact of special interest groups and the role of lobbying. Any rules and policy outcomes of importance for private sector development could, in principle, be analysed using the models and econometric tools developed within this emerging body of research, but direct attention to private sector development remained limited. However, a parallel trend in development economics emerged around this same time: development economists also started paying closer attention to politics and governance. This increased focus on political economy within economics, and the emphasis on politics as an essential aspect of (economic) development, gradually led to the emergence of two strands of literature with importance also for private sector development. The first was the strong emphasis on the importance of *political institutions* for long-run development; the path to prosperity in the very long run increasingly became associated with a certain set of institutions that may be viewed as the types of institutions that are conducive to the development of a vibrant and successful private sector. Secondly, a closely related body of research has emerged around the concept of *state capacity*, based on the idea that a capable state is essential not only for the delivery of public goods but also as the backbone and a necessary underpinning of a dynamic private sector. In the sections that follow, we will discuss both of these strands of research and their importance for development, keeping in mind our particular focus on private sector development.

¹ The textbooks *Political Economics: Explaining Economic Policy* by Torsten Persson and Guido Tabellini, and *Political Economy in Macroeconomics* by Allen Drazen, both published in 2000, together provide a very good overview of the new political economy research that emerged in the 1990s. And the book *Special Interest Politics* by Gene Grossman and Elhanan Helpman, published one year later, provides an excellent overview of this strand of research specifically with respect to interest groups and their role in politics.

Institutions

The study of institutions in economics, both with respect to private sector development and in a broader sense, has a long history. Some trace the roots of what we now call institutional economics all the way back to 19th and early 20th century ‘political economists’ like Karl Marx, Thorstein Veblen and John R. Commons. Today, the study of institutions within economics is largely based on the foundations of *New Institutional Economics* (NIE), with early seminal contributions provided by scholars such as Ronald Coase, Oliver Williamson, Elinor Ostrom and Douglass North. These scholars largely used the language and methodological tools of mainstream economics but, unlike many of their contemporaries who built models of friction-free ‘neoclassical’ economies, emphasised the frictions imposed by incompleteness of information and transaction costs imposed on economic interactions due, for instance, to the monitoring and enforcement of contracts. In the context of this chapter, we can think of these features of real-world economics emphasised by the NIE scholars, as potential roadblocks for the development of a dynamic and generally well-functioning private sector.²

Today, the most commonly used definition of institutions is Douglass North’s the rules of the game, or more specifically the ‘humanly devised constraints that structure political, social and economic interactions’ (North 1990). Much of the early research on institutions, using this or other definitions, focused primarily on economic institutions. The political and development dimensions were present but received a major boost with the highly influential article ‘The Colonial Origins of Comparative Development: An Empirical Investigation’, published in 2001 by Daron Acemoglu, Simon Johnson and James Robinson. In this article, the authors argue that institutions designed by colonising powers primarily in order to extract resources from large segments of population in favour of the elites had long-lasting effects and provided barriers to development. More generally, in a series of follow-up papers and in two books, *Why Nations Fail* and *The Narrow Corridor: States, Societies, and the Fate of Liberty*, published in 2012 and 2019, Acemoglu and Robinson develop a theory of inclusive versus extractive institutions as the key to understanding differences in long-run development paths. In the specific context of private sector development, we can think of inclusive institutions as the types of institutions that provide a certain level of protection to most people and can tap the potential of the mass of the population, which leads to a more broad-based private sector development fostered on the best ideas or the best entrepreneurial ventures.

² The term New Institutional Economics (NIE) was coined in 1975 by Oliver Williamson. Seminal contributions include the books *Markets and Hierarchies: Analysis and Antitrust Implications*, published in 1975 by Williamson, *Structure and Change in Economics History*, published in 1981 by Douglass North, and *Governing the Commons: The Evolution of Institutions for Collective Action*, published by Elinor Ostrom in 1990. Several preceding articles by Ronald Coase, notably ‘The Nature of the Firm’ and ‘The Problem of Social Cost’, published in 1937 and 1960, preceded the NIE terminology, but were highly influential for the later development of institutional economics.

Such inclusive institutions include, for instance, protection of property against arbitrary expropriation, and constitutionally imposed constraints on political executives. In short, under what they define as inclusive institutions, regular citizens have a certain level of protection against arbitrary treatment from the elites. Extractive institutions, on the other hand, hold back private sector development by focusing on the extraction of wealth in favour of a limited elite. In the original 2001 article with Simon Johnson, they trace modern-day differences to different climate conditions facing colonial settlers, leading these settlers to impose different institutions. However, a country's path towards extractive or inclusive institutions can, in principle, have different — not necessarily colonial — origins.

Acemoglu and Robinson are, of course, not alone in emphasising the importance of institutions and political histories for long-run economic development. For instance, in closely related work, Sokoloff and Engerman (2000) also emphasise the importance of political institutions such as universal suffrage and broad-based access to land, for economic development, though in their theoretical framework greater importance is given to geography (factor endowments) in shaping the institutions in the first place. Other scholars focusing on political institutions, including Douglass North together with John Wallis and Barry Weingast, in their 2009 book *Violence and Social Orders: A Conceptual Framework for Interpreting Recorded Human History*, go even deeper and study what they view as the central problem in human history: the control of violence. They focus on the fragility of societies where peace is maintained only as long as all elites with control over the military, or other groups with violence potential, are able to extract enough rents from society at large that they benefit from the peace. In such societies, organic private sector development may upset the equilibrium and undermine itself through the outbreak of violence. Not until societies have managed to transition to become what North, Wallis and Weingast call *open-access orders* — societies with robust civil societies, broad access to political and economic organisations, and a strong rule of law — can a vibrant private sector emerge and lead to deep and broad-based economic development.

While few people today deny that institutions play a significant role in (private sector) development, the strong focus on institutions as the key source of long-run development can be challenged in at least three ways. First, the relative importance of institutions versus competing factors that may shape long-run development is still somewhat of an open question. For instance, structuralist authors, such as Jeffrey Sachs (2000) and Jared Diamond (1998), argue that geography, climate and natural resources are more important for long-run development than institutionally oriented scholars such as Acemoglu and Robinson would claim. Second, despite some interesting work on institutional change, such as that of Avner Greif and David Laitin (2004), we still have a limited understanding of how institutions can change and evolve over time. Third, much of the research focused on the role of institutions cited here originates from North American or European scholars, which may limit the understanding of (successful) institutional arrangements originating in other parts of the world. The

last point is particularly salient in light of the renewed interest, within the field of economics, in the link between culture and economic development (and the link between culture and economics more generally). In principle, many manifestations of culture, such as norms, customs and taboos could be thought of simply as informal institutions, which could easily be encompassed within North's definition of institutions as humanly devised constraints that structure political, social and economic interactions. However, in practise culture and institutions are often positioned as competing explanations in attempts to explain long-run development trajectories. With this in mind, we now turn to a concept that is less tied to specific cultures and countries but still overlap with the work on institutions.

State capacity

In parallel with the emergence of (political) institutions as a possible source of (private sector as well as broader) development, *state capacity* has emerged as a closely related, but somewhat more neutral, concept. In a growing body of research, state capacity is portrayed as a necessary foundation not only for successful implementation of public policies, but also as a foundation necessary for law and order, for the implementation of physical and digital infrastructure, and more generally for the stability needed for the private sector to flourish. Importantly, state capacity is typically thought of as a potential source of strength that can shape the implementation and final impact of policies *regardless of their ideological content* and design, which means that it is not intrinsically tied to a certain type of political system, and therefore not subject to the same type of criticism that has sometimes been levied against the research on institutions, i.e. that specific institutions are tied to a certain political model.

The research on state capacity spans the work of scholars from a wide range of disciplines and methodological approaches, seeking to understand both the effects of state capacity as well as its determinants. The concept is somewhat vaguely defined and different scholars fill it with different meanings. Scholars may implicitly or explicitly refer to at least four different dimensions of capacity: coercive, administrative, fiscal or legal capacity. In addition, normative and positive questions are often conflated. Furthermore, within the realm of normative questions, the view on the appropriate role of a (strong) state typically differs between studies of developed and developing countries. The following observation by Daron Acemoglu captures some of this tension well:

While much research in political economy points out the benefits of 'limited government', political scientists have long emphasized the problems created in many less-developed nations by 'weak states', which lack the power to tax and regulate the economy and to withstand the political and social challenges from non-state actors (Acemoglu, 2005, p.1199).

While conceptually different, the concept of state capacity is often combined with more general institutions and governance indicators such as the rule of law, control of corruption or protection of property rights, as illustrated for instance in the book *Pillars of Prosperity* by Tim Besley and Torsten Persson, published in 2011. However, as captured in the work of Kaufmann, Kraay and Zoido-Lobatón (1999), the ‘good governance’ concept typically refers to, or at least contain, more normative aspects of governance — decision-making practices that are considered ethically and socially desirable — while the concept of state capacity avoids normative conceptions about what the state ought to do or how it ought to do it. All of the dimensions described above — coercive, fiscal, administrative and legal capacity — differ in various ways but are all focused on what the state is able, rather than ought to do. With this in mind, state capacity should be analysed in its own right, and not as part of a package of institutions.

The different dimensions of state capacity all matter for private sector development in different ways. However, in a well-known overview of the early literature on state capacity within ‘new political economy’, Hendrix (2010) concludes that (1) survey measures of bureaucratic quality and; (2) indicators of taxation capacity are the most theoretically and empirically grounded indicators of state capacity.³ The second, the fiscal dimension of state capacity, has been particularly influential in scholarly work. This dimension emphasises the ability of the state to collect taxes from its citizenry. Empirically, this fiscal dimension is commonly represented by proxies such as the share of direct taxes in total tax revenues or tax revenue as a percentage of gross domestic product. That empirical literature, however, suffers from a number of shortcomings, as actual taxation does not only measure the capacity to tax, but also the willingness to tax and be taxed, with normative preferences of the population about the optimal level of taxation potentially differing across countries. Furthermore, countries that are rich in natural resources may find it easier to collect taxes, again making it both conceptually and empirically challenging to determine the actual underlying (state) capacity.

As an alternative to fiscal capacity, some scholars choose to focus on the bureaucratic (or administrative) component of state capacity. Bureaucratic capacity can be regarded as a precondition for taxation capacity, and survey-based measures of bureaucratic capacity are available over a long period of time for a substantial number of countries. Furthermore, in contrast to the fiscal dimension of state capacity, bureaucratic quality is a conceptually clearer measure of state capacity. It is also, due to the powerful theoretical legacy of Max Weber (1922), probably the most salient component

³ In this chapter, we focus mostly on the work on state capacity within the recent political economy literature. However, the work of Charles Tilly (1975, 1990) and Margaret Levi (1988) are important predecessors to this work. For more recent comprehensive reviews of the state capacity literature, see Savoia and Sen (2015) and Cingolani (2018).

of state capacity.⁴ As captured in the 2009 book *Violence and Social Order* by Douglass North, John Wallis and Barry Weingast, a key reason behind its suggested importance is that a professional bureaucracy outlives rulers and is crucial for impersonal policy implementation. Moreover, the seminal contributions of Evans (1995) and Rauch and Evans (2000) show that countries with high bureaucratic quality possess bureaucracies that tend to be more autonomous from political and economic pressures, and tend to have developed extensive mechanisms for recruitment and training. As a consequence, whatever support might be necessary for a healthy private sector to develop, this support is likely to be dependent upon a capable and autonomous bureaucracy that understand and react to the needs of the private sector in appropriate ways.

Sources of state capacity

If state capacity, and the organisation of the state more generally, is an important underpinning of both private sector development and development more broadly, we need to have a better understanding of where it comes from. Early seminal work on the development of state capacity focused on state formation in Europe. In particular the work of Charles Tilly (1975, 1990), who laid the foundation for much of the subsequent work on state capacity, emphasises the importance of the pursuit of war and military capacity. According to Tilly, this pursuit of military capacity, and the need for funding to sustain the pursuit of external wars, lead to the creation of (more) capable states as somewhat of a by-product. More recent work, for instance Dincecco and Prado (2012), similarly finds that European states made various fiscal innovations in order to raise the revenues to fight wars, and these innovations lead to the development of fiscal institutions. Tilly (1990) furthermore argues that increasing population density in Europe made land relatively scarce and therefore very attractive to control, while Paul Bairoch, in *Cities and economic development: from the dawn of history to the present*, published in 1988, shows that increased urbanisation and better transportation networks during the Industrial Revolution further drove state formation and modern state capacity in Europe.

While all of these factors analysed in the early seminal contributions to the state capacity literature may have contributed to understanding state formation and state capacity in Europe, they are also in many ways specific to this continent. A recent and still dynamic body of scholarly research shows that deep histories and path dependence heavily shape state capacity in other parts of the world also, but not in the same ways as in Europe. Tilly's central paradox, that the pursuit of war and military

⁴ The theoretical and empirical associations between bureaucratic autonomy and the various measures of state capacity that scholars have used are discussed in Cingolani, Thomsson and De Crombrugge (2015), which provides the basis for this section of the chapter.

capacity led to a civilianisation of government and domestic politics with state capacity created largely as a by-product, is rather specific to Europe. Although examples of course exist in other parts of the world, interstate wars of conquest are less common in many other parts of the world than in Europe. For instance, most of the conflicts in post-colonial Africa and Latin America have been internal conflicts. As a result, the pressure to build an effective central administration that levies taxes and protects private property was significantly lower compared to the European experience, as illustrated for instance in the work of Robert Bates (2001) and Jeffrey Herbst (1990).⁵

The differential trajectories of state formation were also shaped by population density. Mamdani (1996) shows that, in contrast to Europe, low population density and land abundance formed obstacles to political centralisation in large parts of Africa as many African governments found it difficult to penetrate and control major parts of their hinterland. As low population densities make territorial conflicts less likely, governments have fewer incentives and less means to extend their rule beyond the capital cities and a few other population centres.

As discussed for instance by Szirmai (2015) and Young (1994), in many countries the legitimacy of modern state institutions remains weak as the internal pacification of the territory has not yet been completed, partly because the impetus for modern state formation and institutional capacity development in many countries outside of Europe was often colonial penetration. Western colonial empires typically disrupted or destroyed traditional, indigenous political structures and institutions. A growing body of quantitative and qualitative research maps out the long-term effects of this colonial intrusion on contemporary public goods provision and economic prosperity in former colonies.⁶ Related research, for instance by Alesina, Easterly, and Matuszeski (2011) emphasises the arbitrary nature of post-colonial boundaries in the process of state formation, and the work on Nunn and Wantchekon (2011), among others, show the importance of the slave trade in explaining the weakness of contemporary African states.⁷

Modern post-colonial states are, however, not only shaped by their colonial experiences. A combination of historical, political science and anthropological research, for instance by Boone (2003), Mamdani (1996) and Wig (2016) suggests that there is continuity of precolonial institutions in many countries. This line of reasoning is sup-

5 While the view presented here is both commonly held and influential, countervailing arguments exist. For instance, Rodriguez-Franco (2016) argues that internal wars 'can lead to increased taxation when they enhance solidarity toward the state among the elite and motivate the state to strengthen and territorially expand the tax administration' (p. 190).

6 Key contributions to this literature include Frankema & van Waijenburg (2014), Frankema (2011), Huillery (2009, 2010) and Jedwab, Kerby & Moradi (2017).

7 Much of this research is focused on the legacy of colonialism in Africa. For research on historical legacies outside Africa, see, for example, Angeles and Elizalde (2017), Banerjee and Iver (2005), Cantoni (2015), Dippel (2014), Guiso, Sapienza, and Zingales (2016), and Chuaire, Scartascini and Tommasi (2017). And the book *The Institutional Foundations of Public Policy in Argentina*, by Pablo Spiller and Mariano Tommasi, published in 2007, can be seen as a link between the institutions and state capacity parts of this paper.

ported by recent empirical research that studies the importance of precolonial ethnic institutions for contemporary public goods provision and economic development in Africa. In a string of successful papers, Michalopoulos and Papaioannou (2013, 2014, 2015) attribute a higher regional economic development in the historical homelands of ethnicities to centralised, hierarchical, precolonial political institutions. That said, the relationship between precolonial centralisation and *political* or *administrative* development is less well explored. The work of Gennaioli and Rainer (2006) suggest that African countries with higher precolonial centralisation have stronger rule of law today, while Maaseland (2018) highlights the declining impact of colonial legacies on African institutional and economic development.

In the early 1990s, a wave of decentralisation processes took place as part of the third wave of democratisation that returned power to pre-colonial structure at the local level (chiefdoms etc.). Herbst (2000) discusses how several countries changed their legislation in the early 1990s to provide formal recognition to the role of pre-colonial institutional structures. As a result, the strong relationship between precolonial centralisation on contemporary institutional quality may not necessarily reflect institutional persistence, as the strong link between pre-colonial systems and contemporary institutions could be a more recent phenomenon. In ongoing work, Broich, Szirmai and Thomsson (2022), drawing on Huntington's (1991) work on the 'third wave of democratisation', we find tentative evidence suggesting that precolonial structures have shaped modern-day state capacity, with higher levels of precolonial centralisation leading to greater bureaucratic capacity today, while the impact of colonial experience on bureaucratic capacity appear to fade over the post-colonial period. However, the direction and nature of causality remains challenging to establish, and more country-specific, qualitative research is necessary as a complement to these macro-level studies before we can really trace out the impact of pre-colonial institutions and early state structures on current state capacity.

Concluding discussion

Throughout this paper, we have mapped out the political and institutional characteristics that provide the underpinnings of private sector, as well as more general, development. We have seen a review of the general political economy literature: both early contributions and the dynamic literature of the last three decades. We have covered in greater depth two aspects of political economy that we deemed to be particularly important for private sector development: (political) institutions and state capacity. These parts of the paper contain descriptions of factors that provide political underpinnings of private sector development, not direct studies of this topic. This is a conscious choice. However, there does exist some recent studies that take a more direct

approach and explicitly study the political economy of private sector development. We close the chapter by covering a couple of those contributions.

In the recently published *Routledge Handbook of Contemporary Vietnam*, published in 2022, Tu-Anh Vu-Thanh's chapter 'The political economy of private-sector development in Vietnam since Doi Moi' analyses the interaction between politics and economics in Vietnam in recent years. That chapter illustrates, among other things, that clientelistic state-business relations that emerged in the mid-2000s have created political and economic obstacles for Vietnam's private sector development. In an earlier contribution, Guo et al. (2014) focus on the 'Political economy of private firms in China' and, more specifically, examine rent creation through political connections in China. They find that entrepreneurs that are better connected, enjoy significantly greater rents than other entrepreneurs. With a similar focus on private sector development in China, the paper 'Friends with benefits: how political connections help to sustain private enterprise growth in China', Kai-Sing Kung and Ma (2018) survey 511 Chinese private enterprises and find that political connections are often forged by owners as a response to government discrimination. They argue that government connections function as a replacement of formal (and enforced) property rights, challenging the notion that strong property rights are necessary for private enterprises to grow.

These studies provide interesting examples of more direct examinations of the political aspects of private sector development. They do not replace the need for understanding the deeper underpinnings that most of this chapter has focused on – institutions and state capacities – without which a dynamic private sector cannot emerge and flourish. We close the chapter by noting that a constructive path forward, in terms of research on politics and private sector development, would be to build on a wider range of methodological approaches than those covered in this chapter, for instance by incorporating (approaches to) research from history and anthropology into economics and political science. In order to fully trace out the causal chains linking deep historical institutions and modern-day outcomes, an exclusively quantitative (econometric) approach is typically insufficient; a combination of qualitative and quantitative research, with interactions and oscillations between scholars from the aforementioned fields, offers the promise of a richer and more nuanced picture of the political and institutional foundations of private sector development.

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André Dellevoet and Stephanie Jones

3 Informal business practices: Exception or the norm?

Abstract: The paper is an attempt to contribute to the development of a new management theory, which is particularly relevant for emerging markets, where state institutions and the rule of law are still weak. The paper focuses on ‘informal business practices’ (IBP) which seems underestimated as too much attention goes to formal aspects of business organisation and operation. The paper demonstrates that IBP occur everywhere and are a significant phenomenon in business as evidenced by the size of shadow economies, the size of informal trade in border areas and corruption. An explanation for the widespread prevalence of IBP is found in an economic theory, centred around the minimisation of the costs of doing business, as well as behavioural theory.

In conclusion, the paper calls for more recognition of IBP as a central concept to explain firm behaviour in emerging markets and suggests further research, for example by context specific case studies.

Keywords: Informality, business behaviour, shadow economy, cost of doing business, rational choice

Introduction

The inspiration for this paper comes from years of observation and interaction with business owners and managers in emerging markets in Africa and Asia. Many people working in these markets are often surprised by the difference between theory and practice, what we believe ought to happen (formalisation and organisation, legal compliance, best practices etc.) and what is actually happening on the ground. In our experience, most businesses, small and large, are not (fully) compliant with many rules and regulations, be it their country’s formal laws, contractual obligations or internal codes of conduct, guidelines or manuals. However, not all these business practices are necessarily illegal or inappropriate. They are also a way of getting things done in what is often a difficult business environment. This is why we prefer to refer to them as ‘informal business practices’ (IBP).

There is very little academic literature about the concept of IBP as such, although elements of it can be found in micro-economics, behavioural economics, psychology and sociology. One reason is undoubtedly the difficulty in obtaining reliable data on such a sensitive topic. Nevertheless, it is still surprising, as IBP seem to be much more frequent and significant than is recognised in management literature. If we wish to understand how business really works, especially in emerging economies, we must

delve deeper into the phenomenon of IBP. There are many definitions of a business, but for the purpose of this paper, we define a business as 'any organised, commercial activity that seeks profit by providing goods and services to others in exchange for money'. This definition excludes commercial activities that are undertaken by unorganised individuals such as street vendors, day labourers or subsistence farmers (Dau and Cuervo-Azurra, 2014).

The *first research question* is: are the observations and experiences referred to above a correct interpretation? We need to determine what informal business practices vis-a-vis formal business practices are, and what they are not. In line with micro- and behavioural economics, we are taking the business entity as the basic unit of analysis and particularly the owners/managers. Is it possible to come to a definition? These questions will be answered below in 'The meaning of informal business practices'.

The *second question* is: how large and significant is this phenomenon i.e. how widespread is IBP? We take a look at the big picture and also highlight some of the IBP practices at the business enterprise level. This question will be addressed in the section 'The significance of informal business practices'. Some examples at the macro- and micro-levels will be given.

The *third question* is: after we have described the phenomenon and established its significance, can we perhaps come to a theory that explains the occurrence of IBP? This is the subject matter of 'A theory of informal business practices' where we focus on the development of an economic as well as a behavioural theory of IBP.

The meaning of informal business practices

The first thing we need to state for the purpose of this paper is that a theory of IBP doesn't need to distinguish between the informal sector and the formal sector, since these are related to *enterprise characteristics* such as size, registration, annual sales, access to credit, fixed location and tax status (Benjamin et al., 2012). In our study, we would like to focus on *enterprise behaviour* and particularly the kind of behaviour that happens beyond visibility and scrutiny. There are several dimensions to this kind of informality. The OECD distinguishes the informal economy between hidden (evasion of taxes and other legal obligations), informal (not registered, not in line with professional standards), illegal (smuggling, fraud, drug trafficking, counterfeiting) or household economic activities (personal use of paid domestic services) (OECD 1997).

In view of tax evasion scandals as demonstrated by the Panama papers and recently Pandora papers, fraud scandals around large accounting firms and the occurrence of illegal activities by large, multinational corporations (MNCs), especially in the extractive industries, we contend that these economic activities or business practices

can be found in both the formal and informal sector and in small as well as large businesses worldwide.¹

In line with Benjamin et al. (2012), we believe it is more productive to see IBP as a continuum. Other authors have also recognised that informality is a matter of degree, best captured by a range of indicators (Steel & Snodgrass, 2008; La Porta & Schleifer, 2008; Guha-Khasnabis & Kanbur, 2006), but these authors did not propose operational definitions. Indeed, informality is a complex issue. Some firms are registered and pay taxes but at the same time underreport sales and profits and use informal subcontractors for a large part of their business activities.

Hence, a definition of informal business practices, challenging as it is, should both be clear and concrete as well as encompassing multiple criteria, which capture its significance and meaning, both within the business and in its dealings with the external environment. In this effort, we would also like to be more comprehensive than the distinction by the OECD, as described above, and propose to include those business practices that are not *only hidden, informal or illegal but also unethical*, i.e. those business practices that are considered morally ‘wrong’ and inappropriate at the local as well as international levels (such as discrimination, bribery, insider trading, favouritism, pollution, etc.) (Crane & Matter, 2007). This approach brings us to the following criteria and indicators for informal business practices (see Table 1).

Table 1: Indicators of IBP compared with formal aspects of a business (Source: Dellevoet, 2021).

Part of the Business	Formal	Informal
Governance/ leadership	Board of Directors, professional management, formal mandates, accountability and transparency, full disclosure	Behind the scenes decision making, shadow directors, financiers/investors power, ‘old boy network’, political influences, patronage, conflicts of interest
Legal and tax compliance	Meet legal and contractual obligations and tax compliance	Freely interpret, not strictly adhering to or ignoring contractual obligations, plagiarism, violation of legal obligations incl. environmental regulations, tax avoidance, tax evasion, insider trading
Financial management	Bank finance, professional administration in place, formal procedures and systems, insurance	Informal finance, informal money transfers, shadow bookkeeping, fraud, no insurance, transfer pricing

¹ See for more information regarding the Panama and Pandora papers: <https://www.icij.org/> investigations.

Table 1 (continued)

Part of the Business	Formal	Informal
Production/working conditions/safety/quality control	Work floor organisation, standard procedures and safety measures in place, quality assurance, competence, oversight	Violation of labour laws and workers health and safety regulations, adulterated or substandard products
Procurement	Formal procurement procedures in place, strict policy of gifts and payments by third parties	Non-transparent process, single sourcing, price inflation, acceptance of bribes and gifts
HR management and administration	Official recruitment processes, performance management systems, reward/promotion on merit	Nepotism, favouritism, no social security coverage, no contract, discrimination, unpaid or delayed salaries, undeclared work ²
Sales and marketing	Marketing strategies, media campaigns, advertisements	Word of mouth, personal network, unfair and restrictive trade practices ³
Transport/logistics	Regulatory compliance, appropriate storage and cooling solutions to minimise losses/damages, well managed and maintained transport fleet	Long working hours for drivers, overloading, lack of maintenance of transport fleet, personal use, inadequate storage and handling leading to losses/damages

The difference between formal and informal as described in Table 1 is less clear cut than it seems, and it would be a mistake to equate informal with illegal. Sometimes, the law does not exist or is limited in its effect. For example, Chatterjee and Kanbur studied the impact of India's Factories Act of 2011, which requires manufacturing firms of a certain size to register and comply with regulations. They found that the category of firms that are not affected by the Act, given their small size, was 97% of all manufacturing firms (Chen & Carré, 2020, p. 15).

The situation gets even more complicated when there is collusion of state representatives and private businesses in identifying or creating loopholes in, or simply bypassing, existing rules and regulations to serve their mutual interests. Harris-White and Michelutti (2020) examined eleven case studies in South-Asia, focusing on business enterprises in coal, oil, real estate, and industrial labour and how state regulatory law is ignored or selectively manipulated, revealing the workings of regulated

2 Undeclared work refers to paid work, which is legal in all respects other than it is not declared to the authorities for tax, social security or labour law purposes.

3 These are business activities that have the effect of preventing, distorting or restricting competition which includes such practices as exclusive dealings, tie-up sales, full line forcing, concert or collusion cartels, price discrimination, re-sale price maintenance, area restriction, bid-rigging and output limitations. Sometimes, they are prohibited under prevailing anti-trust legislation, but often they are not.

criminal economic systems in which politicians, police, judges, and bureaucrats are closely involved (Harris-White & Michelutti, 2020). So how can these business activities be illegal if the (local) government is involved?

Clearly, IBP manifests itself in many forms, making it difficult to come to a clear-cut definition. It must be comprehensive and yet particular. In view of the criteria in Table 1 to describe IBP, we propose to use the following definition of IBP:

All those practices, in contravention of formal rules, laws and regulations and generally accepted principles of business ethics, that give the business owners/managers maximum leeway to achieve a competitive advantage, lower costs and increased profitability, as they see fit.

The focus is on business entities or enterprises and particularly the owners or managers, which helps to distinguish between IBP and any transaction between a buyer and a seller. The reference to competitive advantage, costs and profits can be seen as an *economic* principle, while the last sentence ‘... as they see fit’ points towards another characteristic of IBP, namely the attitude, the norms, and the values of business owners/managers, which is the domain of *behavioural* theories. More about this in the sections below.

If we consider IBP as a continuum, then we can in principle position every business on a bar between the extremes of fully informal and fully formal. Suffice to say that very few businesses will in reality meet all criteria at the extremes, so it may be expected that most businesses will find themselves somewhere in the second and third quarter of the scale as depicted in Figure 1 below.

Hence, the assumption is that probably all businesses in the world are involved in both formal as well as informal business practices. However, as we shall explain below, where the business finds itself on the scale depends very much on both internal factors (i.e. corporate governance, ownership, transparency and accountability, labour relations) as well as external factors (government relations, law enforcement, relationship with stakeholders and clients).



Figure 1: The continuum of informal business practices.

A good example of how a business may be positioned on this scale is given by Benjamin et al. (2012), who describe large, informal businesses in three West-African countries. They appear to meet most of the criteria defining formality; they are registered, they pay taxes under the regular business tax regime, handled by the Division of Large Companies within the Revenue Authority, they have a high level of sales, access to bank credit and are known to, and collaborate with, the authorities. Yet, their prac-

tices are informal, their administrative structures and managerial styles resemble those of small, informal firms. Formal firms of the same size have distinct departments (HR, sales, finance, marketing etc.) and a coherent organisational structure, while these informal firms do not. Apart from the owner/director and a few permanent staff (rarely more than five), the rest of the personnel are temporary. Functions and responsibilities overlap and are often done by the same person. Accounting is often done in-house and is typically highly inaccurate, massively underreporting sales and profits, while formal firms often outsource the accounting function (Benjamin et al., 2012, p. 76).

Based upon this description and many others like it (see Chen & Carré, 2020), one can actually develop a force field analysis for such businesses that operate somewhere between the formal and informal, as illustrated in Figure 2. This approach allows an IBP analysis of each company.

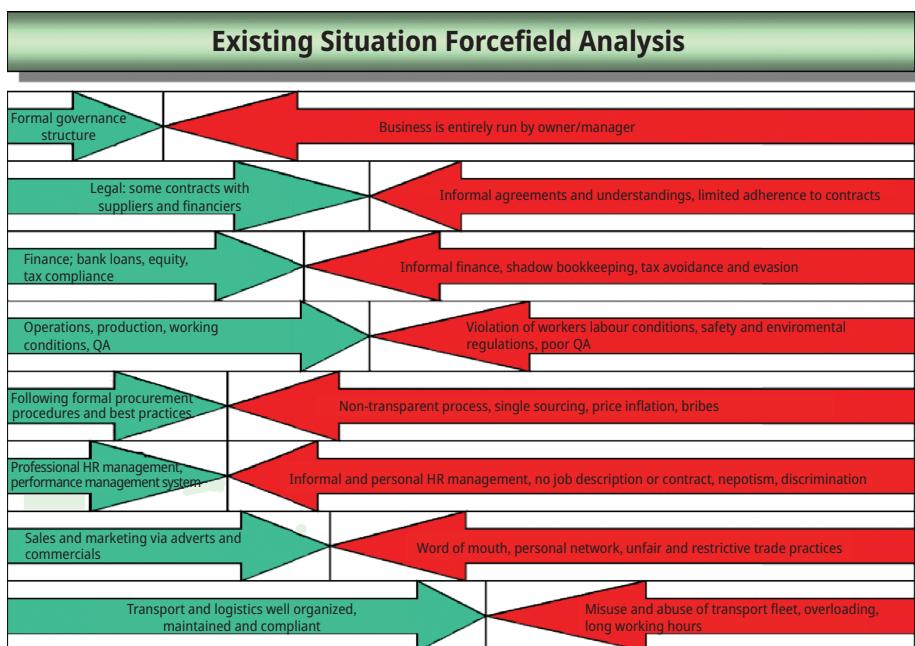


Figure 2: Typical IBP analysis of an individual small business (adapted from S. Jones and M. Tynan (2021), 7 Entrepreneurial Leadership Workouts. London: Anthem Press).

The significance of informal business practices

The next question which we need to answer is to what extent these informal business practices are occurring, in order to understand their significance and magnitude. This

can be determined through a number of indicators such as the size of the informal and/or black economy. Of course, it can be assumed that informal business practices are even more prevalent in the informal sector, as these businesses by definition operate below the radar of government, not being registered and paying no (direct) taxes. In the absence of government oversight and control, these informal businesses typically operate outside of the legal and regulatory framework. For example, labour compensation is much lower in the informal sector, due to evasion of labour market regulations (Benjamin et al., 2012, p. 66). Hence, the size of the informal sector does indicate the prevalence of informal business practices.

A few specific indicators, explained below, show how sizeable the informal sector is and by extension, the likelihood of IBP:

- In the advanced economies, between 10% and 20% of income comes from the shadow or 'black' economy.⁴ In some emerging countries, it can represent more than 30% as demonstrated in Chart 1 below (Schneider & Enste, 2002; Schneider et al., 2010).
- According to the International Labour Organization, about two billion workers, or 60% of the world's employed population aged 15 and older, spend at least part of their time in the informal sector (Delechat & Medina, 2020). Other authors estimate that around 80–90% of the labour force is informal (Benjamin et al., 2012, p. 48; Breman in Chen & Carré, 2020).
- In a typical developing country, the informal sector produces about 35% of GDP⁵ and mostly consists of micro, small and medium sized businesses (MSMEs) who make up more than 95% of all businesses.

Examples of black-market activity are quite common worldwide, whether it is the issue of a warehouse worker driving an unlicensed taxi between shifts or an electrician accepting cash payments without declaring his earnings. However, the level of black market or shadow economy activity depends highly on the country of residence. Benjamin et al. (2012) mention that there are few completely formal firms in West African economies. The only firms that meet all the criteria such as taxes, registration and legal compliance, are branches of MNCs, banks and financial institutions, state owned enterprises (SOEs), certain professions (law firms, notaries, accountant firms) and a few large, local enterprises. Others are involved in at least some of the IBP activities such as undeclared sales or services, value added tax collected and not remit-

⁴ Generally defined as businesses and individuals engaging in inappropriate practices without complying with certain legal obligations such as paying tax or maintaining official standards of employment (Delechat et al., 2020).

⁵ Steel and Snodgras (2008) estimate that the informal economy in Africa even accounts for 50–80% of GDP and as much as 90% of employment.

ted, and undeclared imports through smuggling. This applies to some of the largest and fastest-growing sectors of West African economies; wholesale and retail trade, transportation, restaurants, counterfeit and pirated consumer goods varying from electronics to medicines, carpentry, construction (incl. subcontracting by formal firms under government contracts), manufacturing (use of informal distribution channels) real estate and (artisanal) mining.

Macro examples of IBP

The shadow economy

It seems that the occurrence of IBP is strongly related to the capacity and legitimacy of state institutions. According to Medina and Schneider, heavily regulated economies with weaker administrations tend to have well-established shadow economies (Medina & Schneider, 2018). These practices can be much less common in nations with strong, well-regulated and efficient government institutions, as can be seen in Chart 1 below. Delechat et al. (2020) estimate that the shadow economy costs governments around the world trillions of dollars every year.

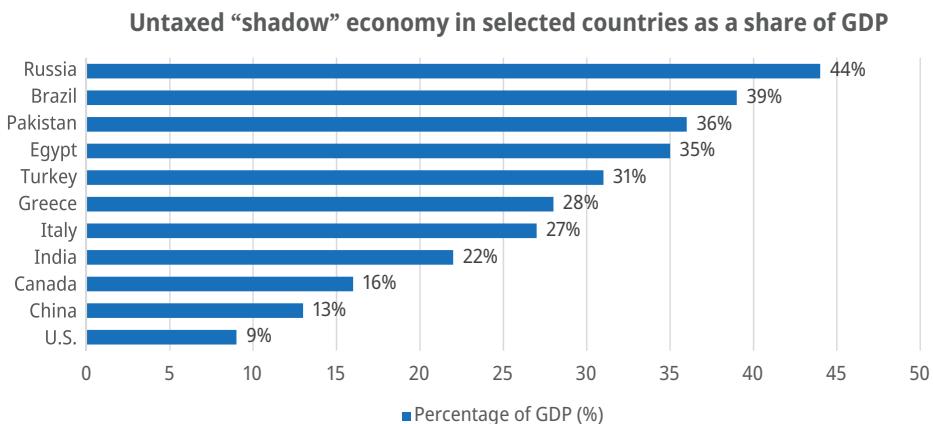


Chart 1: The size of the shadow economy in selected countries (Source: Statista, 2021).

Corruption

Another example that is linked to the shadow economy, which is well documented, is the extent of corruption worldwide. Every year, Transparency International publishes the Corruption Perception Index (CPI), covering all countries in the world. Data on the

CPI score of countries in the European Union, as of 2020, show that Denmark is the EU country with the highest CPI score, implying that it is the least corrupt country in the European Union. The other Nordic countries in the EU: Finland and Sweden, also have high scores and are second and third in this statistic respectively. Bulgaria and Hungary have the lowest index score of all EU countries with a score of 44 each (Transparency International, 2020). The index itself is a composite indicator that includes data on the perception of corruption in areas such as bribery of public officials, kickbacks in public procurement, embezzlement of state funds, and effectiveness of government's anti-corruption efforts. The highest possible score in perception of corruption is 0, whereas a score of 100 indicates that no corruption is perceived in the respective country. The index provides a good indicator of corruption in the EU, both by the state and the private sector when dealing with the state.

Unfortunately, most developing countries, particularly in Africa, invariably feature at the bottom segments of the CPI with a few notable exceptions such as Mauritius and Rwanda. This may create the impression that corruption is an issue in these countries alone. As you can see from Chart 2 below, this is not the case as corruption is also prevalent in the EU and quite significant in Southern and Eastern Europe.

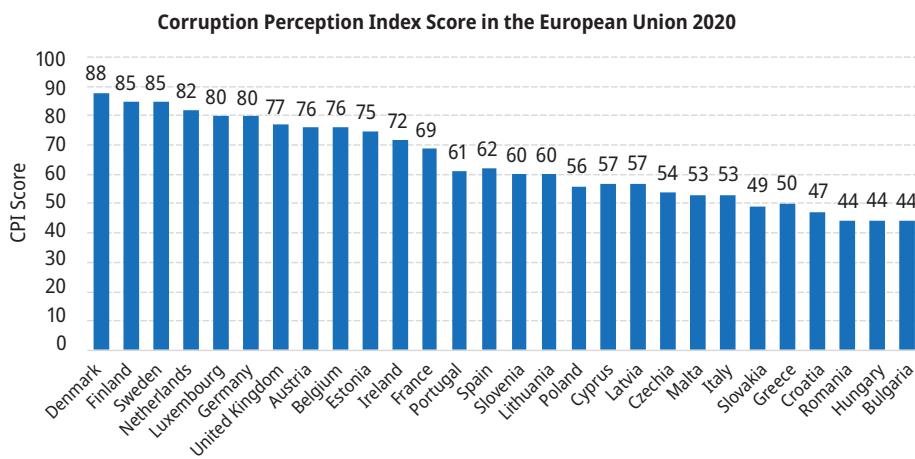


Chart 2: Corruption perception in selected EU countries 2020 (Source: Statista).

Cross border trade

Informal cross border trade is another area where IBP is rife, often with the explicit or tacit approval of the authorities. In West Africa, for instance, informal trade activities involve three types of flows: (1) smuggling of imports from other continents, usually entering through the port without being recorded; (2) exports and imports of locally produced products within the region and; (3) unofficial re-exports of legally

imported goods. The re-export trade involves importing goods and subsequently shipping them to other countries with no additional processing or packaging, except for transport services. This kind of informal trade can be a highly complex and well-organised system which involves large, formal enterprises that import goods through official channels and pay duties; but operate through a sophisticated distribution chain that engages in transhipment through informal mechanisms, avoiding the necessary licenses and tax obligations. This informal trade is a major source of revenue for some West-African countries such as Benin and the Gambia, accounting for about half of these countries tax revenues (Benjamin et al., 2012, p.198).

Examples of IBP in cross border trade can be found everywhere, where state control is limited or absent. In a study about cross border trade in the Myanmar-Thailand border and the tribal areas in Pakistan bordering Afghanistan, researchers described how the limited presence of state authorities or application of state law, led to the creation of 'common spaces' such as border posts or bazaars, where trade is illegal but licit or a form of legalised informality (Horodnic et al., 2018, pp. 173 and further). Local (municipal) taxes or 'gifts' to state officials may be paid and businesses may have some form of license or permit, but their goods are traded informally.

Micro examples of IBP

Governance

At the micro-level of the business itself, IBP can also be detected throughout an organisation. For example, the reality of board governance may be quite different from what many people imagine it to be. Tricker (2012) puts it succinctly: 'Director's behaviour is influenced by interpersonal relationships, by perceptions of position and prestige, and by the processes of power. In fact, corporate governance is more about human behaviour than about structures and strictures, rules and regulations. Corporate governance involves the use of power. It is a political process' (Tricker, 2012, p. 327).

Outsiders often look at the formal side of the business i.e. the articles of association, the existence and composition of the board, by-laws, the presence of board committees, shareholder meetings and so forth. However, anyone who has board experience knows that behind the façade, all kinds of informal governance practices may or may not happen. These practices include, amongst others:

- Pressure on the board by a dominant shareholder or group of shareholders
- Strong influence on decision-making by an overly dominant board chair
- Director's 'games' and behaviours such as; alliances against certain decisions, coalitions pushing for certain decisions, cronyism (personal relationships between directors), deal making outside the boardroom, dereliction of duty, divide and rule, empire building (privileged access to information, people, resources to ac-

quire power), hidden/personal agendas, lobbying, log rolling, scaremongering, sub-optimisation (focusing only on one part of the organisation), window dressing, meeting manipulation.

If these governance practices lead to official, properly constituted decision-making, there is little that can be done about it. However, many stakeholders (inside and outside the firm) would still consider these practices as inappropriate and illegitimate (Counts, 2020).

Tricker (2012) points out that the ‘secretive, authoritarian and family-centric governance’ of family and listed companies is still very common in Asian countries and the MENA region, leading to issues such as abnormal dealing prior to mergers and acquisitions (insider trading) and the existence of ‘insider boards’ and cross ownership with subsidiary companies (Tricker, 2012, p. 457; Gul & Tsui, 2004). In some MENA countries with official common law or civil law governance, significant legal influence on contracts, property rights and external finance is exercised by the overarching Islamic Shariah law.

HR management

As we saw in Table 1, IBP manifests itself in many ways inside the business organisation including when it comes to Human Resource Management (HRM). HRM practices may be highly unprofessional or informal, especially in small, family-owned businesses, who make up the majority of all businesses.⁶ Job descriptions, if in writing, may be very vague and not accurately reflect the job environment, tasks and performance criteria. Job selection may be based upon exam scores, formal CVs and letters of recommendation, without any form of interview or tests, as frequently happens in Japan, Korea and many other Asian countries (Robbins, 2001). In African small businesses, jobs are often given to candidates that are related to the business owners and managers, without any formal recruitment process, which may lead to less workplace diversity as biases based upon gender, religion and ethnicity may prevail (Benjamin et al., 2012). Most businesses, however, do use interviews as the main selection tool but interviews may be unstructured, short in duration, casual and made up of random questions, which lead to bias and a weak relationship with future job performance (Robbins, 2001, p. 476).

In certain sectors, such as the construction industry, agriculture, leisure and hospitality, domestic staff and low-skilled workers often have no contract, and their terms of employment do not include anything about leave days, pensions, social security or even

⁶ It is estimated that 99% of all businesses worldwide fall in the category; micro, small and medium sized enterprises or MSMEs. More than half of those are family owned. See for example, Petty J. W. et al. (2012). *Managing Small Business, an entrepreneurial emphasis*, 16th International Edition.

working hours. In family businesses such as retail shops, cottage industries and farms, it is quite common to 'employ' unpaid contributing family workers, even children. Some of the IBP seem to undermine the very basics of an employment relationship i.e. those pertaining to 'decent' or living wages for work, which seems to be a major issue in the apparel, textiles and leather industries.⁷ In other countries, employers attempt to reduce their labour costs by offering different kinds of salaries. In a study about envelope wages, Horodnic and Williams (2018), mention that in the Baltic region, envelope wages⁸ represent a high share of the shadow economy, being at 52.3% of the shadow economy in Estonia, 42.9% in Lithuania and 39.2% in Latvia (Horodnic et al., 2018, p. 41).

In fact, the standard employment relationship — full-time, year-round, employment with a single employer — seems to be the exception rather than the rule, as most workers in developing countries are self-employed (Chen et al., 2020). Looking at small, informal firms in the three West-African cities of Dakar, Ouagadougou and Cotonou, World Bank researchers found that only about 20% comply with social security obligations, while this number is about 80% for formal enterprises (Benjamin et al., 2012, p. 118).

Most businesses assume that workers are qualified at selection and pay little attention to further training. Despite the fact that most employees of small firms have low education levels, very few resources are invested in employee training. Nielson, Rosholm and Dabalen (2007), found that only 4.6% of businesses with fewer than ten employees in Kenya, Zimbabwe and Zambia offer training programs for their staff. This often leads to low quality and low productivity of work, which in turn limits the growth prospects of the businesses as clients do not return and do not recommend the business to others (while most MSME's depend heavily on word-of-mouth as their key marketing channel).

In small businesses, decision-making about demotion or promotion are often the prerogative of the business owner/manager with very little involvement of anyone else. Performance management systems are not in place. The decision is mostly based upon the observations and perceptions of the owner/manager, which is a response to the 'impression management' of the employee i.e. the effort to control or influence other people's perceptions.⁹ Robbins (2001) noted that performance evaluations are less important in many cultures compared to the US or Canada. Individualistic cultures such as the US emphasise formal performance evaluation systems, for example

7 See for example the work of the Global Living Wage Coalition: <https://www.globallivingwage.org/>.

8 This is a form of undeclared labour in order to reduce tax and social security payments to the government. In Horodnic and Williams' study about student employment in Romania and Moldova, it was shown that 70% of businesses offer student employees an official, declared salary, which is mentioned in a formal, written contract, and an additional undeclared 'envelope wage' (cash) via a verbal unwritten agreement. This practice seems to be widespread in Eastern Europe (Horodnic et al., 2018; Ledeneva, 2018).

9 Rosenfeld, Giacalone & Riordan. (1994). 'Impression management theory and diversity lessons for organizational behavior'. *American Behavioral Scientist*, 37(5), 601–604.

by having yearly written evaluations, to a greater degree than informal systems in Asia and Latin-America. These informal systems downplay feedback, take a longer-term view by having less frequent performance reviews, and disconnect rewards from performance ratings. US and Canadian organisations hold people responsible for their actions, because people in these countries believe they can dominate their environment. In Middle Eastern countries, on the other hand, performance evaluations are not likely to be widely used, since managers in these countries tend to see people as subjugated to their environment and follow orders (Robbins, 2001, p. 496). More about these socio-cultural issues in our paper on inclusive businesses, elsewhere in this publication.

Accounting

One could argue that nowhere are IBP more common than in financial accounting. There are formal and legal practices where business accounts are presented in annual financial statements and reports and tax returns. Then, there is the grey area where accounts are incomplete and poorly administered or the practice of 'creative' book-keeping, where financial data are presented in a beneficial manner towards the tax authorities, banks and investors. Finally, there are the illegal practices of misrepresentation of the financial status of a business and outright fraud. As Benjamin et al (2012) noted when they looked at informal businesses in West Africa, it is common to underreport sales and profits and inflate cost prices. Apparently, the risk of these illegal practices as well as the rather complicated technical character of accounting, has led to a whole services industry of accounting firms worldwide, amongst them well-known names such as KPMG, PWC, Ernst & Young, Deloitte and Touch and BDO.

The extent of these practices is difficult to measure, but sometimes the veil is lifted. An internal audit at a Ugandan agribusiness development organisation called the Agricultural Business Initiative (ABI), looking at more than 200 small to medium sized Ugandan firms, NGOs and farmer organisations over the period 2013–2016, came to the conclusion that about 6% of the expenditure under ABI grants were questioned (including fraudulent transactions with no supporting documents), about 15% did not follow procurement guidelines, 41% failed to comply with statutory laws (taxes, social security), 31% did not review their bank statements every month, 24% failed to report to ABI and 36% could not provide evidence of their own financial contribution to the project, as per the project agreement (ABI 2016).

Benjamin et al. (2012) noted that these IBP are more common among small firms than larger firms. Only 30% of small firms maintain proper accounts and 60% of firms with turnover below CFA 300 million (at todays exchange rate about US\$ 538,000) do not maintain up-to-date and complete books. A similar trend is evident in business registration decisions. Only 62% of firms with turnover below CFA 5 million (US\$ 8900) are registered, as opposed to 100% of firms with a turnover at or above CFA 100 million (±US\$ 179,300) (Benjamin et al., 2012, p. 97).

The general examples of corruption, shadow economy, and cross border trade as well as the micro-economic examples of corporate governance, HR management and accounting lead us to the finding that IBP occur everywhere and are in fact a very significant, even common, part of business affairs and the economy.

A theory of informal business practices

Now that we have developed a definition, based upon a comprehensive list of criteria, and established that IBP are a significant phenomenon in developing as well as developed countries, we can try to develop a Theory of Informal Business Practices.

A key element in the development of the theory is to explain why IBP occurs in so many countries. To answer this question, we need to look at the multiple dimensions of a business, both in its internal mode of operations and in its external environment, and differentiate between economic factors and other influences, such as behavioural factors.

Economic factors

A business often starts at the initiative of an individual or a few partners, who identified a business opportunity and decided to invest their resources in exploiting that opportunity. Hence, the occurrence of IBP can best be explained by understanding the motivation of the founder/owner or management of the business to behave in a certain way. There is a strong body of evidence around entrepreneurship development, micro-economics and behavioural economics that suggests that an entrepreneur or manager of the business is driven by various motives, chief among them is the rational profit maximisation motive ('making money'). However, it also includes other motives such as self-fulfilment, being in charge and having autonomy, reducing risks and guaranteeing business continuity (Cyert, 1992; Gavetti, 2012; Petty et al., 2012).

Of course, the cost of doing business is at the heart of economics and there is a large body of literature that delves into cost structures and how it influences business behaviour. However, these costs are often related to the production of goods and services. In the last few decades, influenced by such studies as the World Economic Forum's World Competitiveness Index and the World Bank's annual 'Doing Business' indicators,¹⁰ more attention has been given to other factors that lead to higher busi-

¹⁰ Due to controversies around the integrity of data and methodologies, the World Bank in 2021 decided to discontinue the annual 'Doing Business' reports. See for example: <https://www.reuters.com/business/world-bank-aims-replace-canceled-doing-business-report-two-years-2021-11-10> or <https://unctad.org/news/world-banks-doing-business-report-out-business-so-what-next>.

ness costs, such as 'hidden' costs of getting permits, paying fees for services, investing in infrastructure (for example by generating your own electricity), red tape and costs of compliance with regulations. These costs may even be so high that a business actually loses money, especially at the start.

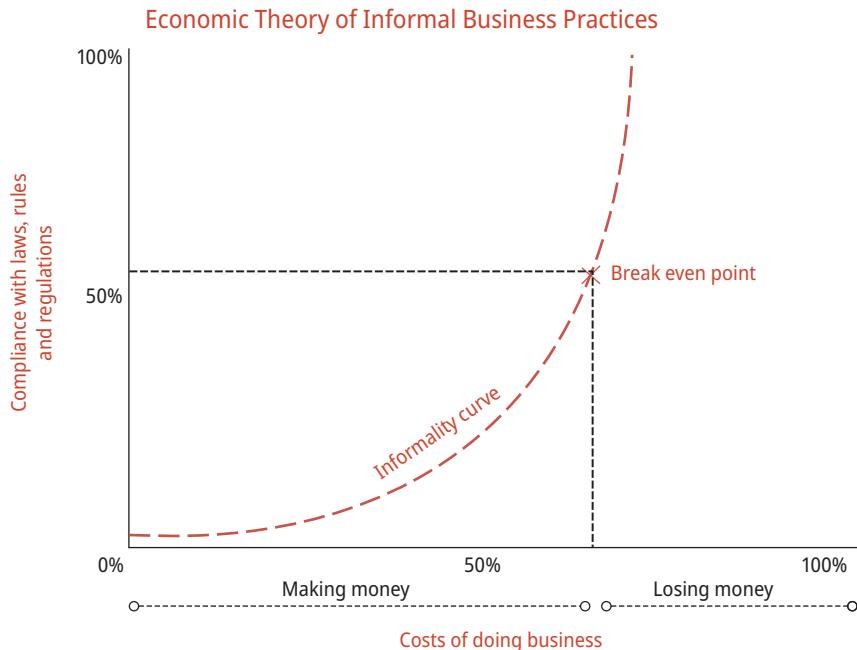
Many studies in developing countries agree that excessive taxes and regulations are an important determining factor for informality (Benjamin et al., 2012). Using data from 69 countries, Friedman et al. (2000) found that the high costs of corruption and bureaucracy pushes firms to the informal sector. La Porta and Schleifer (2008) distinguish between: (1) the cost of becoming formal determined by the number of procedures required to start an enterprise legally; (2) the cost of remaining formal determined by the cost of paying taxes, abiding by work regulations and the costs associated with bureaucratic red tape and; (3) the benefit of becoming formal, determined by access to public services and legal rights in a court of law. The authors find that these three categories of variables strongly correlate with the size of the informal sector.

Trying to keep costs of doing business at the minimum is in line with rational choice theories in classical economics that posit IBP including tax evasion, as the result of rational and self-interested decision-making. This notion is also reflected in the rational behaviour model of crime, which argues that would-be criminals make a rational assessment of the possible consequences of their actions and take the opportunity to commit a crime, only if the economic advantages would outweigh the disadvantages (Jones, 2006).

Indeed, there seems to be some evidence for the rational choice theories. Horodnic (2018) notes that the (financial) performance of informal businesses that start-up unregistered and spend some years operating informally, is stronger than businesses allocating all their resources to be fully compliant (Horodnic et al., 2018, p. 232). Informal firms have a cost advantage compared to larger, formal businesses, as they don't pay taxes and minimise their labour costs and are therefore more able to offer less expensive products and services (Williams & Martinez-Perez, 2013). This is in line with Marxist theories that point out the exploitative aspects of business practices, especially when it comes to labour (Piketty, 2014; Guha-Khasnobi & Kanbur, 2006).

This leads us to the first, economic theory of IBP. As illustrated in Graph 1 below, the economic theory of IBP states that the higher the costs of compliance with laws, rules and regulations, the stronger a business will resort to informal business practices.

The economic theory of IBP, with its emphasis on financial issues, seems to apply to most of the following indicators taken from Table 1, as highlighted in Table 2 below, where the indicators that are less related to financial or economic issues are rendered more vague.



Graph 1: The economic theory of IBP (Source: Dellevoet, 2021).

Table 2: Indicators of the Economic Theory of IBP (Source: Dellevoet, 2021).

Part of the Business	IBP
Governance/leadership	Behind the scenes decision making, shadow directors, financiers/investors power, 'old boy network', political influences, patronage, conflicts of interest
Legal and tax compliance	Freely Interpret, not strictly adhering to or ignoring contractual obligations, plagiarism, violation of legal obligations incl. environmental regulations, tax avoidance, tax evasion, insider trading
Financial management	Informal finance, informal money transfers, shadow bookkeeping, fraud, no insurance, transfer pricing
Production/working conditions/safety/quality control	Violation of labor laws and workers safety and health regulations, adulterated or substandard products
Procurement	Non-transparent process, single sourcing, price inflation, acceptance of bribes and gifts

Table 2 (continued)

Part of the Business	IBP
HR management and administration	Nepotism, favoritism, no social security coverage, no contract, discrimination, unpaid or delayed salaries, undeclared work ¹¹
Sales and Marketing	Word of mouth, personal network, unfair and restrictive trade practices ¹²
Transport/Logistics	Long working hours for drivers, Overloading, lack of maintenance of transport fleet, personal use, inadequate storage and handling leading to losses/damages

Behavioural factors

However, the rational, economic motive for IBP is only one factor that explains these practices, albeit an important one. Ledeneva (2018) defines informality as ‘the world’s open secrets, unwritten rules and hidden practices, as “ways of getting things done”. Described this way, it seems that the phenomenon is more embedded in social and cultural behaviour, rather than economic behaviour, even though it may strongly influence business functioning and performance. This is in line with other authors who have taken a closer look at the prevailing ‘business culture’ in societies. One of the features of that business culture is the general lack of respect for and distrust of the authorities, negligence towards public goods such as the environment and a general leniency to abiding to laws and regulations (Kanbur, 2009). Indeed, social norms play a critical role in explaining entrepreneur behaviours. Their influence can be exerted both internally — in terms of values related to honesty, fairness, empathy and truth — and externally, reflecting the prevailing views on social conformity; if ‘everyone’ makes their own rules and evades taxes, then why should I stick out for being compliant? Ianole-Ăălin (Horodnic et al., 2018) explains non-compliance in Romania as follows: ‘Romania has a strong cultural tradition in which rejection of authority, lack of social trust, simulated compliance and a drive towards social conformity are interwoven in a very intricate pattern of social norms’ (Horodnic et al., 2018, p. 28).

IBP can also be seen as a business response to popular demand. Williams and Martinez-Perez found that in 27 EU member states, only 44% of purchases in the infor-

¹¹ Undeclared work refers to paid work, which is legal in all respects other than it is not declared to the authorities for tax, social security or labour law purposes.

¹² These are business activities that have the effect of preventing, distorting or restricting competition which includes such practices as exclusive dealings, tie-up sales, full line forcing, concert or collusion cartels, price discrimination, re-sale price maintenance, area restriction, bid-rigging and output limitations. Sometimes, they are prohibited under prevailing anti-trust legislation, but often they are not.

mal economy were motivated by lower price only and a further 28% of purchases were done for several reasons including price. Consumers also use the informal economy to circumvent the shortcomings of the formal economy in terms of the availability, speed and quality of goods and services provision, as well as for social and redistributive reasons (Williams & Martinez-Perez, 2013).

Apart from the demand side, much attention also goes to the relationship between the business owner/manager and the external, institutional environment. Schneider (2012) and Benjamin et al. (2012) have called attention to the crucial role of the state and argue that the quality of the state in the sense of governance, legitimacy (being accountable, transparent), capacity (enforcement) and justice (equality before the law), is a key determinant in the size of the informal sector and the occurrence of informal business practices.

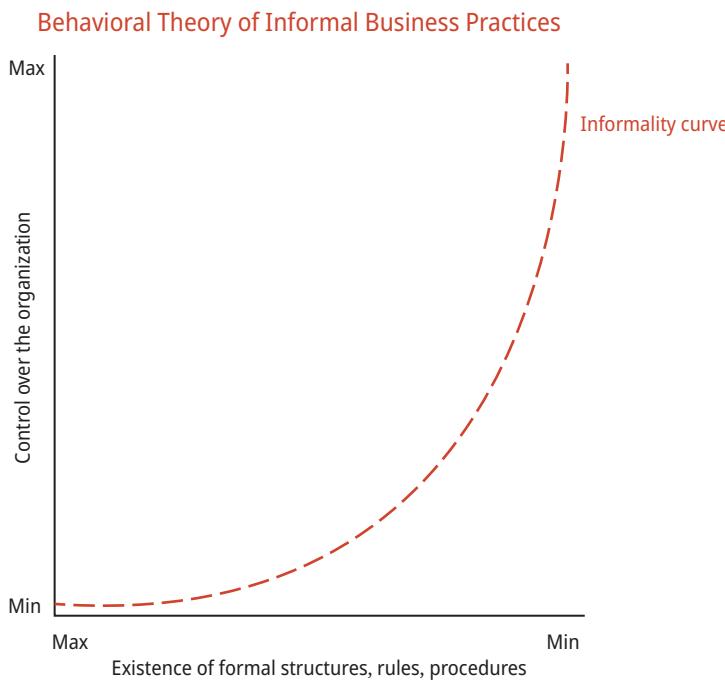
For example, tax revenues are relatively low across the African continent. In 2018, thirty African countries had an average ratio of taxes to gross domestic product of 16.5% — less than half the ratio in far wealthier member countries of the OECD (34.3%). In addition to capacity limitations of government tax agencies, low tax revenues can be related to macroeconomic factors such as large agricultural and informal sectors, which are typically hard to tax. But low tax revenues can also reflect micro-level factors such as citizens' willingness to pay taxes ('tax morale'), their knowledge about what they owe and what their taxes are used for, and their perceptions of corruption in the tax administration. If citizens regard paying taxes as a fiscal exchange or contractual relationship, such perceptions can affect the legitimacy of taxation as a whole.

Thus, engaging in IBP by a business owner/manager may be (strongly) influenced by how they perceive and experience their environment, particularly in relation to other businesses and government. If no one sticks to the rules and the government is nowhere to be seen, why would they? This is in line with Schneider (2012), who established that the most influential factors on the shadow economy and/or shadow labour force are tax policies and state regulation, which, if they rise, increase both. What is interesting about this phenomenon for our purpose is the fact that the determining factor for paying taxes is not the lack of awareness or any legal obligations, but rather the judgment by the business owner/manager himself about the need to be compliant; the tax morale. It is also clear from the literature, that if tax morale is low, the only thing that will ensure some compliance is law enforcement and controls (Kanbur, 2009; Gelb et al., 2009). As law enforcement is weak in many countries, people start to make their own rules, thereby creating this grey, informal and insecure space where things get done but often in direct conflict with the law. Chabal and Daloz argue that such 'disorder' may actually be preferred by certain political and economic elites as it allows them to enrich themselves and hold on to power (Chabal/Daloz, 1999).

This brings us to the third, more idiosyncratic factor that may explain business owners/managers behaviour, the other two being the demand side and the relationship with the state. As far back as 1985, Kets de Vries pointed to the 'dark side of entrepreneurship' i.e. personality disorders such as the strong need to be in control,

authoritarianism, micro-management, sense of distrust and need for applause (Kets de Vries, 1985). Petty et al. mention that 40% of entrepreneurs state that the main reason for leaving their jobs at other companies is that they wanted to be their own boss (Petty et al., 2012). Personal freedom and independence are strong motivators for entrepreneurial activity. This explains why many entrepreneurs have little interest in following best practices or complying with rules and regulations. Studies on entrepreneurship have demonstrated that very few of them will start their business idea with wondering what government policy or the law might say, and instead show that economic freedom is a key determining factor in entrepreneurship self-efficacy and alertness (Hall et al., 2012; Nyström, 2008; Boudreux, 2019). Indeed, there is a vast legal and philosophical discourse on the tension between individual freedom and the legal, moral and religious order in a particular business environment. The law as a norm is an ideal and not a natural reality and the behaviour of individuals may or may not be in conformity with the legal order in place (Forji, 2010).

The business culture as expressed through social norms and market demand, the relationship with government as well as idiosyncratic aspects of business owners/managers behaviour, lead us to a second theory of IBP as depicted in Graph 2 below. The behavioural theory of IBP says that the less structures, rules and procedures are applied to, and in, a business, the higher the control of the owner/manager over the



Graph 2: The behavioural theory of IBP (Source: Dellevoet, 2021).

business will be and the higher the prevalence of IBP will be. In other words; the lesser (external and internal) control, the more owners/managers (and most employees) can do what they believe is right.

Looking at the indicators of Table 1 at the beginning of this paper, it seems that the following indicators are more related to the behavioural theory of IBP, as highlighted in Table 3 below.

Table 3: Indicators of the Behavioural Theory of IBP (Dellevoet, 2021).

Part of the Business	IBP
Governance/leadership	Behind the scenes decision making, shadow directors, financiers/investors power, 'old boy network', political influences, patronage, conflicts of interest
Legal and tax compliance	Freely Interpret, not strictly adhering to or ignoring contractual obligations, plagiarism, violation of legal obligations incl. environmental regulations, tax avoidance, tax evasion, insider trading
Financial management	Informal finance, informal money transfers, shadow bookkeeping, fraud, no insurance, transfer pricing
Production/working conditions/safety/quality control	Violation of labor laws and workers safety and health regulations, adulterated or substandard products
Procurement	Non-transparent process, single sourcing, price inflation, acceptance of bribes and gifts
HR management and administration	Nepotism, favoritism, no social security coverage, no contract, discrimination, unpaid or delayed salaries, undeclared work
Sales and Marketing	Word of mouth, personal network, unfair and restrictive trade practices
Transport/Logistics	Long working hours for drivers, Overloading, lack of maintenance of transport fleet, personal use, inadequate storage and handling leading to losses/damages

Conclusion

The observations regarding widespread occurrence of informal practices made in the introduction above should not come as a surprise, given the evidence quoted. Historically, all business activities were informal until policies and laws were introduced which then created a divide between formal and informal, i.e. those businesses that are registered with the authorities, tax-paying and compliant with the law, and those that are not. Thus, it is ahistorical to be surprised about the prevalence of IBP and more accurate to say that the process of formalisation is still ongoing, which seems to coincide with state formation processes worldwide. However, in recent times this process

seems to have stalled somewhat, due to recent developments around self-employment, informal wage employment and contracted employment. The general examples of corruption, size of the black economy and cross border trade quoted above, demonstrate the significance of IBP worldwide; a closer look at corporate governance, HRM and accounting practices showed in some detail what these practices entail. Indeed, one can argue that this is in fact widely recognised, which is why we have commercial laws, corporate governance and accounting standards. The conclusion that IBP exist and are a substantial part of business activity worldwide is therefore valid. It may even be underestimated if we see, for example, the extent of financial scandals in the past two decades. Enron, the subprime financial crisis, the Volkswagen emissions scandal, the Wirecard fintech scandal, the Panama papers and recently the Pandora Papers all come to mind.

However, this doesn't explain the phenomenon. If IBP are so common and persistent, then there must be a deep, underlying reason why business owners and managers behave in this way. To answer that question, evidence was found in the literature around the costs of doing business, leading to an economic theory of IBP, as well as the personal motivations and attitudes of owners/managers of a business which formed the basis for a behavioural theory of IBP. The two theories should be seen as complementary i.e. even if cost reductions are not the primary motive, the perceptions and attitudes of owners/managers may still lead to more IBP.

The consequences of these findings for the management literature are quite profound. Business failure or success may be much more dependent upon favouritism, patronage and the old boy network, than upon competitiveness, innovation and quality of the products or services. Businesses facing harsh times and potential bankruptcy may defy all economic logic if they are able to dodge taxes, delay salary payments, appease creditors and use all their personal savings to stay afloat. Efforts at formalisation, regulation and compliance may be ineffective as it seems to be dependent on the relationship with government and may be at odds with the very nature of entrepreneurship, namely to run the business as you want and to make money.

If formalisation and regulation aren't the answer, then what may we do to help in the process of countering the detrimental and negative aspects of IBP, such as worker exploitation, pollution and tax evasion? Perhaps, the bar was just set too high by adopting formal standards that are more common among Western, developed countries as described in Table 1 above. These may be problematic in non-Western, developing countries, where the Rule of Law and enforcement capacity may be weaker. More effective responses to IBP may be found in practical, informal and diverse approaches, which might work well in a specific socio-cultural and political context. More research will be needed to uncover these practices and bring them to the fore, so as to enrich our understanding of IBP and what to do about them.

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Part II: The role of policies and institutions

Ha-Joon Chang

4 Industrial policy: Best practices for emerging economies

Abstract: Industrial policy, namely, the set of policies that aim to influence the evolution of particular industrial sectors with a view to raising the overall productivity of the economy, has been far too long unfairly denounced among mainstream economists. Industrial policy is still considered to be an anti-thesis of private sector development — namely, the perspective that government involvement in business, beyond the provision of infrastructure and contract enforcement, hampers private sector development.

However, this is a very misleading view. Industrial policy, especially (although not exclusively) in the context of emerging economies, is based on the recognitions that reliance on market mechanism and private sector initiative is insufficient in promoting economic development. The ultimate goal of industrial policy is to build an economy with higher productive capabilities and in a capitalist economy this cannot be done without developing the private sector.

Keywords: Industrial policy, political economy, policy design, policy implementation capabilities

Introduction

Industrial policy, namely, the set of policies aimed at influencing the evolution of particular industrial sectors with a view to raising the overall productivity of the economy, has been far too long unfairly denounced among mainstream economists. Reda Cherif and Fuad Hasanov, two IMF economists, in their recent paper, called it ‘the policy that shall not be named’ (Cherif & Hasanov, 2019).

Luckily, there has been a shift in the opinion even among mainstream economists in the last decade or so, and these days industrial policy is seen in a more positive light (for examples, see Lin, 2012, Liu, 2019, and Stiglitz & Lin, 2013).

Given this positive turn in the prevailing opinion on industrial policy, currently many emerging economies are plucking up the courage to (re-)start industrial policy. The present chapter hopes to be a help for the policy-makers in those countries by providing a quick overview of what I see as the best practices in industrial policy.

Industrial policy and private sector development

Given the overall theme of the book, that is, private sector development, I think a short remark on the relationship between industrial policy and private sector development is in order.

Despite the increasingly positive view of it, industrial policy is still considered to be an anti-thesis of private sector development. Given that industrial policy often restrains and controls the private sector, many people, including some supporters of industrial policy, believe that industrial policy hampers the development of the private sector.

The prevailing perspective on private sector development is represented by the World Bank's 'Ease of Doing Business' initiative. Even though the EDB initiative itself has recently been suspended due to its politically motivated manipulation of data, the perspective behind the initiative is still widely accepted — namely, the perspective that government involvement in business, beyond the provision of infrastructure and contract enforcement, hampers private sector development.

However, this is a very misleading view. Industrial policy, especially (although not exclusively) in the context of emerging economies, is based on the recognitions that reliance on market mechanism and private sector initiative is insufficient in promoting economic development. This interventionist view, however, is not necessarily anti-private sector, since the ultimate goal of industrial policy is to build an economy with higher productive capabilities, which, in a capitalist economy, cannot be done without developing the private sector. To put it another way, private sector development in emerging economies needs a government that does far more than 'getting out of the way', as implied by the EDB framework, as it will be explained in greater detail below.

Industrial policy: Best practices

Before we discuss best practices in industrial policy, a few 'big picture' points need to be made.

First of all, despite the widespread view that industrial policy is often the result of mistaken or weak economic theories, there are a lot of very respectable theoretical justifications for industrial policy: the infant industry argument (Hamilton, List); the forced accumulation (Feldman-Preobrazhensky-Mahalanobis; Sen); arguments based on capital market failure (Hicks' 'myopia'; Gerschenkron 'late development'); externalities such as R&D, training (Stiglitz); learning-by-doing (Arrow); interdependence (Rosenthal-Rodan 'big push', Hirschman 'linkages'); transaction costs (Coase); asset specificity (Williamson); tacit knowledge (Hayek).¹

¹ See Chang, 1994, ch. 3, Chang et al. 2016, ch. 3, Chang & Andreoni, 2020, for more detailed discussions of these arguments.

The second point is that industrial policy has been much more widespread than people think. As I show in Chang (2002) and Chang (2007), starting with 18th century Britain, through late 19th century US, Germany, Sweden, down to late 20th century Korea, Taiwan, and Singapore, virtually all of today's rich economies used industrial policy that go against the current mainstream advice for economic development, in the earlier stages of their development: trade protectionism ('infant industry' protection); government subsidies and procurement policies; regulation of foreign direct investments (FDI); active use of state-owned enterprises (SOEs); lax intellectual property rights (IPR) laws. The cases of the Netherlands and Switzerland are particularly interesting in this regard. These two countries practised free trade for much of their development period (although only up to WWI in the case of Switzerland), but they still did not conform to today's orthodox recipe, as they refused to have the patent law until the early 20th century (1912 and 1907 respectively). It is interesting to note that, when you think about it, their position was far more consistent than today's orthodox position – if you are against artificial entry barrier in the market, such as trade protectionism, you should be against all types of it, including an artificially created monopoly called the patent.

Third, there is no single best practice industrial policy. Different countries used different policy mixes, reflecting the differences in their conditions and their goals — often in ways that defy the conventional wisdom. For example, the US in the post-WWII period is supposed to have used little industrial policy, but it had a huge industrial policy in the form of public R&D spending, especially defence-related research. During the cold war, one half to two-thirds of R&D funding came from the government, whereas in the supposedly state-dominated economies of Japan and Korea, only about one-fifth of it came from the government. For another example, Singapore may have used free trade policy, but relied very heavily on public ownership — 90% of land is owned by the government and 22% of GDP is produced by SOEs.

With the above points in mind, let me try to extract the lessons from the debates on industrial policy of the last half a century below.

Policy design

First of all, in terms of policy design, policies need to be realistic in order to be successfully implemented. However, this does not mean that industrial policy-makers should only try 'safe' things — some risk-taking is absolutely necessary. Especially for emerging economies, refusing to do anything 'risky' means that they are likely to be stuck with economic activities that conform to their countries' current comparative advantage that only require low productive capabilities. The risk of not taking risk is manifested in the 'middle-income trap' in which many emerging economies seem to have fallen — the inability to upgrade after an initial phase of 'easy' upgrading. However, at the same time, this does not mean that you should try only 'difficult things'.

The challenge is to take up a portfolio of projects with different risk profiles; none in some areas, a little in some others, and a lot in a small number of areas.

Second, the incentive system for the recipients of industrial policy supports should be designed in such a way that it maximises performance and minimises abuse. The recipients should be rewarded and punished according to performance. Attempts by the recipients to manipulate the definition and the measurement of performance indicators should be structurally minimised by clearly specifying in advance performance indicators, reporting requirements, and the expected rates of performance improvements.

Third, industrial policy is such that it needs to be constantly adapted to changing conditions: whether the targeted industries are improving their productive capabilities in line with the initial projection; what stages of economic development the country is entering; or how the external conditions are changing.

Political economy

It is a bit of a cliché, but historical experiences show that successful industrial policy needs to have the right political base. Some people interpret this as meaning that a country's industrial policy is determined by its history, considering that the latter is the most important determinant of its political economy. So, for example, people argue that, if you have a large landlord class, as in most Latin American countries, you cannot implement industrial policy to promote manufacturing.

However, new political coalitions can be built and policies changed, as it happened in US (the Civil War) and Prussia (the Marriage of Iron and Rye) in the late 19th century or in East Asia (Land Reform) in the mid-20th century.

More generally speaking, successful industrial policy requires a government with what Peter Evans (1995) calls 'embedded autonomy', which means that it has roots in the society, ('embeddedness') but also has the power to impose its own will ('autonomy'). In practice, 'embeddedness' means having a mechanism to engage in continuous information exchange and dialogue with the private sector, while 'autonomy' means that the sectional interests of sub-groups of the private sector can be overridden, either by 'peak associations' of the private sector or by the government.

Pragmatism is also needed in terms of public-private divide, policy priorities, policy tools, and so on. Singapore is the most extreme example, but all the other success stories showed considerable degrees of pragmatism in devising policies that suit their conditions. Ideological rigidity is not conducive to policy success.

Policy implementation capabilities

Last but not least, there is the question of policy implementation capabilities. While effective policy implementation requires capable people, this does *not* mean hiring more economists — the policy-makers in the East Asian economies during their ‘miracle’ years were mostly non-economists (lawyers in Japan and Korea; scientists and engineers in Taiwan and China) (see Chang, 2010). General intelligence, the ability to learn, skills to manage complex projects, and the ability to maintain organisational coherence matter more than specialist knowledge in economics.

Moreover, administrative capabilities are not just those possessed by the individuals but also by organisations (e.g. command structure, institutional routines, and organisational ‘memories’) and their working relationships with each other. So, organisational reform is as important as – or even more important than – hiring capable people.

Having improved your implementation capabilities, you need to design your policies to suit your capabilities. The orthodox view in this regard is that poor country governments with low implementation capabilities should not engage in ‘selective’ industrial policy and concentrate on ‘general’ policies, such as infrastructure and R&D. However, my view is the opposite: the lower your implementation capabilities are, the more ‘selective’ your industrial policy should be. Promoting a few sectors is actually much less demanding on implementation capabilities than promoting R&D or infrastructure for the whole economy.

Industrial policy in the emerging economies

It would be amiss to conclude the main section of this chapter without making a brief statement on the widespread view that industrial policy has largely failed in emerging economies of today.

China may be the only currently emerging country that has had the kind of comprehensive success with industrial policy, like the ones we have seen in many of today’s rich countries in the past, but quite a few emerging economies have had sectoral success stories: agro-industry, oil-drilling (Petrobras), and aircraft (Embraer) in Brazil; salmon, forestry, and other agro-industries of Chile; aluminium industry in the UAE; palm oil-related industries and electrical and electronics industries in Malaysia; apparel and shipbuilding in Vietnam; automobile in Uzbekistan; leather, textile and garments, flowers, and cement in Ethiopia; ICT-based services and tourism in Rwanda.²

Contrary to the widespread scepticism about the capabilities to design and implement good industrial policy in emerging economies, the above examples show that

² See Chang et al. (2016) for further details.

industrial policy can work — and has worked — well in a wide range of emerging economies, at least in a number of sectors.

Conclusion

To conclude, history and economic theories show us that industrial policy is necessary for economic development. In relation to the theme of this volume, industrial policy is not an anti-thesis to private sector development, as many people think. It is a policy that will ultimately help the private sector develop more.

History shows that there is no single best practice model of industrial policy. While there are certain general theoretical principles that apply to all successful cases, different countries use different types of industrial policies according to the economic and political conditions they face and the goals they pursue.

Countries that have succeeded with industrial policy are countries that have been pragmatic and flexible, rather than those who found some ‘eternal truths’ and stuck to them rigidly.

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Kwan S. Kim

5 Development of industrial policy in South Korea: The case of from rags to riches with lessons for newly emerging nations

Abstract: How do you turn poverty into prosperity in a developing nation? The post-Korean War miracle in S. Korea is analysed from the historical perspective of industrial policy development. Updating from my earlier work on the role of private sector under authoritarian capitalism (1962–1980), this study extends to its role in democracy after 1981 under liberal capitalism. The Korean-style industrial policy started from government-steered market economy ending in private-sector based, open market economy. It concludes with useful lessons for other developing countries.

Keywords: Miracle on Han River, evolutionary path of industrial policy, entrepreneur-steered development, knowledge-technology sector, soft-power culture

Introduction

South Korea's industrialisation policy started by General Park Jung-hee's military government upon seizing power from the civilian government in 1961. Three years of the Korean War (1950–1953) devastated the economy. Close to 90% of the country was occupied by North Korean army, turning the entire nation into a war zone. The civilian governments after the war (1953–1960), aided by massive foreign aids, oversaw the recovery of a battered economy. The recovery was at a modest speed with few noticeable advances made beyond the pre-war level. South Korea in the post-war era was described by a US aid agent as 'a bottomless pit, can't live without foreign aid'. The World Bank estimated that per capita income in 1961 was \$94, about equal or lower than that of Haiti, Ethiopia, and one fourth of that of India.

President Park's motive for the coup was to launch massive economic recovery and reform for the nation. Following the experience of Japan's industrial policy, the military regime-initiated export promotion policy, Park negotiated a peace treaty with Japan and obtained a sizable reparation fund earmarked for economic recovery. He needed to come up with internationally competitive domestic businesses for export drive. A number of large, family-owned corporate owners called 'Jaebol' in Korean had been prosecuted of tax evasions and trust law violations by previous governments. The military regime reached a compromise under which the accused leaders paid fines and agreed to cooperate with the government in modernising the economy. In return, the government incentivised the entrepreneurial leaders of innovative and highly productive firms by enhanced financing and assisting in their global trading.

The ensuing development of industrial policy consisted of the following evolutionary stages:

Stage 1: Development of labour- intensive, light manufacturing sector: 1962–1972

The government selected Jaebol conglomerates to produce and export labour-intensive products consisting mostly of textiles and light manufacturing consumer goods under guaranteed bank loans and a secure macroeconomic environment via stabilised exchange rates and trade promotion abroad. South Korea with its abundant, unused labour force had a comparative advantage in labour-intensive products. Moreover, the 1960s were the post-Bretton Wood era of major decolonisation, free global trade and investment.

The export supported by government intervention was a big success. Export proceeds along with incoming foreign capital were then invested in physical infrastructure and high-skill human capital development along with research and development for technical innovation, all in preparation for the next stage of capital-intensive sector development as the country's capital endowment relative to labour rose. The promotion of heavy manufacturing industry as the key sector of the economy by government intervention, known in the literature as 'industrial policy', started in the Western nations followed by the newly emerging nations in East Asia. Having a sustainably viable manufacturing basis in the nation is perceived as an engine of economic growth.

Stage 2: Development of high-tech, capital-intensive sector: 1973–1980

Partly motivated by North Korea's military provocations and as more capital became available, the government made a monumental shift to go for Heavy and Chemical industry (HCI). The sectors whose importance the government never tired of stressing were basic materials such as iron, steel, petrochemicals, nonferrous metals, and refined oil. The government saw these sectors as the backbone of a modern industrial economy and provided capital investments in these industries, requesting at the same time Jaebol entrepreneurs' cooperation in modernising the economy. Those business leaders took a bold risk to develop heavy and chemical industries, building from almost ground zero. The country did not have adequate mineral resources nor new technologies suitable for this industry. Driven by the urgent need to turn the economy from light industries toward heavy manufacturing, the government planners relied on the ideas and cooperation of chaebol leaders. They were the driving force in shifting the subsistence economy

to a rapidly growing modernising one. The government support continued at a more intensified level of previous support, allowing productive companies to access foreign capital under the Korean government's loan guarantee.

Considering steel as a basic component to capital-intensive, manufactured goods, the government focused on building a strong steel industry, and then moved to steel-consuming sectors of shipbuilding, automobiles, construction, and capital goods. As a result of the intensified government support to vertically 'deepen' industrial structure in the early 1970s, the machinery and equipment industry achieved a rate of growth about 2.5 times that of the manufacturing sector during the 1970s. Toward the end of the 1970s, about a third of total capital goods output produced was already being exported. The electronics industry also developed rapidly, starting from the assembly-line production of parts and components, progressing to the production of such complete consumer products as colour televisions, microwave ovens, video tape recorders, stereo sets, and digital watches.

By 1980, the total steel capacity in South Korea covered about 90% of domestic markets. The export share of heavy and chemical products rose to more than a half of the total manufacturing production. The country emerged as the world's top contender in exporting electric equipment, shipbuilding, steel, vehicles, and refined oil. The one-sided pro-business policy, however, introduced a new set of issues in the economy. It created an oligopolistic market structure with its harmful effects on the vulnerable segments of the economy. The regime initially suppressed labour union movements. Later, as exports progressed, wages were allowed to rise. Small businesses were accommodated by the vertical integration to large businesses in value chains of upward and downward streams.

After the rapid industrialisation of the economy, the government during the 1970s turned attention to the backward farm sector to rectify the growing disparity between the urban and rural areas. It initiated and pushed through a new village movement, called 'Saemaul Undong'. By redistributing resources from businesses to rural villages, the government built rural infrastructure comprising new roads, irrigation dams, and telecommunication networks. This political initiative was enthusiastically welcomed by the villagers in the traditional culture of self-governance communalism. The movement as part of a broad, inclusive part of industrial policy reduced the urban-rural income gap and rural migration to urban centres. As a result, the country's Gini coefficient during the period of Semaul Undong ranged from 0.28 to 0.38, far lower than in other emerging nations.

Stage 3: Entrepreneur-steered development of knowledge/technology sector 1981

With the restoration of democracy and instalment of an open free trade system by joining WTO and G20, the private sector aided by civilian governments continued a leading role in developing domestic technological capabilities. To acquire advanced technology, foreign direct investments under joint ventures in special trade zones were promoted. The government continued to provide a business supportive environment for entrepreneurs with regulatory and financial measures, and by investing in research and development projects to expand innovative capacity in highly digitalised technologies on close collaboration among government, industry, and academic community. The government at the same time provided massive educational support in science and technology areas. By 2000, all adult Koreans were internet-ready by digital literacy training. As a result, according to 'Best Countries for Entrepreneurs' rankings by US News, South Korea emerged as the top fifth in 2022. Economic growth has at the same time been digitally delivered with the world's fastest internet speeds, making South Korea emerge a global leader in Information and Communication Technology (ICT) and other innovation technologies.

Nonetheless, as Jaebol businesses expanded rapidly in the mid-1980s, the income gap resurged. With the upsurge of the middle class population, pervasive tension in the country over economic equity ensued. Concerned with economic inequity, the democratic government subsequently resorted to more progressive taxation, increasing social welfare programs for the poor.

Stage 4: Promotion of soft power culture 2001

South Korea has been able to advance at the frontiers of the global entertainment industry, proving that its developmental model can be applied to the cultural arena. The democratic governments in the late 1980s promoted cultural-industrial policies to export soft power culture, music, arts, and cuisine. The vogue for Korean cultural products, called 'Korean Wave' or 'Hallyu' in Korean, started with Gangnam Style, K-pop, BTA Group, and K-Dramas, culminating later in the success of the Netflix show Squid Game. The country emerges a global superpower of soft power culture.

Policy consequences

Korean-style industrial policy resulted in real gross domestic product (GDP) growth averaging 5.45% annually between 1988 and 2019. This strong performance was fuelled by annual export growth averaging 9.27% in the same period. The country rose from

one of the poorest countries in the world to a developed, high-income, and globally care-giving country over two generations. As of 2020, it was ranked the world's 6th militarily strongest and 10th largest nation with a GDP of US\$1.64 trillion exceeding that of Russia's US\$1.40 trillion and that of Australia's \$1.33 trillion. In per capita GDP, South Korea was US\$ 43,421, about 4 times that of China, slightly exceeding that of Japan, and 24 times that of North Korea.

South Korea is a globally recognised advanced, industrialised economy in a thriving democracy and a software culture powerhouse with its largest industries of electronics, automobiles, telecommunications, shipbuilding, chemicals, and steel. The country is among the largest manufacturer of electric and electronic equipment including semiconductors at the forefront of the 4th Industrial Revolution. The goal of the country's industrial policy was to attain a long-term sustainable growth with equity path. It achieved a success in combining rapid economic growth with significant poverty reduction.

Lessons for newly emerging nations

Industrial policies in South Korea played a critical role in uplifting the country from rags to riches. Given the particular global circumstances when the country started its policies along with its unique cultural heritage, its success model cannot directly be replicated. There are, however, a few important general guidelines useful for newly emerging nations.

Consensus building under effectively functioning government

Policy plans must contain a broad view that can integrate and reconcile diverse social interests. In the case of South Korea, the policy planners obtained the feedbacks from diverse interest groups before executing policy. The development goal and strategy should reflect the values and preferences of the citizens. It helped the Korean government to succeed in policy implementation to have its citizens understand that responding to the national goal of 'from rags to riches' is everyone's problem, not just the state's.

The role of government is simply to execute policy effectively and efficiently. Emerging nations must start with a government with the administrative capacity to implement dynamically orchestrated, inclusive economy-wide policies.

Flexibility and pragmatism in policy

Policies should reflect changing global and domestic socioeconomic conditions as the economy evolves. Choose for policy planning the methods that would produce best results, not influenced by any particular ideology. In the South Korean case, the market system was used when deemed appropriate and necessary, only as an instrument in achieving national developmental goals.

Economy-wide inclusiveness in policy

Industrial policy should aim at attaining an economy-wide, sustainable, equitable growth path. The goal of industrial policy must be perceived as the national development that includes all different interest groups of the economy. In the South Korean case, the driving force implementing the policy was business entrepreneurs. Small businesses were helped by large businesses through a vertical and horizontal integration. Labour groups were allowed higher wages through labour-union negotiations as the economy developed. Farmers were helped by the government by redistributing resources from large businesses for agricultural development.

Looking ahead: Challenging issue

Rise in populism and new imperialism, heightened global trade tensions and military conflicts, environmental degradation, pandemic aftermath, digitalisation of the economy in the age of Artificial Intelligence – all possibly leading to social and economic instability and deepening inequalities within the nation and across the nations. Thus, in light of recent changes in global environment for the newly emerging nations, the conventional industrial policy needs to be modified or integrated to a new, resilient framework of industrial policy for the 21st century. Moreover, when the pandemic starts to fade away and global military conflicts subside, the emerging nations will have renewed and elevated opportunities. The window of opportunity should not be considered closed.

In this respect, the South Korean experience provides a useful lesson. First, the Korean industrial policy expanded access to the non-industrial, cultural soft power sector for global export with a success. The government developed social networking services utilising innovated digital platforms. Secondly, concerned with the collateral damaging effects on the economy, the government has been controlling the spread of the Covid pandemic. As a result, there have been no losses of the work force in the Korean economy. Thirdly, as an integral part of the country's industrial policy, beginning in the early 1980s the cooperative governance among the government, businesses, and the civilian sector including households and transportation has been

staged to reduce greenhouse gases. The aftermath impacts on pollution have been moderate but positively beneficial.

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Harald Sander

6 Towards inclusive industrial policy: Taking stock of a debate in flux

Abstract: Industrial policy is back on the policy agenda in advanced and emerging markets and developing economies alike. Unlike its predecessors in the second half of the 20th century, which either have been praised as a key to success for economic catch-up growth in Southeast Asia or blamed for economic failure elsewhere, today's calls for active industrial policies take the lessons of the past seriously. In this paper, I first take stock of the rationale of such a new industrial policy, then explore the contemporary challenges to such a policy and, in consequence, make the case for an inclusive industrial policy that goes beyond the promoting selected manufacturing industries, but must be driven by and addressing societal goals, namely to promote inclusive economic development and shared wealth on a sustainable base. This approach is illustrated with three key areas of policy intervention, namely Rodrik's 'good-jobs development model', directing technical change, and inclusive finance for small and medium enterprises.

Keywords: Industrial policy, inclusive growth, new global economy, inclusive finance, productivity

JEL: D3, F6, L5, O1

Introduction

Industrial policy (IP) is back on the policy agenda in advanced and emerging economies alike. It aims at affecting the structure of the economy with the objective to raise overall productivity as a means to increase the standard of living. However, in the second half of the 20th century IP was often blamed for economic failure and mismanagement. Especially from the 1980s onward, the neoliberal policy agenda denounced interventions into the economy as counter-productive, prone to rent-seeking behaviour, and supportive to corruption. The policy alternative, famously summarised by John Williamson (1994) as 'Washington Consensus', was a plea for de-regulation and non-intervention by the government in order to 'let the market forces work'. Successful economic development in Asian countries that intervened heavily into the structure of their economies contested this view. By now, it widely acknowledged that the key to success for economic catch-up growth, notably in South-East Asia and, in particular China, have been well-conducted industrial policies. Today's calls for active industrial policies have thus to take the lessons of the past seriously, as discussed in this book by Chang (2023) and, for the case of South Korea, by Kim (2023).

In this paper, I argue that contemporary IP must not only take the lessons of past on board but also to adopt to the realities of an emerging new global economy that is driven by digitalisation and robotisation, disrupted by pandemics and geo-political tensions, and challenged by climate change and rise in nationalist tendencies (Sander, 2022). It is posited that IP today must necessarily be an *inclusive* IP to be successful.

Such an inclusive IP must go beyond merely aiming at influencing the structure of an economy to enhance overall productivity. Rather, this very structure also determines how an economy uses resources: whether it generates sufficient employment or contributes to jobless growth, whether generated jobs are sufficient to allow for a decent standard of living, and whether it is producing with a high CO₂ footprint or compatible with green growth. With limited policy instruments available in a world of rising inequality, climate change, and geo-political tensions, policy interventions into the economic structure cannot ignore these challenges. A contemporary IP must include the objectives of promoting inclusive and sustainable economic development.¹

The plan of the paper is straightforward: in the section entitled 'Lessons learned: conceptions and misconceptions about industrial policy', the lessons learned from successful and failed experiences with IP will briefly be reviewed to take stock of where we stand. The section entitled 'Aligning industrial policy with the emerging new global economy' highlights the major challenges emanating from the emerging new global economy. The section entitled 'Towards an inclusive industrial policy' sketches key elements of a new inclusive IP. The last section concludes.

Lessons learned: Conceptions and misconceptions about industrial policy

In the neoliberal view, there is no role for a deliberate IP. This view is now widely regarded as obsolete for two reasons: first, even countries with a strong market-focused orientation intervene substantially into the structure of the economy. In fact, basically all countries pursue policies that impact on the structure of their economies, e.g. by means of defence spending, financing of basic research that led to spin-offs (such as DARPA, the US Defense Advanced Research Projects Agency, which played a key role in developing the Internet), support for ailing 'too big-to-fail' companies, and

¹ There is an emerging consensus that industrial policies have to address more than just the single productivity objective, as can be witness from the conference recent report on a IEA-METI-RIETI Conference (2022) on 'New Thinking on Industrial Policy' that brought together academics and government officials. For example, Nobel laureate Joseph Stiglitz argued that industrial policies have to address double or triple duties and points to the Biden administration that pursues industrial policy with inequality and green transition considerations. The issue of multiple objectives will be discussed in more detail in the section entitled 'Towards an inclusive industrial policy'.

so on. Moreover, also policies aiming at the macro level, like taxation, government expenditures and monetary policy do have structural effects. By not acknowledging their structural effects of policies they are almost by definition a bad IP. Only if we accept that we are impacting, intentionally or unintended, on the structure of our economy by conducting policies, we can and should do it in a deliberate a coherent way that helps to create win-win solutions for the economy and its people.

Second, the track record of a deliberate IP is better than it is commonly perceived. Much depends on how IPs are designed and implemented. Here are seven key points on good IP to de-bunk common misconceptions about IP.²

1. *The focus of IP should not be competitiveness.* The aim of traditional IP is to increase the overall productivity of the economy by inducing and/or supporting structural change to raise the standard of living. The frequently pursued focus on supporting competitiveness of certain (export) industries – often powerful, though not competitive corporations – is one reason for the bad image of an IP that invites rent-seeking behaviour. Most importantly, competitiveness is by definition a win-lose strategy. If you gain, someone else loses. This happens within an economy when scarce resources are redirected, thus discriminating the non-targeted sector, and between economies, thus risking trade wars and subsidy races to the bottom. By contrast, fostering productivity is a win-win strategy that aims at enlarging the cake rather than distributing it differently.

2. *IP has worked better than commonly perceived.* First of all, the success of South-East Asian countries that actively pursued IP speaks for itself. The key point is that the appropriate design and implementation as discussed by Chang (2023) and Kim (2023) in this volume. Second, one reason of the bad image of IP is that governments, especially in advanced countries, are often support ailing industries. Hence, the selected firms are often underperforming, creating the image of governments ‘picking losers’. However, without public support jobs would have been lost or — in the better case — not being created. For example, in a study on the causal effects of IP, Criscuolo et al. (2019) show that interventions worked well in terms of employment generation in the UK. Reviewing the evidence on IP in OECD countries, Criscuolo et al. (2022b, p. 2) conclude: ‘overall, it strongly supports the premise that well-designed economic incentives for firms and good framework conditions shaping the business environment are effective.’

3. *IP can help to correct, shape, and create markets.* The neoclassical paradigm ‘allows’ for interventions when there are clearly identified market failures, in particular so-called external effects that can be internalised, e.g., by levying a tax. The classic example is a carbon tax. The neoclassical market-failure view can be challenged in three ways. First, the internalisation of external effects is a theoretical solution that often

² For more detailed analyses and discussions see Chang (2023) and Kim (2023) in this volume.

fails to get implemented on a sufficient scale because of political economy effects, such as lobbyism and short-termism by consumers, who resist higher taxes, as could be seen recently in France from the ‘yellow vests’ protest movement against higher gasoline prices. Hence, the concept, while economically correct can be politically naïve. Second, Hausmann, Velasco and Rodrik (2008) go further and identify coordination and information externalities in emerging markets and developing economies (EMDE), which require corrective actions. Coordination externalities arise when a private activity is only profitable if other private activities are taking place at the same time. Hence, a central coordinating initiative is needed.³ Information externalities relate to innovation in EMDE, which often is the *discovery* that a country or region is a feasible place to start a new economic activity. However, as this idea can easily be imitated, such discoveries often have low private returns, while the social returns in terms of economic developments can be high. Hence, government support and regulation can help to correct these market failures in EMDEs. Finally, several authors hold that there are potentially so many market failures that fixing just one does not solve the problem. It is therefore suggested that IP should also deliberately engage in creating and shaping markets. A classic example is DARPA’s crucial role in developing the internet (see, e.g. Mazzucato, 2013).

4. *IP can create comparative advantages.* A naïve version of Ricardo’s theory of comparative advantages would posit that countries should specialise in the goods where they already have a comparative advantage. In the case of EMDE, this often means to remain stuck with traditional (often primary) export products with all the associated problems, such as volatile export prices and a Dutch disease type of de-industrialisation. However, modern versions allow for changes, i.e. dynamic comparative advantages. The source of these dynamics can be twofold. An economy may improve its resource base by capital investment, technology transfer, and, in the case of human resources, by education and learning by doing. If this process is properly supported by the government, countries can upgrade their production and exports over time, moving from simple manufacturing, such as clothing, to more sophisticated industrial production processes, e.g. in the electronics industry. In Lin’s (2012) ‘new structural economics’ this process can be organised and supported by IPs that allow realisation of new dynamic comparative advantages in a continuous process, rather than specialising against comparative advantages. The latter, however, is exactly what proponents of a more active IP propose: to target new industries where learning effects are important. As the incumbents are by definition more experienced, without temporary support the newcomer would never become competitive and, hence, not have the chance to learn. If the country does have an under-

³ Coordination must, however, not necessarily be achieved by government interventions if potential investors succeed to coordinate amongst themselves.

lying advantage, the comparative advantage can thus be created by means of IP.^{4,5} The caveats are clear: first, without an underlying advantage the strategy will fail as the government had then picked ‘losers’. It is therefore important to be able to correct mistakes, limit support, and withdraw it in cases losers have been picked. Second, a successful strategy may lead to cross-country tensions on ‘unfair’ government support as witnessed by the ongoing conflict between the US with China.

5. *Supporting manufacturing is key for a successful IP in EMDE.* The literature on catch-up growth and gradual economic convergence of EMDE to high-income economies is not very encouraging. A recent World Bank study, edited by Dieppe (2020), examines convergence in term of productivity per working hour and found either no evidence for unconditional convergence (i.e. independent of factor conditions, including human capital, and technology access), or — with respect to the last two decades — some evidence for a diminishing productivity gap for the average country, but at a disappointing slow pace that would require 140 years to close half of the initial productivity gap.⁶ However, Rodrik (2013) has shown that catching-up in manufacturing is unconditional, i.e. it does not depended on investment in human and physical capital and other conditioning factors suggested by growth theories. The rationale is that many manufacturing processes, such as in the clothing industry or in simple assembling tasks, do not require a high level of formal education. Additionally, foreign investors often bring in the necessary technology. Within such a new manufacturing sector, learning effects can therefore be more easily realised than in other sectors, hence the development of a manufacturing sector is seen as central to catching up. Stiglitz and Greenwald (2014) therefore suggest an IP that supports manufacturing in general rather than some individual industries. Their *infant economy strategy* would thus avoid the ‘picking-losers’ problem of the classic *infant industry strategy*. However, Rodrik (2013) points out that only very few successful countries have managed to create a large enough manufacturing sector to allow for unconditional catch-up of the whole economy.

6. *Access to technology and absorptive capacity is key to technological catch-up.* Advanced countries are by definition countries that operate at the technological frontier. They can only increase productivity by pushing the frontier outward. Hence, IP in advanced countries is closely married to technology policy. In contrast, latecomer coun-

4 This argument is part of standard textbook trade theory, see. e.g. Sander (2022). The argument can be based on learning effects as well as on so-called external economies of scale, i.e. the network effect of forward and backward linkages. The older argument of (internal) economies of scale has lost appeal and power in a world where home market size matter less (or not at all) when production can access an open world market.

5 In a debate between Lin and Chang (2009), the latter challenges Lin’s argument that a successful IP should not work against comparative advantages by arguing the case of leapfrogging to new industry in which a country does not possess a comparative advantage yet.

6 For a short explainer on conditional and unconditional catch-up as well as on the recent evidence see Sander (2022, pp. 38–42).

tries typically operate below the technological frontier, hence both imitation and technology transfer are crucial. However, technology transfer is often limited, especially when potential investors fear that imitation could undermine their competitive advantages. On the other hand, deliberate policies to gain access to foreign technologies, e.g. by China's infamous joint-venture requirements for foreign investors, are often viewed as 'technology theft' and at the heart of the controversy between China and Western countries.⁷ However, the case for protection of intellectual property rights is not as clear-cut as it is often viewed. In fact, the yardstick for technology policy and protection of intellectual property rights as a public policy cannot be the interests of an individual company, but the well-being of the people, which is largely driven by higher productivity. Some research has revealed the so-called patent puzzle, namely that despite the strong legal protection of patents in the US, it had not shown any remarkable effects on technological progress and R&D expenditures (Boldrin & Levine, 2013). The same authors posit therefore that weaker patent systems could be more supportive to innovation by pointing out the important role of an innovation-stimulating competitive environment. In a similar vein, Eugster et al. (2018) report evidence that innovation has often been spurred by increased competition from emerging market firms. However, even if a supportive intellectual property rights regime would be in place at the national and international level, the ability of a latecomer economy to catch-up technologically depends crucially on its ability of latecomer countries to learn, aka 'absorptive capacity' (Cohen & Levinthal, 1989). The task of an IP with respect to technology is therefore also to create a conducive environment for technological catch-up. As argued Aghion and Jaravel (2015, p. 536): 'while institutions or policies such as property right protection, contractual enforcement, the rule of law and macroeconomic stability are conducive to both frontier innovation and imitation, there are other institutional or policy features that tend to be more favourable to the former than to the latter. Thus, more product market competition and more free entry encourage innovation in sectors or countries that are closer to the technological frontier but can have detrimental effects on innovations in laggard sectors or countries.'

7. The crucial role of political economy. Conducting a successful IP requires the ability to correct mistakes, reject lobbyism and rent-seeking, and discover new economic activities. As advocated by Chang (2023) in this volume, this requires an *embedded autonomy* of the state. This means that the developmental state needs be at the same time autonomous enough to overcome and reject rent-seeking behaviour by incumbents, yet sufficiently embedded within the private sector to overcome information asymmetries, i.e. to benefit from the latter's insight into markets and technologies that government officials do not necessarily have. Such public-private collaborations

⁷ See the US-China Trade Policy Working Group Joint Statement (2019) of the International Economic Association (2019), which also contains a number of concurring statements from (Chinese) economists, such as the former World Bank research director Justin Yifu Lin.

can be understood as a joint discovery process (Hausmann, Velasco & Rodrik, 2008). This process does not end with the successful discovery of new economic activities, but should also entail continuously shared financial and implementational responsibilities, and — as discussed under point 4 — to withdraw support in case of picking losers. Finally, igniting fast development does require a developmental mindset, and often new pro-development coalitions within the social set-up of a country, typically overcoming traditional power relations (Chang, 2023).

While these seven points summarise the state of play on IP for EMDE, it is now increasingly becoming visible that a contemporary IP needs to deal with a number of new challenges emanating in the new global economy, as discussed in the next section.

Aligning industrial policy with the emerging new global economy

The emerging new global economy (NGE) will arguably be driven by digitalisation and robotisation, increasingly disrupted by pandemics and geo-political tensions, and challenged by climate change and rises in nationalist tendencies (Sander, 2022). For latecomer EMDEs this implies that past successes in catching-up via manufacturing may not be replicable, or if yes, they may not generate the same shared societal benefits, such as fast rising employment in manufacturing and shared prosperity without compromising global sustainability. In the following, I briefly outline the key challenges for EMDEs in the NGE.

Robotisation versus catching-up via export-oriented manufacturing

China and a few other, mostly Asian, countries have been experiencing a tremendous rise in per-capita income by means of participating in global value chains (GVCs), often starting with simple manufacturing assembling tasks and then moving up the ladder towards more complex tasks. This has not only led to a rapid rise in the standard of living, but also to a lifting out of poverty for millions of people, notably in China. The ‘Elephant Curve’ by Lakner and Milanovic (2013) has famously depicted this process. However, increasing robotisation, i.e. the proliferation of robots that perform tasks in GVCs, such as assembling with no or only minimal labour input, can undermine the potential cheap-labour advantage of latecomer EMDEs, as low-skilled labour costs play less-and-less a role. Next to such labour-replacing robots, additive manufacturing (3D printing) is also a case in point, though recently falling somewhat behind early expectations. Robotisation thus encourages re-shoring and limits late-

comer changes to copy the success story of export-manufacturing economic catch-up. Additionally, if robots and additive manufacturing are getting less and less expensive, this threat to EMDEs is likely to be reinforced. However, instead of reshoring, near-shoring to a close-by country is also possible. Nevertheless, the pathways to growth via participation in GVC manufacturing may be increasingly difficult — and the more so, the more remote a country is from major markets.

Digitalisation of service as a new opportunity

In contrast to robotisation, digitalisation, especially the digitalisation of services, can offer a new opportunity for EMDEs to specialise in digital cross-border provision of services. Several observers see here a great potential for EMDEs for three reasons. First, services are still often labour-intensive and, hence, the labour-cost advantage continues to matter. Second, digital delivery is basically without transportation costs and can therefore be located even in remote countries, which were for this reason not successfully participating in GVCs in the past. Finally, the barriers to trade in services are still high and often opaque. With a political will to liberalise trade in services, as much as it has been done for GVC trade in the 1990s and 2000s, trade in such services could easily be boosted both strongly and rapidly.

What kind of services are we talking about? To start with, digital technologies have the potential to transform services in a way that they resemble main features of manufactures. This can be illustrated by the Indian service industry: while it is well-known that India is a very successful exporter of IT services, notably software programming, there is a large and rapidly expanding industry offering so-called business process outsourcing activities, such as billing and ticketing services for airlines. As argued by Baldwin and Forslid (2019), these services share with manufacturers that they are tradable and scalable, and that innovation and learning effects are important in the industry. In consequence, these service tasks are increasingly ‘commodified’. As argued also by UNCTAD (2020) such service tasks do play an important role along the value chain. Hence, they can become part of the fragmentation of the value chain, i.e. sliced-up and offshored. Examples are market research activities, repetitive tasks within R&D activities, or again billing and accounting.

Pushing the argument further, Baldwin (2019) argues the case of tele-robotics and tele-migration that may offer new areas of specialisation for EMDEs. In the words of Baldwin and Forslid (2019, p. 8):

as various forms of virtual-presence technology are combined with human-controlled robots, an expanding range of manual services could be provided at a distance. At the high end, technicians could conduct inspections or undertake repairs from remote locations, and nurses in the Philippines could care for elderly people in Japan. At the low end, hotel rooms in Oslo could be cleaned by robots controlled by cleaners in Kenya. Lawns in Texas could be maintained by robots steered by Mexican gardeners sitting in Mexico.

Of course, whether this vision will materialise any time soon to an extent that can make a difference depends much on how fast the still high costs of such tele-robotics will fall.

The bias of new technologies against labour and employment

Since the Industrial Revolution technical change is displaying a labour-saving direction, starting as a consequence of rising wages in Europe in the late 18th and 19th century, which suddenly made such labour-replacing investments pay-off. Hence, labour-saving technical progress is not new. While past fears of jobless growth have not materialised, this may not be guaranteed anymore. As argued by Acemoglu and Restrepo (2018), modern robots in manufacturing are largely automating tasks, thus replacing the worker. While this *replacement effect* reduces the demand for labour, new technologies also have a *productivity effect* which reduces costs, thus increasing production and — via rising incomes — demand. While in the past the net effect on labour demand was mostly positive or neutral, the authors posit that modern technologies are often only ‘so-so technologies’, i.e. they are just good enough to replace workers, but they do not exceed the productivity of the workers they replace by an extent that would boost labour demand sufficiently. Consequently, jobless growth may now become a reality driven by robots that Phelps et al. (2020) call ‘additive robots’, as they have the same effect as an increasing total labour force, namely rising unemployment, (at least temporarily) depressing wages, and reducing the share of income (GDP) that is going to labour.

Empirically, the evidence for a labour-saving bias of new technologies is strong. A recent study by Reijnders et al. (2021) investigates (simulated) employment growth in GVCs during 1995–2007. They distinguish employment changes due to reallocation of jobs from one country to another within GVCs, employment changes in response to wage changes, and, finally, job losses a consequence of labour-saving technologies. The study reveals that the technology bias is responsible for a large part of a shift against low-educated workers, not only in advanced countries but also in poor countries. To be sure, it does not mean that no jobs are created when entering GVCs. If and when participation in GVCs is high, the reallocation effect can overcompensate the losses from the technology bias, as for example in the case of China where reallocation increased GVC employment by almost 50%, while it was reduced during the same time by some 30% due to technical change. In other EMDE, such as India, Mexico and — to a lesser extent — Indonesia the net effect is negative (and partly compensated by falling relative wages). The results of this study, although covering only few selected EMDEs, provides strong evidence that job generation via participation in GVC may not be sufficient anymore. Especially in times when the chances for participation in GVCs are diminishing, the issues of jobless growth come back forcefully. Rodrik (2022) cites the results of this study to motivate a new employment-focus in IP, which I will discuss in the section entitled ‘Towards an inclusive industrial policy’. A second

conclusion that can be drawn from this analysis is that an employment focus of IP may need a technology policy that directs new technologies towards employment, i.e. to overcome the bias against labour. I will discuss the case for such a *directed technological change* in the section entitled 'Towards an inclusive industrial policy'.

Global climate policies: Development obstacle or development vehicle?

Climate policies that put a price on carbon emissions related to transportation costs increase trade costs and thus give an incentive to shorten global value chains. This is a mixed blessing for EMDEs. With a large market nearby, especially when having neighbours with a large internal market, a country may be able to attract new activities within GVCs that will be relocated to them from more remote countries. As a tendency, this could lead to an increased regionalisation of GVC trade, creating both winners and losers. However, the climate imperative may also provide new business opportunities in renewable-energy-related activities, such as the production of green hydrogen by means of wind and solar energy, or other tasks within newly created green supply chains.⁸

(Geo-)political tensions and political reshoring in a multipolar world

Finally, increasing nationalist populism, the Covid-19 pandemic, and mounting geopolitical tension have led to a call for re-shoring and making supply chains more resilient. In this respect, the potential impact of some remarks made in a recent speech of US Secretary of the Treasury, Janet Yellen (2022), can hardly be overestimated:

our objective should be to achieve free but secure trade. We cannot allow countries to use their market position in key raw materials, technologies, or products to have the power to disrupt our economy or exercise unwanted geopolitical leverage. . . . Favouring the friend-shoring of supply chains to a large number of trusted countries, so we can continue to securely extend market access, will lower the risks to our economy as well as to our trusted trade partners.

The key point here is that the role of policy can have lasting effects on the character and geography of globalisation, creating both winners and losers in EMDEs, offering both new chances and new risks, which have to be taken into consideration when contemplating about new direction in IP in EMDEs.

⁸ For an optimistic view see the recent Project Syndicate op-ed column by Ricardo Hausmann (2021).

Towards an inclusive industrial policy

It is becoming increasingly clear that in the NGE market-driven economic growth is (a) not sufficient to ignite sufficient private sector development to obtain the much sought-after productivity gains, (b) that even when these gains occur their distribution is often tilted against low-skilled, and (c) this growth may be incompatible with the climate imperatives. Point (a) is the traditional focus of an enlightened IP as outlined in the section entitled 'Lessons learned: conceptions and misconceptions about industrial policy'. However, nothing guarantees that (b) and (c) get equal attention unless it is built into the IP agenda in order to achieve *inclusive growth*. Such an IP must go beyond promoting selected manufacturing industries. It must also be driven by and addressing societal goals, namely to promote inclusive economic development and shared wealth on a sustainable base. I will first briefly define what I mean by inclusive growth. I will then show how a new inclusive IP can be conceptualised before illustrating it by highlighting three key strategies.

What is inclusive growth?

While there are many definitions of inclusiveness, such as World Bank's concept of *shared prosperity* or the European Commission's 'high-employment economy delivering economic, social and territorial cohesion' (European Commission, 2020), I follow here Cerra (2022, p. 8) in defining inclusive growth as consisting of three components: '(1) strong economic growth that is (2) inclusive and (3) sustainable' (Cerra, 2022, p. 8). Cerra (2022, p. 9–10) explains further: 'Economic growth refers to increases in the production of goods and services that are valued by people, providing the means for a better standard of living.' 'Inclusion refers to broadly sharing these improvements in living standards among all groups in society. Inclusion can be summarised by four general objectives: (1) benefit-sharing; (2) opportunity; (3) participation; and (4) empowerment.' . . . 'To be inclusive, growth must also be sustainable. Sustainability means that the current path of consumption and social welfare can be sustained into the future of both current and future generations.'

One IP, multiple objectives, different strategies

The new challenges sketched above clearly suggest that the traditional focus of IP on increasing productivity is too narrow for at least three reasons:

- As growth, when it occurs, is often not broadly shared, the distributional implications of IP needs to be considered explicitly.
- Given the labour-saving bias of new technologies, employment generation cannot be taken for granted and should be addressed.

- Every structural change induced by IP has environmental and social consequences that need to be considered, too.

In other words, a contemporary IP should be an inclusive IP in the spirit of inclusive growth as defined above. In fact, as Nobel laureate Joseph Stiglitz remarked in a recent IEA-METI-RIETI Conference on ‘New Thinking on Industrial Policy’: ‘An industrial policy program has to focus on addressing double or triple duties. With limited resources and instruments, policies need to address as many of social objectives as possible.’ (IEA-METI-RIETI Conference, 2022, p. 15). In a similar vein, a recent OECD study, aiming at developing an industrial policy framework for OECD countries, posits that IP increasingly goes beyond addressing the traditional productivity objective by focusing on *inclusiveness* (in the narrow sense) by targeting firms in disadvantaged areas and disadvantaged people, *green* IPs, such as the European Green Deal,⁹ and — increasingly in response to the Covid-19 crisis, *resilience*, i.e. improving the capacity of an economy to withstand, adapt and rebound quickly from shocks. Moreover, geo-political tensions have in the EU also given rise to the idea of achieving *strategic autonomy* by means of IP (Criscuolo et al., 2022a).

A serious issue that immediately follows from an attempt to address more than one objective with just one instrument is the well-known Tinbergen principle that posits that one needs at least one instrument to address one objective. However, this argument can be overcome in two ways: first, if there are no goal conflicts, and second, when using IP strategies that encompass the simultaneous use of several complementary policy instruments.

To start with the first argument, the reason is that there could be trade-offs between the various objectives. This may particularly be a problem when looking at potential goal conflicts between resilience (and may be even more for strategic autonomy) and productivity, as productivity often implies specialisation to achieve economies of scale, while resilience in many cases demands diversification and not putting all eggs in one basket. However, with respect to the other objectives the situation may be easier. In a recent interview with Adamant (2021) Harvard’s Dani Rodrik concludes:

At the moment, I don’t see a big trade-off between the objectives of environmental sustainability, slowing down climate change and equity/inclusion, on the one hand, and economic growth on the other. One of the most important ways in which middle-income and rich countries can stimulate growth is by undertaking a large investment drive in green industries and technologies. Moreover, growth and inclusion have become complementary objectives. One reason productivity growth has slowed down everywhere, bringing economic growth down with it, is that advanced technologies and productive methods are not disseminating sufficiently rapidly from firms at the frontier to the rest of the economy and throughout the workforce. If we can pursue policies to achieve that, we can get both more growth and better distributive outcomes. (p. 9)

⁹ For details of the European Green Deal see https://ec.europa.eu/info/strategy/priorities-2019-2024/eu-ropean-green-deal_en

Regarding the second argument, IPs have indeed more than one instrument at hand. However, the devil is in the detail whenever it comes down to selecting policy instruments. In this respect the following observation by Criscuolo et al. (2022a, p. 9–10) is of particular relevance:

Complementarities between policy instruments justify the use of industrial strategies. The available evidence supports the effectiveness of several categories of policy instruments such as firm-level investment incentives, instruments favouring the access to inputs (e.g. skills, knowledge, infrastructure) and appropriate framework conditions (e.g. sound competition, well-functioning capital markets). For the instruments to be effective and to maximise their effectiveness, however, good policy design is crucial. In addition, the framework developed in this paper sheds light on the complementarity between investment incentives, instruments supporting access to inputs and framework conditions, thereby rationalising the use of policy packages, or strategies, to reach industrial policy objectives.

According to Criscuolo et al. (2022a), IP strategies can broadly be categorised as ‘sector-based’, ‘place-based’, ‘technology-focused’, and ‘mission-oriented’. While the first two are well-known standard sectoral and regional policies, the latter ones have recently gained prominence. With respect to technology-focused strategies, digital strategies, AI strategies, or the US CHIPS (‘creating helpful incentives to produce semiconductors’) act are typical examples to use IP to address new IP objectives, such as resilience or strategic autonomy. Typical mission-oriented strategies are, e.g. green strategies, such as the European New Green Deal. Nevertheless, there might be a lot of overlap between the two strategies. For example, basic research support of the DARPA-type as well as support for certain innovation clusters are typically both, a technology and a mission strategy.¹⁰

In sum, an inclusive IP is one that aims to change the structure of an economy in a way that it delivers higher productivity growth while generating a sufficient number of good jobs without undermining long-run economic, social, and environmental sustainability. To achieve these multiple goals, inclusive IP needs to reap the benefits from instrument complementarities in a well-orchestrated coherent approach.

Key strategies and policies

In this section I briefly highlight three IP strategies and policies which are key to a new inclusive IP for EMDEs. First, the employment-centred good-job development model advocated by Rodrik (2022). Second, strategies to direct technical change, and, finally, inclusive finance policies for micro, small and medium enterprises (SMEs).

¹⁰ For an influential mission-oriented approach see Mazzucato (2021).

Rodrik's 'good-jobs development model': Targeting SMEs

Rodrik (2022) posits that the manufacturing-led growth model that helped the economic rise several EMDEs, particularly in Asia, has broken down because, first, it cannot be replicated easily under contemporary world trade rules and trade costs, and, second, because of the labour-saving bias of technology. Hence, the most productive industries in EMDEs, often export industries, frequently operate with a higher capital intensity than would be justified by relative income levels and factor proportions, as Rodrik illustrates it with examples from the manufacturing sector in Tanzania and Ethiopia. As a consequence, especially low-skilled labour, the abundant factor of production and, thus, potential source of EMDEs comparative advantages in manufacturing, loses importance. If this view is correct, traditional industrial policies that target high productivity (export) sectors may not deliver the required employment growth and increase in mass income that is necessary to achieve sustained growth, especially via boosting the demand for services in the economy.

What then is the alternative? According to Rodrik (2022):

Future growth policies will need to have different priorities. Instead of focusing on the most productive segment of firms, the next generation of growth strategies will have to target small- and medium-sized firms with the potential to enhance both productivity and employment and which are necessarily mostly in services. Traditional 'industrial policies' will have to be modified and extended to parts of the informal economy. Economic growth will be possible only by raising productivity in smaller, informal firms that employ the bulk of the poor and lower-middle classes. At the same time, sustainable poverty reduction and enhanced economic security will remain possible only by creating more productive, better jobs for workers at the bottom of the skill distribution. In short, the growth policies of the future will need to look more like social policy, albeit with a much more productivist, firm-oriented bent. (pp. 79–80)

The strategy proposed has a strong focus on promotion of higher-quality jobs in services. What Rodrik has in mind here are small and medium-sized firms in the middle productivity segment of the productivity spectrum, mostly in services with the potential to raise both productivity and employment at the same time. I have two major comments on which this new strategy relies. First, Rodrik is rather sceptic about the role that high-productivity new tradeable digital services, such as back-office services, can play in the future, basically because of their relatively high skill-intensity and low labour absorption. This view stands in contrast to Baldwin's (2019) view of a forcefully coming new globalisation of digital services, which may in future may be both less skill-intensive and more labour absorbing as currently visible. As discussed in the section entitled 'Aligning industrial policy with the emerging new global economy', this more positive view depends on the trajectory of digital technology and the prices of tele-robotics. Even if the sector remains relatively small, it may still have the potential to create a new middle class that could add to developing the mass markets for the

SMEs products and services in EMDEs that Rodrik has in mind. Thus, this opportunity should not be dismissed too fast.

Second, Rodrik's conclusion is explicitly based on the assumption that the labour bias in technology will prevail, and 'appropriate technologies' for EMDE will not be put in place on a sufficient scale. His 'good-jobs development model' is therefore a second-best alternative, if and when the direction of technological change is not altered toward more labour-friendly technologies. In fact, Rodrik finishes his paper with a call to put this issue on the agenda on global discussion. As I will discuss in the next section, the issue of (re-) directing technical change is, however, already influencing the debate on a new inclusive IP for advanced and emerging and developing countries alike.

Directing technical change

From the above discussion it follows that directing technical change is a key policy issue with respect to both labour-friendly and environment-friendly technologies. The case for promoting environment-friendly technologies is by now well established. For adopting such technologies, they must pay-off. Hence, policies incentives, such as a carbon tax, are needed to make them more profitable than dirty-technology alternatives. In a comparable vein, labour-saving technical progress can be view as directed technical change that responds to high(er) wages. Before the Industrial Revolution labour was so cheap that machines simply did not pay off. Starting in the 14th century a combination of the plague, endless wars, and a beginning urbanisation led to labour shortages and wage increases. Especially in England, the rise in wages is seen by many researchers as a key event that incentivised the industrialisation process of England.¹¹ Labour-saving technical progress — or in the terminology of Phelps et al. (2020) 'additive robots' — became the norm. While additive robots aim to replace human labour in performing tasks in the value chain, so-called 'multiplicative robots' seek to augment it by making human labour more productive, thus allowing for higher wages. Take the examples of nursing and surgery: assisted by AI, a nurse could examine routine parameters of patients, while a surgeon could concentrate on her key tasks. Both would be more productive and deliver higher value added.

If this view, advocated by Phelps et al. (2020), Acemoglu and Restrepo (2018), Korinek, Schindler and Stiglitz (2022), and others is correct and we do need different technologies, the questions emerge: First, why do we not get them, and, second, how can we get them? Regarding the first question: Why does the market system not provide (enough) incentives to develop labour-friendly, productivity-enhancing technologies? In a recent paper, Acemoglu (2022) summarises several arguments:

¹¹ For a summary presentation on the debate of the (historical) role of labour-saving technical progress see chapter 2 in Sander (2022).

- The empirical evidence that the market always makes the best technology choices, judged by the slowdown of (total factor) productivity growth in the past decades, is not overwhelming.
- New technologies create significant externalities, i.e. they may create cost (e.g. job losses in the case of additive robots) or benefits (e.g. income gains in the case of productivity-enhancing multiplicative robots or AI; environmental benefits in the case of green technologies). As an innovator will neither pay for the societal costs nor profit from societal benefits, they have no incentive to care about things like a more inclusive society or a cleaner environment. Hence, there is a bias towards dirty and/or labour-replacing technologies.
- Researchers and companies tend to stick to existing leading paradigms or norms in the field, even if another may be more productive. This ‘path-dependency’ is well documented in the innovation literature.
- Government regulation itself may bias technologies towards replacing labour, e.g. by taxing labour higher than capital.

In sum, innovations and investments do not fall like manna from heaven but react to incentives. If the incentives are to replace workers by robots, we stimulate labour-replacing technologies. If carbon-dioxide emissions are for free, we provoke climate-unfriendly technologies. Vice versa, directing technical change to enhance the capabilities of workers and contribute to climate neutrality, could be key to inclusive economic growth.

What, then, can be done about thesees biases? The conventional wisdom for promoting eco-innovations, i.e. new technologies that, e.g. reduce pollution and emissions at a given level of production, thus allowing decoupling from economic growth is to put a price tag on emissions and supporting R&D regarding eco-innovations.¹² Given the increasing evidence on a bias against labour in new technologies in both advanced economies and EMDE it seems to be high time to incentivise labour-friendly technologies and direct the technological progress to support inclusive growth in both advanced and developing countries. As Rodrik (2022, p. 80) has put it with respect to EMDE: ‘At the global level, we may need to revive the idea of ‘appropriate technology’. If present trends continue, innovation in the advanced nations will remain biased against workers with low education and undermine the comparative advantage of developing nations. New technologies that are labour-friendly can be considered a global public good from a development perspective. Hence the promotion of such technologies must be placed on the agenda of global discussions alongside other major global public goods, such as decarbonisation and pandemic control.’

¹² What holds back the adoption of eco-innovations is, of course, a complex story as a multitude of influencing factors, such as a path dependencies and access to such technologies are important, too. For an overview see Sander (2016). Likewise, it is beyond the scope of this article to discuss the relative efficiency and efficacy of carbon taxes vis-à-vis alternative policy instruments.

In sum, inclusive IP in both advanced and developing economies should prioritise technologies that promote good-jobs by being labour-augmenting rather than labour-replacing using all available means such as a more labour-friendly taxation system, incentives for firms to create jobs, and support for basic and applied research in labour-friendly technologies.

Inclusive finance for SMEs

In Rodrik's 'good-job development strategy' SMEs are key in providing jobs in EMDE. The well-known 'growth diagnostics' approach, a heuristic to identify binding constraints to economic growth and development, advocated by Hausmann et al. (2008), highlights that new investments can be held back either by a lack of profitable investment opportunities (e.g. because of market failures or lacking complementary infrastructure) or by a lack of finance for projects that would pay off. Employment-generating SMEs are typically more often financially constrained than the high-productivity (foreign) investors and large firms, and this problem is more severe in EMDE with weaker financial systems as shown by Beck, Demirguc-Kunt and Maksimovic (2004). As a consequence, an inclusive IP should have a particular focus on removing financial constraints on SMEs.

To review briefly the key issues on financial inclusion for SMEs, I will follow the line of arguments provided in an excellent survey article on inclusive finance by Barajas et al. (2022) and present the key issues. The authors start with enlisting five factors that may contribute to higher financial constraints for SMEs relative to larger firms. First, fixed cost in credit assessment, processing and monitoring makes small-scale lending to SMEs relatively more costly; second, SMEs are more *opaque* and thus more difficult to assess and monitor; third, SMEs may exclude themselves voluntarily from financial markets due to cultural barriers and financial literacy; fourth, they may be too few SMEs in a given sector for financial institutions to exploit scale economies and diversification benefits; and, fifth, lenders may limit the availability of credit due to regulatory distortions or due to a lack of competition. As a consequence, addressing each of these issues can help relax the financial constraints for SMEs (or, in the spirit of growth diagnostics one would aim at addressing the most binding constraints first). Barajas et al. (2022) also review and point to the mostly positive evidence on financial development for job creation, start-up activities and allowing existing firms to grow and increase organisational efficiency.¹³

In sum, whenever finance is binding — and this is quite often the case for SMEs — policies to promote financial inclusion are key. While the devil is in the detail and beyond the scope of this overview article, two additional points made by Barajas et al.

13 For more details see the insightful review by Barajas et al. (2022).

(2022) deserve to be mentioned here. First, in their discussion presentation they include micro enterprises, which are often operating in the informal economy without formal business licenses and bank accounts. These enterprises need different finance instruments (e.g. microfinance) than established SMEs with access to banks or even venture capital. Second, the authors make a distinction between *subsistence* and *transformational entrepreneurs* and conclude, that 'if the objective is to promote long-term aggregate growth and job creation, credit policy should focus on transformational enterprises, while non-credit policies should be targeted at vulnerable segments of the population.' (Barajas et al., 2022, p. 142).

Conclusion: Towards an inclusive industrial policy as a societal task

IP has moved from a policy non-grata to the centre stage of policy making in advanced economies and EMDE alike. Unlike its older cousin that often focused on government intervention in favour of incumbents or 'national champions' in a top-down way (with frequent rent-seeking and lobbying feed-backs), a new and contemporary industrial policy should be viewed as a collaborative process between the public sector, the private sector, and the civil society, or, especially with respect to innovation and technological catch-up, as a process of academic-industry-government/civil society interactions as advanced by the triple helix model, discussed in this volume.

In this new approach, the task of the public sector is not only to correct isolated market failures but also to shape markets (from guaranteeing stable general framework conditions over incentivising labour- and environment-friendly technologies to policies promoting inclusiveness), and even help creating markets by laying the foundations of future growth by means of mission-oriented policies. The role of the private sector is to help the public sector to overcome its information deficits. Hence, a new industrial policy should be understood as a joint discovery process as argued by Hausmann, Velasco and Rodrik (2008) early on. However, the private-public partnership should not be misread as an invitation to rent-seeking and lobbying. Rather, the experience of the most successful late industrialisers has shown that an *embedded autonomy* of the state is needed to design policies and support that can and should be revoked in case of non-performance.

Finally, and most importantly under the conditions of an emerging new global economy, an inclusive IP must address economic, social and environmental objectives simultaneously. It is therefore best understood as a societal task, involving all stakeholders, to generate inclusive and sustainable development as a policy mission. This may require broad-based political alliances for a societal change that helps to bring out the best of the private sector for the society.

Of course, and on a final note, a more development-friendly global trade, technology, migration, finance and environmental regulatory environment would be most conducive for such a policy change. Yet, this discussion is beyond the scope of this short attempt to take stock on a debate in flux on a new and emerging inclusive industrial policy.

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André Dellevoet and Stephanie Jones

7 Inclusiveness and small businesses in emerging markets

Abstract: The paper focuses on the key question to what extent inclusive business (IB) models can be promoted amongst MSMEs in emerging markets, who constitute between 95–99% of all businesses in emerging markets.

The paper first looks at the definition and concept of IB and highlights differences in interpretations and substance, where two, basic approaches can be discerned; (1) the strict interpretation that may ultimately lead to the idea that IB is the same as social enterprises; and (2) the more flexible and pragmatic approach that considers every business as inclusive that targets and involves the poor.

The paper then looks at other aspects that are relevant in assessing to what extent IB may be more widely adopted in emerging markets. It highlights a number of internal, market and socio-cultural constraints that may constitute limiting factors.

Finally, the paper suggests that, in order to promote the concept of IB, it is necessary to limit the ‘accountability ceiling’ to the spheres of control and influence and focus on concrete, short term, social and environmental improvements.

Keywords: Inclusiveness, small business, sustainability, ESG, business case

Introduction

Rising inequality has emerged as an important topic of political debate and a major public policy concern (Piketty, 2014; Stiglitz, 2013). According to the World Inequality Report, the wealthiest 10% of the world’s population has more than 50% of the world’s income, while lower income groups, which constitute around 50% of the population, own only 2% of the world’s wealth. Inequality increases not only between rich and poor but the gap between rich and poor countries also widens.¹

Since its conceptual development in the mid-2000s, inclusive business (IB) has increasingly been proposed as central to addressing development needs, including countering the rise of inequality. IB is seen as a means to deliver long-term development impact at scale by integrating the poor as suppliers, distributors, retailers or consumers (Inclusive Business Action Network, 2021).

There are two kinds of inclusiveness:

- Inclusion at work, dealing with issues such as diversity and equal opportunity within a company;

¹ See for more information the world inequality report, available at <https://wir2022.wid.world/>.

- Inclusiveness within the company's external environment, such as the supply chain. In this paper, we will particularly focus on this kind of inclusiveness i.e. the relation between the company and the poor and marginalised in its external environment.

Unfortunately, there are many slightly different definitions and opinions about IB. For the purpose of this paper, we will stick to the definition of the G20: 'inclusive businesses provide goods, services and livelihoods on a commercially viable basis, either at scale or scalable, to people from the base of the economic pyramid (BOP), making them part of the value chain of companies' core business as suppliers, distributors, retailers or customers'. Companies can target different segments within the BOP, such as women, internally displaced persons (IDPs), disabled, youth or the elderly (IBAN, 2021).

Much of the literature on IB seems to focus on the adoption of forms of IB such as 'sustainable business' and 'corporate social responsibility' by MNCs or large companies in emerging markets, such as Unilever, Philips, Lafarge, Nestlé, Novartis, SABMiller, Schneider Electric, The Coca-Cola Company, Vodafone, Mars and Olam (Van Dijk & Trienekens, 2012; WBCSD & SNV, 2011). All these different concepts have in common that they combine economic performance with environmentally and socially sound business practices, as we can see from the debate on inclusive industrial policies as discussed in the contribution of Harald Sander, elsewhere in this publication (also see Rodrik, 2022). Moreover, a central notion in these concepts is 'shareholders value vs stakeholders', which suggests that we are dealing with publicly listed companies. Similarly, when the growth of inclusive business and social enterprises is highlighted, reference is mostly made to Western markets, where businesses increasingly respond to consumer pressures for social and environmental positive impact, particularly among the younger generations (Van Dijk & Trienekens, 2012; UNDP & Deloitte, 2016). Sometimes, examples are given of inclusive businesses from emerging markets themselves such as the well-known Grameen Bank in Bangladesh or Safaricom in Kenya.²

However, little is known about the widespread adoption of IB models among the hundreds of millions of local micro, small and medium enterprises (MSME), who constitute between 95–99% of all businesses in emerging markets. Without them, IB models would remain limited to certain tight agricultural value chains of high value export crops and certain manufacturing activities such as electronics and garments that also aim for the world market. Since the aim of the UN, G20 and others is to take IB models to scale and see it adopted across the globe, the question to what extent IB models can be promoted amongst MSMEs in emerging markets, is critical to the debate around the achievement of the UN Sustainable Development Goals (SDGs).³

² For more information on Safaricom, see: <https://www.safaricom.co.ke/> and for Grameen Bank: <https://grameenbank.org/>.

³ For more on the SDGs, see <https://sdgs.un.org/goals>.

This paper will explore the concept of IB and assess to what extent IB is or will be practised by small businesses or MSMEs in emerging markets. It will endeavour to answer that question by firstly exploring the concept of IB and see how it is defined and used by various development actors. Then, we would like to analyse the economic and socio-cultural factors that are relevant to the concept of IB. This includes key topics such as the business case for IB, market adoption of the concept, and discrimination and exclusion. Finally, we draw attention to an alternative approach to promote IB that may be based upon a business' span of control and resources available and may have a higher chance of widespread adoption amongst small businesses in emerging markets.

The concept of IB

In search of an IB definition

IB is in fact a very broad concept that originated in the development sector. IB is sometimes equated with 'inclusive growth', which is not the same as 'pro-poor growth'. The latter focuses primarily on the outcome i.e. reducing poverty and inequality, while inclusive growth also emphasises productive participation in growth through non-discriminatory and disadvantage-reducing access to opportunity (Schoneveld, 2020; Verra, 2022). Prahalad (2009) argued that economic and development objectives can be complementary because of the commercial opportunities that can be exploited from actively engaging and/or serving the 'bottom of the pyramid'. Taking this economic argument further, some authors argue that philanthropic or corporate social responsibility (CSR) activities can't make a business inclusive if these are not integral to the overall business logic. It is also not good enough for a business to be considered inclusive if it only serves poor customers. Most definitions highlight that IB *integrates* people and/or communities that are poor, low income, at the BOP and disadvantaged, into the supply and/or demand-side of the value chain. Tapping into BOP markets requires that companies reconfigure their business assumptions, models and practices. New competitive business designs need to be created that involve developing unique products, services or (disruptive) technologies appropriate to BOP needs (Van Dijk & Trienekens, 2012; Von Braun, 2014, p. 338).

Moreover, according to Schoneveld (2020), definitions of IB have been too much focused on growth and too little on environmental inclusiveness, supply chain sustainability, climate resilience and sustainable value creation. A more holistic perspective of IB looks at the economic, social and environmental value, which together form the heart of a business value proposition to its shareholders and stakeholders (DCED, 2021). This notion of inclusiveness is additive rather than replacing, taking a 360 degree view of all stakeholders.

Given these multiple interpretations, as highlighted in Table 1 below, it appears that there is no agreed definition of IB in the academic or donor community (see Schoneveld, 2020) which can only be resolved by critically examining actual business models or questioning conceptual ambiguity and inconsistency. As a result, the concept is widely misused (DCED, 2021). This limits researchers and IB promotors to communicate across disciplines, adopt learnings and develop the necessary empirical evidence base that can support actual business model innovation.

Table 1: Various definitions of IB (Source: Schoneveld, 2020).

Source	Definition
UNDP	Inclusive business models include the poor on the demand side as clients and customers, and on the supply side as employees, producers and business owners at various points in the value chain. They build bridges between business and the poor for mutual benefit.
SNV and WBCSD	An economically profitable, environmentally and socially responsible entrepreneurial initiative, which integrates low-income communities in its value chain for the mutual benefit of both the company and the community.
FAO	Inclusive business models promote the integration of smallholders into markets, with the underlying principle that there are mutual benefits for poor farmers and the business community.
G20	Inclusive businesses provide goods, services, and livelihoods on a commercially viable basis, either at scale or scalable, to people at the 'base of the economic pyramid,' making them part of the value chain of companies' core business as suppliers, distributors, retailers, or customers.
IFC	Inclusive business models are those which integrate low-income consumers, suppliers, retailers or distributors in their core business operations, on a commercially viable basis. By adopting the models, companies build the capacity of low-income farmers and entrepreneurs; Increase access to finance for suppliers and consumers; create or adapt products to meet local needs and requirements; and develop innovative distribution approaches to hard-to-reach communities.
ADB	A business entity that generates high development impact by (i) improving access to goods and services for the base-of-the-pyramid population (i.e. low-income people); and/or (ii) providing income and/or employment opportunities to low-income people as producers, suppliers, distributors, employers, and/or employees. An inclusive business must be commercially viable.

Neither is there consensus on who the poor and marginalised are. Depending on the prevailing legal framework and organisation, they could include; youth, women, elderly, disabled, racial-ethnic and religious minorities, refugees, unemployed and homeless, prisoners, single parents and subsistence farmers. The concept of vulnerability starts losing its usefulness when so many groups are considered as being affected.

The bar is even set higher when it comes to what constitutes poverty, traditionally measured by the minimum income per day of US\$ 1.90 per person, at purchasing power parity. However, this is more and more overtaken by the concept of 'living income' defined as the 'net annual income required for a household in a particular place to afford a decent standard of living for all members of that household' (Schoneveld, 2020). Elements of a decent standard of living are closely aligned with the SDGs, including water, food, education, healthcare and protection. One must wonder to what extent this is the responsibility of a business and if it were, how the business can still be financially viable as insufficient economic value can be captured to grow or sustain the business. The debate not only inhibits innovation and subjects the concept of IB to relentless debate and changing goalposts, but also risks negating the economic effects of a successful business venture, such as sufficient capital accumulation for investment and growth leading to more jobs and a bigger involvement of suppliers, subcontractors and distributors up and down the value chain. The more complex it gets, the higher the risk that it leads to a 'multiple objectives trap' (Schoneveld, 2020) which could compromise the viability of the business.

The normative and prescriptive nature of the concept has been further enhanced by donor involvement (Deloitte, 2017). Promoting IB models has been heavily influenced by donor interventions, which are based on four primary justifications: (1) market failure; intervening where the market alone cannot optimally allocate goods and services; (2) inclusive and sustainable growth, addressing specific access barriers faced by the poor; (3) contracting out; buying socially and environmentally desirable outputs cost effectively to compensate for 'state failure' to deliver basic public services; (4) experimentation and first mover cost: encouraging innovative technical and business solutions by reducing first-mover costs and scaling up successful experiments (ODI, 2014).

The primary goal of donors is to achieve improved livelihoods, opportunities or access for the poor; support for women and other vulnerable groups; and increased quality of jobs and access to skills and training (ODI, 2014). The business goals are secondary and rarely play a role in donor assessments of business applications for grant support as can be seen from the selection criteria and operations manuals of various private sector development instruments such as the Dutch PSOM/PSI, multi-donor AECF and ABI operations. In other words, for donors the business is a means to an end, namely to achieve development impact (AECF, 2012; Dellevoet, 2020). However, donors are also pragmatic and flexible and there are significant gaps between the rationale for public intervention and approaches undertaken to measure and demonstrate impact (Kindornay et al., 2013). Similarly, donors don't use the term 'social enterprises' and prefer IB, basically meaning all enterprise models having social/environmental impact as part of their core business, instead of a stricter one, requiring social impact to be the primary enterprise goals subject to financial viability (ODI, 2014; Schoneveld, 2020). This pragmatic approach creates difficulties as it is challenging to demonstrate that business models work better than government models and that direct interventions have more impact than working on the enabling environment for doing (inclus-

sive) business (DCED, 2016; WEF, 2018). It also discourages the private sector which has a strong preference for using real-time data to make management adjustments, rather than a focus on ‘value-for-money’ of public actors including donors (DFID, 2011). Finally, the pragmatic approach makes it harder to distinguish between businesses serving the poor, for example by including them in their supply chain as smallholder farmers or as charcoal and water suppliers for urban slums, and IB.

However, this pragmatic approach isn’t matched by a pragmatic execution of private sector development programmes. Donor programmes are no longer ‘at arm’s length’ of the private sector but are managed in detail by donor and managing entity themselves, setting countless criteria and conditions (Dellevoet, 2020). Most MSMEs are not aware of these PSD programmes or don’t bother to apply, but if they do, less than 5% make it to the contracting stage (AECF, 2014).

The growth of the impact investment industry is closely intertwined with the increasing interest in IB. Impact investments are investments made with the intention to generate positive, measurable social and environmental impact alongside a financial return. Impact investments can be made in both emerging and developed markets, and target a range of returns from below market to market rate, depending on investors strategic goals. The impact investment market provides capital to address the world’s most pressing challenges in sectors such as sustainable agriculture, renewable energy, conservation, microfinance, and affordable and accessible basic services including housing, healthcare, and education. The Global Impact Investing Network (GIIN) last year estimated the market size to be around US\$ 715 billion (GIIN, 2021).

There are three key elements of an impact investment:

- Financial terms — valuation, preferred stock, liquidation preferences, pro rata rights, anti-dilution measures, information and transfer rights, impact triggered default;
- Environmental, Social and Governance (ESG) terms — definitions and indicators, reporting, exclusions (i.e. tobacco);
- Control terms — board seats, voting powers, right of first refusal for both financings and acquisitions.

Even though large funds are available for impact investments, a commonly heard challenge for fund managers is on the demand side; very few businesses in emerging markets meet all the criteria. Impact investors not only look for financial results but also tell business owners/managers how to run their business. ESG is typically concerned with business operations (such as employee welfare, supply-chain transparency and the structure of the board) as well as a company’s output i.e. does the company generate revenue from products/services which help to address the world’s environmental and social challenges? (Busch, 2021). Access to appropriate and affordable finance has always been one of the key challenges for MSMEs in emerging markets. Hence by raising the bar even higher, to perform well on ESG impact as well as a market rate financial return, impact investors are actually quite exclusive, often limiting the number of beneficiaries to a few investees per year. For example, one of the largest impact invest-

ors, Acumen, has only invested, in the past 20 years, US\$ 146 million in 155 companies (Acumen, 2021).

According to some authors, an IB can only be considered inclusive if stakeholder value creation is maximised by only capturing value to sustain itself or if profits are largely reinvested into deepening or broadening value creation. Because this conceptualisation of IB is consistent with most conceptualisations of a social enterprise, an IB can then be positioned within this category of businesses (Schoneveld, 2020, p. 9). The social element of social enterprises can be defined by five operational features (Nicholls, 2013):

- A business activity launched by a group rather than an individual.
- Decision making power not based on capital ownership.
- A participatory nature involving those affected by the business.
- Limited profit distribution.
- An explicit aim to benefit the community.

There has been an unprecedented wave of global growth in social entrepreneurship since the 1990s (Bosma et al., 2015; Nicholls, 2013). Well known examples are the Grameen Bank, mentioned earlier, that serves millions of micro-credit customers across Bangladesh and Afghanistan and the Fair Trade movement that has seen its international sales grow exponentially to billions of dollars, impacting millions of livelihoods, the majority being women.⁴ The role of philanthropies and international non-governmental organisations (INGOs) has also changed fundamentally, becoming more influential and entrepreneurial. At times, between 15 and 20% of development funding of the World Bank as well as bilateral aid funding of USAid, DGIS (Netherlands), DFID (UK) and DANIDA (Denmark), would be dispensed by these INGOs (Nicholls, 2013; OECD, 2018).

Despite the impressive growth of CSR activities, IB models and social entrepreneurship, even pioneers like Jeff Skoll and Bill Drayton, founder of Ashoka, have admitted that the sector is still in its infancy and most of the financing is still dependent upon government and donor subsidies and private contributions from family and friends, rather than the financial markets. With reference to Fair Trade, Raynolds and Murray note that Fair Trade products have moved from specialised shops to mainstream distribution channels, but that maintaining Fair Trade principles is difficult in 'buyer-driven' commodity networks controlled by powerful retailers and branders (Raynolds, 2007, p. 226). Hence, challenges remain to make the inclusive business model mainstream, not in government or academia, but in the for-profit, private sector (Nicholls, 2013). Indeed, a common criticism is that few IB models have gone beyond the pilot stage and reached scale or systemic change (DCED, 2021).

⁴ See for example the World Fair Trade Organization, an umbrella organisation of more than 300 fair trade enterprises, www.WFTO.com.

The IB landscape

The challenge is not only the many interpretations and definitions, but also the many variations of IB models in this highly dynamic sector, blurring lines between public and private entities and commercial finance and government subsidies. However, for the purpose of clarity, we have included some basic models in the IB landscape in Table 2 below.

Table 2: The inclusive business landscape (Source: Dellevoet, 2022).

For profit		Not for Profit		
Traditional business producing goods/ services for the market, including the poor, on a for- profit basis	Corporate social responsibility (CSR), wide range of environmental and social activities, separate from for- profit core business	Sustainable and inclusive business (IB), environmental and social goals alongside profitability. Also includes concepts as 'shared value'	Social enterprise (SE), environmental/ social goals first, but seeking financial viability/ sustainability	Non- governmental organisations (NGOs) environmental and social goals first, no financial viability/ sustainability

The first thing to acknowledge is that 'traditional' models of for-profit business in developing countries actually include the poor and marginalised in their business models, for example as workers and outgrowers in commercial agricultural production of cash crops (tea, coffee, cocoa, cotton, sugar, tobacco) or as distributors and retailers of industrial products (beverages, food) and services (local transport, sim card booths, battery charging). Since large parts of the population in emerging markets live below the poverty line, most businesses in one way or the other try to cater for their needs as well.

The second category that is well known is corporate social responsibility (CSR), which is a very flexible concept that may include a wide range of business activities that maintain a link with the surrounding community, including internships and apprenticeships, sponsoring of sports clubs, garbage collection, provision of water and sanitation, etc. Even though CSR activities may be compulsory for large businesses in certain countries such as India, and businesses may benefit from them (for marketing purposes), the critical distinction made is that CSR activities don't belong to the core business and are mostly seen as a niche activity that is outsourced to a service provider (Byiers, 2015).

Further down the scale towards full inclusiveness is the inclusive business model (IB), which seeks to reconcile both social and environmental goals as well as business profitability. One of the key concepts is 'shared value' which aims to address social and environmental concerns related to products or services and design production processes that benefit workers and consumers. What distinguishes IB from CSR is the profit motive

(albeit with a longer time horizon regarding expected returns), and the fact that it is considered to be core-business (WBCSD and SNV 2011). In the past decade, IB models have been given a significant boost by the advent of impact investing, as described above, which seeks the same balance between environmental and social goals and business profitability (IFC 2021).

Next is the fast-growing market of social enterprises (SE), which can simply be defined as businesses with social objectives. SEs use entrepreneurial principles to organise, create and manage a venture with the primary aim of bringing about social change. Unlike a for-profit business which measures performance in financial terms, a social entrepreneur measures success in terms of progress made towards the creation of social value. However, SEs still have a strong market orientation, as they are concerned with business viability and sustainability, hoping to draw on public as well as private resources to achieve impact and scale. As mentioned before, a well-known example is Grameen Bank in Bangladesh, led by Nobel prize winner Mohammed Yunus.⁵

Finally, there is the vast number of local and international NGOs that are involved in both social (i.e. health, education, sanitation) and economic (agriculture, manufacturing) sectors with the aim to include the poor and marginalised, both as consumers and producers. What distinguishes (most of) these NGOs from SEs is their weak market orientation, absence of a profit motive and strong dependence on external financing from governments or donors.

In sum, we can roughly distinguish two approaches to inclusive business; on the one hand the pragmatic and flexible approach by donors and most for-profit businesses, where the principal aim remains for-profit, while undertaking social and environmental activities, and on the other hand the stricter approach that aims to change the business model where environmental and social goals are primary and profitability remains largely limited to financial viability, which could be mixed market driven/subsidised (SE's) or fully subsidised as in the case of NGOs and philanthropies.

Economic rationale for IB

The business case

One of the key arguments for adoption of IB models is the argument that the business case is strong. However, proof is hard to find and some studies are more into advocacy and promotion than providing actual evidence. A good example of an ‘inclusiveness bias’ is the GIZ initiated Business Call to Action (BCTA).⁶ Based upon their own research among businesses, BCTA claims that reasons why businesses have an interest in inclusive-

⁵ For more about Grameen Bank and their business model, see <https://grameenbank.org>.

⁶ See: www.businesscalltoaction.org.

ness are: (1) to overcome organisational barriers (to what change? Here we see the flawed assumption that the company has already chosen to become inclusive); (2) increase impact (the term is foreign to most companies, but what impact are we talking about? As we have seen, one can't assume that companies aim to increase development impact rather than making money); (3) gain competitive advantage;⁷ (4) maximise inclusive business value creation (for the stakeholders or the shareholders? it is assumed that the former are pivotal but this is not further substantiated by data, see Pelaez, 2019, p.7).

In another study by The Partnership Resource Centre (PRC) of the Erasmus University in Rotterdam, it is claimed that the business models for IB exist, citing Safaricom's M-Pesa, Community Diagnostic Centers (CDC) centres with Philips, and food security in Ethiopia with GUTS Agro Industry. However, these studies contain a qualitative description of the business models of two MNCs and one medium sized Ethiopian company that received funding from several international organisations. They don't include a quantitative financial and business analysis, which is crucial for smaller businesses with much less capital available, less access to government or donor funding and shorter time horizons for innovation and product/service development (Lijfering & Van Tulder, 2020; UNDP & Deloitte, 2016; and IFC, 2014). Typically, there is no attention to the opportunity costs of adopting an IB model versus 'traditional' models of doing business. Similarly, an IFC/Harvard Study focusing on scaling up of IB models, found that *expected* revenue growth was the main driver for businesses to develop IB models. The main development outcomes for the poor have been expanded economic opportunities (as suppliers, distributors or retailers) and improved access to goods and services (Jenkins, 2010). No financial analysis was included in the study.

Hence, questions remain about whether and how it can be financially viable for businesses to include the poor in their value chains. In fact, some studies seem to move in the opposite direction, pointing out that the business case for IB may be stronger if business owners look at: (1) adequate return on investment; (2) beneficiary farmers likely to be emergent, small scale, commercial farmers; (3) target consumers and producers with daily incomes of US\$ 3 who possess capital and assets but have limited market access (DCED 2021). According to Deloitte (2017), IBs improve their chances for success if they serve customers across a broader range of incomes, including but not limited to low income customers. The potential market may indeed be large as Prahalad and others have emphasised, but costs and risks are high as well. Because of the slow uptake of products or services in the BOP markets, due to demand side constraints such as lack of awareness and purchasing power, the low margin/high volume model that for example many consumer goods companies adopt, may not work. This would push the company to a higher margin model, a consumer market which already has awareness, or fail to scale.

⁷ IB may actually be a disadvantage if companies pay living wages and comply with environmental rules and regulations while the competitors do not, see Dellevoet/Jones on informal business practices in this volume.

In the literature one can find many references to the need to strengthen the business case through partnerships but even then, challenges remain. The international NGO Oxfam worked closely with Unilever in Vietnam and found that despite strong commitments by Unilever to improve working standards (especially wages), there remained a significant tension between commercial and labour requirements for suppliers, including smallholder farmers (Oxfam, 2016). In Africa, Unilever went even further and entered a partnership between farmers, government, donors (in this case the UK Department for International Development, DFID), and philanthropic investors such as the Gatsby and Wood Foundations to overcome the challenges of a tea greenfield development, developing a sustainable industry that puts the interests of local farmers and communities at the heart of its model. However, the case is very difficult to replicate, especially for MSMEs. It needs long-term, no-interest, patient capital alongside grant funding as seed capital, a reputable tea company with a long-term vision as the lead off-taker and capable partners to de-risk the smallholder investment and lead operational execution (NOSC 2020). In the exception lies the rule. Many other case studies have demonstrated the need for external donor financing and partnerships with local NGOs, which may be elusive for most MSMEs (IFC 2014, Deloitte 2017).

Tinsley and Agapitova (2018) looked at the IB models in the sectors of health, education, water and sanitation, energy and waste management and noted that in most cases, the business model remained weak, because of several reasons:

- 1) *Absence of conventional distribution chain.* Markets often lack the presence of distributors and distribution infrastructure such as warehouses, cold storage, logistics and transport infrastructure, and retail outlets. Narrow and/or poor quality roads are not able to accommodate standard delivery vehicles and retail shops are not big enough to take on lots of additional inventory.
- 2) *Fragmented and decentralised demand.* Consumer groups in these markets are heterogeneous. Demand is also fairly decentralised, in that there are no mechanisms to aggregate demand from many small customers (no equivalent to the superstore or online outlet) across regions and segments. There are cultures where it is also difficult for people (mainly women) to leave the home or village in order to procure goods and services that they need.
- 3) *Reverse logistics are crucial but difficult.* After-sales support is crucial for durables (e.g. water filters, pumps, solar home lighting kits, etc.) that tend to be costly purchases. However, it is challenging for manufacturers to provide product training, servicing and part replacement services in remote geographies. Indeed, when thinking about the poor, what is striking is their marginal existence and lack of access to resources and opportunities, and the development of personal capabilities. The difficulties in reaching people at the margins can be explained by a set of distances i.e. physical distances (remote and sparsely distributed settlements), social distances (no access to services, exclusion, discrimination) as well as technological and institutional infrastructure deficiencies (Von Braun, 2014).

- 4) *Irregular and unreliable cash flows.* Consumers are usually cash-poor and cash flows depend on external factors such as weather and harvest cycles. Consumers are unable to make single large payments and require financing assistance. This is a particular challenge faced by distributors of durable goods and means that distribution also needs to be combined with availability of end-consumer financing.
- 5) *Demand for basic services is latent.* While there is a clear need for basic services (water, sanitation, health, education and energy), it does not translate into demand. Converting this latent demand into real demand requires building mechanisms such as awareness-building programmes and free product trials into the distribution chain and often adapting the roles of sales and distribution staff.
- 6) *Demand is fairly elastic.* Cash-poor consumers are price-sensitive yet highly cautious to compromise on quality. This means that increased end-consumer prices to cover costs of decentralised distribution is not possible. At the same time, cutting costs through lower quality also doesn't work. Hence efficiencies in distribution systems are needed, but this is a major challenge. Distribution partnerships such as local sales agents or piggybacking on existing networks is the way forward, but these are a significant burden to manage as partner interests and incentives need to be aligned (Tinsley et al., pp. 354–361).

Another factor is the kind of product or service that is being offered. One idea is that enterprises, which are able to function effectively with an 'asset light' business model, will be better able to serve poorer customers. At a high level, asset light businesses have low marginal costs and up-front capital requirements (e.g. a mobile phone app). In contrast, 'asset-heavy' businesses carry a higher cost structure due to the need for physical presence, complex distribution channels, and a skilled labour force (e.g. a manufactured product). The more asset light a business, the lower its infrastructure, overhead, and distribution costs, and the more it ought to be able to offer a low price for its products and thus, reach customers with limited purchasing power. A second condition is that enterprises selling 'pull' products will be able to reach more deeply than those selling 'push' products. Highly valued products for which there is ready demand that can be used immediately with little risk are pull products (e.g. food and electricity). These are in contrast to 'push' products, which are goods and services with less obvious value or that provide uncertain benefits in the future (e.g. insurance, clean drinking water, and mosquito nets). Organisations selling pull products tend to have lower marketing and sales costs and thus, ought to be able to offer lower price points, again enabling deeper reach.

While it is important to consider and test whether or not asset light businesses or those selling pull products reach more deeply into the BOP, the reality is that much, if not most, critical development work necessarily entails asset-heavy operations, often delivering push products. Most of what the development organisations want to do, involves efforts such as providing access to health, classroom education, clean drinking water, basic sanitation, life-saving vaccines and medicines, safer cooking methods, and so forth. These are all goods and services that must typically be manufactured or

carried long distances, distributed through real property, delivered by skilled and expensive workers, sold via lengthy educational campaigns, and the like. It stands to reason then that enterprises with asset-heavy or push products face quite challenging conditions to reach deeply into the BOP (Deloitte 2017).

Due to the challenges as described above, companies take five years or more to implement effective business models and turn BOP initiatives into commercially sustainable operations (Byiers, 2015). Companies often have to intervene to deal with a number of significant market imperfections such as supply chain deficiencies, natural and environmental problems, as well as a lack of a sufficiently educated and skilled workforce. Indeed, one of the key questions is whether IBs, in view of these challenges, should simply focus on direct rather than a systemic, more long-term impact on poor people's living conditions in places where they operate (DCED, 2021). Such a timeline is actually quite unattractive to many MSMEs in often volatile, emerging markets.

The functioning of the market

The first thing to realise is that, for an entrepreneur, time is money. MSMEs face significant capacity constraints to deal with labour intensive and complex issues within the company and in the direct business environment, including lack of skilled workers and finance. Most MSMEs are very small, where the owner and manager are the same and organisational structures, delegation and specialisation are absent. Business is intense amidst high levels of uncertainty and working days of 12–14 hours are no exception. As we have seen, IB and social enterprises have a social mission, where they constantly look for alliances with government, NGOs and businesses, sourcing funding wherever they may be found, often through government or aid donors (Nicholls, 2013, p. 11–12). Working with the poor requires interventions at multiple levels including training, providing inputs or tools and credit. This is a very complex and labour-intensive process that few MSME managers can handle on top of their day-to-day business operation (Byiers, 2015, p.12).

Many studies have shown that by far most MSMEs in emerging markets are established out of necessity, as jobs are scarce, and with an explicit financial motive to sustain the household and possibly make money (see for example the World Bank Enterprise Surveys [WEBS]; Scarborough, 2016; Petty, 2012). Other motivations include social status and independence, but the main motive is a 'for profit' enterprise, despite the fact that many entrepreneurs will state that they also consider social and environmental issues in business decisions (GERA, 2022; Saldinger, 2022).⁸ In a Citi-

⁸ Much also depends on how the question is asked. Most entrepreneurs would most likely translate 'social' as family or own community and 'environmental' as 'no pollution' but as we have seen, the concept of inclusiveness goes much further and includes marginalised and vulnerable groups with whom the entrepreneur has no direct relationship. Also see point 4 on socio-cultural constraints.

bank survey, 95% of respondents cited the business case rationale as the top motivation to engage in IB (Chakravorti, 2014, p. 19). On top of that, entrepreneurs have a strong sense of ownership and pride over their business and will not easily accept messages that the business model needs to be changed.⁹ Social entrepreneurs can be stubborn too, but for different reasons; they are often highly political advocates for social change (Nicholls, 2013, p. 22). Figure 1 below is an illustration of this conservative business attitude among entrepreneurs in a developed country where government, CSO and media campaigns continuously call for more social and sustainable business practices. When asked in 2020 about their motivations to increase investment in 'responsible investment products', almost 60% of French businesses said they had no plans to do so. It may be assumed that in most developing countries, the number is higher since the campaigns mentioned above, are less frequent or even absent, while entrepreneurs may be less interested as they try to survive in a market characterised by social divisions, intense competition, external shocks (e.g. Covid-19, inflation, conflict) and government neglect (Meagher, 2010, p. 131; Morris & Kuratko, 2020, pp. 36–49).

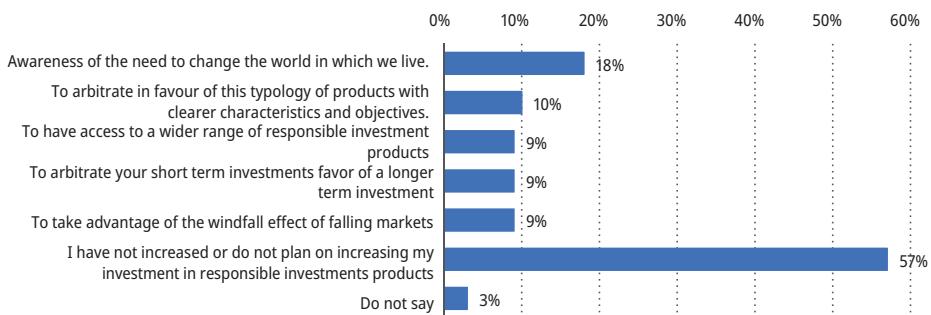


Figure 1: French businesses motivations to invest in RI products (Source: Statista, 2020).

As we have seen, a clear cut legal, organisational and operational business model for an IB doesn't exist (Nicholls, 2013). This creates significant technical problems for businesses who wish to change their business model (Chakravorti, 2014; Deloitte, 2017; Pelaez, 2019). Top barriers include:

- *Absence of common strategic motivation and vocabulary* among various groups of stakeholders and decision-makers. Whereas NGOs, consultants and academics use language of inclusive markets, sustainability and/or shared value, businesses rely on the language of commercial viability (e.g. net present value, break-even levels,

⁹ In 2017, when André was working for an international NGO, a female business owner in Kenya welcomed him by saying: 'are you here to tell me how to run my business?' This attitude and sense of ownership of local business people has been observed by many impact investors and PE firms that we spoke to in the past years.

return on investment), strategic alignment, scalability, good will and brand building. Vague terms used by non-profits such as 'bottom of the pyramid' and 'inclusiveness' may actually deter businesses from engagement in these kinds of ventures.

- *Absence of an organisational home.* Businesses haven't figured out how inclusive and sustainable business practices need to be incorporated in the organisational set-up; separate legal entity, special business unit inside the corporation, division at the corporate centre? Building a viable, scalable practice requires different time horizons, performance metrics and capabilities that might not be present in the organisation. How to make investment decisions and tie IB to the P&L, how to set targets and compensate and reward sustainable and inclusive managers?
- *Difficulties in measuring impact.* In the absence of credible, widely acceptable measures and indices of development on key elements of the venture, organisations fail to implement IB and allocate budgets accordingly. The risk of a 'bottomless pit' is real as even the most hailed examples of IB such as Safaricom's M-Pesa, couldn't have been launched without financial support from DFID and the deep pockets of the parent company Vodacom.

Despite progress on the development of quantitative performance indicators for social enterprises such as the social return on investment (SROI) model, social value creation will always be at least partly contingent on subjective and negotiated judgements across stakeholders (Nicholls 2013 p. 19). As private, for-profit businesses in emerging markets are often regarded with great suspicion and mistrust, as we have noticed throughout our careers, this is an important reason why businesses would rather not open up and engage with other stakeholders, since they fear to be put on the defensive.

The market also doesn't work in favour of IB at the meso-level. The rise of global value chains (GVCs) actually has led to the opposite of inclusiveness; it favoured the concentration of decision-making and economic gains for the small number of MNCs that are responsible for 80% of global intrafirm trade (Van Dijk & Trienekens, 2012). It strengthened the position of highly mobile capital vis à vis governments and labour, creating opportunities to minimise taxes, exploit cheaper labour and weaker environmental standards (Kohler & Cripps, 2018). This is partly due to the advent of free trade agreements (FTAs) and bilateral investment treaties (BITs) that grew exponentially since the 1990s, which contained many so-called 'WTO-plus' provisions covering intellectual property rights, customs regulations, free movement of capital, antidumping measures, technical barriers to trade, sanitary and phyto-sanitary standards. Other FTAs would also include liberalising financial services or public procurement, further reducing developing countries policy space. By contrast, policy areas of great importance for social actors with much less influence on trade negotiations, such as the vulnerable and poorest segments of society, were barely included or formulated as a set of principles rather than rules. This included respect for labour rights, social and environmental protection and corporate tax avoidance (Kohler & Cripps, 2018). Indeed, this development is part of wider shared concerns about the north-south trade models which favour rich nations

more than developing countries (Todaro & Smith, 2015, p. 620). Non-equity modes of international production and trade (NEMs) have also been at the forefront of the free trade debate. NEMs can yield substantial development benefits such as job creation and transfer of know-how, but may also pose significant risks. Employment in low value added, contract manufacturing can be highly cyclical and easily displaced and NEMs may be used to circumvent social and environmental standards (UNCTAD, 2011; Scholte, 2000).

Apart from government and trade regulations, markets are further complicated by voluntary standards for products and services which have led to further concentration of local suppliers in global value chains (GVCs). There are at least 458 eco-labels in 197 countries and 25 industries. These include ISO 14001 on environmental management or SAI SA8000 standards on labour conditions. Companies also join standard setting initiatives like the Clean Clothes Campaign or the Ethical Trade Initiative and adapt their production processes to comply with ethical and sustainable labels like Fair Trade, UTZ Certificate and Demeter Organic. Value adding in food production focuses particularly on safety and quality of the product, which can be intrinsic i.e. colour, taste, tenderness, and extrinsic such as organic or fair-trade production. To safeguard quality and safety of end products, since the 1990s, western retailers have defined various standards for the production and processing of food, such as British Retail Consortium (BRC), Global-GAP, Safe Quality Food (SQF). These standards are now applied by importers, wholesalers and major supermarkets and retailers to coordinate and improve supply chain activities and control food quality and safety (Van Dijk & Trienekens, 2012; Nicholls, 2013). For producers to get access to modern retail markets, certification is conditional upon meeting these standards. However, because of these standards, access to these markets for small businesses is difficult if not impossible (Van Dijk & Trienekens, 2012; Lee, 2012). Compliance with standards implies high certification costs (for producers) and high monitoring costs (for buyers). MNCs such as Unilever and Nescafe are trying to promote inclusion of smallholders in their supply chain through capacity development projects, often with the support of donors, but these projects are limited in number and scale.

Van Dijk and Trienekens (2012) point to the disparity between global economic integration and the extent to which countries and people actually benefit from globalisation. This is partly due to what is called 'inappropriate insertion' of local businesses and farmers in GVCs. This is the case when a producer specialises in particular links in the value chain (tea, coffee, cotton, fresh vegetables) that are subject to intense competition, resulting in declining terms of trade. This may lead to a 'race to the bottom' locking farmers into ever greater competition and reducing incomes. This 'immiserising growth' (reminiscent of Marx's 'Verelendungs' theory) can be characterised by increasing economic activity (implying more output and employment) but falling economic returns. The farmers that can't keep up, have only one option left: exit the value chain and fall back upon alternative crops or subsistence farming.

This may even be true for the fair-trade movement. Narlikar and Kim (2013) argue that fair trade can't replace more equitable free trade agreements under the WTO. The

creation of a higher value niche market for fair trade labelled products has favoured the few farmer organisations that can afford the fair trade certification and necessary investments in the production cycle but left many behind that now operate in the regular, secondary market at lower prices (Narlikar & Kim, 2013).

There is a strong tension between 'going deep' of ticking all the boxes on IB and 'going wide' i.e. going to scale. As we have seen, targeting the BOP can mean lower revenue per customer, accepting certain risks and/or incurring higher operational costs than in more developed or higher income markets, which are often in the urban areas. As a result, IB often need to go to scale, for example by serving a large, rural BOP customer base, to make it a viable business opportunity (IBAN, 2021).

Including smallholder farmers in value chains, particularly for the exports of cash crops such as coffee, tea, cocoa, and fresh fruits is a major challenge for businesses. These poor farmers often cultivate subsistence crops, mixed with a bit of cash crops and hold some livestock on very small, fragmented plots of land with little or no input of seeds, fertilisers or pesticides. In SSA only 4% of the farmland is irrigated (Todaro & Smith, 2015, pp. 456–458). They also lack the know-how and discipline to maintain strict quality and food safety standards, or the capital to invest in technologies such as soil steaming, hydroponics or poly bags that prevent soil borne diseases affecting the crops. The response of businesses, government and donors has been for decades to improve the functioning of the value chain by investing in training and extension services, providing small amounts of suppliers credit and micro-finance, setting up warehouses and warehouse receipt systems, subsidising inputs and other measures at the policy and macro-economic levels. However, in Sub-Saharan Africa and some parts of Asia and Latin America, none of these measures has led to a significant and structural rise in productivity and output (Lee, 2012; Todaro & Smith, 2015, pp. 462–476). Many businesses experience challenges in efficiently aggregating and standardising fragmented and unreliable suppliers and face difficulties in measuring and monetising impact. Inclusiveness of smallholder farmers, who live and work on most of the available farmland, seems to be driven more by necessity than by choice. Van Dijk and Trienekens (2012) divide the market in three basic subsystems:

- The A-system, with a large number of actors, a high share of agricultural production volume but little value generated.
- The B-system, with fewer small to medium sized producers, organised in cooperatives and/or linked in subcontracting arrangements, catering for demand in the urban centres and the region and sometimes limited exports. Volumes are smaller but value is higher.
- The C-system which is completely focused on exports, aiming for economies of scale and including FDI. Export chains are more integrated and shorter distances (often close to the harbour or airport). Volumes are smaller than in the other systems and producers involved are more limited, but the value added is relatively high.

Setting product standards and strict quality assurance also means that fewer MSMEs can benefit from government programmes such as Black Economic Empowerment (BEE). For example, a study on South Africa's energy company ESKOM, found out that a very low percentage of MSMEs and Black women owned suppliers applying for listing in the database were qualified to supply ESKOM and that the same suppliers tended to win contracts all the time (Langenhoven, 2005). Indeed, one of the main criticisms of BEE is that it has created an elite group of politically connected Black South Africans while the majority of disadvantaged people receive little benefit (Ponte & Roberts, 2008; also Vilakazi & Bosiu about BEE in Andreoni et al., 2021).

Another major factor that influences inclusiveness and businesses in general is the business environment. Factor conditions relate to the nation's endowment with resources such as physical and human knowledge, technology, and infrastructure. These factors enable or constrain value chain upgrading. For most emerging markets, especially LDCs, typical constraints faced by companies include a lack of specialised skills and difficult access to technology, inputs, market, information, credit, and extension services, besides issues such as corruption and insecurity. Apart from these resources, the presence of an adequate distribution and communication infrastructure is a basic condition for value chain development and upgrading (Van Dijk & Trienekens, 2012). Suffice to say that the business environment is often not supportive of MSMEs in many emerging economies, and this further reduces their ability and propensity to transform their business model to more inclusiveness.

Given all these risks and uncertainties, businesses still hold back on adopting IB models. Rather than seeing inclusiveness as a business opportunity, US businesses seem to invest in inclusiveness and sustainability as a way of risk management. In a US survey for the Citibank group cited above, reasons for investing in sustainable and inclusive business practices were; 'maintaining competitive position' followed by 'avoiding reputational damage', 'avoiding future supply disruptions', 'capturing revenues and building loyalty', 'avoiding regulatory disruption' and 'responding to demands from employees or shareholders' (Chakravorti, 2014, p. 3).

The socio-cultural factor regarding IB

One of the key constraints to adoption of IB models is the mindset and behaviour of businesses (WBCSD, 2013). Naturally, we are all products of our socio-cultural environment which has a strong influence on our norms, values and behaviour. Sociologists like Robert Merton and others have pointed to the human tendency to discriminate. Often racial and ethnic prejudice lead to discrimination against the subordinate, racial and ethnic groups in a given society. Discrimination in this context refers to the arbitrary denial of rights, privileges, and opportunities to members of these groups. The use of the word *arbitrary* emphasises that these groups are being treated un-

equally not because of their lack of merit but because of their race and ethnicity (Merton, 1949; Devah & Shepherd, 2008).

A well known example of discrimination and exclusion is the continued existence of the caste system in India. In 2015, a comprehensive assessment was done of the broad issues that underpin social exclusion in India. The assessment posited the scheduled castes (SCs) and scheduled tribes (STs) vis-à-vis their upper-caste Hindu peers and established how caste is a lived reality in everyday life in modern India. It explored areas where caste and religious exclusion are most visible, such as human development, inequality, poverty, educational attainments, child malnutrition, health, employment, wages, gender, and access to public goods. The study concluded that in each of these sectors, the performance of upper-caste Hindu households was far better compared to that from the SC, ST, and Muslim households (Borooh et al., 2015; also Von Braun, 2014, p. 205).

One must always be careful in being too deterministic on social and cultural differences between people, but there are indications that socio-cultural constraints to inclusiveness play a role in most parts of the world. This is well illustrated, for example, by the World Values Survey that places most emerging economies in the equation between traditional and survival values, which are characterised by strong emphasis on the family, social conformity, deference to authority and high levels of national pride as well as existential insecurity and rigid intellectual and social constraints on human autonomy. They feel threatened by foreigners, ethnic diversity and cultural change, which has an effect on inclusiveness (WVS, 2021).

As we can see in Figure 2 below, inclusiveness can be found in various degrees among both advanced and emerging economies. Among African countries, Tanzania, Ghana and Namibia are seen as among the most high-ranking in terms of achieving inclusiveness, based on the WEF 2018 Inclusive Development index. By contrast, at the bottom of the scale are Egypt, Nigeria and South Africa.

To explain these differences in social and cultural barriers to IB, we can also use the Hofstede country comparison index.¹⁰ Countries in Africa most noted for inclusivity are typically high power-distant and low on individualism/high on collectivism but are also mostly feminine (rather than masculine) cultures – as discussed by Hofstede. In his country comparison index, Tanzania, Ghana and Namibia are in some contrast with Egypt, Nigeria and South Africa – especially on the masculinity/femininity divide. These first three countries – also higher up the WEF rankings – are noted for a lack of extreme diversity, more linguistic and ethnic harmony, a longer experience of self-determination, some natural wealth and a degree of religious unity. Mostly, they have not featured a settler economy and tradition – except for Namibia, which is nevertheless known for its political and economic stability, and safe living conditions. These African countries at the top of the WEF index, have been championing IB in terms of encouraging private sector development and have been able to attract large Western businesses – to a certain extent.

¹⁰ see <https://www.hofstede-insights.com/fi/product/compare-countries/>.

The Inglehart-Welzel World Cultural Map (2020)

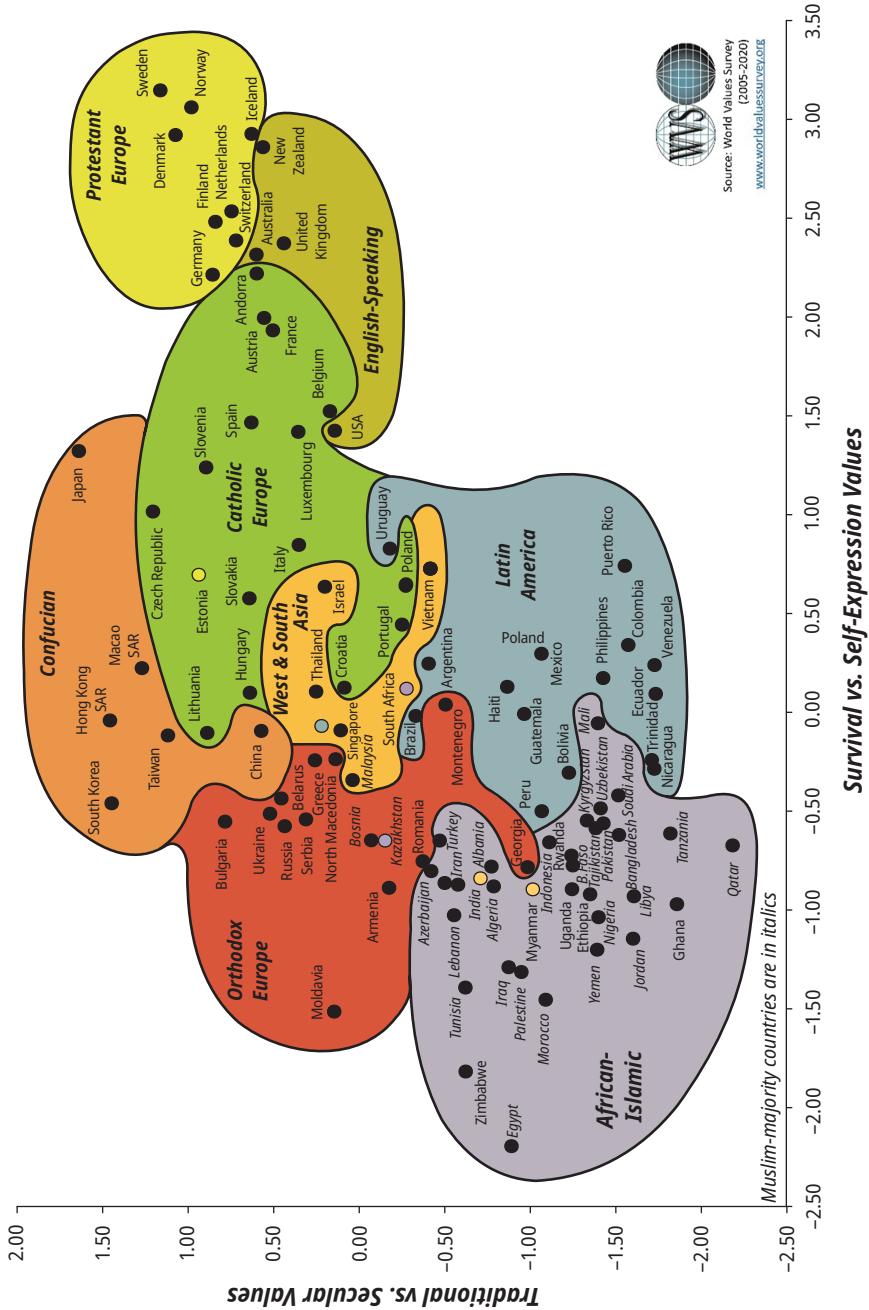


Figure 2: World Cultural Map (Source: World Values Survey).

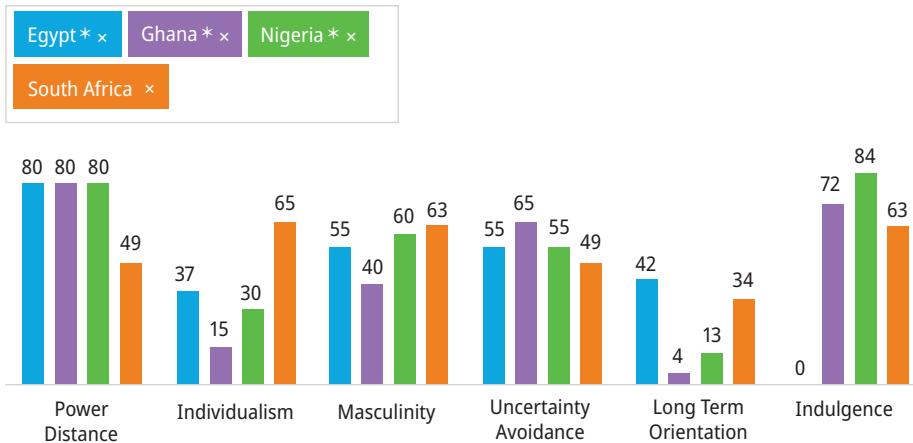


Figure 3: Hofstede country comparison index 2021 for 4 selected countries (Source: Hofstede Insights).

Looking in detail at the dimensions of the Hofstede country comparison index (see Figure 3) — high *power distance* is a feature of most of these countries, although it seems to have been diluted by colonial influences and population diversity. However, this would appear to be more positive in its results in the case of Namibia. Similar to Namibia, South Africa is low power-distant for an African country, but this may be a feature of diversity — and it's not clear at first which aspects of the population are included in Hofstede's sample (on closer inspection of the Hofstede commentary, it would seem that his statistics/calculations relate only to the white population). Overall, high power distant behaviours can be related to a lack of inclusivity in a workplace, and can be seen as encouraging cliques, a strong old boy network, and the exclusion of out-groups. Minorities and out-group members will hesitate to challenge leaders in high power-distant environments, and (arguably even more significantly) will tolerate exclusive behaviours as a privilege of the leader.

Nearly all of our African examples are seen as high power-distant, with Ghana, Egypt and Nigeria as exceptionally so — scoring 80 on the Hofstede Index. Egypt in particular has become intolerant of unorthodoxy and somewhat normative — and very much restrained by social norms. Tanzania was close with 70. Even Namibia's score of 65 and South Africa's white's population score of only 49 are still on the high side in Hofstede's interpretation. People in these countries accept existing hierarchies without question, considering that there will always be inherent inequalities being seen as 'that's just a fact of life', and that the centralisation of power is somehow within the country's DNA. Ideal bosses are seen as benevolent autocrats (according to the Hofstede website). In Nigeria in particular, managers are expected to be decisive and assertive — with an emphasis on equity, competition and performance. In South Africa, hiring and promotion is expected to be meritocratic — but this has been increasingly open to interpretation, with a tendency to have no more rules than necessary.

Collectivism is all about a country's tendency to exhibit a long-term commitment to a member group — where loyalty to one's group overrides other societal rules and regulations. Promotion at work can depend on being a member of the in-group — and as explained below, less masculine and more feminine societies work to live (rather than living to work), favouring consensus, valuing equality and espousing solidarity with others supporting IB. This may be one of the most important indicators of inclusivity — and it is also a major feature of the Netherlands — a top scorer on the feminine index. There's a kind of morality about looking after close relatives (especially the vulnerable) which is very strong in most of Africa and many other emerging markets. Overall, the countries at the bottom of the WEF index in Africa are more individualistic than those scoring much more highly on collectivism. Tanzania, Ghana and Namibia are more collectivist and less individualist than Egypt, Nigeria and South Africa.

Higher than usual *individualism* is very much a feature of Namibia, Egypt and South Africa — which may relate to German/Dutch/British influences historically — and especially because the last-named country's scores only relate to the white population. It might be thought that higher individualism could be related to inclusivity, given the acceptance in highly-individualistic societies of people being different — but the history of racial divide and separation in South Africa would seem to have fostered a tendency towards exclusivity, which local evidence suggests may still exist to a large degree. Sometimes the exclusion is of whites by Blacks — anecdotal evidence suggests that there is a good deal of white resentment here, and fear about the integrity of their property rights and safety in an increasingly Black-supported environment. However, Hofstede looked only at data collection amongst the white population which might help explain the radical differences between South Africa's Hofstede scores and those of other countries, suggesting an extreme difference with the Black population.

Most African countries have collectivist cultures, and Ghana is an extreme case here, which might be a factor in its relatively high inclusivity ranking for Africa. Certainly, religious tolerance and a lack of a divide here are remarkable in Ghana. The mix of Christians and Moslems in workplaces and educational establishments in Ghana is impressive, and especially their empathy with each other's religious observances, for example. It was a unique experience for one of our authors (Stephanie) whilst teaching classes in Ghana that every class opened with Christian prayers, except on Friday when a Moslem member of the class was given this task, and all joined in (anecdotal evidence).

On the masculinity rating, most African countries appear low, and the need for expensive consumer products as evidence of achievement would seem to be features of less inclusive countries. By contrast, higher femininity scores would seem to be more indicative of inclusivity — featuring values such as work-life balance, care of the family, support for the disadvantaged, etc. Thus, it may be argued that Tanzania, Ghana and Namibia are characterised as indeed more inclusive — through being more feminine. In Tanzania, the focus would seem to be more on well-being, less so on status, and where effective managers are defined as those who are supportive of decision-making being

less centralised. Ghana is known for extremely low long-term orientation, and maximising enjoyment and fun in the meantime. By comparison, especially Nigeria and South Africa are seen as espousing more masculine values – with success defined in terms of external trappings of wealth (and therefore success). Especially in Nigeria (apparently where more top-branded champagne is drunk than any other country!) signs of wealth are sought-after and prized, and exclusivity would be interpreted positively. Arriving in a very smart car with a driver makes a positive impression. Cycling or walking doesn't. Classy, branded clothes and accessories are essential for a person to be taken seriously. By contrast, in feminine cultures, work-life balance and being caring and respectful of personal needs are widely recognised as positive. This Hofstede dimension would seem to be amongst the most useful in predicting/being related to the Inclusivity Index.

Many African countries are known to be high on *Uncertainty Avoiding* — especially Ghana, but Tanzania and Namibia are less so here, which can include more risk-taking behaviours, and thus more assertiveness and demand for inclusion. Tanzania has more respect for tradition and absolute truths, but is still primarily short-term oriented. South Africa is fairly low, but the element of the population being surveyed here were the whites — so this is not typical. Egypt is especially high on the UAI, but this may be related to religious differences with the other African countries in this sample — and colonial influences.

Most African countries lack a *Long-Term Orientation*, but Tanzania and Namibia are higher than most, although South Africa's and Egypt's scores are similar here. Ghana, Egypt and Nigeria are mostly short-term thinking — Ghana exceptionally so, with a propensity for having fun and with a positive and optimistic outlook, and prizes leisure time. So, it's difficult to see a pattern here, and the same can be said for *indulgence and restraint*. Egypt is very low, especially characterised by cynicism and pessimism, and Nigeria is very high, and Ghana higher than most African countries, perhaps associated with its short-term orientation. Tanzania (like Namibia) is fairly restrained, and apart from Egypt (which might be due to poverty and rampant inflation), is the lowest of the countries in our sample in terms of being indulgent. Overall, it seems fair to say that of the Hofstede constructs, Indulgence and Masculinity might be related to less inclusivity.

It could be suggested that the profile of an inclusive country — low power-distance, medium to low individualism, low masculinity, medium to low uncertainty avoidance, medium to high long-term orientation and medium indulgence/restraint — could be a prediction/explanation for the African context, but we need more detail and examples here. Of the many cross-cultural management authors (such as Fons Trompenaars, Erin Meyer and the contributors to the GLOBE project) there is relatively little coverage of cultural differences within Africa, and how these might be used to explain a tendency towards inclusivity (Trompenaars, 1997).

Overall, the three countries most highly-rated for inclusivity in Africa — Tanzania, Ghana and Namibia — have certain cultural aspects in common. In particular, they are low on masculinity — which would seem to be the key towards understand-

ing a tendency towards inclusivity. Being obsessed with masculine values; status symbols of success, espousing consumerism and one-upmanship — is not congruent with being inclusive. Supporting feminine values; of nurturing, caring and helping the vulnerable — can be seen as much more closely linked to inclusivity. Meanwhile, high power-distance, collectivism, fairly short-term thinking and medium levels of uncertainty-avoidance would seem to characterise many of these countries. Indulgence and restraint is extremely variable in our sample. This construct does not seem to have a bearing on levels of inclusivity.

A good example of how deeply rooted this tendency is to exclude people from economic networks of business activity, is provided by Kate Meagher in her study of the Nigerian informal shoe and garments clusters. The dramatic restructuring of enterprise networks in response to liberal economic reforms, doesn't generate more transparent or inclusive forms of business organisation. Instead, it has reinforced identity based networks based upon ethnicity and non-economic loyalties in the struggle to maximise access to scarce resources (Meagher, 2010). One of the surprising findings is that 'networks of survival', where these resources are even less available, seem to be more open and inclusive than the 'networks of accumulation', when growth and capital formation are actually happening and resources are more abundantly available. Success leads to further exclusion, rather than sharing and inclusiveness (Meagher, 2010, p. 121–139). This is in line with Chabal who described the exclusive nature of what he calls 'the politics of belonging' in Africa where those who don't belong to the dominant community in power, are caught in a fierce competition for resources which often degenerates into conflict (Chabal, 2009). In that sense, exclusion is not typical for Africa at all and seems closely related to the eternal struggle between the haves and have-nots as recently highlighted in the seminal study regarding inequality by Thomas Piketty (Piketty, 2014). In Latin America and Asia, the inequality also seems to have a racial and ethnic dimension as the poor and marginalised are disproportionately found among indigenous peoples (Amnesty, not dated). Hence, exclusiveness seems to be common in many parts of the world and is not only an economic issue, but also deeply rooted in history and society.

Governments are trying to nudge and sometimes force businesses to invest in sustainable and inclusive practices. For example, India's Companies Act of 2013 requires that 2% of average net profits must go towards CSR activities like promoting poverty reduction, education, health, environmental sustainability, gender equality and vocational skills development. However, most businesses see these provisions as just another form of taxes, not as a compelling case to change their business model. A report of the Donor Committee on Enterprise Development (DCED, 2016), also noted that mandatory inclusion rules, for example through local sourcing requirements, seems to be counterproductive as it actually discourages the private sector to work with suppliers that can't meet their requirements and raises the cost of doing business. Market based solutions such as capacity building or clearly defined public procurement may be more effective (Heinrich-Fernandes, 2016). It would take too much space to dwell on the effectiveness of government legislative, tax and policy interventions to pro-

mote IB, but we would just like to make the point that there are pro's and con's to the effectiveness of such interventions.

NGOs and philanthropies also provide grants to induce local businesses in emerging markets to become more inclusive and sustainable. However, grant-making is hampered by a number of administrative constraints such as; (a) the demand for full accountability and transparency which few grantees can provide, (b) aiming for significant development impact, forcing grantees to overpromise (and under deliver); and (c) lengthy and intensive vetting, application and reporting procedures. The result is that grants are often allocated to a rather narrow pool of organisations and individuals that are well connected to the grant makers and 'talk the talk' (Dellevoet, 2020; IPP, 2021).

IB adoption

In view of the economic and socio-cultural constraints as described above, it is going to be very challenging to get IB models mainstreamed among MSMEs in emerging markets.¹¹ However, this doesn't have to mean that progress isn't possible. The landscape of IB is very diverse. You may have elements of IB within a commercial company, CSR, shared value and social enterprises and each is organised and financed differently. For public or non-governmental organisations, the art is to make commercial enterprises more social and social enterprises more commercial i.e. financially sustainable.

Based upon the previous paragraphs, we can perhaps accept that most small businesses or MSMEs are primarily driven by commercial objectives, while a number of them are also pursuing social objectives. This is in contrast to those enterprises that follow mostly social objectives and may be either NGOs or social enterprises. IB find themselves somewhere in between those two worlds as we saw in Table 2. In view of their limited financial basis, management capacity and socio-cultural behaviour, it is imperative for MSMEs that the business case is very clear and concrete, containing not only potential benefits of IB, but also its costs and risks (Messner, 2013).

To provide further depth, we can also apply the 'accountability ceiling' (Schoneveld, 2020; Taplin et al., 2013), which is often used in development programming around theories of change. However, this is also useful to assess how business can change and become more inclusive. Within the behavioural sciences, the accountability ceiling is typically placed at the juncture between an organisation's sphere of control and the sphere of influence, while the sphere of concern is considered a given, see Figure 4 below. Only outcomes arising from within an organisation's sphere of control and influence are those it needs to realistically monitor and take credit for (Tsui et al., 2014; Schoneveld, 2020).

¹¹ For a number of insightful articles regarding the feasibility of inclusiveness, see Vice Versa Magazine, 'Include Special', Amsterdam, December 2018, available at: www.viceversaonline.nl.

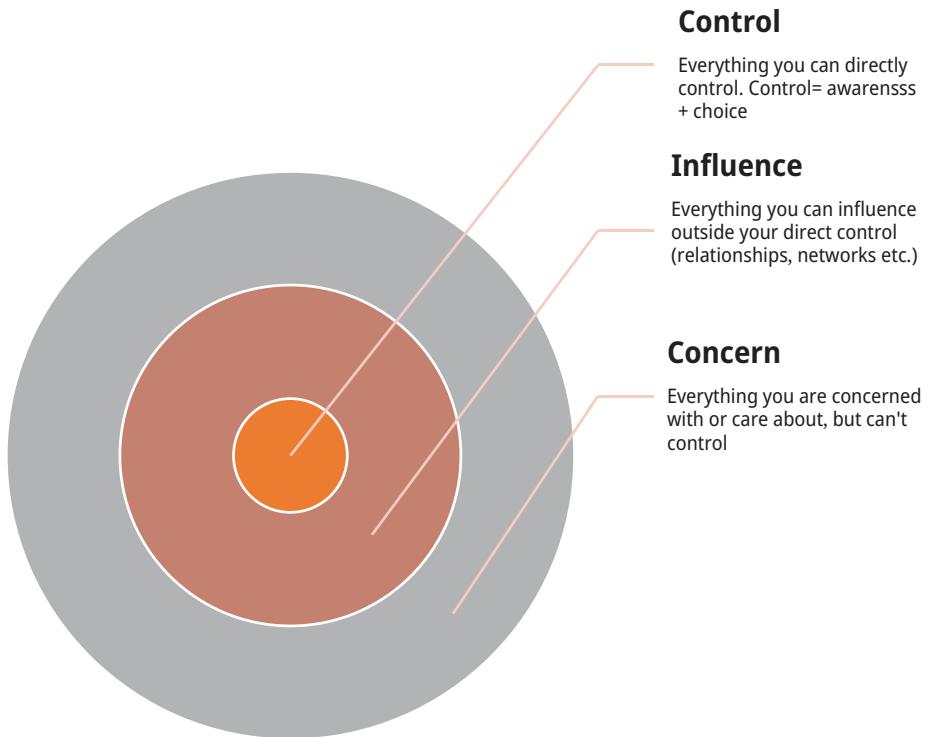


Figure 4: Business accountability and inclusiveness (Tsui et al. 2014).

What does this mean in practice? As we saw above, the concept of IB is not well defined and the business case is not sufficiently proven. Hence, what constitutes inclusiveness for a small business, needs to be very concrete and practical, based upon a predominantly financial cost-benefit analysis in the short to medium-term. Table 3 below depicts concrete elements of such an approach to IB.

When we look closer at the sphere of control in Table 3, we can see that it is much more concrete and based upon decades old, proven technologies and business practices, which can also be measured through familiar tools such as the lifecycle analysis (LCA),¹² which looks at energy consumption, water consumption and amount of primary resources used, and Cradle to Cradle (C2C) that also looks at recycling opportunities.¹³ Most small business owners have probably already learned about these technologies and may be interested in investing in them, provided they are not too

¹² See for more information on LCA: <https://www.wur.nl/en/research-results/research-institutes/economic-research/research-topics-wecr/improving-sustainability/our-tools-for-sustainable-management/life-cycle-assessment.htm>.

¹³ See for more on C2C: https://knowledge4policy.ec.europa.eu/glossary-item/cradle-cradle_en.

Table 3: Examples of IB within the three spheres (Source: Dellevoet & Jones, 2022).

Sphere	Elements of inclusiveness
Control	Environmental (in the sense of natural environment) <ul style="list-style-type: none"> <li data-bbox="344 319 862 346">– waste treatment, prevention of pollution and recycling <li data-bbox="344 346 563 373">– water conservation <li data-bbox="344 373 884 401">– renewable energy and reduction of energy consumption <li data-bbox="344 401 1017 428">– local infrastructure (land clearing, feeder roads, extension of power lines) <li data-bbox="344 428 563 455">– forest conservation <li data-bbox="344 455 743 482">– soil fertility and grassland management <li data-bbox="344 482 592 510">– preserving biodiversity
	Social <ul style="list-style-type: none"> <li data-bbox="344 555 721 582">– Diversity and inclusion in the company <li data-bbox="344 582 588 609">– Positive discrimination <li data-bbox="344 609 884 637">– Sourcing from local suppliers that are most marginalised <li data-bbox="344 637 756 664">– Occupational health and safety standards
Influence	Environmental <ul style="list-style-type: none"> <li data-bbox="344 718 949 745">– Certification and adherence to sustainability standards (FSC etc.) <li data-bbox="344 745 991 791">– Efficiency and reduction of carbon footprint in transport and logistics management <li data-bbox="344 791 691 818">– Reduction of waste, including food
	Social <ul style="list-style-type: none"> <li data-bbox="344 873 927 900">– Training and organisation of smallholder farmers and workers <li data-bbox="344 900 1051 945">– Mediation for or provision of services such as inputs on credit, warehousing, finance and insurance for suppliers <li data-bbox="344 945 730 972">– Fair and minimum prices for producers
Concern	Environmental (in the general sense of business environment) <ul style="list-style-type: none"> <li data-bbox="344 1036 528 1063">– Climate change <li data-bbox="344 1063 871 1090">– Depletion of the commons (soils, water, natural forests) <li data-bbox="344 1090 541 1118">– Economic growth
	Social <ul style="list-style-type: none"> <li data-bbox="344 1163 460 1190">– Poverty <li data-bbox="344 1190 579 1217">– Civil unrest and crime <li data-bbox="344 1217 511 1245">– Food security <li data-bbox="344 1245 576 1272">– Health and education

expensive and the return on investment is guaranteed within 2–3 years. Moreover, when it comes to sustainable technologies such as renewable energy, many suppliers can do the cost-benefit analysis for the customer, to reduce uncertainty, which is now common in the Netherlands for example.

The GIIN developed the IRIS metrics system which offer many useful M&E indicators for every sector of interest to impact investors.¹⁴ At the social level, there are HR

¹⁴ See: <https://iris.thegiin.org/metrics>.

management tools to analyse and take action when it comes, for example, to inclusion and diversity in the company. Moreover, these type of practical environmental and social measures are often promoted by government and donors through various voluntary (tax holidays or rebates, subsidies) and involuntary incentives (penalties). Hence, at this level, there is an existing ecosystem that can support businesses to take action on IB.

Conclusion

In this paper, we took a deep dive into the concept of IB and found that no agreed definition exists. One reason is that the concept is constantly being re-examined and refined and more and more criteria and characteristics are added, including care for the environment and welfare of the poorest. Public (aid agencies) and private financers (impact investors) further fuelled the debate. In the absence of a common definition, we have tried to position IB among a wide-ranging landscape of basic business models that could be considered more or less ‘inclusive’.

In the second part of the paper, we examined key economic and socio-cultural issues that provide the rationale for IB. We focused on the business case for IB and found that the scientific evidence was rather poor. We then looked at the actual functioning of the market and found that, contrary to what the development sector wishes to believe, markets are more inclined to exclude large groups of farmers and clients. We found further evidence for this exclusion in socio-cultural factors such as ethnic divisions and the general inclination of people to discriminate.

In the third and last part of the paper, we turned our attention to a possible alternative, more pragmatic and feasible model of IB. A model that considers a business’ span of control and available resources, further illustrated in an overview of various elements of inclusiveness that fit this model.

As we have demonstrated, the concept of IB is not very well defined and the business case is not proven, especially when one looks at the financial aspects, which makes it difficult for MSMEs to translate IB models into fundamental choices regarding markets, finance, and operations. The fact remains that adopting IB models is costly and risky and the rationale for IB seems predominately based upon considerations of CSR, where a business feels that it needs to be seen as caring about the community of which it is part. However, this may be constrained by socio-cultural factors, such as ethnicity and gender that actually lead to many forms of exclusion, as any advocacy organisation for equal rights and justice in rich and poor countries, can confirm.

The progressive development of the concept of IB, as exemplified by the growth of the Fair-Trade Movement and Social Enterprises, may lead to further strict definitions and criteria, the latest variance being ‘Green Growth’, from what we hear in the development community. However, as we have argued, this process may actually pro-

duce the opposite result of what is intended; more and more farmer organisations and local MSMEs, not being able or willing to comply with these criteria and therefore being excluded from financing and support. In such a scenario, IB models would remain the domain of the few, pure believers.

Alternatively, one can choose a more lenient approach in which the IB model is interpreted as any business activity that includes the poor as producers or consumers. This seems to be the pragmatic approach of some aid donors. Given this general description, any business activity that partially or fully targets the rural and urban poor, could be considered as compliant with IB. As we have seen, many local, small businesses who source from farmers or offer medicines, low cost meals at the roadside, transport services, water supply, solar power or fuel for household lights, charging mobile phones, etc. would qualify. However, this might not satisfy the IB community and may still be exempt from donor or government subsidies and impact investment funds.

In order to promote IB models among a critical mass of local businesses in emerging markets, it seems more effective to pursue a pragmatic and step-by-step approach. No questioning of the for-profit motive or change of the business model, but rather adoption of concrete actions that promote the well-being of direct stakeholders such as employees, suppliers and consumers and at the same time contribute to business efficiency and commercial viability. This 'accountability ceiling' seems more feasible and in line with companies' sphere of control and interest, which greatly enhances the chance of widespread adoption of IB in emerging markets.

In this paper, we explored the concept of inclusive business and asked ourselves what the chances are of widespread adoption, using secondary sources. In our view, the business case for IB is the heart of the matter which can only be proven by in-depth research at the micro-level, to understand the trade-off that a small business faces in emerging markets, between a purely commercial venture and an IB. Such an analysis should at least include costs incurred, revenues received (not expected) and risks taken and differentiate between sources of finance i.e. subsidies vs commercial finance. Given the confidential nature of the data, which is also competition sensitive, it will be difficult to conduct such research, but it is necessary if we want to get to the bottom of this topic.

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**Part III: Skills, (Eco-) investment and innovations
for private sector development**

8 The role of innovation and R&D for private sector development: An evolutionary theory perspective

Abstract: Knowledge distribution and innovation capacities vary across countries and regions. Due to weak institutions and resources, the innovation capacity of companies lags behind, especially in emerging economies. Lower education levels, reduced public and private spending on research and development (R&D), and a shortage of scientific personnel result in fewer R&D resources and a weak institutional framework that forces firms to limit themselves to lower value-added activities. This chapter reviews the role of R&D and innovation in emerging economies through the lens of evolutionary theory.

Keywords: Innovation, R&D, emerging economies, evolutionary theory

Introduction

Evolutionary theory recommends focusing on innovation as the main driver of economic development. This thought is already reflected in the earlier work of some well-known economists, such as Joseph A. Schumpeter (1939). In its broadest sense, evolutionary theory can be understood as a conceptual approach to the way a society or a whole economy experiences learning (Dosi & Nelson, 1994). Learning processes are hereby described as cumulative, path-dependent, and interactive (Winter & Nelson, 1982). Of central importance in this context is the conceptualisation of the term 'knowledge'. Knowledge can have three different types. It can be seen as 'local (technology-specific), tacit (firm-specific) and complex (based on a variety of technology and science domains)' (Pyka, 2002) (see also Atkinson & Stiglitz, 1969; Polanyi, 2012). Learning is therefore considered a non-linear process accompanied by imperfect (erroneous) and selective behaviour (Dosi & Nelson, 1994).

In this way, evolutionary theory offers an alternative to the neoclassical view of economics. The neoclassical approach assumes that an observed economic behaviour can be explained as a result of rational actors making decisions to ultimately maximise their utilities (Leusin, 2022). From this perspective, knowledge is seen as a 'public good' characterised by the two criteria of non-excludability and non-rivalry¹ (Pyka

¹ The two main criteria that define a public good are that it must be non-rivalrous and non-excludable. Non-rivalrous means that the supply of goods does not shrink as more people consume them; non-excludability means that the good is available to all.

et al., 2018). However, this understanding of knowledge neglects both the relational dimension of knowledge transfer processes² and the collaborative nature of innovation or research and development (R&D)³ processes. In contrast, the evolutionary perspective emphasises how actors display rule-governed behaviour that is context- and time-dependent (Leusin, 2022).

Economic agents such as private companies are not in a position to simply replicate new technologies or copy organisational systems, this process requires them to recombine their resources and expand or reinvent their internal capabilities. They do this within the constraints of the innovation systems of which they are part of (Anand et al., 2021; Criscuolo & Narula, 2008). Freeman (1987) calls the national innovation system (NIS): 'the network of institutions in the public and private sectors whose activities and interactions initiate, import, and diffuse new technologies'. A NIS therefore contains a wide range of organisations, which result from the interactions between institutions and the development of institutional structures (Rao-Nicholson et al., 2017). These knowledge flows within a NIS can be regulated by formal institutions such as laws and regulations, but informal institutions such as norms, conventions and communally shared values also influence the relationships between the actors within an innovation system (Anand et al., 2021; Burki et al., 1999). Central actors in a NIS are private and public enterprises (both domestic and foreign), as they are the core of any innovation system (Anand et al., 2021). A NIS has therefore a significant impact on the innovation behaviour of these economic agents and thus on the performance of firms (Freeman, 1995).

From a learning perspective, a NSI can stimulate or hinder the accumulation of knowledge (Anand et al., 2021). An innovation emerges in this environment as a possible solution to a particular problem (Leusin, 2022). The understanding of innovation in this context is also reminiscent of Schumpeter and sees innovation as the recombination of different knowledge components in novel ways (Frenken et al., 2007; van den Bergh, 2008). The term innovation is not limited to only technological activities, but also encompasses organisational and transactional improvements (Anand et al., 2021).

Innovation as recombination at various levels is an essential vehicle for emerging economies to meet the challenge of catching up (Anand et al., 2021). In emerging markets innovation is driven by the process of overcoming substantial technological and organisational gaps in order to rise in the value chain (Criscuolo & Narula, 2008). However, it should also be noted that the understanding of innovation often diverges in the case of leading countries and latecomer countries. For leading countries, innovation is often defined as 'new world'-innovations in products or processes or abstract

² For more information on relational dimension of knowledge sharing please see (e.g. Boer et al., 2011).

³ According to OECD (2012) 'Research and development (R&D) comprise creative work undertaken on a systematic basis in order to increase the stock of knowledge (including knowledge of man, culture and society), and the use of this knowledge to devise new applications'.

knowledge in general, because these innovations promise to maintain economic lead. For latecomer countries interested in catching up, innovation means often new to the country or company (Hu & Mathews, 2005).

The following section provides a literature review on the role of innovation and R&D in emerging economies through the lens of evolutionary theory.

Literature review through the lens of evolutionary theory

Innovation and R&D in emerging economies

Innovation plays a central role in being or remaining competitive in a technology-driven world (Hu & Mathews, 2005; Kleiner-Schäfer & Liefner, 2021). Furthermore, innovation is not only important for the knowledge base of a company and a society (or country), but it is also an essential driver of growth (Aghion and Howitt, 1999; Grossman and Helpman, 1991; Romer, 1990). However, knowledge distribution and innovation capacities vary across countries and regions (Kleiner-Schäfer & Liefner, 2021; OECD, 2007). Due to weak institutions and resources, the innovation capabilities of companies in emerging economies in particular are falling behind (Acemoglu et al., 2006; Carrillo-Carrillo & Alcalde-Heras, 2020; OECD, 2007). Lower education levels, lower public and private spending on R&D and a shortage of scientific personnel lead to fewer R&D resources and a weak institutional framework, forcing companies to limit themselves to lower value-added activities (Carrillo-Carrillo & Alcalde-Heras, 2020; Kleiner-Schäfer & Liefner, 2021; Meyer et al., 2009; OECD, 2007). Innovations therefore often include low-cost,⁴ frugal,⁵ and adaptable innovations on the firm level in emerging economies (Anand et al., 2021; Ernst & Kim, 2002; Malecki, 1993; Zeschky et al., 2011).

R&D represents a measure of innovation input, although of course not all R&D activities result necessarily in innovations. When looking at R&D intensity across countries, huge differences become visible between emerging countries and advanced economies (see Figure 1). As Figure 1 demonstrates, even though emerging countries often improved their R&D intensity emerging economies from 2010 to 2020, they still lack behind in R&D intensity compared to industrialised countries.

⁴ Low-cost innovation is not about radical new inventions, but about finding innovative ways to use existing technologies to develop affordable products for the general public (Agnihotri, 2015).

⁵ Frugal innovation is about delivering more value at lower cost to more people. It is frugal because you need to adopt a mindset of simplicity and extremely low cost without sacrificing the quality of the user experience. Usually associated with designing products for emerging markets where the target is the bottom-of-the-pyramid (BOP) market (Zeschky et al., 2011).

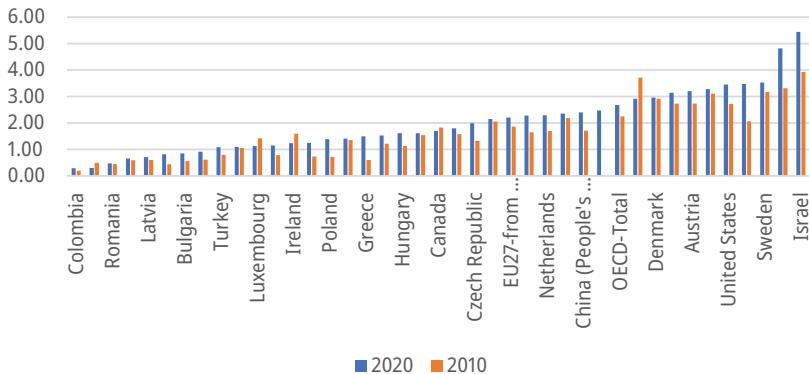


Figure 1: R&D intensity in OECD countries and other economies (2010 and 2020).

Note: The R&D data shown here have been compiled according to the guidelines of the OECD Frascati Manual. (Source: OECD Main Science and Technology Indicators [MSTI])

According to Rostow (1980) ‘economic growth depends on the rate of absorption of the existing and unfolding stock of relevant knowledge; the rate of absorption depends on the availability of both trained men and capital; the reason for the accelerated growth among middle-income countries is that they have built up the stock of trained manpower (including entrepreneurs) to a position where they can accelerate the rate of absorption of the existing stock of knowledge’.

Emerging markets tend to compete in international markets through low production and labour costs. As a result, they are usually described as factor- or efficiency-driven.⁶ This can be risky as it weakens the creation of domestic innovation by causing the majority of companies to neglect high value-added products (Carrillo-Carrillo & Alcalde-Heras, 2020). As a result, companies from emerging markets do not create new knowledge to innovate, and the domestic market that could use these sophisticated products and services remains underdeveloped, leaving companies as imitators rather than innovators (Carrillo-Carrillo & Alcalde-Heras, 2020; Ponomariov & Toivanen, 2014).

To move from imitation to innovation, strong absorption capabilities in science, technology and innovation are needed i.e. the ability to identify, understand and apply available sources of knowledge. Sources of knowledge can be interactions between different actors associated with the company, such as employees, but also buyers and suppliers. These connections form the knowledge structure that creates the absorptive capacity (Cohen & Levinthal, 1990). Furthermore, strong knowledge in-

⁶ Factor-driven economies primarily operate on the basis of their factor endowments, such as unskilled labour and natural resources, and compete on the basis of price, often selling basic products and raw materials. Efficiency-oriented economies are increasingly competitive and characterised by more efficient production processes and higher product quality, requiring higher levels of education (see e.g. Rostami et al., 2019).

stitutions are needed in emerging countries that improve their capacities in science, technology and innovation and simultaneously strengthen domestic sources of knowledge (Carrillo-Carrillo & Alcalde-Heras, 2020; Ponomariov & Toivanen, 2014).

Globalisation and market liberalisation provide an opportunity for firms in emerging economies to enter global production networks and learn how to master higher value-added activities (Anand et al., 2021; Ernst & Kim, 2002; Gorodnichenko et al., 2010) (Anand et al., 2021; Ernst & Kim, 2002; Gorodnichenko et al., 2010).⁷ Acquiring knowledge from abroad can lead to better performance and helps companies to unlock their innovation potential (Kafouros & Forsans, 2012).

However, to be able to use this knowledge, the absorptive capacity of companies in emerging economies needs to be strengthened. Companies can acquire and strengthen these capabilities by being active in R&D itself and thus building up its own knowledge base (Cohen & Levinthal, 1989; 1990). This requires efforts and investments in organisation, knowledge building and technological development at the firm level (Pavitt, 1990). It also requires public investment in human capital, institutions, governance, and science and technology (S&T) systems at regional and national levels (Hu & Mathews, 2005; Lundvall, 2007).

Fagerberg et al. (2010) emphasises that the well-known country examples such as Korea, Taiwan and Singapore, which have managed to evolve from a developing country status and adapt their standard of living to that of industrialised countries, were not passive learners. Contrary, these countries have actively sought knowledge of new technologies from the industrialised countries and have built up their 'technological capabilities'. This was also achieved through concerted efforts of the public and private sectors (see also Chapter 5 by Kim Kwan).

The role of the private sector

To understand innovation the recognition of the interactions between large domestic companies (both state-owned and private), foreign multinationals, and small and medium-sized enterprises (SMEs) is needed (Anand et al., 2021; McDermott & Pietrobelli, 2017). Innovation is largely a process of recombination of local and imported knowledge, which can be enhanced through various forms of collaboration. Therefore, it is important that local companies but also foreign multinationals can access knowledge and learn from each other (Anand et al., 2021).

Multinational enterprises (MNEs) are considered to be one of the most important driver of research and development worldwide (Fu et al., 2011). One reason for this is

⁷ There are generally three types of knowledge transfer: (1) codified knowledge via books, internet, (2) embodied knowledge, e.g. via exports (reverse engineering), and (3) tacit knowledge via direct contacts, such as foreign direct investment, migration, licensing, etc. (Sander, 2021; Xiao & Park, 2018; Crespo & Fontoura, 2007).

that creating new knowledge is an expensive and risky process. This is especially true for small and medium-sized enterprises (SMEs), which have fewer financial resources and face high fixed costs and high minimum investments in R&D projects on the one hand and great uncertainty about outcome success on the other (Carrillo-Carrillo & Alcalde-Heras, 2020). Since SMEs account for the vast number of companies in almost all economies, these factors often hinder the development of an innovation-driven economy, as it is difficult for SMEs in emerging markets to build a competitive advantage based on R&D (Anand et al., 2021; Carrillo-Carrillo & Alcalde-Heras, 2020).

Multinational companies are therefore both intermediaries of knowledge resources and focal points for their implementation. This has a significant impact on the innovation dynamics in emerging markets. As multinationals facilitate access to technology, capital and practices or standards, they also learn how to align their strategic goals and organisational approach with the often very different organisational and institutional realities of the host country (Anand et al., 2021).

In order to understand the dynamics between multinational companies and local companies in emerging markets, it is essential to be able to comprehend the knowledge flows between and within companies (Anand et al., 2021). In the medium to long term, therefore, local companies can benefit from the spill overs and linkages of MNEs (Fu et al., 2011). A study of Kafouros and Forsans (2012) shows that companies in emerging markets that open up to organisations from abroad and gain access to knowledge and technologies are more likely to perform better than companies that obtain knowledge from domestically based organisations. Thus, a firm's ability to improve its performance by leveraging external knowledge depends on the source of that knowledge (domestic or foreign).

However, this is not without controversy, as McDermott and Pietrobelli (2017) and Fu et al. (2011), for example, argue that foreign pioneering technologies may be unsuitable for local socioeconomic and technical conditions. Therefore, simply introducing local SMEs to sources might be not enough, as technological change is a 'localised learning-by-doing process' (Atkinson & Stiglitz, 1969; McDermott & Pietrobelli, 2017; Fu et al., 2011).

Conclusions

Innovation is an essential tool for emerging economies to meet the challenge of catching up. Due to weak institutions, the innovation capacity of firms lag behind and innovation in emerging economies is driven by the process of overcoming significant technological and organisational gaps (Acemoglu et al., 2006; Carrillo-Carrillo & Alcalde-Heras, 2020; Criscuolo & Narula, 2008). Acquiring knowledge from abroad can lead to better performance and helps companies in emerging economies to unlock their innovation potential (Kafouros & Forsans, 2012). However, the benefits of inter-

national technology diffusion can only materialise if domestic innovation efforts are undertaken to build up their absorptive capabilities. In parallel, modern institutional and governance structures and supportive innovation systems need to be in place (Fu et al., 2011). Companies and industries in emerging economies are therefore required to constantly try to improve their technological and organisational capabilities. The same applies for the societies in these countries and their institutions and networks, which also are in need to constantly improve their knowledge resources (Anand et al., 2021). These processes are mutually dependent and contribute to an improved national innovation system that promotes innovation and fosters knowledge sharing among stakeholders, both between companies and with non-businesses. The strength of an economy and the effectiveness of its institutions are reflected in the opportunities for businesses to flourish (Anand et al., 2021).

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Balakrishnan Chandrasekar, Rajiv Ranjan Thakur and Daru Setyorini

9 Vocational and skill training systems in India and Indonesia: A comparative analysis with an application to green sector skills

Abstract: The Technical Vocational Education and Training (TVET) system plays an important role in providing relevant skills in employable trades and crafts that lead to careers, not only in India but in all developing countries. The present study attempts to review the best practice models of learner engagement, institutional issues, which enables a system of synchronising systemic approaches for skills training, vocational education. In addition, present research attempts to gain new learning strategies with respect to the learner engagement, skill learning characteristics using latest technologies. As a reference case, best practices of green sector skills models in India and Indonesia are discussed.

Keywords: Technical Vocational Education Training (TVET), skills training systems, institutional structure, TVET policy, ITI (Industrial Training Institutes), vocational learner engagement (VLE) model

Introduction

One of the key areas for large scale employment in the developing nations include the Technical Vocational Education and Training (TVET) system. Largely, the technical and vocational education focus towards providing skills training and employment. The availability of skilled resources has remained strategic to the economic growth of the developing nations. The TVET system addresses largely the skills training needs, employability of youth, relevance to the employment intensive sectors in the production, manufacturing services and service sectors. In the present trend, the technical vocational education training focuses on knowledge and service-oriented trades covering most of the industrial production coupled with soft skill services (Chandrasekar, 2019).

Technical vocational education and skill training provides opportunities to the learners to seek employment in formal sectors and at the same time help organisations in

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enhancing productivity. Training in vocational education are significant instruments for enhancing employability, productivity and addressing labour market needs (Caillods, 1994). The technical vocational education and training across geographies have varied with demand and availability of employment, time scale, type of trades, and skill attainment. Thus, skill training comprises of transfer of information, knowledge, trade relevant skills, which are required for enhancing productivity and efficiency using the skill attainment activities (Chandrasekar, 2019). The technical vocational education and skill training have emerged as formal and informal training methods to meet the learner's aspirations, linking the employment market needs.

Over time, the vocational education and training has grown with technological development in line with industrial growth and trends in industrial production (Chandrasekar, 2019). The increased mechanisation of industrial processes, automation, and specialised needs has resulted in demand for skilled workers. The need to improvise vocational education by the providers was felt, as these were the only sources for imparting skill training to meet the market demands. Many of the developing nations felt the need for expansion of vocational education to meet the emerging demands (Nilsson, 2010). Indonesia in particular, has made technical vocational education one of the priorities of the Indonesian government to improve and strengthen the skills of the workforce and increase readiness to face globalisation and technological change, including changes in national economies. (ILO, 2019).

The world's population is expected to reach 8 billion by 2022, as projected by UN (the World Population Prospectus, 2022, and the UN's latest projections on the global population to grow by 8.5 billion by 2030 and 9.7 billion in 2100). The two most populous regions in Asia are Eastern and South Eastern Asia with 2.3 billion, contributed 29% of global population, including India and Indonesia. The Central and Southern Asian with 2.1 million contributing to 26% of global population. The projected population in the Central & Southern Asia and Eastern and South Eastern Asia closely edge, hence contributing to world's largest youth populationⁱ (www.un.org). The Asian region, including the East Asian, will significantly contribute to the world's skilled workforce, due to the significant number of youth population. Therefore, the focus on training youth in the age group will play an important role in the new and emerging areas while updating their skill needs to meet the global resource demand in the employment sectors.

In the light of recent developments in vocational learning, the use of appropriate technology resources has helped learners become familiar with new skill sets of learning, learning with relevance, use and application of technology in their areas of trade. However, these have varied with time, type of resource, and the relevant vocational training content available. Therefore, the effectiveness of learning from use of modern technologies plays an important role in acquiring skills that may be relevant to employ-

ⁱ The projected population in Central and Southern Asia respectively are 2,075 (2022); 2,248 (2030); and 2,575 (2050) and Eastern and South-Eastern Asia 2,342 (2022); 2,372 (2030); and 2,317 (2050).

ment. In line with the above, the paper attempts to provide insights to the new and emerging learning technologies in the identified trade e.g., virtual and extended augmented reality in vocational training. The paper seeks to highlight new emerging areas that shall address the growing demands of employment in green skills sectors. Best practices of green sector models in India and Indonesia are discussed as a reference case.

Overview of TVET and skills training systems

Many developing nations are of the opinion that, well trained workforce is the cornerstone of success of economic development. The vocational education and training play an important role in acquisition of skills to enter the job market. They always serve the backbone to the nation in bringing skilled workforce, relevant to the market needs.

For many Asian nations, the technical vocational education is termed as experimental and practice-based learning process (Okoro, 1999). The authors also define vocational education as a training specially designed to develop, enhance learner's technical skills, human talents, cognitive accepting attitudes, and work behaviour to make learners employable in the manufacturing industries (Winer, 2000).

The key characteristics in the TVET system, varied with type of vocational education, acquisition of skills by learners, and the skills sets needed by employment sector. The common characteristics include the following:

- Contextualised learning: vocational learning content; pedagogy — teaching learning environment, learning ecosystem; type of workplace; type and level of learners, who make the entire context relevant and appropriate.
- Varying learner characteristics, skill needs and demands in the type of skill programmes.
- Trainers adopting different learning methods, classroom-based teaching, mocks & trials in the classroom/ workshops, mock labs and virtual experiments, case study resources, visit and experience on practical handling techniques etc.
- On the job training, wherein fresh graduates learning in varied systems and approached lands in shop floor, workshop to get hands on training and experience to mature into assembly productions, manufacturing etc.

The vocational education and training broadly remained the same across the Asian nations. The typical structure of skill training system in a developing country is illustrated in Figure 1.

In the present study, the author refers to Technical Vocational Education Training (TVET) and skills training as a system converging with vocational training and skill acquisition through a defined processes leading to attainment of knowledge and acquisition of practical skills. Both the systems, lead to a learning outcome and certification or equivalent qualifications. While the former is a system, where a learner comes through

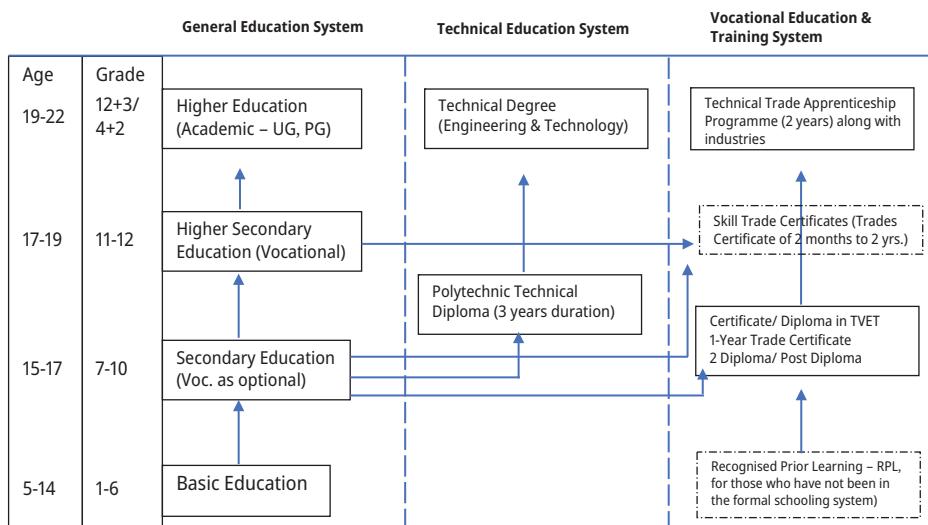


Figure 1: Generic structure of skill training system in a developing country (Chandrasekar et.al., 2019).

an education system, while in the skill training a learner youth or aspirant with no formal qualification enter this system to seek equivalent certification or qualifications.

Figure 2 illustrates a unified education, vocational education and skill training system relevant in the present context.

The technical vocational education system has evolved over a time and has varied with training needs, trends and aimed to meet the demands of skilled manpower. There are several schools of thought, which can be named as vocational education training models: One is a market led system, in which vocational training providers design the trainings as per the labour market characterised by substantial mobility and skill acquisition. In another model, the vocational education training is imparted as part of school curriculum and students learn a variety of vocation, which is a formal system. A third model is a dual mode, wherein the vocational learner is attached with the industry in the respective trades in the form of apprentice and acquire knowledge, skills, and trade related experience (Nilsson, 2010).

It is seen that during the post-World War II period, many international agencies such as International Labour Organizations (ILO), UN-GC, UNESCO played major roles in the facilitating vocational technical education in the developing countries. These international institutions have facilitated uniform regulations, guidelines across nations, with the aim to distinguish the vocational education system. Following the emphasis of international institutions, several of South Asian nations have initiated policies with increased importance towards vocational education and building an effective system to address the employment scenario.

With the rise in the automation and use of technology, perspective of vocational education in the world rose with the change in the industrial revolution. Thus, during

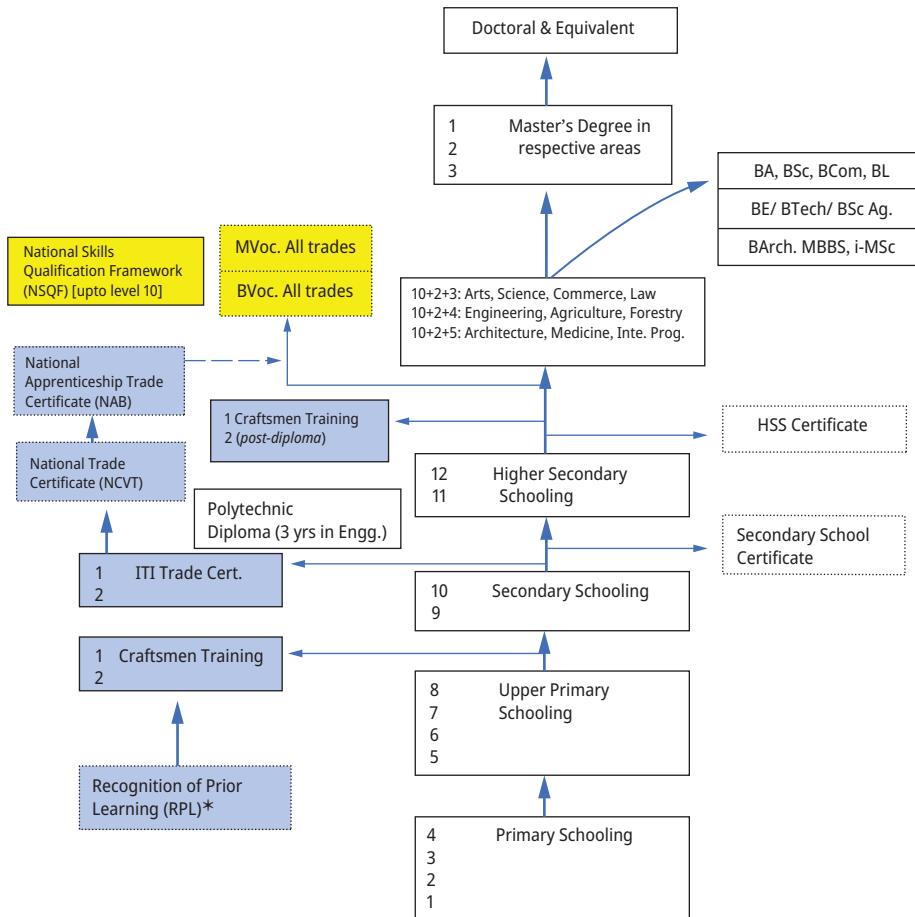


Figure 2: TVET Training and Skills Training System in India (Chandrasekar, 2019).

the 20th century mechanisation of processes, jobs became complex and more specialised resulting in the demand for skilled resources. The trend of vocational education perspective changed to meet the demands for technically proficient work force. This demanded use of newly trained skilled resources across sectors and the growing number of skilled resources (Benavot, 1983).

There has been a growing demand for skilled labour force. The vocational education training system is quite small across the nations. The labour market needs and outcomes despite following the vocational training system have not met the intended objectives. Various country specific studies indicate that vocational education training system has not responded in the South Asian region. All developing nations are giving maximum efforts to make vocational education training a robust by introduction of various policy initiatives. (T. Agrawal, 2013).

The technical vocational education in developing nations is steadily growing to meet the expectations, scope, potential, and employment demand. The developing nations have significantly given importance in terms of overall organisational structure, emphasis on policy following the regional needs and considering the global norms, standards, and assessment systems. However, in order to address the growing demands, a lot remains to be addressed at various levels for typical developing nations like India.

TVET learning system, a learner engagement model

Learning in vocational education is a process for imparting knowledge and skills to a student learner, aspirant who desires to seek specific vocational skill trade. To acquire skill trainings, the learner undergoes a learning process for skill acquisition covering a structured curriculum-based classroom training, practical handling for the specified trade, demonstration, and industry-based training to become a skilled technician.

Typically, the vocational training conducted by a service provider or designated training centre use traditional and conventional methods, wherein classroom teaching for the concepts of core skills, principles are used, for practical component, demonstration, using equipment and devices. The learning hours and hands on practical training at the training centre allows learners and youths to gain practical skills handling the equipment and devices. This practical training in the vocational institute along with industrial training, and apprenticeship in the relevant industry/sector make the youth employable. The learning in the centre with a combination of theory and demonstration varies with trades, level of skill training and type of resources available in workshop, used to meet the learners needs and objectives.

With varying trends, international institutions; namely, ADB, DfID, UN, UNESCO, GIZ, and the World Bank, have undertaken several studies and recommended strategies particularly for the Asian region for development and improvement in the vocational technical education in the respective countries. India in particular has taken the lead by giving importance to TVET and including a system to streamline the skill training system with the holistic objective that all trained youths through entering the system have an equivalent skill trade certificate leading to employment.

As discussed earlier, the vocational education training comprises of classroom teaching, practical training in the workshop, and handling of equipment and devices in the training centre. In addition to these, learners undergo apprenticeship, or industry internship to gain full understanding of the skills. The extent of learning in the classroom, practical training and demonstration varies with type of trade, availability of training resources, equipment, and extent to which the learner gets paired with a relevant industry for internships.

In recent times, the classroom learning/demonstration has varied with the use of ICT enabled technologies. The time trend of use of such teaching-learning is illustrated below.

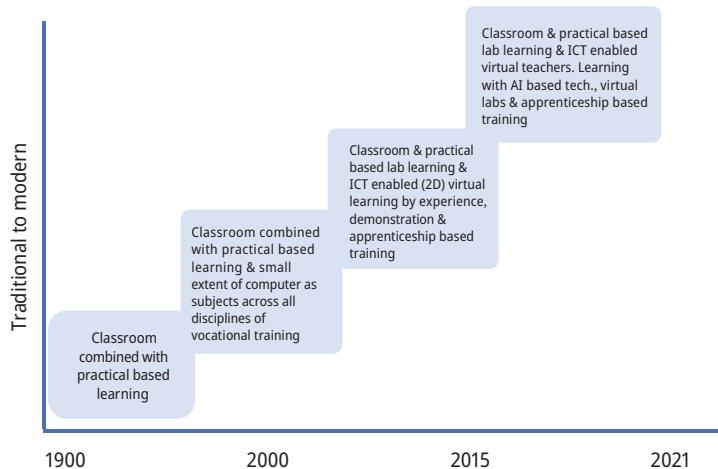


Figure 3: Evolution of teaching technology in vocational education training

(Source: compiled by the authors).

The teaching methodology for vocational education, skills training and imparting hands-on training within the training centre, and industry attachment has varied with time. The extent of use of technology in vocational education and training have begun in more recent times with the advent of demand in the skills relevant to the country needs.

A typical teaching learning process for vocational education is illustrated in Figure 4 below.

For a typical vocational education, the learning achievement is an important outcome, which can be assessed through skill attainment. In the entire learning process, a variety of parameters that influence skill attainment include policy of vocational training centres/providers, objectives of the national mandate, scope of the training and demand in the geography and trade discipline and the learner themselves. In all the process, the extent of learner being influenced to learn and acquire skills to the maximum is possible with the support of ICT enabled technologies. Figure 4 attempts to provide information on how the learner can be influenced by various parameters, and the overall impact.

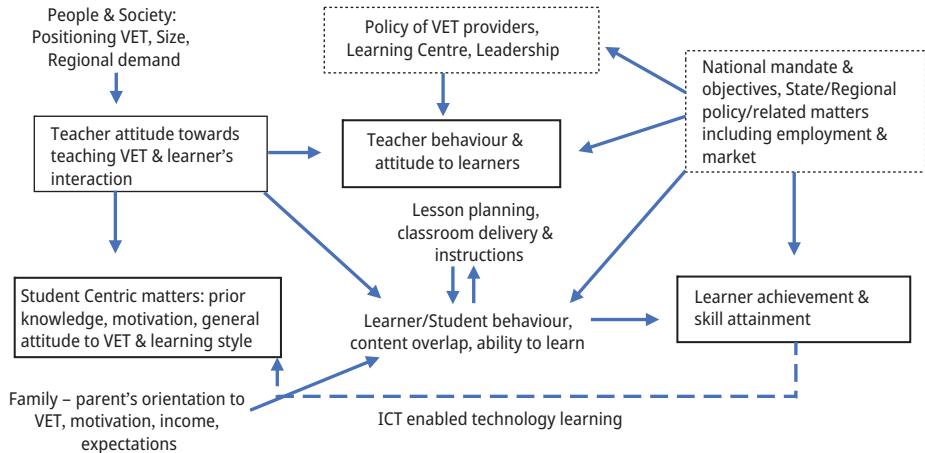


Figure 4: Model for student learner engagement process in technical vocational education
(Source: compiled by the authors, this illustration is derived out of the study of TVET combined with ICT).

TVET and green sector skills – a case of Indonesia and India

The skill training system has grown with opportunities towards employment generation and skill needs for employment intensive sectors. As mentioned earlier, the skill training system with focus to creating opportunities for the learners, who have never been in the education/schooling system avail an opportunity to get trade certification, which is nationally and globally equivalent to skill qualification standards. The skill qualification standards are developed within the country taking into account the global practices. The skill training standards play an important role in skill attainment and efficiency.

The skill training is provided by the private sector participation through the training providers. Industry partners have actively participated in a structured model for developing standards, program design, assessment criteria and learning resources along with employer engagement, wherein a trained youth is placed in the respective industry sector for apprenticeship and placement.

A typical model of India's public private partnership model for skill training delivery is illustrated in Figure 5.

Given the nature of developing country perspective, well laid institutional mechanisms, objectives, statutes, regulations and norms along with participation of key stakeholders, helps in achieving large scale skill development goals.

With the large-scale private sector participation, new areas in skill development have gained significance and the need for trained skilled resources are in demand. In the present research, a case of green skill jobs or green sector skills has been undertaken as a

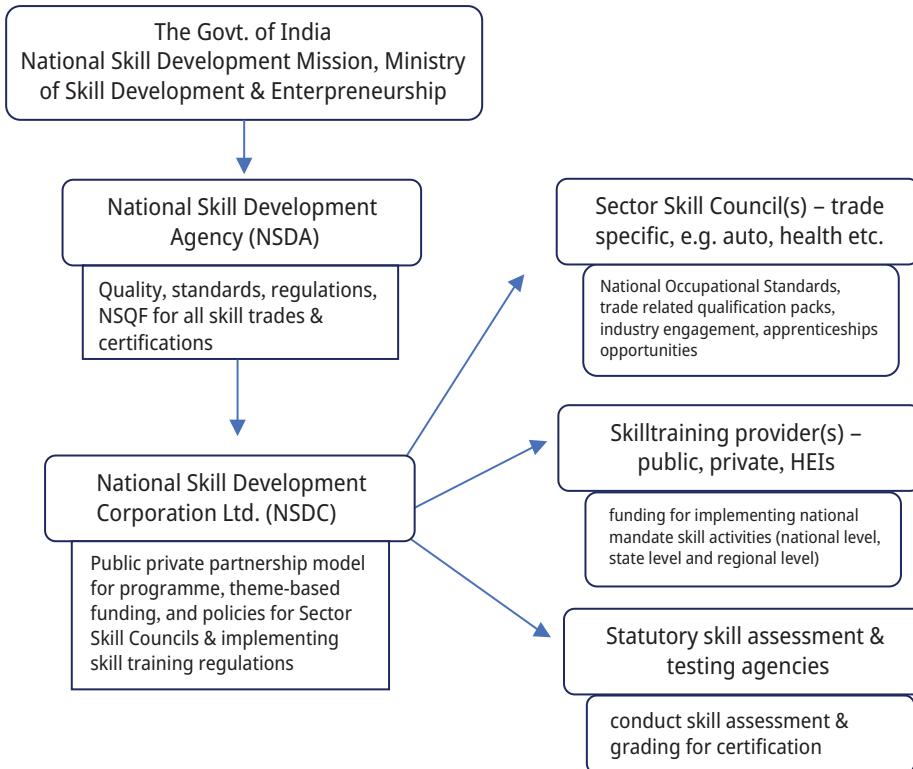


Figure 5: Public private partnership for skill training delivery (Chandrasekar, 2019).

case model for countries like India and Indonesia. A comparative case of India and Indonesia are taken in the present research as both Asian countries have a significant number of bulging projected youth population and the geographic relevance for both countries have similar employment for the youth to tackle the sustainable development goals.

The green skill jobs and green sector skills significantly play an important role in management of the environment and related sectors. The specially trained youth can better undertake such activities that effectively and efficiently meet the national and global environmental standards on sustainable basis.

The UNEPs definition of green jobs are skilled resources contributing to maintaining or restoring environmental quality and activities avoiding damage to the ecosystem. The green economy, which provides green jobs, is also outcome of this green economy (UNEP, 2008). Another definition of green jobs defined by Friedrich Ebert Stiftung, 2011: (i) any tasks, or skilled jobs associated with helping improve the environment management, (ii) this activity provides support and income to sustain family living, health improvement and a decent working environment and this work should be conducted by diverse sections of workers irrespective of race, creed, gender and ethnicity.

The green jobs are seen as diverse economic, social, and holistic environmental aspects. They provide opportunities for a variety of sophisticated tasks, and long-term perspectives such as renewable energy applications, installation of solar panels, bio-fuels, waste to energy generation and the like.

Diky Edwin Hindarto, (2014) defines that the green sector or the green collar jobs include forestry, energy, construction, green building, transportation, material waste/recycling, deconstruction, toxicity, carbon market, food, agriculture, local production involving local raw materials and the like.

Case studies and best practices of green sector skills

To gain an understanding of new areas in skills training, case studies of green sector skills or green jobs of Indonesia and India are considered.

From the case study model, the green sector skills in addition to the core of environment related skills require abilities in communication, collaboration, bridge building between the dialogues/ conversations, customer orientation, creativity and innovation, a broad understanding of the environmental sciences, analytical ability, problem solving, positive attitude and leadership abilities, which will make the green skills relevant in the context.

1. Case study of Indonesia and how it is relevant to the country's economy

The skill training in Indonesia is conducted through formal vocational training systems and non-formal means of education through private education providers. The formal education is managed by the Ministry of Education, while the vocational education is managed by the Ministry of Manpower and Transmigration. The education system at all levels have focused their curriculum majorly into theory, principle-based learning and skills. The redesign of the curriculum to be more skill based has impacted learners to seek jobs in the market to a larger extent. The Government of Indonesia has attempted to mainstream green jobs to government programmes with the aim to accelerate the developmental process and transfer of knowledge and have identified 6 key such indicators: environment, economics, social linkage, equality and sustainability. With the aim to promote green jobs, the national, provincial and district government have designed incentive schemes. In addition, the government has promoted entrepreneurship, which underlies the development of the country. The focus of skill education and training has varied with geographic location. It is seen that joint venture companies are focused in West Java, Jakarta, while entrepreneurial sectors are located in Surabaya, East Java with the presence of private universities. The Toyota Foundation has also collaborated with Indonesia authorities for promoting green skills and green industry jobs with various vocational schools. The aim has been to employ more youth in such green sector jobs with relevant skills.

Source: Green Jobs in Indonesia: Potential and Prospects for National Strategy, Janti Gunawan and Kym Fraser, 2014.

The employment sector in Indonesia is shifting from agriculture to the services sector covering retail, banking, hotels, tourism, communication, transportation, public and

social services, which has varied with geographic location based on the market potential and availability of such resources.

Based on information relating to green sector jobs in both countries, it is seen they are emerging with need and demand. The green sector skills are at the nascent stages of development, they are progressing with new and emerging trends, the activities and job roles outlined as per the country specific requirements and the policies of the country. The countries identify their own priorities as per the regional need and demand for implementation. The scope and potential for employment of youths in the green sector have varied with geographic demands, and the type of institutional mechanism in each of the countries.

2. Case study of India and how it is relevant to employment in related industry

The responsibility for skill training for green sector jobs is one of the responsibilities of the sector skills council. In the case of India, this is the Skill Council for Green Jobs, which has been created under the Ministry of Skill Development and Entrepreneurship and promoted by the Ministry of New and Renewable Energy. Its sole objective is to undertake skill gap analysis, develop National Occupational Standards along with course curriculum and certification of trainers and provide employment linkages with such industry in India.

Presently, the council has made efforts in the national priority sectors, viz., renewable energy such as solar, thermal, wind and hydro. The council has identified the skilled resource requirements at various levels and drawn programmes relevant to the skills with National Occupational Standards. In terms of training design and delivery, the council has collaborated with skill training providers (public and private) across all geographies. The training providers implement training as per the qualification packs developed by the council and the certified youths are provided employment opportunities in the relevant industries. The study reports that the total number of skilled resources (highly and semi-skilled) depends on the scope of the mission projects of the nation. However, the highlight of the study indicated the skilled resources required for the renewable energy sector include procurement, production and quality assurance, which will help in assembling and maintaining the solar panels. The percentage of such manpower estimated are 9, 55 and 36 respectively. It is relevant to mention that the scope for green sector jobs is wide in the case of India covering renewable energy (solar PV, hydro, domestic application in cooking), biomass application, green construction, green transportation, solid waste management, e-waste management, carbon sinks. In terms of vocational training in green sector jobs, the council identified areas of training needs, developed standards and training delivery with training providers are achieved to an extent.

Source: Skill Council for Green Jobs, <https://sscgj.in>

Vocational education training using virtual reality or extended augmented reality contents

Predominantly in the developing nations, vocational education training has largely been delivered using conventional methods, such as classroom teaching along with practical handling using demonstration equipment and devices. The classroom teaching covers imparting the concept of the subject or trade specialty. The disciplines

broadly cover engineering, manufacturing skills and industrial production sector trades. The duration of the classroom learning, practical training, and demonstration of using the equipment varies with the type of trades, level of certification and the programme the learner is enrolled on.

In the last decade, the emphasis on vocational education and skill training, and the increasing demand for employment in a variety of trades in new areas such as agriculture, service sector, hospitality and health services form part of this system. While the new disciplines have emerged, the learning design and delivery are a combination of traditional methods combined with computer-based technology. UNECO coined the term ICT enabled vocational education in early 2000, which also set standards and regulations on the extent of use and delivery systems. On this basis several developed and developing nations created vocational learning resources, which are available as web resources, on online platforms across a majority of the trade specialties.

With a mixed use of teaching technology, the attainment of skill levels varies with trades, level of vocational and skill training, and availability and usability of the ICT enabled resources. UNESCO-UNIVOC in 2017 reported that ICT in vocational technical education had the potential to create transformative changes in skills delivery and attainment to the expected levels of employers.

Training need analysis for TVET trainers, instructors, and teachers

The author conducted a review study¹ to identify the training need analysis of the vocational trainers/trade instructors of TVET providers in select states in India. The project was funded jointly under the India and UK initiative UKIERI (the United Kingdom India Education Research Initiative) in 2019. In the study, structured questionnaire-based research was undertaken covering six states (Andhra Pradesh, Karnataka, Kerala, Pondicherry, Tamil Nadu, and Telangana) in India. The pooled responses from 200 trainers across 60 VET providers/institutes, covering the trade instructors, VET administrators and industry is briefly presented and discussed relevant to the present research paper. The survey explored the possibility of training needs of vocational instructors in the government VET providers.

In response to the survey, the vocational training institutes offering skill trade courses have met the skill needs of employers viz., small enterprises, industries, and to some extent self-employment. The vocational education trainers in the surveyed

¹ Training of trainers of Industrial Training Institutes (ITIs) towards capacity building in skills and education, a review of vocational training resource & development of training content for welding technology, India jointly funded by the Govt. of India and Royal Government of UK, through UK India Education Research Initiatives.

institute responded that such institutes have largely met the skills needs of employers in the relevant industry cluster. However, the respondents indicated the opportunity for improving skills needs in the employment sectors still prevails.



Figure 6: Response to the training needs and relevance of vocational institutes courses
(Source: compiled by authors).

It is seen that many of the trainers/trade instructors in the vocational education institutes undergo mandatory training either in the apex training institutions within the state or outside. This has primarily met the needs in acquiring information on new developments in their specialisation. Figure 7 illustrates, 91% of the surveyed trainers have undergone mandatory advanced skills training.

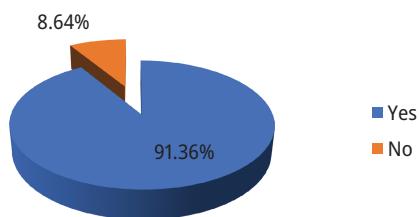


Figure 7: Percentage of vocational trainers undergone mandatory advanced skill training
(Source: compiled by authors).

It is observed from Figure 8, that the majority of the respondents (vocational trainers of the institutes) agree that the trainings undergone in the advanced training institutes, or apex training centres in their fields are relevant and met the training needs.

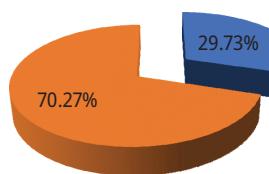


Figure 8: Relevance of training undergone by the vocational trainers in the apex training centres
(Source: compiled by authors).

The respondents mentioned that the trainings undergone as part of the career development in the apex training institutes should be recognised as a formal certificate course. From Figure 9, it is seen that 87.7% of the respondents agree in acquiring a formal certificate for the trainings undergone.

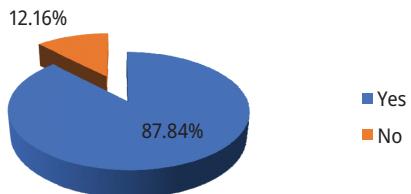


Figure 9: Vocational education trainers interested in acquiring additional qualifications or certificates for the training attended (Source: compiled by authors).

The outcomes of the policy attributes from the analysis indicate trade instructors need adequate exposure to new skills in the relevant areas on the application of latest technologies. The regular refreshment courses will add value to their classroom teaching and provide updated knowledge and skills. The vocational education trainers demand practical skill training to update the industry trends, which means, the trainers/trade instructors need exposure in the relevant industries which will help equip current trends in skills and knowledge. The trade instructors also demand soft skills training covering theoretical skills in teaching technology for vocational areas, building positive attitudes, motivational skills, communication skills, designing and development of teaching-training aids, learning industry skills needs on the latest technology.

The trade instructors support the industry engagement with vocational training institutes, which will help students gain understanding on employment trends and new areas to engage in such opportunities. The vocational education trainers support that industry resources should be deputed to engage with the vocational training institutes to teach students in updating latest trends in use of equipment, devices, and technology. On-the-job training is one aspect the vocational education institutes desire to have for students, which will help learners understand the entrepreneurial approaches and develop linkages for future skills enhancement.

The survey results present that vocational education augmented with ICT enabled learning focusses on conceptual learning, modular based approaches to skill trades, and the learner's ability to pick the relevant skills to meet their expectations. With the increasing use of IT enabled systems for vocational education over the decade, the trends have been changing based on the market demand, learner's expectations, skill delivery and employability.

In response to the vocational education trainers/trade instructors, the institutes have expressed interest in continuously updating their knowledge and skills relevant to the current trends in the industry. This illustrates that a sustainable capacity building programme to equip learners with new knowledge and skills is an important factor from any developing country perspective.

With the growing need and the objective to continuously update new knowledge and skills in line with the industry and technological trends, virtual reality and augmented reality is the latest option, where learners can access the real-time learning and practical based demonstrations on virtual mode. Virtual/augmented reality involves the application of animation, gaming techniques, artificial intelligence, and assessment features covering holistic learning approaches, allowing the learner the opportunity to assess the skill attained on a real-time basis.

The experiential learning, teaching, access to contents and resources for complex topics, the learner engaging with extended demonstration, practice, and access to such practice resources will keep up the learner's motivation, and enthusiasm for long term learning (Diegmann, Schmidt- Kraepelin, Eyden & Basten, 2015). The authors have also reported on the long-term benefits of such virtual learning. The virtual reality or the extended augmented reality provide support for continual learner engagement and learners have opportunity to mix and match the collaborative learning with more thinking abilities.

Teaching learning tools in the present context of vocational learning

With the increasing application and use of technology in education widely, social media-based learning is another concept, which has picked faster and penetration even to the remote locations of India. A variety of social media tools and platform are available and what is more important and relevant is the type of content designers and developers use to meet the learner's requirements. The author has focused an internet source-based research to identify the top 10 popular social media tools relevant for education content. The relevant use in vocational training may be the need to explore, however it is relevant to mention that these social media tools will come in handy either for concept learning, application of relevant technology or as an information source learning for industry engagement and to identify the potential needs and requirements for employment and upskilling.

Jane Hart, 2020 conducted a survey (online) from total respondents of 2369, covering 45 countries to elicit information about the top 200 tools used for learning. The respondents of the survey included school education, higher and tertiary education. As per the survey results, the top 20 social media tools relevant for education is presented in Table 1 and discussed.

With the advent of the use of technology in learning and increasing use of e-learning resources across all subjects of study, levels of programmes and variety of disciplines, several e-learning platforms are available based on the need, availability of resources, accessibility of relevant contents and the like. The social media platforms also exist in addition to such dedicated learning platforms, which have enabled

Table 1: Top 20 Social Media tools relevant for education used by the learners (Source: www.TopTools4Learning.com).

Overall ranking	Platform/ Tool(s)	Category	*PL100	*WL100	*Ed100
1.	YouTube	Web-resource (videos)	1	4	1
2.	Zoom	Video-meeting	5	1	3
3.	Google Search	Search engine	2	3	6
4.	PowerPoint	Office tool/ suite	9	5	2
5.	MS Teams	Collaboration platform	15	2	8
6.	MS Word	Office tool suite	10	6	5
7.	Google Doc & Drive	File sharing platform	11	10	4
8.	LinkedIn	Social network community	3	8	0
9.	Twitter	Social network	4	28	25
10.	WhatsApp	Chat tool, videos	6	9	10
11.	Wikipedia	Web resource	7	7	20
12.	Facebook	Social network	8		19
13.	Excel	Office tool/ suite	30	11	14
14.	WordPress	Blogging/ website platform	12	21	18
15.	Google Classroom	Learning platform, LMS, interaction	75		7
16.	Google Meet	Video meeting platform	28	48	9
17.	Slack	Collaboration platform	32	12	61
18.	Canva	Content development platform	37	31	11
19.	Skype	Video meeting, chat tool	18	14	22
20.	Trello	Collaboration platform	39	13	64

*Ranking for PL: Personal Learning; WL: Workplace Learning; Ed: Education

learning in the education sector. These have varied with type of learning resources, information sharing, and feedback in the context of social awareness.

The review of ranking of social media platforms and networks in the context of e-learning and e-resources for education by the learners indicate that learners have a choice of medium to learn at their pace. It is also observed that the social media platform has preferences; namely, virtual models of face-to-face discussions, virtual lectures, discussion-based platforms, information sharing etc. for the purposes of education.

Conclusion

For developing nations, TVET systems with an appropriate institutional mechanism play a significant role in skill development of youths, leading to employment opportunity in the relevant sector and thereby empowering youths. They have remained backbone to the economy of developing nations. A variety of institutions in terms of curriculum design, content development, assessment and industry linkages facilitate in the quality improvement and relevance of the skill programmes. Developing countries need to focus on the scope, potential, and relevance of skill trades with the most employment potential.

Linkages with employers for vocational education and skills training make the system holistic in making the programmes more relevant and sustainable in the long term.

New areas in skill training, such as green sector jobs, are promising, as many employment generation activities can be undertaken in the developing country perspective. The green sector jobs meet the UNs sustainable development goals and at the same time youth engaged in the management of the environment is a yet another new dimension to developing a promising sector.

The changing dynamics of work roles and integration of technology has necessitated continual learning, skilling and upskilling in line with the market need and demand. The digital revolution has played a significant role in rapid transformation of the world of work and of several skill profiles. Research on emerging innovative approaches to TVET in developing nations focusses on work and skill-based learning which can be combined with transformative and lifelong learning. The actual and potential role of technology within these models is highlighted together with the recommendations for policy and practice.

The advancement of use of technology applications especially ICT in education has promising applications using a variety of platforms: e-learning, technology enabled learning, learning management systems, mobile applications, app-based learning, augmented reality/virtual reality to form the real-time learning. Further research into these applications will create new learning impacts and an augmented approach to the learners.

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Huub L. M. Mudde

10 Entrepreneurial universities in Ethiopia, Indonesia, and the Palestinian Territories: Impacting internal and external factors

Abstract: This chapter analyses the entrepreneurial status of universities in Ethiopia, Indonesia, and Palestine and their contribution to youth employment and entrepreneurship. It draws on a multiple case study of 14 universities: nine in Ethiopia, four in Palestine and one in Indonesia. A Likert-scale survey measuring perceptions was filled out by 769 respondents and a total of 439 university leaders, teachers, students, graduates, and external stakeholders were interviewed or participated in focus group discussions. Findings indicate that the more entrepreneurial universities seem to 'create' more entrepreneurial graduates who are better able to create a job or to find a job than graduates from less entrepreneurial universities.

Keywords: Entrepreneurial university, entrepreneurship education, youth employment, Indonesia, Ethiopia, Palestine

Introduction

Many countries in Africa and the Middle East face the challenge of creating employment for their predominantly young population: 50.3 million unemployed young people live in Africa, the Middle East, Asia, and Latin America, which is 85% of all unemployed young people globally (ILO, 2017). Even a position that matches the level of their education is hard to find. This labour market mismatch results in graduates ending up as a taxi driver or waitress just to name a few examples. The absorption capacity of the labour market is not big enough for this youth: the public sector has its limits with often low salaries and the formal private sector is underdeveloped, in particular in regions further away from capital.

In reaction to the disadvantaged situation of youth, entrepreneurship is stimulated globally by governments, civil society, private sector, and education institutions as an instrument for employability and economic development (Röpke, 1998; European Commission & OECD, 2014). According to the Global Entrepreneurship Monitor (GEM, 2018), almost two-third of the working-age population (aged 18–64) in low-income countries perceive starting a business as a good career choice (versus 57% in high-income countries). In Africa, this is even higher: 76.2%. From all young African people surveyed, 50% had the intention to start a business (Schøtt, Kew & Cheraghi, 2015). The job creation impact is however marginal, because most of the entrepreneurs in low-income countries expect to stay small without additional workers (GERA, 2018).

Based on the notion that entrepreneurship¹ can be learnt (Lazear, 2004, 2005; Hessel, Brixy, Naudé & Gries, 2014), universities started to offer courses about and for entrepreneurship. In doing so, universities aim to stimulate graduates to become job creators instead of job seekers, because 'higher level of entrepreneurship and more effective innovation are perceived to be the key engines of economic growth' (Dugganna, 2012). However, a substantial number of graduates do not find a (decent) job at all. For example, in South-Africa, 31% of graduates aged 15–34 are unemployed (Pitan & Muller, 2020), and in Ghana, around 50% of graduates were still unemployed after two years being graduated, and in Nigeria up to 80% of graduates had difficulty in finding a job (Owusu-Ansah & Poku, 2012).

This evidences that for a university to become successful in terms of entrepreneurial graduates, more is needed than offering entrepreneurship courses. Entrepreneurship education only pays off if the institute itself is entrepreneurial (Röpke, 1998; Kirby, 2006), in vision, strategy, structures and organisational rules, (human) resources and work processes, and culture and values (Fayolle & Redford, 2014). Whilst most literature focusses on education, scarce are studies that analyse this broader institutional aspect of universities in developing countries. This chapter is contributing to fill this research gap. It presents the result of a study about the entrepreneurial characteristics of universities in developing countries, in particular in Ethiopia, Indonesia, and Palestine, exploring why some universities are more entrepreneurial than others. The research questions of this study are: 'How entrepreneurial are universities in developing countries?' and 'Which factors influence how entrepreneurial a university in a developing country context is?'

In the remainder of this chapter, first an overview is given on the most relevant literature. Subsequently, the research methodology is presented, the findings described and finally discussed and concluded.

Literature review

It is in a context of increased perceived importance of entrepreneurship for economic development that higher education institutions globally are expected to provide 'thinking, leadership and activity to enhance entrepreneurship capital' (Audretsch, 2014, p. 320) and to become entrepreneurial (Röpke, 1998). Universities are challenged to provide knowledgeable and skilled young entrepreneurs that are considered to contribute to the creation of knowledge-based enterprises (Frank, 2007; Coyle, Gibb & Haskins, 2013). They are offering entrepreneurship education with the aim to develop an entrepreneurial mindset of students and to prepare them to start-up a business (Gibb, 2013). The

¹ Entrepreneurship is defined as the tendency to create value through identification and exploitation of opportunities. This includes starting and managing one's own business (Shane & Venkataraman, 2000).

background of this view is that in the dynamic, fast changing world of today, employability requirements overlap with competencies and skills associated with entrepreneurship, like opportunity identification, initiative taking, networking, strategic thinking, and self-efficacy (Coyle et al., 2013; Moberg, 2014). Entrepreneurial skills are considered as essential for young people to become successful in the 21st century (Obschonka, Hakkarainen, Lonka & Salmela-Aro, 2017).

Entrepreneurial universities

Attempts to define entrepreneurial university have not reached consensus (European Commission and OECD, 2012). The common denominator however is the recognition of a change from traditional universities as institutions of production and dissemination of knowledge through research and education to academic institutions with a stronger public service role, contributing to economic growth and innovation (Fayolle & Redford, 2014), enhancing and facilitating entrepreneurial behaviour (Audretsch, 2014).

The current thinking on entrepreneurial universities is grounded in a few influential publications, all published in 1998. Röpke (1998) states that transformation of the traditional research and teaching university into an entrepreneurial university is a necessity. He bases this on the notion that knowledge creation and dissemination is essential for innovation, which in turn is fundamental for economic development. Röpke poses that for knowledge to be applied, the founders of this knowledge (faculty and students) must become entrepreneurs. For faculty, staff, and students to become entrepreneurs, Röpke claims that the university itself needs to become entrepreneurial to '*increase wealth and create employment by incorporating new knowledge in innovative products and technologies*' (p. 9).

Etzkowitz (1998), in his study among American universities, emphasises in his entrepreneurial university concept the relations with industry. In his view, entrepreneurial universities are those universities that can generate significant income by raising venture capital funds through commercialising academic research. Etzkowitz poses that this 'capitalisation of knowledge' is the heart of a new mission for the university. An entrepreneurial university is closely linked to users of knowledge and is becoming '*an economic actor in its own right*' (1998, p. 833).

Clark (1998) presented a multiple case study of five European universities. Central to Clark's stand is the transformation of government-sponsored universities to a more independent status. He poses that universities need to change due to changing funding base, increased demands from government to support in solving social and economic problems, the changing labour market with more knowledge-based enterprises, hence other requirements for graduates, and more and different type of students. Entrepreneurial are those universities that are able to transform in order to meet the ever-changing demands in society. Change, complexity, and uncertainty are endemic to an entrepreneurial university.

Although Clark and Etzkowitz approach the entrepreneurial university differently, both have identified similar characteristics of entrepreneurial university, in particular the importance of interaction with society (industry and government), independency in decision-making, and the need of all members of the university to be involved and supportive to an entrepreneurial culture (Etzkowitz, Bikkulov, Kovaleinen, Grey, Leitner & Poutanen, 2017).

In this study, the definition of Gibb (2013, p. 1) is used, because it captures the broader role of universities in an increasingly entrepreneurial society (Audretsch, 2014), and aligns with Clark's emphasis on organisational change. Central to Gibb's view is that entrepreneurial implies being able to cope with high levels of uncertainty and complexity and that this is applicable both on individual as well as organisational level (Gibb et al., 2009, updated 2012). Building on the different approaches and definitions as presented in literature, Gibb defines an entrepreneurial university as purposefully designed for staff and students to 'demonstrate enterprise, innovation and creativity', dedicated to create public value in partnership with local, national and international stakeholders.

Subsequently, Gibb proposes a framework for exploration of entrepreneurial university development. The five areas of this framework are: strategy, governance, organisation and leadership; knowledge exchange; stakeholder relationship development and partnership (local, regional, national and international); enterprise and entrepreneurship education; and internationalisation (Gibb, 2012). This framework has been the basis for an assessment tool developed by the OECD (Organisation for Economic Cooperation and Development) and the European Commission named HEInnovate (European Commission & OECD, 2013), which is applied in this study.

In the growing body of literature, there are critics on the entrepreneurial university. Nelles and Vorley (2010) and Gibb et al. (2009, updated 2012) state that the thinking on entrepreneurial university is mainly rooted in empirical evidence with weak theoretical underpinning, exemplified by the work of Clark and Etzkowitz. In addition, studies on the relation between context and development of entrepreneurial university transformation are scarce (Foss & Gibson, 2015). This is remarkable, because the extent to which a university is entrepreneurial is to be understood within a specific context (Gjerding, Wilderom, Cameron, Taylor & Scheunert, 2006). Furthermore, an internationally agreed set of indicators measuring entrepreneurial universities does not exist (Etzkowitz et al., 2017). This is because of the variety of interpretations and manifestations of entrepreneurial university, which hampers comparison among universities. Another critique is about the dominance of the economic, business-oriented interpretation in the discourse on entrepreneurial university. This dominance is contested, with a plea to focus on the wider societal role of universities (Audretsch, 2014; Cai & Lui, 2015; Goddard & Kempton, 2016).

Entrepreneurial universities in developing countries

Only recently, the attention for entrepreneurial universities is more global with contributions from and about universities in developing countries. Of the 101 peer-reviewed articles on entrepreneurial universities indexed in two EBSCO databases (Cai, Mudde, Reyes & Weng, 2017), 26 articles were about higher education in Africa, Asia, Latin America or Central/Eastern Europe, of which 23 published in 2005 or more recently. The ten Asian articles included three articles on universities in high-income countries Singapore, Hong Kong and South Korea. Six articles were about higher education in Africa, of which four on South Africa.

The societal role of universities is the essence of several of these articles. Ceptureanu (2017), Saeed, Muffato and Yousaf (2014) and Amadi, Philips, Chodokufa and Visser (2016) focus on entrepreneurship education – in Romania, Pakistan and South Africa – among others as a way to mitigate youth unemployment through strengthening entrepreneurial skills or intentions. A cross-cutting conclusion is the need for more cooperation with entrepreneurs, industry, government, and non-government organisations for entrepreneurial skill development of the students. Furthermore, Saeed et al. (2014) conclude in their study among Pakistani students that students lacked support in how to set-up a business, which they explain by the novelty of entrepreneurship education in the country and possibly restrictive orientation on entrepreneurship by the faculties at these universities.

Grobbelaar and De Wet (2016) and Subotzky (1999) propose alternatives to the concept of entrepreneurial universities, which they perceive as too biased towards economic development. Grobbelaar and De Wet advocate for ‘development universities’ that are concerned with creating solutions for concrete problems of society. They illustrate this with a South African case study. Centre stage in their framework are relationships with local communities. They state that academic contributions of universities should be valued by the engagement of these universities with the community.

Subotzky published his article on higher education in — as well — South Africa at a time of rebuilding South Africa after apartheid. He stresses the role of universities as contributors to the public good and to a more equitable society. He advocates for university community partnership development as an alternative for business oriented entrepreneurial university. Also, Sooampon and Igel (2014), in their case study among Thai university researchers, emphasise the role of universities in fostering social equality. They propose universities to be social enterprises rather than profit-making organisations, framing the entrepreneurial role of researchers as leaders for social change. This focus on the developmental or social role of universities coincides with the recent attention for social entrepreneurship that is becoming increasingly popular worldwide. (Bosma, Schøtt, Terjesen & Kew, 2016; Betts, Laud & Kretinin, 2018). For example, sub-Saharan Africa has one of the highest proportions of social entrepreneurs in the world (Mirvis & Googins, 2018). One can argue that entrepreneurial universities in developing countries continue to be relevant as developmental universities by stimulating and sup-

porting social entrepreneurship. They can do this for instance through experiential learning, partnering with civil society organisations, including 'social engagement' in curricula, or offering internships at social enterprises (Betts et al., 2018).

Last, both Etzkowitz and Clark touched upon entrepreneurial universities in a developing context. Etzkowitz (2003) is of the opinion that universities have an important role in furthering developing countries through adaptation of technologies for solving local problems or local innovations. Clark (2004) elaborated on the development of Makerere University in Uganda as an example of entrepreneurial university transformation in a highly problematic context. He explains that a change into becoming more entrepreneurial needs a supportive political and economic environment as well as a strong internal will to change.

Summarising, the body of literature on entrepreneurship development by universities in developing countries has started to emerge in the last decade, mainly focusing on entrepreneurship education. Scarce are articles analysing entrepreneurial characteristics of these universities beyond the education process.

Understanding the broader picture: The entrepreneurial ecosystem

Naudé, Szirmai and Goedhuys (2011) indicate that more than entrepreneurship, the determining factor for innovative behaviour in developing countries is a conducive policy and institutional environment. In a study on student entrepreneurship in Brazil, Alves, Fischer, Schaeffer and Queiroz (2019) come to a similar conclusion. They postulate that an unfriendly institutional environment is negatively affecting student's attitudes towards entrepreneurial intentions. Thus, entrepreneurs, and universities alike, are part of an entrepreneurial ecosystem (Isenberg, 2010) that can be conducive or inhibitive for enterprise. It is relevant to introduce this broader system approach because analysing differences among universities needs understanding of the context in which they operate (Foss & Gibson, 2015).

The question arises whether entrepreneurial universities tend to be more likely located within more entrepreneurial ecosystems. This question can only be answered indirectly because there is no globally comparable data on entrepreneurial universities. Mudde (2020) clustered data of the QS Graduate Employability Ranking, the Global Entrepreneurship Index and the Global Competitive Index per type of country as characterised by the OECD (least developed countries, lower middle-income countries, upper middle-income countries, and higher income countries). The picture arises that higher income countries score higher on the Global Entrepreneurship Index and house almost all of the universities that feature on the QS Graduate Employability Ranking. This analysis confirms that the environment in which universities in developing countries operate is less conducive for entrepreneurship development.

Concluding remarks

Literature reveals that there is a link between entrepreneurship education and entrepreneurship on the one hand with its focus on individual development, and the entrepreneurial university on the other hand with its focus on institutional and organisational development. Furthermore, it is understood that successful entrepreneurship development is to be expected more in entrepreneurial universities, which operate in more entrepreneurial ecosystems. Whilst earlier research on entrepreneurial universities was mostly concentrated on their role in innovation and technology transfer, there is a more recent shift towards exploring universities role in assisting students to accumulate entrepreneurial skills, because these skills are perceived to be essential in current society.

Methodology

This research used non-probability, purposive sampling, heterogeneous with respect to country selection as well as type of universities (Saunders, Lewis, & Thornhill, 2012) to be able to build up a diverse set of evidence. Three countries were chosen with the aim to reach maximal variation in the sense of geographical dispersion: Ethiopia, Indonesia, and the Palestinian Territories. The sampling criteria were (i) the OECD classification, whether as least developed country or lower middle-income country (OECD, 2018); (ii) being a partner country of Netherlands development cooperation (Government of The Netherlands, 2018) and (iii) accessibility for data collection within the period and budget of this study. Ethiopia is categorised by the OECD as least developed country, whilst Indonesia and the Palestinian Territories are both lower middle-income countries (OECD, 2018). Table 1 presents of each of these countries data on youth population, youth unemployment and total early-stage entrepreneurial activity (TEA).

The second sampling was on university level. Four theoretical grounded criteria were used to select universities, besides the feasibility to access the university for data collection. The first criterion is the funding base of the university. Both private as well as public universities were selected because the funding base of the institution is considered as an important imperative for change (Clark, 1998, 2004; Gibb, 2013). In this respect, the main difference in the educational sector is public versus private funding. The second criterion is the size of the university in terms of number of students, which is a factor of potential relevance mentioned by Clark (2004). The indicator used is a student population of more or less than 10,000 students. Third, the age of the university is used as criterion, differentiated between young universities of less than 15 years and those who are older, because transforming a university is a long process which can take ten years (Clark, 1998). And last, both comprehensive universities as well as universities with a specific academic profile were selected. The academic profile of the higher education institution, being a comprehensive university or a technical university, could

Table 1: Youth population, youth unemployment and total early-stage entrepreneurial activity (TEA) of Ethiopia, Indonesia, and the Palestinian Territories.

	% 0–14 years (1)	% 15–24 years (1)	Annual population growth (1)	Median age (1)	Youth unemployment rate (2)	TEA (year) (3) (5)
Ethiopia	43.21%	20.18%	2.83%	17.9	25.2% (1)	14.73 (2012)
Indonesia	25.02%	16.99%	0.86%	30.2	15.80%	7.47 (2017)
Palestinian Territories	36.5% (4)	21.37% (4)	1.84% (4)	21.1 (4)	46.80% (4)	9.8% (2012) (5)

(1) Source: CIA The World Factbook, 2018, accessed 20 October 2018

(2) 2018 estimated youth unemployment rate (age 15–24). Source: ILO ILOSTAT, ILO modelled estimates, Nov. 2018, accessed 11 March 2019

(3) Source: Global Entrepreneurship Monitor, accessed 20 October 2018

(4) Only data of the West Bank

(5) Source: Global Entrepreneurship Monitor, Palestine Country Report 2012

also explain differences between institutions. More entrepreneurial possibilities with industry linkages as well as funding opportunities are expected from science and technology (Clark, 1998).

This resulted in the selection of 14 universities that are diverse with respect to the four above mentioned criteria: one in Indonesia, nine in Ethiopia, and four in Palestine (see Table 2). In Indonesia one university has been selected for testing the research framework and as an in-depth case: Bogor Agricultural University (IPB). This university is publicly funded, has more than 10,000 students, exists more than 15 years and has a specialised academic profile.² In Ethiopia, nine universities were selected (out of a population of 37 universities). These universities are predominantly publicly funded, young, comprehensive universities. One private university is included as comparison. In Palestine, four universities were selected (out of a population of 14 higher education institutions on the West Bank). They are mixed in the sense of age, size, funding, and academic profile.

Per university, a mixed method research was carried out comprising of qualitative and quantitative methods. Data were collected through various data sources, which allowed for triangulation. The main data sources were individuals from within and beyond the university: university leadership, teaching staff, students, university-graduated entrepreneurs, and external stakeholders. Per university, interviews have been conducted, focus group discussions (FGD) organised, and surveys distributed. The main language used was English. The structured surveys were about perceptions of university leadership, teaching staff, and students about the entrepreneurial status of their university. Furthermore, desk research of university documents and websites

² Attempts have been made to collect data of a few more Indonesian universities through online surveying, but the response rate was far too low.

Table 2: Multiple-case design: countries, number of universities and university characteristics covered in this research (Source: Author).

	Indonesia (1 university)	Ethiopia (9 universities)	Palestine (4 universities)
OECD country classification 2018	Lower middle-income country	Least developed country	Lower middle-income country
Funding base: public or private	Public	Public (8) & private (1)	Public (1) & private (3)
Size: large or small (more/less than 10,000 students)	Large	Large (7) & small (2)	Large (2) & small (2)
Age: young or old (more/less than 15 years)	Old	Young (6) & old (3)	Young (1) & old (3)
Academic profile: comprehensive or specialised	Specialised	Comprehensive (8) & specialised (1)	Comprehensive (3) & specialised (1)

helped to verify evidence obtained from the interviews, FGDs and surveys. Last, researcher's observation of the conditions on the university campus provided additional information, and hence served as another source of evidence. Table 3 summarises the number of people surveyed or interviewed in this research.

Research framework

For this study, 'HEInnovate' is used as a framework for answering the research questions. HEInnovate is an online self-assessment tool developed for European universities by the European Commission's Directorate General for Education and Culture together with the OECD Local Employment and Economic Development Programme (LEED) (European Commission & OECD, 2013), also applicable in the context of developing countries (Mudde, 2020). In this research, the 2015 updated version is used that comprised of seven categories with in total 37 statements about the entrepreneurial status of a university.³ See Table 4 for the categories and variables of the HEInnovate framework.

Each category of HEInnovate was captured in a sub-set of statements, resulting in two questionnaires (for students and staff). A 5-points Likert scale was used for all the statements,⁴ with one indicating total disagreement, and five indicating total agree-

³ In 2018, beyond the data collection period of this study, an eighth category was added to HEInnovate named 'digital transformation and capability'. This category groups statements related to the ability of a university to integrate, optimise, and transform digital technologies to support innovation and entrepreneurship.

⁴ In Indonesia, a 6-points Likert scale has been used.

Table 3: Number of people surveyed or interviewed per country, categorised by leadership, teaching staff, students, graduate entrepreneurs, and external stakeholders (Source: Author).

	Indonesia (1 university)	Ethiopia (9 universities)	Palestine (4 universities)	Total (14 universities)
University leadership				
Survey	1 (not used)	18	0	19
Interview	9	22	23	54
Teaching staff				
Survey	51	67	56	174
Interview	12	1	20	33
FGD	28	69	9	106
Students				
Survey	258	75	200	533
FGD	20	82	63	165
Graduate entrepreneurs				
Interview	7	7	0	14
External stakeholders				
Survey	0	43	0	43
Interview	8	7	10	25
FGD	0	42	0	42

Table 4: Categories and variables of the HEInnovate framework (Source: adapted from HEInnovate, 2013).

Categories of HEInnovate	Explanation	Variables included in this study
Leadership and governance	Variables related to the institutional mission and vision, the role of top-management and the degree to which innovative activities are stimulated	Strategy; High level commitment; coordination; support to faculties; relation to wider regional, social and community environment
Organisational capacity	Variables on funding, people and incentives. An important aspect is the degree to which entrepreneurial behaviour of staff is incentivised	Funding; internal cooperation; recruitment; staff development; incentives and rewards
Teaching and learning	Variables stimulating an entrepreneurial mind-set in education, both through content as well as approach	Formal learning; informal learning; validation of entrepreneurship learning outcomes; collaborating and engaging with external stakeholders; research

Table 4 (continued)

Categories of HEInnovate	Explanation	Variables included in this study
Supporting entrepreneurs	Variables on what the university has in place for supporting those students, staff and alumni that want to start-up a business, including giving access to finance, networks, and incubation	Attention for entrepreneurship awareness; business creation support; business start-up training; mentoring; access to finance; access to business incubation facilities
Knowledge exchange	Variables on knowledge creation with and for the benefit of the social, cultural and economic development of society	Collaboration and knowledge exchange with industry, society and the public sector; Active involvement in partnerships; links with incubators, science parks and other external initiatives; staff and student's opportunities to take part in innovative activities; knowledge exploitation
Internationalisation	Variables on staff and student mobility and the importance of international research and partnerships.	Internationalisation strategy; international mobility of staff and students; international staff; internationalisation in teaching; international research
Monitoring and evaluation	Variables related to whether and how the institution is measuring the results of its entrepreneurial strategy and activities	Impact of entrepreneurial strategy, personnel and resources, teaching and learning, start-up support, knowledge exchange activities, and internationalisation

ment with the statement presented. The questionnaires were tested for validity and reliability using factor analysis. All scores — Cronbach's Alpha — were 0.7 or far above, indicating that the factors are reliably measured by the relevant questions in the questionnaire.

Data analysis

Data of the interviews and focus groups were analysed in two steps. First, per university, data was summarised by using a data-matrix that related the information received with the variables of the European Commission/OECD framework. This resulted in a university specific narrative that was complemented by data of various internal documents.⁵

⁵ Such as university strategies and reports, organograms, financial reports, course descriptions, outlines, information on patents, licenses and IP, entrepreneurship-related documents.

As far as possible, the narratives represented a balanced picture from the perspective of all the four groups of respondents. Subsequently, the university-specific narratives were aggregated in a cross-case analysis using the same variables of the European Commission/OECD framework.

Findings

Perception scores

Students and staff have been asked to score statements related to the entrepreneurial status of their university on a scale from one to five (Indonesia: one to six). Table 5 presents the means per dimension of the framework, i.e. the total scores of the respective sub-set of statements divided by the number of statements. The overall conclusion is that PT University Khadoori (PTUK) in Palestine and IPB University in Indonesia score the highest, in absolute and relative terms.

The data of the 14 universities as presented in Table 5 indicate that the cumulative responses of six universities were slightly above the neutral value of 3.0, indicating that the respondents had a slightly more positive than negative perception on the entrepreneurial status of their university. In Palestine, only the cumulative responses of PT University Khadoori (PTUK) staff and students were slightly above the neutral value of 3.0 (3.18 and 3.12 respectively): the results of the three other Palestinian universities are less positive. In addition, students and teaching staff of IPB University in Indonesia also had a positive perception of the entrepreneurial status of IPB. Table 5 shows that all values (but two) were beyond the average of 3.5.

Furthermore, the survey results have been analysed per country exploring whether statistically significant differences exist between the universities. This is done by comparing the responses for the seven categories of the analytical framework per university. Beyond the significant higher score of PTUK among the Palestinian universities, the data of the Ethiopian universities show variation: an analysis of variance indicates that Axum University, Adama Science and Technology Institute, and Dire Dawa University score significantly higher than Wollega University ($p = 0.009$, 0.003 , and 0.000 respectively). Differences between Axum University, Adama Science and Technology Institute, Dire Dawa University and Mizan-Tepi University are also considerable, but only Dire Dawa University scores statistically significantly higher than Mizan-Tepi University ($p = 0.010$).

Additional analysis of variance indicated that there are statistically significant differences between students and staff at the universities in Palestine and Indonesia. In Palestine, students scored significantly lower than staff on all the seven categories of the framework except for the category 'measuring of impact'. In Indonesia it was the other way round: staff scored higher than students. A closer look at the student re-

Table 5: Mean per category of the analytical framework, students and staff, by university (Source: Author).

	1. Leadership	2. Org. Capacity	3. Teaching	4. Support entrepren.	5. Exchange, collabor.	6. Internatio.	7. Impact measure.	Total Mean
Ethiopia all 9 universities								
Addis Ababa University (n=15)	2.94	2.83	2.69	2.59	2.54	2.9	2.64	2.73
Aksum University (n=22)	3.33	3.61	3.31	3.08	3.26	3.03	2.99	3.23
Adama Science & technology Institute (n=25)	3.4	3.47	3.17	3.2	3.15	3.49	2.79	3.24
Wollega University (n=27)	2.75	2.55	2.77	2.43	2.49	2.37	1.87	2.46
Jimma University (n=27)	3.34	3.29	3.29	3.08	3.06	3.2	2.55	3.12
Mizan-Tepi University (n=12)	2.8	2.68	2.88	2.34	2.29	2.4	2.18	2.51
Unity University (n=24)	3.25	3.66	3.37	2.93	3.02	2.69	2.47	3.06
Dire Dawa University (n=30)	3.6	3.8	3.5	3.14	3.38	3.36	2.87	3.38
Wollo University (n=21)	3.3	3.06	3.21	2.92	2.86	2.8	2.21	2.91
Palestine all 4 universities								
An-Najah National University – students (n=56)	2.37	2.46	2.48	2.42	2.51	2.71	2.58	2.5
Al Quds University – staff (n=23)	3.18	3.12	3.02	2.85	2.87	3.01	2.59	2.95
Al Quds University – students (n=62)	2.51	2.54	2.55	2.44	2.42	2.54	2.3	2.47
Hebron University – staff (n=6)	2.83	3.05	2.89	2.7	2.74	2.61	2.42	2.75
Hebron University – students (n=55)	2.61	2.72	2.7	2.56	2.59	2.46	2.5	2.59
PT University Khaddori – staff (n=27)	3.4	3.37	3.28	3.15	3.28	2.9	2.88	3.18
PT University Khaddori – students (n=27)	3.19	3.11	3.22	2.89	3.12	3.05	3.23	3.12
Indonesia (IPB University)								
Students (n=258)	4.16	3.97	4.08	3.82	4.07	3.98	3.8	3.98
Teaching staff (n=51)	4.27	4.09	4.22	4.15	4.18	3.99	4.16	4.15
	4.04	3.84	3.93	3.49	3.95	3.97	3.43	3.81

sponses leads to the conclusion that there are no statistically significant differences between students by department, by sex, or by number of years studying at the university. The same applies to staff.

In-depth case analysis

The overall finding of the cross-case analysis is that at all 14 universities assessed, entrepreneurial activities were taking place, in particular entrepreneurship education. However, only the Indonesian university IPB, situated in a middle-income country, could be categorised as entrepreneurial, because of its strategically embedded research-based technology transfer and innovations. This university started an entrepreneurial strategic path in the year 2000. This development was triggered by the granting of the autonomy status to the university by the government of Indonesia in combination with a serious threat of drastically reduced government funding. The institutional leadership consistently worked towards becoming a research-based entrepreneurial university, stimulating technology transfer and innovation. As a result, IPB has entered in 2016 the top 100 of QS World University Ranking by subject on Agriculture and Forestry and has been awarded several times in Indonesia because of its contributions to innovation. Compared to other Indonesian public universities, IPB was part of the group of top ten institutions that had more than 100 students winning a grant over the last three years for their start-up. The August 2019 issue of IPBs electronic newsletter mentions that IPB is the third best public Indonesian university according to the national government (IPB, 2019).

Although the perception scores of the nine Ethiopian universities show some variation, the in-depth case analysis finds a similar situation at all of them. All were operating in a top-down, central government-led context, in which the Ministry of Education had instructed the universities to strengthen entrepreneurial mindsets of the students. The universities faced limited discretion: university leaders had to obey the instructions from the central government and a large proportion of staff had the inclination to act on command. As a result, entrepreneurship education was being set-up, but in general, there was a lack of an entrepreneurial vision, mission, and strategy. Partnering with external stakeholders was limited. Some of the universities showed more entrepreneurial activities than other universities, which coincided with a positive orientation of institutional leadership towards entrepreneurial initiatives.

In Palestine, more specifically in the West Bank, the four universities assessed demonstrated an entrepreneurial zeal. In their diversity, they all set-up activities to strengthen entrepreneurial attributes of their students and to link education with industry. A strong push factor identified in this research was the prominent influence of international donor agencies that made funds available for conquering the huge problem of youth employment in the country: the unemployment rate is above 40 per cent (ILO, 2016).

Factors

The three cases studies of Ethiopia, Indonesia and Palestine capture a multitude of factors that initiate, hamper or support how entrepreneurial a university is, summarised in Table 6.

Table 6: Conducive and hampering factors to entrepreneurial university transformation (Source: Author).

	Conducive factors	Hampering factors
External to the university	<p>(Financial) independency from the government, autonomy (IND + PAL) 1</p> <p>(serious threat of) reduced government funding (IND + PAL)</p> <p>Guiding national innovation strategy (IND)</p> <p>Necessity for many students and staff to generate additional income (IND)</p> <p>Extreme high youth unemployment (PAL)</p> <p>Donor agencies support to entrepreneurship development and university-industry relations (PAL)</p>	<p>Financial dependency from the central government, almost fully government funded (ETH)</p> <p>Non-entrepreneurial central government strategy universities expected to comply with national government priorities and political goals (ETH)</p> <p>Absence of private sector and weak government institutions (ETH + PAL)</p> <p>Israeli occupation: restricted mobility, restricted access to goods, insecurity, political instability (PAL)</p> <p>Worrisome economic outlook (PAL)</p>
Internal to the university	<p>Pro-active, consistent university strategy (IND + PAL)</p> <p>Consistent and determinant leadership team (IND)</p> <p>Exemplary leadership role of the university president (ETH + PAL)</p>	<p>Lack of internal communication and coordination systems (IND)</p> <p>Top-down management culture & practice (IND + ETH)</p> <p>Disconnect between daily teaching practice and university corporate entrepreneurial strategy with its focus on commercialisation (IND)</p> <p>Mind-set on ‘knowledge transfer’ not on ‘co-creation’ (IND)</p> <p>Individual revenue-generation prevails institutional interest (IND)</p> <p>Absence of entrepreneurial strategy (ETH)</p> <p>Uniform, copied university strategies (ETH)</p> <p>Limited autonomy on individual level (ETH)</p> <p>Bureaucratic university regulations (ETH)</p> <p>Non adequate working and learning environment (ETH)</p> <p>Age of the institute: young universities have limited capabilities and network (ETH)</p> <p>Underdeveloped research function (PAL)</p> <p>Absence of a coordinated, strategic intention (PAL)</p>

IND = Indonesia; ETH = Ethiopia; OPT = Occupied Palestinian Territories

These factors can be categorised by internal to the university and by external to the university and are presented in Table 7. Other factors may be of importance as well but have not been part of the findings of this research. The factors printed in bold are those that have been found in all the three countries of this study. The internal factors are grouped using the appropriate categories of HEInnovate. The external factors are grouped using the PESTEL categorisation.⁶

Table 7: Internal and external factors influencing how entrepreneurial a university is
(Source: Mudde, 2020).

Internal to the university (HEInnovate)	External to the university (PESTEL)
Leadership and governance	Political
<ul style="list-style-type: none"> - Strategic intent (IND+ETH+OPT) - (Exemplary) leadership (IND+ETH+OPT) 	<ul style="list-style-type: none"> - Funding of universities (IND+ETH+OPT) - Innovation and research policy (IND) - Political (in)stability (ETH+OPT) - (in)Security (OPT)
Organisational capacities	Economic
<ul style="list-style-type: none"> - Working, teaching and learning environment (ETH) - Management culture and practice (IND+ETH) - (Bureaucratic) University regulations and procedures (ETH) - Level of individual discretion (ETH) - Coordination and communication (IND+ETH+OPT) 	<ul style="list-style-type: none"> - Availability and maturity of formal private sector (IND+ETH+OPT) - Youth (un)employment, government and donor agencies priorities on (IND+ETH+OPT) - National economic outlook (OPT) - Access to goods and resources (OPT) - Capability of government institutions (ETH) - Priorities of donor agencies (OPT) - Level of income (IND)
Teaching and learning	Social
<ul style="list-style-type: none"> - Staff development in entrepreneurial teaching (IND+ETH) 	<ul style="list-style-type: none"> - Pre-university entrepreneurial activities (IND+ETH) - Strength of social network (IND+ETH) - Ease of mobility (OPT)
Support to Entrepreneurship	Technological: no factors found
<ul style="list-style-type: none"> - Facilitation of mentorship (IND+ETH) - Individual revenue-generation versus institutional interest (IND) - Experience level of staff (IND+ETH) 	
Knowledge exchange and partnerships	
<ul style="list-style-type: none"> - Research capabilities (IND+ETH+OPT) - Strength of social network (IND+ETH+OPT) - ‘Knowledge transfer’ versus ‘co-creation’ mindset (IND) 	
Internationalisation: no factors found	

⁶ A PESTEL analysis is a tool that is used to identify macro external forces influencing an organisation. The letters stand for political, economic, social, technological, environmental and legal.

Discussion

Internal factors

The three case studies resulted in several internal factors that influenced the entrepreneurial status of the universities assessed, confirming extant literature (Clark, 2004; Etzkowitz, 2004; Vorley & Nelles, 2009; European Commission and OECD, 2012; Coyle et al., 2013; Gibb, 2013; Fayolle & Redford, 2014; Foss & Gibson, 2015; Maritz, Koch & Schmidt, 2016; Leih & Teece, 2016). Those determining factors that have been found at all 14 universities are strategic intent, (exemplary) leadership, coordination and communication, research capabilities, and strength of social network (Fernández-Pérez, Alonso-Galicia, Rodríguez-Ariza and Fuentes-Fuentes, 2015; Tang, Chen, Baskaran & Tan, 2016). The other internal factors were found only in the assessment of one or some of the universities.

A strategic intent, operationalised in a strategic plan, appeared a fundamental factor determining an institutional-wide change process (Gibb, 2012). A consistent strategic orientation at IPB over a period of more than ten years demonstrably resulted in a research oriented entrepreneurial university, whilst the non-entrepreneurial Ethiopian universities were characterised by — among others — a lack of university-specific entrepreneurial visions, missions, and strategies. In Palestine, at one of the universities assessed, a strategic entrepreneurial transformation process started and at another university an entrepreneurial vision and agenda were implemented, whilst such a coordinated approach was not present at the other two Palestinian universities.

The importance of (exemplary) leadership is extensively evidenced in the case studies, underlining the relevance of this determining factor for initiating, guiding, or facilitating a change process (Vorley & Nelles, 2009; European Commission & OECD, 2012; Coyle et al., 2013; Gibb, 2013). The Indonesian case demonstrates that consistent leadership matters. Also in Ethiopia, the more dynamic universities were those with a leader that was more receptive to entrepreneurship development. And in Palestine, a period of growth and innovation of the most entrepreneurial university assessed was pushed by the university president.

Internal coordination of entrepreneurial activities and communication of these activities, results and rationale are confirmed to be relevant (European Commission & OECD, 2013). In most of the universities assessed internal coordination and communication was weak, resulting in different interpretations among staff of what was expected from them, and scattered, potentially duplicating activities. The most entrepreneurial university in Palestine was characterised by a coordinated strategy implementation with all deans involved.

In most cases, the absence of research capabilities was found to be a bottleneck in cooperating with businesses, which is a core aspect of an entrepreneurial university (Etzkowitz, 2004; Clark, 2004; Gibb, 2013). Most of the universities assessed focused on teaching of undergraduate students. The exception was IPB with its explicit strategy to become an entrepreneurial research university with the results as already described. One of the

Palestinian universities, An-Najah National University, emphasised its strategy scientific excellence in education and in research, but had not (yet) related this focus with a possible entrepreneurial agenda.

The last prominent internal factor that needs mentioning is strength of social network, which is considered to be important for entrepreneurship development (Fernández-Pérez et al., 2015; Tang et al., 2016). Whilst the Indonesian network — in particular through alumni — appeared to be strong and accessible, the Ethiopian university staff was less experienced in networking. In Palestine, social networking was strong, although still limited with business.

Although not explicitly touched upon in the assessments of all the universities, but still important to mention is the conduciveness of the environment for working, teaching and learning. In particular at younger Ethiopian universities in more remote areas, the living and working conditions appeared less conducive for teaching and learning, let alone for stimulating creativity and entrepreneurship. Access to books, computers, internet, but also good sanitary facilities was limited. This observation is in line with the conclusion of Grimaldi, Kenney, Siegel and Wright (2011) who pointed to the underestimated importance of universities to provide '*a protected environment where students can experiment with new ideas and follow their passions*' (2011, p. 1047).

Last, absent in the internal factors are factors related to internationalisation, one of the categories of HEInnovate. Although international relations were present or fostered by universities, it was not considered to have a (major) influence on the entrepreneurial agenda. The reason may be twofold. First, the attention for entrepreneurship was relatively recent and mostly concentrated on introducing entrepreneurship education for local start-up development. Secondly, the integration of entrepreneurial activities in the wider university system was found to be weak. Internationalisation was organised separately from those university staff or units dealing with entrepreneurship. Literature evidences however that internationalisation helps. Vandor and Franke (2016) in their thorough study among Austrian students and entrepreneurs who had lived and worked abroad for more than six months, argue that cross-cultural experiences increase 'the ability to recognise entrepreneurial opportunities'. Also, Minoli, Donina and Meoli (2016) conclude that internationalisation positively relates to student entrepreneurship. In their study using data of 28,855 students from 130 European universities they state that internationalisation of education increases human and social capital of students, which in turn has a positive effect on their engagement in entrepreneurship. Furthermore, they found that students benefit indirectly from faculty and staff that are participating in international research and knowledge transfer.

External factors

In the understanding that universities are to be understood within their specific context (Gjerding, Wilderom, Cameron, Taylor & Scheunert, 2006; Foss & Gibson, 2015), sev-

eral contextual factors have been found that appeared to be relevant for all the universities assessed. These are: institutional autonomy, funding, availability and maturity of formal private sector, and youth (un)employment. Whilst institutional autonomy and funding are known factors from literature (Clark, 1998, 2004; Etzkowitz, 2004; European Commission & OECD, 2014; Etzkowitz et al., 2017), availability and maturity of formal private sector, and youth (un)employment may be more specific for the developing countries assessed. The other external factors in Table 7 may also be relevant for all the universities assessed but were found only in the assessment of one or some universities.

The entrepreneurial transformation at the Indonesian university started when it became more autonomous from government, the Palestinian universities were autonomous in making their own choices, but an entrepreneurial spark was absent at the government-led Ethiopian universities that had little autonomy. The same pattern is applicable to funding: a serious possibility that government funding would decrease was an important trigger for the Indonesian university to re-strategise becoming a more entrepreneurial institution. The Palestinian universities, structurally confronted with restrictive government funding, had to develop alternative, more market-oriented income strategies. But the Ethiopian universities, almost fully funded by the central government, lacked a financial imperative to become more entrepreneurial. However, also in Ethiopia, government support to universities has come under pressure, which led to starting-up income-generating activities (Feleke, 2015).

Whilst the relation with industry is at the heart of the entrepreneurial university concept (Clark, 1998, 2004; Etzkowitz, 1998, 2004; Gibb, 2013), the explicit attention for the availability and maturity of formal private sector is less prominent in the literature. This is understandable given that most studies on entrepreneurial universities are on universities in developed countries that have a large, well-established formal private sector. This study has found that entrepreneurial development by universities in the countries assessed is seriously hampered due to the restrictive practical possibilities for engaging with the formal private sector. As such, it confirms the conclusion of Stensaker and Benner that 'entrepreneurialism rests upon powerful and resourceful networks that are not readily available to all' (2013, p. 404).

The final external factor that appeared to be relevant for all universities assessed is the level of policy attention for creating employment opportunities for youth. This study found a large pressure by government and donor agencies on the higher education sector to help overcome youth unemployment through entrepreneurship education and supporting business development of graduates. This resulted in inserting entrepreneurship in university strategies, offering entrepreneurship (awareness) courses, setting-up university entrepreneurship centres and incubators, mentoring of students, and giving students access to networks, facilities and finance.

Interrelation of determining factors

An interesting conclusion of this chapter would be to identify which factors are more important for becoming an entrepreneurial university than others are, and which factors may be interrelated. Some qualitative conclusions can be drawn, by considering that HEInnovate used in the three empirical studies was meant neither to measure the interdependence of determining factors, whether internal or external, nor to identify the relative weight of each factor.

The empirical studies show that at those universities that were assessed to be more entrepreneurial, in particular IPB in Indonesia and PTUK in Palestine, a more entrepreneurial strategic intent, university leadership at the top of the institution receptive to entrepreneurship development, and institutional and individual autonomy went hand in hand. With these three enablers in place, a university seems to have the potential to engage in a transformation process towards becoming more entrepreneurial. Dependent on other internal and external factors as listed in Table 7, the university could become entrepreneurial in the sense of research, innovation and commercialisation, as in the case of IPB, or focus more on student entrepreneurship, which was more visible at universities in Palestine and in Ethiopia. The importance of these three enabling factors is supported by literature, as explained above.

Another important interrelation among determining factors relates to the motivation for and initiation of an entrepreneurial transformation within the university. Etzkowitz (2004) states that the lever for becoming more entrepreneurial as a university is an increased interaction with industry and government. Clark (1998) points to a changing funding base, read reduced government funding. This study however confirms the conclusion of Foss and Gibson (2015) who point to the interplay of an initial external impetus for change and 'exceptional leaders'. The more entrepreneurial universities assessed in this study were those in which exemplary leadership of the university president reacted on an external trigger, in particular a (possible) reduction of government funding, government and donor agencies priorities on youth employment, and an increased institutional autonomy. This underlines the importance for entrepreneurial leadership that is able to sense and seize opportunities and subsequently transform the university (Leih & Teece, 2016).

Differences between universities

A next step in the analysis of the factors influencing entrepreneurial transformation is to explore whether differences exist between different types of universities. In this study, the universities assessed were located in a least developed country and in lower middle-income countries according to the OECD country classification (OECD, 2018). In addition, the universities were selected by using four theoretically grounded criteria (Clark, 1998, 2004; Gibb, 2013): (i) funding base: public or private; (ii) size: more

or less than 10,000 students; (iii) age: more or less than 15 years; and (iv) academic profile: comprehensive or specialised. The empirical findings indicate that in particular the national economic situation and the age of the university seem to affect on how entrepreneurial a university is.

The research findings demonstrate that for the 14 universities assessed, one can conclude that the higher the respective country is on the ladder of the OECD country list (thus the higher the national income), the more entrepreneurial the universities are. The Ethiopian universities, with limited resources, incentives, networks, and experience, operating in a factor-driven economy (Lopez-Claros, 2006), are to be considered not entrepreneurial. The picture of the Palestinian universities, operating in a complex legal, social and political context but in a slightly more advanced economy (categorised by Lopez-Claros as in transition from factor-driven to investment-driven economy), is mixed, with an identifiable entrepreneurial zeal. The Indonesian university, operating in a context with a larger formal private sector, being more experienced, better resourced and networked in an economically stronger country (in transition from investment-driven to innovation-driven economy, Lopez-Claros, 2006), is assessed to be entrepreneurial.

Whether a university was (mainly) private or publicly funded appeared not to be relevant in relation to the existence of internal factors conducive for entrepreneurial transformation. Within the countries, differences were marginal. The same applies to the size (student numbers). Concerning the academic profile, the findings point to the fact that the specialised universities among all 14 universities assessed were more conducive to entrepreneurial change than the other, concurring Clarks findings (1998). They had a more entrepreneurial strategic intent, leadership, and were more active in knowledge exchange and partnerships.

The most prominent difference is the age of the institute. Comparing the 14 universities leads to the conclusion that internal factors at older universities are more conducive to entrepreneurial transformation than at young universities. The most relevant factors are: a more conducive working and learning environment, more experienced staff, more research capabilities, and a stronger and larger social network. The latter includes a bigger network of alumni who may have entered senior positions (Tang et al., 2016). In the context of developing countries, this is the more relevant, because universities in developing countries are relatively young, sometimes very young like in the case of Ethiopia. They will face more difficulty in attracting funding, building up a reputation as knowledge provider, and in recruiting the best staff and students. It will be more difficult for these universities to be entrepreneurial in the sense of contributing to innovation through research-based commercialisation (Etzkowitz, 2004; Stensaker & Benner, 2013; Etzkowitz et al., 2017). The empirical findings that the age of the university is important deviates from the conclusion of Foss and Gibson (2015), who argued that clustering of universities around size and age is not useful for describing entrepreneurial differences.

Last, a word of caution is at place here. The oldest university (IPB) is located in the country with the highest national income, the younger universities are located in

Palestine, whilst the youngest universities are all located in Ethiopia, which is a low-income country. Thus, attribution of differences in how entrepreneurial a university is may be related to the age of the institution or to the national economic situation, or to an interplay of both.

Conclusions

This chapter has explored how entrepreneurial universities in Ethiopia, Indonesia and Palestine are and subsequently which factors have influenced this. The findings indicate that at all 14 universities assessed, entrepreneurial activities were taking place, in particular entrepreneurship education. However, only the Indonesian university IPB, situated in a middle-income country, could be categorised as entrepreneurial.

Becoming a more entrepreneurial university appears to be influenced by a multitude of internal and external factors. The most important internal factors found in this study are: strategic intent, (exemplary) leadership, coordination and communication, research capabilities, and strength of social network. The external factors that were relevant for all the universities assessed are: institutional autonomy, funding, availability and maturity of formal private sector, and policy attention for youth (un)employment.

From all these factors, a more entrepreneurial strategic intent, entrepreneurial leadership at the helmet of the institution, and institutional and individual autonomy went hand in hand. With these three enablers in place, a university seems to have the potential to engage in a process towards becoming more entrepreneurial in the sense of contributing to more entrepreneurial students and graduates.

These conclusions need to take into account limitations of this study, in particular the explorative nature with its case-based evidence, the broad definition of entrepreneurial universities that complicates a clear distinction between entrepreneurial and non-entrepreneurial universities, and the nature of HEInnovate that makes attribution of perceptions and outputs – like number of start-ups – to intended strategies and activities difficult.

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11 Aligning the vocational curriculum with job and business opportunities in Ghana's chocolate and cocoa drink industry

Abstract: Vocational education and training institutes in Ghana are presently modernising their curricula to make the vocational institutes more relevant to market needs and more appealing to students. This paper presents the results of a study that addresses the question of how farm institutes and agricultural colleges in Ghana could redesign their curriculum to incorporate the new opportunities in Ghana's chocolate and cocoa drink sector. The study is theoretically guided by triple helix literature, while the research methodology involved value chain analysis. Data was collected in the period 2020–2021, via a desk study, personal interviews with 20 public and private organisations, a survey among 23 Ghanaian companies, and a stakeholder workshop. The study provides an overview of the relevant stages of the emerging chocolate and cocoa drink value chain in Ghana and identifies a wide variety of job and business opportunities along this value chain. A stakeholder dialogue was used to develop the groundwork for triple helix collaboration between domestic manufacturers, vocational institutes, and relevant government agencies involved in the industry.

Keywords: Chocolate value chain, cocoa value addition, agribusiness training, public-private collaboration

Introduction

I envision the day where the streets in Accra will be blocked on Chocolate Day for young entrepreneurs to showcase their skills in cocoa value addition, and young graduates transform the cocoa bean into valuable products and sold to restaurant chains and hotels. (Joseph Boahen Aidoo, CEO of COCOBOD, during the Ghana Cocoa Awards event, 14 November 2020).

Farm institutes and agricultural colleges in Ghana are presently modernising their curricula to make their Agricultural Technical Vocational Education and Training (ATVET) more relevant to market needs and more appealing to students. In Ghana, like everywhere else in Africa, the appetite for a career in farming is limited among the younger generation (see e.g. FAO, IFAD, & CTA. 2014), and in particular the Ghanaian farm institutes endure dramatically low enrolment rates of less than 10% of their capacity (MSM 2019). The Maastricht School of Management (MSM) and the Centre for Innovation of Education and Training (CINOP), both from the Netherlands, have been

supporting ATVET institutes to turn the tide by raising the attractiveness and relevance of ATVET education in Ghana.¹

One of the initiatives included a study of the job and business opportunities along the chocolate value chain. Such a study is a novelty for two reasons. First, it uses value chain analysis to lay the groundwork for industry-TVET collaboration for curriculum revision, and second, the analysis covers not just farming but the entire value chain in Ghana. The world knows Ghana as one of the world's largest exporters of cocoa beans, but the country has an emerging domestic industry that manufactures chocolate and cocoa drink. This development opens a wide variety of potential job and business opportunities in the processing, manufacturing, and distribution stages of the value chain. Since the courses at Ghana's ATVET institutes primarily focus on farming activities, the emergence of a new agri-business sector provides opportunities for a renewal and extension of teaching modules covering the entire value chain.

The central question addressed in this study is in what direction the ATVET institutes could re-design their curriculum to incorporate the new job and business opportunities. Explicit attention to the chocolate and cocoa drink industry should help ATVET institutes reform and modernise their educational profile. The average age of farmers in Ghana is 55 years (MoFA, 2022), indicating the low interest among Ghanaian youth to follow their parents career path in farming. Courses on cocoa agribusiness rather than on cocoa farming per se could increase the interest of young people. Students will be taught about specific agribusiness stages and will learn how to become farmer-entrepreneurs who can make a profit. They also may find farming more relevant when they have a better understanding of the dynamics in the entire (global) value chain. They could learn how they can collaborate with actors in other stages of the value chain, such as urban private investors or foreign buyers of special, fine flavour cocoa beans. Moreover, when ATVET institutes teach knowledge and skills in agro-industrial processing, confectionary manufacturing, (inter)national marketing, and trading, they help develop a labour force that is badly needed for the industrialisation efforts in Ghana. Like everywhere else in Africa, Ghana urgently needs to transform its economy and reduce the socio-economic importance of agriculture, compared to higher value-adding manufacturing, distribution, and agri-business services.

The first section of this chapter explains the triple helix approach of the study. In the methodology section, we describe how we used value chain analysis to collect data and examine the dynamics of the emerging chocolate and cocoa drink industry in Ghana, and how we tried to involve the industry's stakeholders in an initial triple

¹ The MSM-CINOP support took place via two projects funded by the Dutch government: project OKP-GHA-10030: Reviving agricultural technical and vocational education and training in Ghana by integrating farm institutions (FIs) in the wider agricultural education system with public agricultural colleges and universities, and project OKP-GHA-10031: institutional strengthening of national bodies for technical and vocational education in Ghana in terms of accreditation, supervision and management and by making ATVET competence based. Both projects were executed in the period 2019–2022.

helix collaboration. The results sections analyse new job and business opportunities in the chocolate and cocoa drink sector, the skills, and competences they require, as well as the willingness of stakeholders to join forces in view of ATVET curriculum development. We end with conclusions and discussion.

Triple helix approach to partnership

Many vocational education institutes and universities globally aspire to contribute to the economic development of their country (Clark, 1998; Coyle, Gibb & Haskins, 2013). In countries with a large, young population like Ghana, these educational institutes promote business creation among their students through entrepreneurship education and start-up incubation (Mudde, 2020). Improving job and business opportunities need collaboration between industry and academia. This cooperation is meant to make education institutes more relevant to market needs and more appealing to students through; among other things, redesigning education programmes.

Cooperation between industry and academia is also important for spurring economic development, a development that forms the basis for the anticipated (self-) employment of the graduates. For local economic development to take place, Etzkowitz (2004) underlines the importance of encouraging collaboration between academia, industry, and government, which he coins as 'triple helix'. The triple helix model can assist in the transition from a low-risk to a high-reward local development model that promotes the creation of new markets, skills, and jobs (Ranga & Etzkowitz, 2015). Transcending the traditional, top-down, technology-oriented approach (Schut et al., 2016), triple helix platforms aim for inclusivity among all stakeholders and consider institutional, organisational, and technological barriers to innovation (Mudde et al., forthcoming).

Central to the triple helix approach is the blurring of boundaries between the traditional institutional spheres of government, industry, and universities, with each assuming roles of 'the other' (Etzkowitz & Leydesdorff, 2000; Etzkowitz, 2003). In this way, the relationships among the institutional spheres of the university, industry and government are continuously reshaped in an endless transition resulting in new technologies, new firms, and new types of relationships in a sustained and systemic effort.

The underlying mechanism of the triple helix is to bring key actors; especially government, research, and industry practitioners together to work towards a common goal. The three actors do not shift roles in this approach; instead, they take on additional roles in addition to their conventional responsibilities. For example, universities and research institutes are important in developing ideas through teaching and research, but they may also venture into investing in start-up firms, whereas commercialisation is primarily driven by the private sector, with the government playing a key role in funding research, resolving market failures, and making venture capital available for promising start-ups. When these critical players work together

and, more importantly, when their mandates overlap, it becomes a more effective approach to partnerships.

Such a triple helix can be university-pushed, government-pulled or corporation-led (Etzkowitz & Zhou, 2007). In the university-pushed model, universities are initiators of regional innovation through commercialisation of knowledge and job generators. In the government-pulled model, government is the most important actor and initiator of economic development. In this model, universities are under the control of government and supportive to regional development by helping existing industries and contributing to policy. The corporation-led model supposes industry to be the driving force of technological innovation with universities contributing to innovation. Mudde (2020) suggests adding 'donor-pushed' and 'society-driven' as new typologies,² in particular for triple helix operating in developing countries. He argues that these typologies are applicable in a context in which government institutions are often weak, private sector is small, and universities are young, under-resourced and focusing on teaching with weak research capabilities.

In the context of Africa, inclusivity of key stakeholders in a triple helix means to provide a key role for TVET organisations, because innovation is more related to new processes with the required entrepreneurial skill development than to fundamental research (Kariuki, De Boer & Mudde, forthcoming). Kariuki et al. postulate that triple helix research in emerging economies should take the role of TVET organisations and development partners into account.

In this study, we follow this line of thought, in which we broaden the category of 'university' to 'knowledge institution', to allow for the inclusion of TVET organisations in the analysis. Innovations need to be implemented at more practical levels in an industry, and this requires the involvement of TVET institutions. The quality and employability of graduates of TVET colleges necessitates changes at the local, regional, and national level through triple helix partnerships.

Methodology

To identify job and business opportunities as well as the potential for triple helix collaboration in Ghana's chocolate and cocoa drink industry, we conducted a value chain analysis (Gereffi, 2018; The Springfield Centre, 2015). This implied that private sector actors in the value chain were identified and studied in their entire business eco-system of trade and business relations, and government and educational institutions. In respect of data collection, we followed a mixed methods approach, comprising desk research, a round of interviews, a survey, and a stakeholder workshop.

² These typologies refer to 'multi-stakeholder cooperation initiated by or at least fully compliant with international donor agencies and developmental non-government actors' (Mudde, 2020).

The study took place in the period 2020–2021, with the fieldwork starting with a round of face-to-face interviews with stakeholders of the Ghana's chocolate and cocoa drink value chain. Since domestic cocoa product manufacturers in Ghana are not publicly listed as a distinct group, we searched manually for names of such companies in documents and newspaper articles available on the internet that featured Ghana's chocolate and cocoa drink makers. In this way, we managed to identify 20 companies that we approached for an interview. Because several firms did not respond to our repeated invitations or did not want to be interviewed in the midst of the Covid pandemic, the eventual sample of interviewees includes ten firms. We also found two farm institutes, two agricultural colleges and one ATVET expert prepared to participate in our research. Seven more public and private sector stakeholders were purposely selected because of their roles in the value chain or because of their expertise. In total, 22 interviews were conducted (Appendix 1). Due to the Covid pandemic several interviews were carried out via video conferencing; the majority, however, took place physically by one of the authors in Ghana.

As a result of the round of interviews, we discovered the formation of the Cocoa Value Addition Artisans Association of Ghana (COVAAAGH). This association, founded in 2021, has 55 members, of which 60% (about 33 firms) are in the business of chocolate and cocoa drink manufacturing and distribution. Supported by COVAAAGH, we organised an online survey among its chocolate and cocoa drink manufacturing members, which resulted in 23 useful responses. The overlap between interviewees and survey respondents was limited to one. In terms of industry representativeness of the study, assuming that most of Ghana's chocolate and cocoa drink firms are affiliated with the COVAAAGH, the study covers about 30% of Ghana's relevant firms in the interviewees sample, with over 60% of (different) firms in the survey (Table 1 provides an overview of interviewees and survey respondents).

The workshop had to take place online due to the pandemic, and attracted 17 participants from the industry, ATET institutes and government. The workshop was meant to validate the initial findings and was particularly important to engaging industry representatives with revising the ATET curriculum.

The setting: Ghana's chocolate and cocoa drink value chain

The story of Africa's involvement in the chocolate global value chain is often told. Africa has a dominant share in the global cocoa bean production (almost 70%), valued at US\$ 9 billion, but this is only a fraction of the global chocolate confectionary revenues with an estimated value of US\$ 110 billion (Goodman AMC LLC, 2017). Most of the African cocoa beans are directly exported to Europe or North America, where companies such as Mars, Barry Callebaut, Hershey, Mondelez and Nestle manufacture the chocolate end products. African efforts to retain the higher value addition stages of

Table 1: Overview of survey and interviews respondents and workshop participants (source: compiled by authors).

	Survey (N=23)	%	Interviews (N=22)	%	Workshop (N=17)
Companies in the sample	23		10		10
Companies core business	11	48			
Chocolate	5	22	7	70	9
Cocoa drink*	6	26	3	30	1
Both	1	4	—	—	—
Not indicated	—	—	—	—	—
Permanent employees					
None	—	—	—	—	
1–25	17	74	6	60	
25–50	3	13	2	20	
51–100	2	9	—	—	
400–500	—	—	2	20	
Not indicated	1	4			
ATVET Institutes	—		5		5
Farm institutes			2		1
Agricultural colleges			2		2
Foreign ATVET expert organisations			1		2
Other stakeholders in sample	—		7		2
Commercial cocoa farm			1		1
Government agencies Ghana			2		1
Foreign cocoa industry experts			4		

*Cocoa drink includes both alcoholic and non-alcoholic drink.

the value chain on the continent have had limited success so far. Ghana has managed to expand the cocoa grinding operations in its country to 30–40% of the cocoa produced (COCOBOD, 2020). Any higher is unlikely for cost and logistical reasons (Grumiller et al., 2018). Moreover, the intermediate processing stage in Ghana is capital-intensive and renders a relatively limited number of jobs, while processing is dominated by foreign companies (Goodman AMC LLC, 2017).

Yet, there are alternative routes for Ghana to expand value addition of cocoa bean in the country. Ghana has a few big domestically owned cocoa processors and chocolate makers: the Cocoa Processing Company (CPC), the state-owned enterprise Niche Cocoa Industry Ltd., and Plot Enterprise Ltd. Each of these companies employ between 100–500 people. In addition, there are dozens of small, artisanal chocolate and cocoa drink manufacturers, most of which are organised in the Cocoa Value Addition Artisans Association of Ghana (COVAAAGH) (Interview D22).

The Ghanaian chocolate and cocoa drink manufacturers serve three markets: the domestic market, the African market and remote markets. The domestic market is most important. The manufacturers sell 80–90% of their products domestically, to a variety of retail outlets (supermarkets, food boutiques, hotels, restaurants), and customised clients (private ceremonies, public events, and foreign organisations). Reliable statistics on the size of the Ghanaian chocolate market are not available, but industry estimates vary between US\$ 9–40 million (FMO, 2020, Interview A10). In any case, Ghana's chocolate market is small, with an annual per capita consumption of 1 kg, against over 10 kgs in some western countries (Sabutey, 2023). Moreover, domestic manufacturers compete with multinational confectionary firms that import chocolate from manufacturing locations in China, Turkey and the Netherlands (OEC, 2020). The government aims to expand domestic chocolate consumption and supports events and programmes, such as the annual Cocoa Day (COCOBOD, 2020), the National Chocolate Day (Tourism Authority, 2022), the Ghana Cocoa Awards and an intended cocoa drink school feeding programme (Hayford, 2020).

For the small chocolatiers and cocoa drink manufacturers, the African continent is the most important foreign market. Between 5–15% of their products are sold in the region, mainly in Nigeria and Togo. Most companies plan to expand their exports within Africa (Van Wijk et al., forthcoming). In 2018, Ghana's chocolate exports to African countries were valued at about US\$ 14 million, 41% of the country's total chocolate export (OEC, 2020). Market research underscores considerable opportunities in the African continental chocolate market, which is forecast to grow in the 2020s, driven by economic growth, expanding modern retail shops, rapid urbanisation, and a possible preference towards the westernised taste (6WResearch, 2020). In the West African region, Ghana's chocolate exporters benefit from zero tariffs rules under the Economic Community of West African States (ECOWAS). The African Continental Free Trade Area (AfCFTA) agreement may help Ghana's chocolate industry serve African markets beyond West Africa. The agreement is supposed to expand intra-African trade on cocoa, cocoa intermediate and manufactured products (GEPA, 2017).

Remote markets are presently the least important for the small chocolatiers. Only 5–10% of their products are being exported to Europe, Asia, or North America. The situation is different for the bigger companies. Niche Cocoa Industry, for example, exports 90% of its chocolate to remote markets (Interview A10). Trade data shows that the value of Ghana's chocolate export to Europe is US\$ 18 million in 2018, or 52% of its total chocolate exports (OEC, 2020). Europe is the world's biggest market for chocolate confectionary products and is expected to grow. The main drivers include an increased demand for (a) dark chocolate, which is associated with health benefits, and (b) specialty chocolate, such as chocolate certified under a social sustainability or organic label, or fine or flavoured chocolate. Ghana's chocolate exporters to Europe could benefit from the forthcoming Economic Partnership Agreement (EPA) between ECOWAS and the European Union (EU) (European Parliament, 2020).

Addressing cocoa agribusiness in Ghana's ATVET education: The educators' view

To what extent are Ghana's farm institutes and agricultural colleges responding to the new employment opportunities in the emerging chocolate and cocoa drink business? The interviews with the four ATVET institutions and an ATVET expert show that such a response is as yet absent due to structural and organisational issues. Ghanaian farm institutes in particular cope with low enrolment rates for which the representatives of the institutes give several reasons. Youth have limited interest in agriculture because they think it is not lucrative, and the transition from farm institutes to the higher TVET level of the agricultural colleges is problematic. Farm institute diplomas do not qualify as entry tickets for colleges and have therefore not sufficient value in the eyes of young people. Apart from this, the farm institutes are short of financial means to adequately implement their educational programmes that require, for example, modern machinery (Interviews C12; C13).³

ATVET interviewees agree that a new cocoa products course could be one of the options to make farm institutes' curriculum more appealing to students. However, they pointed out two basic issues that should be addressed first:

(a) Dealing with the level of crop-specificity in courses

Neither the farm institutes nor the agricultural colleges teach a specialised cocoa course presently. They offer a 'tree crops production' course, which addresses 5–6 tree crops, with cocoa being one of them. The time spent on cocoa is, in the end, only a few days' (Interview C15). The interviewees would welcome a new course on cocoa that has an entrepreneurial approach and covers the entire value chain. Students like to pursue broader courses because these are assumed to offer the most employment opportunities. Moreover, educational policies in Ghana increasingly value entrepreneurship components in teaching modules, which stimulate students to create their own employment. A new cocoa course should build on agribusiness potential, i.e. opportunities for value-addition along the entire chocolate – cocoa drink value chain.

(b) Contextualising production in the value chain

By default, the courses of farm institutes and agricultural colleges deal with the production stage. According to interviewees, they commonly include the activities that link production with preceding and following stages, such as acquiring inputs and marketing the produce, but what happens with the produce after it has left the farm gate has not been part of the curriculum. At least, this used to be the situation until recently.

³ An overview of interviewees can be found in Appendix 1: List of Interviewees.

The farm institutes are now trying to make the curriculum more value chain-oriented by paying attention to employment opportunities at each stage of the value chain, especially in crops services sector (for example soil testing). Nevertheless, interviewees explain they are coping with inadequate resources (Interviews C11; C12).

The agricultural colleges have started an agribusiness course that teaches entrepreneurship and includes value chain analysis. ‘Students have to make and pitch a business plan. Before the end of the semester, they must present a final product and outline how they intend to sell it. The idea is that when they have the entrepreneurial skill, they can practice on their own, and start a business after graduation’ (Interview C14).

The discussion on the development of a new ATVET course on the cocoa product value chain could greatly benefit from an earlier initiative by the ATVET programme of the African Union’s NEPAD Comprehensive Africa Agriculture Development Programme (CAADP). This programme aims to develop more coherent policies for ATVET, particularly for women and young people who are identified as potential drivers of development (AU NEPAD, 2019). In this context and with the support of Ghana’s Commission for Technical and Vocational Education and Training (CTVET) and the German development organisation GIZ (German Agency for International Cooperation), two demand-driven courses were designed for farm institutes in Ghana. The courses concerned the pineapple and citrus fruits value chains (GIZ, 2016). The learning materials were pegged at the level 3 of the National Technical Vocational Education and Training Qualification Framework (NTVETQF). Manuals for soft skills and gender policy were also developed (Interview C16).⁴

The two farm institutes, included in the sample of interviewees, have worked with the GIZ CAADP value chain courses. Their experiences and appreciation vary substantially. The common opinion is that the courses are very comprehensive, but the number of modules is too large. For one institute, this was the reason to suspend the use of the value chain courses. They take much longer than three months, the common period that students stay at the institute. Moreover, the institute’s efforts to attract farmers who are specialised in the crop, failed because the farmers wanted sponsorship to attend the course (Interview C13). The second institute used the modules for the normal 1-year agricultural certification programme and for the short courses. People just don’t come for a short course in citrus or pineapple, so due to the lack of time we pick sections of the modules and package them in an innovative way that is suitable to students. At the end of three months, they are equipped. Therefore, it is about selecting what skills the learner

⁴ The Programme for Sustainable and Economic Development (PSED) of GIZ had TVET and ATVET components. The ATVET project of PSED has over the years been implemented by GFA (a German consulting firm), and currently by Planco Gopa consulting firm. This project is being implemented with the farm institutes and other public and private ATVET institutions. The PSED ATVET project has developed learning materials for the mango, cashew, and palm oil value chains as well (Interview C16).

needs to be a processor, instead of trying to teach everything in the entire value chain. This requires some training of facilitators' (Interview C12). The two value chain modules follow a competence based training (CBT) approach, which requires much more teaching capacity. The CBT certification for the citrus and pineapple modules are still under review by the CTVET (Interview C12).

The agricultural colleges are familiar with the GIZ CAADP value chain courses but cannot use them for various reasons: they are too detailed, they are crop specific, and they follow a CBT approach, which does not fit the college teaching methods. The curriculum of the agricultural colleges is not accredited by CTVET, but by the National Accreditation Board (NAB) and operates under the aegis of universities. The colleges have therefore a more theoretical orientation. One of the colleges is using an agribusiness module, which GIZ CAADP also developed. However, here too, only parts of that module are being used because the whole course is perceived as too detailed.

Industry perceptions of required skills and competences along the chocolate-cocoa drink value chain

The industry representatives proved to be largely unaware of the teaching developments at the ATVETS. Their views on the curricula are based on the performance of their employees that have an ATVET diploma. The majority of survey respondents (see Table 2) indicated that new hires with a TVET background had to be retrained on the job because they were 'low skilled', or they had to be retrained only in certain competences, for example soft skills. One-third of respondents was satisfied with their TVET employees, nevertheless. They said TVET level employees were 'good and trainable', 'social media savvy and know how to operate machinery', 'essential to the company', or simply 'great'. A substantial part of respondents skipped the question, with a few stating that they had no experience with TVET-level employees.

Table 2: What is your opinion of the level of knowledge and skills of TVET graduates? (N=23).

Knowledge and skills of new hires from TVET	#	%
Need retraining	10	43
Good skills	8	35
Not indicated	7	30

The open answers were grouped in themes.

Unlike the industry survey respondents, the industry interviewees were all rather critical of their ATVET-level employees, although they referred mainly to agricultural college graduates the far majority said they had no knowledge of farm institutes or their graduates. They were concerned with employee attitudes rather than technical or social competences. There was almost consensus among the ten interviewees that 'attention for detail,' 'passion,' and 'patience' were the attitudes of key importance to young people who want to enter the cocoa agribusiness. Employees need 'to have a good eye for detail in carrying out their job, 'need to have a genuine drive or the will to achieve something in their work' and need to 'understand that there is no gain without pain'. These attitudinal requirements are so crucial that they need to be continuously addressed throughout a new cocoa value chain course (Interview B11).

Other general skills mentioned are creativity for product development and the ability to relearn. More specific skills include skills in market research, product development, long-term planning and investment, and understanding the value chain.

Openness to triple helix collaboration

The ATVET interviewees said they appreciate the involvement of domestic chocolate and cocoa drink manufacturers in the development of a new cocoa products module. The private sector is considered to be very relevant as future employers and trading partners of ATVET graduates. The experiences with ATVET-private sector collaboration are not too positive though. For example, in the current agricultural college curricula, the period that students can spend on in-company internships is limited to a few weeks. Companies find that too short and are therefore reluctant to open internship places.

On their part, the chocolate and cocoa drink manufacturers showed a great interest in liaising with the ATVET institutes (see Table 3). A large majority of survey respondents said they would provide internship opportunities, while over a third said they were willing to participate in joint working groups or give guest lectures.

Table 3: Would you be interested in liaising with TVETs or universities? (N=23).

Interest in liaising with TVETs or universities	#	%
Providing internship opportunities	16	70
Participating in joint working groups	9	39
Giving a guest lecture	8	35
Not indicated	1	4

The private sector interviewees were even more positive in respect of collaborating with ATVET institutes. All of them wanted to be updated on relevant ATVET pro-

grammes, and nine out of ten were willing to join advisory ATVET committees, offer internship places to ATVET students, and giving guest lectures at ATVET institutes.

Business and employment opportunities in the cocoa products value chain

During the interviews and the stakeholder workshop, private sector participants were explicitly asked to identify new agribusiness jobs and business opportunities that would increase efficiency in the chocolate and cocoa drink value chain, and which young people could consider. We grouped the 15 suggestions provided by stakeholders into two sections: one concerning the cocoa farming stages, and the other related to the manufacturing of chocolate or cocoa drink. All suggestions are briefly explained in Box 1.

Box 1. New agribusiness jobs and business opportunities along the chocolate value chain in Ghana, according to industry stakeholders

A. Farming stages

1. Farming: Stakeholders pointed to several competences and skills related to the primary cocoa production process that could create employment for specialised service providers, such as integrated pest management (IPM) and cocoa agro-tourism.
2. Harvesting, fermentation & drying: These are crucial stages in cocoa production that impact the final flavour of the beans. Specialised professionals should have competence in understanding the chemical transformations in the cocoa beans during these stages.
3. Storing and grading: Professionals could specialise in quality assurance of dried beans, by implementing hygiene protocols throughout the post-harvesting and transporting stages of the value chain. Beans should be properly stored and bagged, taking into consideration the temperature and moisture content. Beans are tested, sorted, and graded.
4. Farm marketing and sustainability standards: Farm marketing professionals need competences and skills in marketing and negotiating to ensure fair prices for farmers, particularly when their cocoa has special qualities (cocoa with special flavour, or organic or Fairtrade cocoa). Selling these types of cocoa requires long-term relationships with foreign buyers or the certification bodies of the particular standard, such as UTZ/Rainforest Alliance or Fairtrade. Marketing professionals also need to be trained in the certification requirements of the international sustainability standards.
5. Research assistance: Cocoa farming requires considerable research, which brings along opportunities for assistants and farm staff at ATVET level. Cocoa products value chain stakeholders mentioned assistance in soil testing, plant breeding, plant propagation, climate, and weather research, geoinformation and remote sensing, and research on optimizing organic cocoa production.

B. Chocolate and cocoa drink manufacturing stages

6. Supply chain management: Chocolate and cocoa drink SMEs source their production inputs, such as cocoa beans or butter, sugar, but also machinery from the local market or from abroad. Adequate supply chain management requires competences and skills in accessing and understanding market data, in importing, and in negotiating.

7. Production of chocolate and cocoa drink: The manufacturing of chocolate and cocoa drink requires a series of particular competences and skills. The manufacturers interviewed said that they need to train their new hires themselves.
8. Hardware maintenance: The manufacturers explained they import their small-scale cocoa processing machinery. The maintenance of this equipment creates opportunities for inventive people who are willing to develop the necessary competences and skills and offer them as a service company.
9. Substituting imported items: Chocolate and cocoa drink manufacturing requires food ingredients (such as milk, sugar, lecithin, food colouring) and machinery that is not available in Ghana. Business opportunities exist for all these imported items that can be produced in Ghana itself.
10. Marketing: Chocolate and cocoa drink manufacturers sell their products domestically, elsewhere in Africa, or in remote markets. Marketing and exporting products require a wide range of specific competences and skills that young people could specialise in.
11. Digital services: The manufacturers require a wide range of digital services to enhance their visibility to potential customers and to sell online. Stakeholders mentioned, for example: website design, social media advertising and branding, digital marketing, food photography, and ICT problem solving. Small manufacturers tend to outsource these specialised activities, which opens a window of opportunity for young entrepreneurs with an eye for the chocolate and cocoa drink business.
12. Design: The manufacturers explained they make their own chocolate recipes and use their own decoration designs. They acquired the necessary set of competences and skills via random individual tracks, often abroad. Young people could specialise in chocolate recipe design and offer their services, and they could benefit from a systematic offering of the basic skills in chocolate recipe making and decorating.
13. Packaging: Several interviewees mentioned that some packaging materials, such as foils, are not available in Ghana and need to be imported. Local printing services are sometimes not up to standard and a reason why some manufacturers turn to foreign suppliers. There are several opportunities here for young people who have competences and skills to import or to produce packaging materials, as well as to design these materials and wrappers with specialised computer aided design software.
14. Networking: The manufacturers need to network. They need to cooperate as an industry segment as they do in their new association COVAAAGH, but they also need to link up to relevant government agencies such as COCOBOD and GEPA for support and to influence rulemaking. This requires competences in understanding relevant national rules and regulations, as well as soft skills in inter-personal communication.
15. Transport: Much of the chocolate that is sold on the domestic and other African markets requires a cold chain of refrigerated transport services. Young people could specialise in this type of transport for which they would also need competences in safety and phytosanitary standards, post-harvest management, and skills in fork lifting.

Conclusion and discussion

Ghana's ATVET institutes are upgrading their curricula by taking a more entrepreneurial approach and widening the scope of their programmes to include the entire value chain, rather than just the production stage. This study used value chain analysis to explore the potential new employment and business opportunities and to lay the groundwork for industry-TVET collaboration for curriculum revision. The crop to

which the new course approach could be applied was cocoa. Cocoa is one of Ghana's most important crops, with great potential for value addition. Manufacturing cocoa goods, such as chocolate and cocoa drink, has the potential to create jobs.

By ensuring a complete shift to a competency-based curriculum (CBT) for ATVET institutes, there are numerous opportunities to create jobs and increase enrolment in the colleges. This will also remove or reduce time spent on retraining new hires by manufacturing firms. This shift is taking place in technical and vocational schools, but implementation is still weak. A new curriculum should place a greater emphasis on soft and entrepreneurial skills, as well as practical applications tailored to specific issues. For example, by including processing, marketing, and distribution in addition to production in the curricula, which provides students with practical experience, the colleges could protect against low enrolment. This could also absorb young people into decent work after completion. The switch to CBT alone will not suffice.

The government is still the prime driving force behind the curriculum development process. A concerted effort to fully integrate employers, the agricultural colleagues leadership, and other key stakeholders into the process will ensure more relevant content.

Aside from collaborating on CBT development, the effectiveness of curriculum delivery is critical. The findings point to a lack of infrastructure and logistics for providing training to students. This is exacerbated by a lack of internship opportunities with companies that can provide practical hands-on training. Inadequate time allocation to modules, limited levels of flexibility, and an inadequate focus on preparing students for the labour market all have an impact on curriculum delivery quality. Working structures for industrial attachments, as well as access to digital tools, electricity, and internet connectivity, will prepare students to be familiar with industry needs. On the other hand, for effective curriculum delivery, clear and comprehensive facilitator education and training strategies are required. This will allow teachers to be continuously skilled in accordance with industry requirements. However, firms with a better understanding of market requirements will be required to participate.

The findings highlight a critical lack of transition for learners from farm institutes and ATVET colleagues to higher learning. This is exacerbated by the agricultural institute's curricula not being accredited by CTVET. A new curriculum should aim to ensure and support learners' transition to higher education as well as obtaining the necessary certification at the end of the study through accreditation. This will help to increase enrolment and, in the long run, provide better service to industry.

The study identified a number of job and business opportunities along the chocolate and cocoa drink value chain. The provision of services such as equipment maintenance and lack of import substitution of imported machinery is a major challenge for local firms manufacturing chocolate and cocoa drink. There is a need to encourage services that support repair and maintenance of equipment and production of processing tools. More support is needed to disseminate new ideas for better-performing machines and lower the cost of inputs, particularly food-grade stainless steel for the processing sector. Improved collaboration among artisanal fabricators, research institutes, and universities

is required to facilitate the spread of ideas, as each idea offered can benefit another. Fabricators, for example, have a strong understanding of market requirements, but research can help them improve their designs. With strong government support, a link can be established between the fabrication and research sectors. Backward integration of manufacturing firms and local fabricators can reduce production costs while also creating jobs.

This calls for triple helix partnerships, but the findings indicate that cooperation mechanisms between the ATVETs, industry and government are weak. Knowledge about each other's interests and about opportunities for cooperation are limited. No structural triple helix platforms exist that could give direction to the upgrading of the chocolate and cocoa drink value chain and to the educational and labour needs demands that come with it. The findings indicate a positive attitude as well towards more cooperation, but mechanisms to leverage partnership and capacities to effectively engage with a multitude of stakeholders are absent. There is a need to create spaces for key actors to interact and share ideas, build trust, and have a shared vision.

A three-way collaboration among domestic chocolate and cocoa drink manufacturers, ATVETs, and relevant government agencies can improve learning systems and expand business opportunities along the cocoa products value chain. It can aid in the formation of solid, well-structured and accountable partnerships for more industrial internships and transition-to-work programmes. It can assist in the development of comprehensive training policies and strategies for facilitators, allowing for smooth and continuous upskilling in accordance with labour market demands, while also ensuring coordinated curriculum development and delivery to bridge the gap between education and employment prospects.

Appendix 1: List of interviewees

Interview	Type of organisation*	Position
A1	Craft chocolate manufacturer	CEO
A2	Craft chocolate manufacturer	Owner
A3	Craft chocolate manufacturer	Owner
A4	Craft chocolate manufacturer	Owner
A5	Cocoa drink manufacturer	Owner
A6	Cocoa drink manufacturer	Sales & Marketing Manager; Head of Programs and PA to the Managing Director
A7	Cocoa drink manufacturer	Finance & Administration Director; Director Production & Operations; Supply Chain director

(continued)

Interview	Type of organisation*	Position
A8	Craft chocolate manufacturer	Owner
A9	Craft chocolate manufacturer	Owner
A10	Chocolate manufacturer	Production Manager; Sales & Marketing Manager; Trade Finance Manager
B11	Cocoa farm	Owner
C12	Farm institute I	Principal
C13	Farm institute II	Principal; lecturer
C14	Agricultural college I	Principal; lecturer
C15	Agricultural college II	Lecturer
C16	Foreign development organisation I	Expert – cooperative training models in agricultural value chains
D17	Government organisation	Deputy Director
D18	Government organisation	Director of Projects
D19	Foreign chocolate manufacturer	Partnership Manager
D20	Foreign development organisation II	Researcher – sustainable economic development
D21	Foreign development organisation III	Director Farm & Supply Chain Intelligence
D22	Business association	President

*Organisations are Ghanaian, unless indicated otherwise

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Part IV: Triple helix: Conceptual issues and practical applications

Henry Etzkowitz and John O. Adeoti

12 Technological informality as a development strategy: Iconic ikeja computer village at risk

Abstract: A paradox of informal economy in development is the government's ambivalent and contradictory attitude. The Ikeja computer village provides an iconic example of organic growth of high-tech micro enterprises through traditional apprenticeship system that has resulted in employment opportunities for individuals who jostle in the market for jobs and commission for menial repairs or profits on sales at big stores. This paper argues that the government's plan to relocate the Ikeja computer village away from its traditional location puts the economic gains from several decades of the evolution of technological informality at risk. The government wishes to promote the cluster but its actions appear to be based on a misinterpretation of developed country high-tech experience, and thus serves to suppress the self-replicating growth dynamics of the cluster. Attempting to fit the cluster into the format of a modern industrial enterprise is likely to raise operating costs, removing its competitive advantage of supplying computer IT goods and services at low cost to the broader economy. Government authorities should engage with the leadership of informal technology complexes to better understand what initiatives would be helpful to enhance the clusters rather than assuming that the cluster has to be swept away and replaced by a top-down development initiative. Instead of focusing on persuading cluster leadership to adapt to governmental authority initiatives, the process should be reversed with government listening to and addressing the concerns of the cluster. This will potentially enhance the indigenous process of development rather than stifling it.

Keywords: Informal economy, technological informality, triple helix, micro enterprises, Ikeja computer village

Introduction

A series of development plans from independence of colonial countries in 1960 to the present have emphasised large projects such as the importation of foreign technology, typically under the banner of 'import substitution' producing artifacts within the national boundaries (Chete et al., 2016). However, most of these schemes failed to become self-sustaining, let alone growth points, and wound down. More recently, development projects have focused on existing informal clusters of technology development and the application of the triple helix model in explaining the dynamics of technological innovation in developing countries is gaining more attention from development stakeholders

(Etzkowitz & Leydesdorff, 2000; Zhou & Etzkowitz, 2021). However, its application in informal economies remains unclear. This was the underlying question in a recent discussion of the triple helix model of university-industry-government interactions and its applicability to developing countries commissioned by the Maastricht School of Management in celebration of its union with Maastricht University.

How should the industry helix in the model be conceptualised in regions where creation of an industrial sector was the problem at hand? Although the informal economy of unregistered micro-firms typically constitutes more than half of economic activity in developing countries (ILO, 2018), the 'local productive arrangements' that constitute these 'informalities' are seldom seen as a stepping stone to development (Lastres & Casiolato, 2005; Tümen, 2016). Thus, we draw attention to a subset of the informal economy, technology-based micro firms that have emerged as indigenous clusters in Nigeria and elsewhere. However, the urban agglomerations that constitute informal economy clusters are often viewed as an eyesore, a cataract on the vision of a gleaming metropolis that must be excised. Their crowded, sprawling sites are often slated for elimination and replacement by modern structures that fit elite perception of what development should look like (Osagie & Okonji, 2014).

Notable examples include the Yaba technology cluster (aka, Yabacon) and the Ikeja computer village in Lagos State, Nigeria. Yabacon is a technology hub located in a seemingly informal economy, which had grown to become an attraction for the evolution of the digital economy (Adeoti, 2020). The market has been an important source of employment, providing opportunities for tech-savvy individuals who hustle in the market for commission on repairs, or profits on sales at big stores and on second-hand items. The Ikeja computer village, estimated to generate about US\$2 billion yearly,¹ has become an important contributor to the development of the local tech ecosystem in Nigeria.

The informal economy as part of a process of development should thus be included in the industrial domain of the triple helix. Aptly, the technological upgrading of the informal economy should be encouraged through a model of the triple helix that aims at promoting indigenous innovation and the creation of jobs for the teeming and youthful population of many developing countries, especially in sub-Saharan Africa.

The example of the Ikeja computer village is in the following reviewed in more detail.

¹ <https://www.vanguardngr.com/2013/04/computer-village-generates-2bn-annually-to-economy-minister/>.

Ikeja computer village: Rise of an informal economy icon

Ikeja computer village, established in the early 1960s as an industrial estate, reached global attention through a New York Times story celebrating its entrepreneurial dynamic, characteristic of traditional Nigerian markets, noted by researchers and visitors (NISR, circa 1962). An initiative taken by the Action Group, a political party based in Western Nigeria, led to the creation of a new commercial district in Lagos. Development of roads and basic infrastructure replacing farmlands, with tech products, businesses, personal and professional services such as beauty salons and legal offices were among the early businesses. Over time, retail sales including office supply stores became the source of the current specialisation in computer wares that exist today. The market is known as a bustling and sprawling place piled with different tech products. Daily, the market vendors serve thousands of people who come to buy or repair computers and mobile phones, as well as other tech accessories such as software, microchips, hard drives, etc.

A high level of knowledge-acquisition and upgrading occurs daily in the Ikeja computer village through a traditional apprenticeship system taken to a new level. The market has served as an important source of employment by providing opportunities for individuals who jostle in the market for jobs and commission for menial repairs, or profits on sales at big stores. The market has been estimated to generate about US\$2 billion yearly.² The Ikeja computer village has thus become an important contributor to the local tech ecosystem development in Nigeria. Omolayo (2017) reported that 'ecological succession' was observed from professional and personal services occupations, e.g., lawyers, barbers, tech sales and repair. Also, emphasis on dependence on technical abilities rather than simple marketing has been an important element of the informal technological economy at the computer village.

A study of Ikeja computer village (aka, Otigba computer market) by Oyeleran-Oyeyinka (2006) identified a mechanism of growth in the market through the apprenticeship training of unskilled labour by skilled persons. The apprentice would usually undergo 2–3 years of tutelage, after which such a person establishes their own business. One of the characteristics of most firms operating in an informal economy is that they remain small in size, while growth occurs through the replication of numerous small businesses. These businesses repeat the apprenticeship process as their basic mode of operation continuously. However, it has been observed that knowledge is easily passed among these micro-firms or businesses through the movement of people. With the need to improve the efficiency of these businesses, technological upgrading is important. This means that a reconfiguration of subunits drawn from the

² <https://www.vanguardngr.com/2013/04/computer-village-generates-2bn-annually-to-economy-minister/>.

products of different manufacturers to meet the special needs of clients can be achieved. For instance, adaption to local conditions, such as the provision of keyboards including the Nigerian currency unit and robust devices to take into account fluctuation in local electricity supply has been as a result of the collaboration and modification in the tech market. Also, a series of associations has provided governance for the market and representation of groups of local firms with foreign firms. It is however, imperative to note that, technological upgrading in informal economy clusters under recognised indigenous development phenomenon has a considerable potential for triple helix policy-making and practice.

Ikeja computer market at risk

It has been widely reported that Lagos State Government is planning to relocate the Ikeja computer village to Katangowa,³ signalling that the Lagos governmental authorities apparently prioritise the aura of modernity over the substance of indigenous technological development in their plan to relocate the Ikeja computer market complex. Relocating the Ikeja computer village to Katangowa will likely raise the cost of doing business,⁴ creating barriers to entry that are virtually non-existent at the original site. It is estimated that it will cost one million naira to establish a firm at the new site. By formalising an informal economy, important attributes of development may be lost (Aparcana, 2016), such as the ability to create large numbers of skilled jobs through organic incubation, the apprenticeship system that prepares low-cost start-ups to enter the market. The crowded street life, umbrellas and stalls of Ikeja facilitates the proliferation of computerisation in Nigeria and typifies similar occurrence elsewhere in sub-Saharan Africa (Brown et al., 2010).

It is also important to note that the informal economy often has strong leadership in professional and trade association.⁵ For example, the Ikeja computer village alone has at least 16 professional/trade associations. Understanding the informal economy as a potential platform for indigenous innovation based on the triple helix model will involve making these professional/trade associations to actively participate in joint policy making projects to create triple helix ‘consensus spaces’ of informal technological economy, university and government interaction, focused on raising the level of the existing clusters by enhancing their indigenous technological capability dynamics.

³ Developer assures new Computer Village will be completed in 24 months | The Guardian Nigeria News – Nigeria and World News — Technology — The Guardian Nigeria News – Nigeria and World News.

⁴ <https://qz.com/africa/972910/lagos-is-relocating-nigerias-largest-computer-market-and-likely-destroying-it-in-the-process/>.

⁵ First author interviews with Ikeja market association directors, 2010.

Although the Lagos State Government may score some points in trying to solve some of the state's traffic problems with the move, it will not only deal a devastating blow to hundreds of businesses at the original site, it may also wipe out years-long success of indigenous technological development. The computer village, which evolved by necessity rather than design, sits at the heart of Lagos, occupying a valuable real estate at the city centre. Although the government promised to offer a 'world class' ICT park at the proposed new location, Katangowa is about 13 kilometers away from Ikeja and would take a few hours to reach, given Lagos characteristic traffic jams. The move by the government exemplifies an imposed solution, rather than a demand-driven and evidence-based one.⁶

The paradox of technological informality as a development strategy

The paradox of informal economy in development is the government's ambivalent and contradictory attitude. There have been positive developments such as a programme to subsidise university student apprenticeship in technology clusters. However, existing research on informal technology clusters appears to have been neglected in the dominant policy approach to informal technology clusters. Government wishes to promote the cluster but its actions based on a misinterpretation of developed country high-tech experience, serves to suppress the self-replicating growth dynamics of the cluster. Lagos authorities wished to fit it into the format of a modern industrial enterprise but doing so would raise operating costs, removing the clusters competitive advantage of supplying computer IT goods and services at low cost to the broader economy.

Rather than focusing on enhancing the indigenous dynamics of highly successful informal technology clusters, for example by encouraging academic links, policy makers often view their dense urban agglomerations as a problem to be solved by redevelopment and replacement. However, these replacement sites are typically costly and are not compatible with the low-cost business model; and internal dynamics of these informal technology clusters do not meet the needs of the majority of the inhabitants of the old sites. By razing the low-cost site of the indigenous base of informal technology clusters, high-cost relocation projects may be expected to have negative effects, especially on employment growth (Osagie & Okonji, 2014). The micro-firm apprenticeship process would be weakened, if not precluded in a high-cost regime. The loss of low-cost replication through apprenticeship informality would reduce the dynamic quality of informal technology clusters like the Ikeja computer market in Lagos

⁶ First author meeting with Lagos State Development Authority representatives to review Ikeja computer market redevelopment architectural renderings, 2010.

and the Nnewi auto parts cluster in Anambra State (Ekesiobi et al., 2018). Employment growth takes place through apprenticeship practices that sustain and replicate micro firms as the apprentices gain the knowledge base to operate independently in a low-cost regime. This is the direction in which developing economies are headed, characterised by low wages and a young population that does not have the benefit of high-level formal education.

The most important recommendation is for government development authorities to engage with the leadership of informal technology complexes to better understand what initiatives would be helpful to enhance the clusters, building upon their base and best practices rather than assuming that the cluster has to be swept away and replaced by a top-down development. Instead of focusing their efforts on persuading cluster leadership to adapt to governmental authority initiatives, the process should be reversed with government listening to and addressing the concerns of the cluster, enhancing the indigenous process of development rather than stifling it. Replication of micro enterprises through apprenticeship and organic incubation increases scope of activity without enlarging scale. Micro-enterprises can operate sophisticated technologies, not limited to simple tasks of food selling and garbage collection. This is too important a process to be impeded. Government should ensure that its intervention would enhance economic and social development, without negative side effects potentially destabilising a bottom-up successful job creation process originally stimulated by government-led infrastructure development program decades ago.

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Julius Gatune

13 Triple helix as model for driving innovation in emerging economies – what it takes

Abstract: Innovation is at the centre of economic development. However innovation tends to be the domain of more developed countries as they have the models to drive innovations. One model that has good potential to be applied in both developed and developing country contexts is the triple helix model of innovation. This model seeks to create more deliberate linkage between universities (knowledge producer), industry (key for innovations commercialisation) and government (key to creating environment and public goods needed to drive knowledge or innovation). However, producing a dynamic triple helix partnership is problematic. To better understand what makes a triple helix partnership work we explore some successful partnerships to get insights on what it takes. Key lessons emerging are the need to build trust and a shared vision. This requires creating strong consensus spaces where key actors can interact (formally and informally). Leadership is also crucial and in this regards leadership can come from any of the partners.

Keywords: Triple helix, innovation, local economic development, public private partnerships

Introduction

Economic development is the process of increasing supply of goods and services and consumption of these, resulting in improved livelihoods. By nature goods and services are scarce and thus increasing supply requires innovations in technologies to convert natural and knowledge capital to goods, and also innovations in business models to make this conversion economical i.e. make goods and services affordable. Innovation — the attempt to try out new or improved products, processes or ways to do things¹ — is an as-

¹ The *Oslo Manual* for measuring innovation defines four types of innovation: Product innovation: A good or service that is new or significantly improved. This includes significant improvements in technical specifications, components and materials, software in the product, user friendliness or other functional characteristics. Process innovation: A new or significantly improved production or delivery method. This includes significant changes in techniques, equipment and/or software. Marketing innovation: A new marketing method involving significant changes in product design or packaging, product placement, product promotion or pricing. Organisational innovation: A new organisational method in business practices, workplace organisation or external relations.

pect of most if not all economic activities (Kline & Rosenberg, 1986; Bell & Pavitt, 1993 cited in Fagerberg et al., 2010).

The importance of innovation as a driver of economy has had wide acceptance, for example the Solow growth model (1956). At the same time, there has been an inherent assumption that innovation takes place in frontier countries (Fagerberg et al., 2010) and other countries catch-up through diffusion and learning (Barro & Sala-i-Martin, 1997; Grossman & Helpman, 1991). However, this is a narrow conception of innovation. Indeed, there are significant innovations that takes place in low-tech industries and though the outcomes are less glamorous, their cumulative social and economic impacts maybe huge (von Tunzelmann & Acha, 2006). Thus, policies and structures to foster innovation are as important in developing as they are in developed countries.

Furthermore, Fagerberg et al. (2010) points out that innovation need not be something new and applies to changes that are new to the local context, even if the contribution to the global knowledge frontier is negligible. This then underscores the importance of effectiveness of structures in diffusing knowledge and learning. Indeed, there has also been an inherent assumption that catch-up through diffusion and learning will take place automatically and laggard countries will catch up (Mankiw, Romer, & Weil, 1992). However, it has been argued that catch-up is not automatic and critically depends on other capabilities including social capability (Abramovitz, 1986), technological capability (Kim, 1980), absorptive capacity (Cohen & Levintal, 1990) and innovation system (Lundvall, 1992).

Therefore, emerging countries need to pay attention so they can foster local innovation while diffusing and adapting innovations from other countries. The triple helix partnership provides a particularly powerful model. The rest of the chapter is structured as follows: 'Why triple helix?' makes the case for the triple helix model; 'Impact of triple helix partnerships' explores approaches to building triple helix partnerships; 'Building: The triple helix — approaches' discusses what it takes to build triple helix partnerships; and 'Enabling triple helix' explores the criticism of the triple helix model, while the final section concludes.

Why triple helix?

As pointed out, economic development is essentially driven by innovations and their commercialisation into goods and services. Universities are crucial in generating knowledge and knowhow that underpins innovations while the industry is key in commercialising knowledge and innovations. Both these efforts require considerable mobilisation of resources. There is also need for markets to allow for exchange of goods and services, and coordinate production activities through price signals. Government plays a crucial role setting the rules of the game, facilitating the functioning

of markets and also incentivising actors to participate in otherwise risky economic activities. More crucially, government provides public goods. Public goods are especially critical in ensuring that basic knowledge continues to be created and putting critical pieces of the infrastructures needed in place to facilitate production and distribution of goods and services. Therefore, public investment is a significant enabler and indeed a catalyst for private investment.

Thus, knowledge creation and innovation eco-systems, a vibrant industry and a well-functioning government are the key ingredients for strong innovation ecosystems. Indeed, how these core enablers of innovation work together is crucial in determining the dynamism of any economy and its resilience. This is key, as developments especially in technologies and business models are not linear. Development trajectories are occasionally punctuated by disruption as innovations (new technologies and new business models) emerge and change the way goods and services are created and consumed. Therefore, one's comparative advantage can be wiped out.² The triple helix model seeks to bring the three core actors into more deliberate arrangements and, more crucially, triple helix partnership is also organised at the local level.

The formal recognition of the need for the three actors and the potential synergies that result from deliberately and purposefully bringing the three spheres together so that they can act in concert is known as the triple helix (TH) approach. Central to the TH approach is the blurring of boundaries between government-industry-research/knowledge institutions, with institutions assuming some roles of 'the other'. In this way, the relationships among the institutional spheres of the university, industry and government are continuously reshaped in an endless transition bringing forth new technologies, new firms and new types of relationships in a sustained and systemic effort (Etzkowitz, 2003).

Localising innovation activities – tacit knowledge and clusters

The shift to knowledge economy has been accompanied by a dramatic expansion of scientific and research output, which is transmitted relatively easily between researchers through published scientific papers and formal presentations. This is the so-called codified knowledge. As this type of knowledge has become more accessible its relative economic value has been diminished by its sheer abundance. The new source of competitive advantage is increasingly tacit knowledge³ largely gained through close interactions of people working together. Individuals or groups working together for the same firm or

² This has been described as creative destruction process (McCraw, 2007).

³ Tacit knowledge refers to knowledge or insights, which individuals acquire in the course of their scientific work that is ill-defined or uncodified and that they themselves cannot articulate fully. It is highly subjective and often varies from person to person (Michael Polanyi, 1987).

organisation often develop a common base of tacit knowledge in the course of their research and production activities (Nelson & Winter, 1982, 76–82; Dosi, 1988, p. 1126). The tacit dimension of knowledge is particularly significant for regions and communities, for it is the kind of knowledge that tends to be locally embedded. In a knowledge-based economy, spatial proximity is thus a critical factor for accessing this kind of knowledge and exploiting its commercial potential. The fact that triple helix partnership is regionally focused makes it an ideal platform for building tacit knowledge.

Innovation occurs in an institutional, political and social context. In this view, innovation is seen as a geographical process and innovation capabilities should be sustained through knowledge sharing regional communities (Gust-Bardon, 2012). Note that the ultimate objective of a regional economic development policy is really to create a ‘commons’. The ‘commons’ include the shared resources that companies and communities rely on in order to be productive. Every successful company and every region begins with certain foundations – an educated populace, pools of skilled labour, vibrant networks of suppliers, strong infrastructure, basic research that can be commercialised (Fuller et al., 2015). The ‘commons’ is crucial for shared prosperity that is at the heart of a successful economic development strategy. The ‘commons’ forms the basis for emergence of clusters,⁴ the engines of local economic development. Clusters enhance firms’ competitiveness through agglomeration economies. This is due to presence of high skills, specialised suppliers and service providers, improved market access and circulation of information.

The triple helix model is key as it affords the potential for tighter collaboration that is key to regular and sustained problem solving needed to build competitive clusters. Over time, this can create very strong innovative clusters that can drive the development of the region through upskilling and creation of industries. The industries can eventually spawn world-class firms over time and become prime movers of national development.

Consensus space

Knowledge creation and diffusion is at the centre of innovation. The interchange of information and knowledge can enrich innovation and assist novel solutions in new sectors (Leydesdorff, and Ivanova, 2016 cited in Antonen et. al., 2018). Studies on innovation systems show that, to promote new innovations effectively, common understanding of central concepts eases their application (Etzkowitz and Leydesdorff, 2000 cited in Antonen et. al., 2018). Therefore, building spaces to allow for exchange is key.

⁴ A regional cluster defined as a ‘group of firms in the same industry, or in closely related industries that are in close geographical proximity to each other’ is meant to include geographically concentrated industries including so-called ‘industrial districts’ (Fiorenza and Caldari, 2009).

Triple Helix partnership by design creates consensus spaces through the overlaps it promotes across the three core spheres.

In summary, triple helix partnership provides a model for emerging countries to drive innovation and the local economic development. The realisation of the role of innovation systems has seen government play more a pro-active role in driving innovation, and seen innovation systems become entrenched in law. For example, Brazil's 2004 Innovation Law incentivises the interaction between firms, public universities and research centres. It provides grants to innovative firms, supports the set-up of private firms incubation facilities in public universities and the shared use of university infrastructures (Ranga & Etzkowitz, 2013).

Impact of triple helix partnerships

Triple helix partnerships have been attributed to significant success in driving local economic development. For example, the Columbus triple helix partnership created over 160,000 jobs, attracted more than \$8 billion in investments (Wartenberg, 2018), doubled foreign direct investment (FDI) in the region, and increased the region's exports 61% (Brookings & JPMorgan, 2018). The success of the partnership has been a model for many cities and regions in America and worldwide. Harvard Business School has even created a case study on the partnership for use in the Young American Leaders Program at the school (see Rivkin, 2015). The Brainport triple helix partnership been credited with creating one of Europe's most innovative regions with over 5000 tech and IT companies and organisations in all sorts and sizes that work on the latest technologies and perform ground-breaking research.⁵

Building: The triple helix – approaches

Key to a powerful triple helix system is the breaking of boundaries and each sphere interfering in the other. For example, a university can incubate firms and thus move into the industry space, industry can create company-universities, the government can become a venture capitalist through funding of small business development funds (Etzkowitz, 2002). The key prerequisite however is the existence of agglomeration of knowledge resources or concentration of research and development (R&D) activities.

Triple helix also requires a prime mover. Note that the driver of the triple helix can be any of the three nodes. When government leads the process then this is a top-down

⁵ <https://brainporteindhoven.com/int/for-you/work/work-on/digital-technologies>.

model, policy drives the process. When industry or academia drives then it is a bottom-up process. However, the two processes are not distinct as, for example, government can initiate the process through encouraging industry and then industry leaders can take over, or young entrepreneurs can initiate new activities and government entrepreneurial programmes can take over. This dual track process is more productive than any single path (Ektowitz, 2002).

Some examples of a triple helix driven regional development initiative under the leadership of the different nodes are described below to underscore that success using TH model can be achieved through various pathways:

Private sector driven triple helix

The Eindhoven region of the Netherlands is a great example of triple helix cooperation. With Philips⁶ as the lead firm working closely with the Eindhoven University of Technology (TU/e) and the local government to drive innovation and develop a strong cluster of knowledge industries. Philips has clearly been the leader of the triple helix and plays a crucial role particularly for its strong R&D and its role as incubator for start-ups. Philips also pays researchers at the Technical University of Eindhoven (TU/e). The TU/e in turn provides the region with high-skilled people and enhances its economic spin-off. The municipalities try to retain an attractive living climate and location factors. To ensure the smooth functioning of the model, the region has set up an institute for triple helix cooperation Brainport, which supports and coordinates cooperation between government, university and industry. Industry leaders, the board of the university and representatives of local government form the board of Brainport (Van der Meer et al., 2008). The result is that Eindhoven is now one of the most vibrant and resilient regions in the Netherlands.

University driven triple helix

The university driven triple helix model is best epitomised by the highly successful biomedical cluster around the Oxford universities in the UK. Indeed, universities are now at the centre of regenerating regions as they can bring new knowledge to local areas and are becoming the cornerstones of regional clusters by attracting knowledge intensive business around their strong research base and ready supply of skilled people (Rodrigues & Melo, 2013).

⁶ Philips is a leading health technology company. Headquartered in the Netherlands, Philips is a leader in diagnostic imaging, image-guided therapy, patient monitoring and health informatics, as well as in consumer health and home care (see more at <https://www.philips.com/a-w/about.html>).

The Oxfordshire county expertise in biomedical research lies in a combination of university, charitable trusts and government funding. However, the primary centre of research is Oxford University.⁷ The city of Oxford has nine hospitals, which host the research laboratories of Oxford University. The county of Oxfordshire also has several secondary centres of research including Oxford Brookes University, which specialises in life sciences. Being close to Oxford University was found to be the key decision of many companies that had located themselves in Oxfordshire (62%).⁸ Also over half of the companies in the biomedical sectors were spin-offs of Oxford University, underscoring the central role of the university driving the cluster (Smith & Bagci-Sen, 2010).

Government driven triple helix

The Limburg province of the Netherlands has the Brightlands triple helix partnership, a very ambitious triple helix local economic development strategy. The initiative was triggered by forces of change that threatened Limburg province economic prospects. The traditional economic base of petrochemical industry was being threatened, as competence in knowledge economy became the key competitive advantage. The province leadership saw the answer as adoption of a triple helix model to drive the region to a new development trajectory. It sought to tie DSM to the region and bring on the University of Maastricht (UM) under a new strategy called *Versnellings agenda* ('acceleration agenda').

The Brightlands has since grown to a vibrant innovation ecosystem. The Brightlands Chemelot campus has grown to 77 companies, 1,900 employees and 660 students and has set the ambitious target of having 2,900 knowledge workers, 1,000 students and more than 100 participating companies by 2023 (Brightlands, 2016⁹).

Thailand has used the triple helix model to develop a competitive poultry industry. Through the Industrial Technology Assistance Program (ITAP) of the National Science Technology and Development Agency (NSTDA) it sought to be a bridge between basic R&D and development R&D.¹⁰ It has effectively linked university and industry. ITAP support ranges from identification of problems, guiding firms to solutions, getting suitable solutions and funding through matching funds. Where R&D is needed, ITAP will coordinate with researchers in the university and provide funds for R&D to be undertaken. ITAP is thus the key intermediary in driving the flow of knowledge.

⁷ The university is ranked as the third best biomedical university behind Harvard and Cambridge.

⁸ This was the second most important reason for location decision after quality of life (note that in earlier survey done in 2002, being close to university was the most important reason for locating in Oxfordshire (72% of the respondents).

⁹ See <https://www.brightlands.com/>.

¹⁰ This is the so called valley of death, moving from patent or a research product to a commercial product.

ITA has Industrial technology advisors that help mediate between industry and research. ITA has also developed regional networks that work with a university in a particular region. For example, King Mongkut's University of Technology Thonburi (KMUTT) is the key in the KMUTT-ITA network for Western Region. Through this network, KMUTT-ITA has managed to support the development of 8 products for the poultry industry that were previously imported. This saw incomes of the product manufacturers increase by 20% and product sales by 10% (for further details see Klomklieng et al., 2012).

Public private partnership (PPP): The Columbus Partnership

The region of Columbus in Mid-Western United States is a good example of a true PPP effort to drive local economic development. Public and private leaders in Columbus region had seen that the region was not keeping pace with the nation in income and employment growth the way it had in the 1980s and 1990s. Columbus was struggling in the 2000s and had only created 10,000 jobs. This was despite the fact that the region was home to several fortune 1000 companies and also had the second highest concentration of college students (second only to Boston). Led by two private sector CEOs¹¹ who mobilised CEOs of private companies, not-for-profit organisations, and presidents of local universities to form the Columbus Partnership.¹² The Columbus Partnership worked closely with the 11 local governments in the Columbus region and the local communities to co-create a regeneration strategy – The Columbus 2020 (see also <https://columbusregion.com/columbus-2020/strategy/>).

Enabling triple helix

The fact that the key elements of an innovation system are in place does not necessarily mean that the dynamism of a TH system will be unleashed. Studies on failure of innovation systems identify a number of challenges that could inhibit the development of an innovations system. Woolthius et al. (2005) provides a framework for understanding innovation failure that has two key dimensions; (i) missing actors and (ii) systems failures. The missing actors include demand (consumers), firms, knowledge institutions (universities, technology institutes) and third parties (banks/VCs, intermediaries/consultants etc.). Systems failures include infrastructure failures (ICT, roads etc.) and institu-

¹¹ Key drivers were, L. H. Wexner the CEO of L Brands, a fortune 1000 company headquartered in the region and John F. Wolfe, the publisher of the Columbus Dispatch.

¹² The Columbus Partnership is a non-profit, membership-based CEO organisation of more than 65 CEOs from Columbus' leading businesses and institutions.

tional failures (hard laws, norms, values etc.). The two dimensions then form a matrix that can be used to analyse gaps in innovations. However, Cai et al. (2015) argue that this framework is too complicated and that this is the reason why it has not been used much. Ranga and Etzkowitz (2013) provide an alternative and identify the key enabling conditions for triple helix as:

- Competencies of universities in knowledge and technology generation and diffusion.
- Absorptive capacity and demand of industry as innovator for knowledge and technology.
- Supportive infrastructures, including policy and fiscal measures for formation and development of high-tech start-ups, university spin-offs, and other kinds of organisation for university technology transfer.
- Institutional entrepreneurs who enunciate a vision for knowledge-based development and bring leadership of the three phases together. Key here are innovation champions across the three spheres who have sufficient respect and authority to exercise convening power.

However, Cai et al. (2015) argues that the Ranga and Etzkowitz (2013) framework is too generic and does not adequately address how the political and social context might affect the triple helix. Drawing from institutional theory, they treat the triple helix development as a process of institutionalisation involving four stages: (i) realisation of needs; (ii) intra-organisational transformation; (iii) inter-organisational interactions and (iv) institutionalisation. Using this institutional logic they develop seven enabling intangible conditions that focus on the more general contextual factors and four tangible conditions elaborated by Ranga and Etzkowitz (2013) that focus on specific performance (see Figure 1). They argue that the role of innovation policy in a regional innovation system is through its influence in the enabling conditions.

Smith and Bagchi-Sen (2012) argue that many researchers fail to properly recognise some key features that make triple helix work. They make the following points:

- While the existence of a research university is key, other types of universities and education institutions may also play a key role especially in building capacity.
- The danger of overemphasis of scientific excellence at the expense of other equally important social and economic processes operating within global knowledge frontiers. Also key is the capacity to attract talent from around the world.
- The presence of a university per se is the key attraction for the private sector but the high-quality talent and availability of technical resources are also crucial. Other important factors include: quality of life; proximity to likeminded companies; availability of funding; access to specialist services; access to networks; access to mentors; proximity to partner organisations; proximity to markets; proximity to a big city.
- Indirect science and technology policy that develops favourable economic ecology like facilitating incubators, provision of vendor funding and professional business advice.

- Geography factors matter a lot, so what works in one location may not work in another. The characteristic of the region, stage of development, degree of specialisation and the innovation support are key.

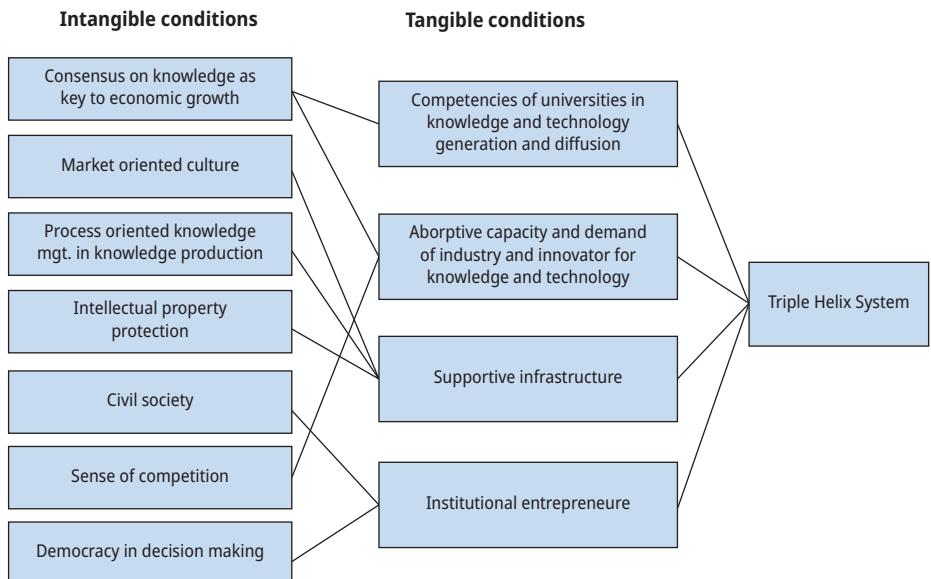


Figure 1: Enabling conditions for a triple helix system (Source: Adapted from Cai et al., 2015).

Lessons from building triple helix partnerships

Building triple helix partnerships takes time. To get some insights on what it takes from the perspective of leadership, two in-depth case studies were conducted for the Brightlands triple helix partnerships in Limburg, Netherlands and the Columbus Partnership (see Gatune, 2019). The lessons emerging include:

- *No silver bullets*: Economic development is not a single project or activity, but rather a host of initiatives that create a culture of sustainable development over the long-term. We must be deliberate and accountable and think long-term.
- *Inclusiveness*: The partnership needs to include a diverse spectrum of members – from the largest corporations to the smallest owner-operator businesses, from big university to community colleges to small vocational training institutes, from regional government to smaller municipalities and communities.
- *Deliberate and purposive*: A collaborative, deliberate and purposeful approach to every step of the process is required. All stakeholders, whether big or small, matter and each stakeholder must understand what is at stake, the path forward and the role that they play.

- *Leadership needs to be earned*: Being a good leader requires that you have followers because people trust you. You have to earn that trust, you cannot command it.
- *Humility*: The partnership is very sensitive to the fact that it can be a powerful group, so if it gets misdirected, it can do terrible mischief, unintendedly.
- *Curiosity*: Being curious is an ongoing exercise and a fundamental activity that the partnership members practice with vigour. Curiosity expands perspective and ensures the mission stays relevant as the future unfolds.
- *Focus*: Work hard to ensure issues are being identified; seek best practices globally; identify partnerships and experts to bring to the table and tackle the work.
- *Collaboration culture*: Cultivate a culture of collaboration between the various constituencies-both public and private-that did not exist in the community.
- *Persistence of old mind-sets*: Key to a successful triple helix model is the blurring of traditional boundaries of the key actors. However, this can be a challenge. Partners need to be comfortable in new roles.
- *Mistrust*: Partners may not communicate their strategies.
- *Power asymmetry*: Partners with power may cajole the government to make investment it may not have wanted especially providing subsidies.
- *Governance*: Management of TH system is a challenge, as the partners may not have expertise to run the triple helix organisation created. An outside expert may have to be hired.
- *Leadership continuity*: Progress maybe slowed significantly, when leadership changes and a new leader is not sold on the agenda.
- *Political challenges*: Key to getting funding, especially from national resources, depends on getting national politicians on board. However, politician want credit and have short time horizons.

From triple helix to quadruple helix to N-helix

The triple helix model has been criticised for focusing on the three players and leaving out an equally important actor, namely the civil society and NGOs, the so-called third sector. This sector is key particularly in the developing countries where NGOs provided significant capacity building and funds for development. Even fairly successful clusters like Oxford University Biotech owes much of its success to charities that have funded research and also played a key role in setting up networks (consensus spaces) that were key to the success of the cluster (Smith & Bagci-Sen, 2010).

Carayannis and Campbell (2009) proposes a quadruple helix. The ‘fourth helix’ of a quadruple helix is what they call ‘media-based and culture-based public’. They argue that knowledge and innovation policies and strategies must acknowledge the important role of the ‘public’ for successfully achieving goals and objectives. On the

one hand, public reality is being constructed and communicated by the media and media system and on the other hand, the public is influenced by culture and values.

Another potential dimension of the triple helix is internationalisation. More and more researchers are seeking collaboration with other researcher to share experiences. Indeed, with globalisation, one can expect the international-national dimension to be increasingly relevant. The collaboration between the Dutch and Taiwan design sector is an example of ways in which the triple helix model is being internationalised (van Beuren & Goh 2016). The Taiwan Dutch Design Post (TDDP) is an organisation that has been established as a bridge between a design triple helix that involves the government, leading designers, small and medium enterprises (SMEs), manufacturers and leading technical universities in both countries. Using this model, Dutch SMEs have been able to internationalise. For example, Taiwan students have gained new insights through internship with Dutch designers; Taiwan manufacturers have also been able to upgrade their production capacity through closer interaction with Dutch designers (van Beuren & Goh, 2016).

Leydesdorff (2012) cautions that though one may wish to move beyond three dimensions, a fourth or fifth dimension would require substantive specification, operationalisation in terms of potentially relevant data, and sometimes the further development of relevant indicators. Without such a perspective, parsimony itself may be a methodologically well-advised strategy. Thus, he argues that so long as one is not able to operationalise and show development in the relatively simple case of three dimensions, one should be cautious in generalising beyond the TH model to an N-tuple of helices.

For simplicity, triple helix can be construed to automatically include civil society which primarily brings local context and thus acts as knowledge institutions, delivers development, and also at times investments in projects.

Conclusion and policy implications

Innovation is increasingly becoming central to any development strategy. Success will come built on the foundation of a knowledge-based economy that is characterised by highly entrepreneurial firms. Providing knowledge to foster innovation and creating an environment that supports the development of a knowledge-based economy are key. Thus, the close collaboration between university, industry and government will become increasingly crucial. The triple helix model can be a leverage for regional development through promoting both endogenous and exogenous processes of innovation. However, this is not easy. Key is overcoming mistrust, managing power asymmetry among partners, and having the right leadership that can develop a shared vision that is key to developing a strong partnership.

Thus having the key elements together does not mean that a triple helix is in operation. Even collaboration does not constitute a true triple helix if the collaboration is based on one-off engagements with no shared long-term strategy. Key is a deliberate effort to create dynamic and long-lived linkages. It not only requires overcoming trust issues but also developed a shared vision and also selling this vision to attract other players and thus develop a vibrant cluster that can then drive the vision.

It is important to note that though university, industry and government are at the core of this model other equally important players need to be included and cared for. The civil society and development partners (including NGOs) are particularly important. Indeed, they can be key in developing that consensus space that is important to making the model work. They also play a significant role in financing initiatives and shaping the development policy. Indeed, in the developing countries quadruple helix is the more appropriate operating mode. However, given the short-term nature of interventions from NGOs and CSOs (which typically last about 3 years) and the very specific agenda compared to much longer horizons of the other players, the triple helix model is still a relevant term, but with understanding and incorporation of other partners as need be.

Making the triple helix work will involve action by all parties. Nevertheless, policy will be key in driving the process. Policy should thus seek to:

- Understand linkages in the triple helix and strengthen them. Policies could include research funds that can be tapped to solve solutions and to facilitate exchange programs to allow staff to move across organisations for short resident visits.
- Attract new entrants to the triple helix to develop a critical mass of player R&D and non- R&D actors. Policies here can include improving labour market conditions especially for researchers.
- Develop infrastructure and funding options to attract investors and entrepreneurs. This includes development of incubation facilities, science parks etc. creating seed funds and other venture funds.
- Develop new institutional structure to coordinate the development of the triple helix that is free from bureaucratic process and conflicts in interest in parent organisations when making decisions.
- Develop spaces and platforms to encourage both formal and informal networking and increase public participation in decision making. This could include funds to support innovation fairs, networks, conferences etc.

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14 The triple helix model in the heterogeneous transitional Chinese economy: A comparative analysis of Zhejiang and Yunnan provinces

Abstract: To ensure a sustainable economic growth and increase manufacturing capabilities and productivity, China introduced the knowledge-based innovation system as new driver of economic growth. The indigenous innovation strategy has become the core of China's national innovation and economic development strategy. As a great regional disparity is typical of the transitional Chinese economy, this paper provides a comprehensive understanding of the triple helix interaction and coordination mechanisms at two contrasting regions. Zhejiang and Yunnan innovation system are identified, which show huge regional differences. Regional resource base, local industrial and economic structure, institutional environment and the existing development trajectories substantially determine university-industry-local governments interaction and collaboration. The regional context does matter.

Keywords: Triple helix interaction, innovation, knowledge-based economy, regional disparity

Introduction

The market-oriented economic reform since 1979 has brought about significantly rapid economic growth in China. The Chinese GDP annual growth rate has averaged about 10% over three decades (World Bank Group, 2019). However, the high growth in China heavily relied on resource and labour-intensive and low-tech manufacturing, high levels of investments, and a large volume of exports, especially after China joined the WTO in 2001. Firms in China, who are embedded in global value chains, have gradually lost their advantages in the global competition when labour-intensive and low-tech manufacturing industries started shifting to regions with a lower cost of labour, such as Southern Asian countries. Thus, to sustain rapid growth, China's policymakers introduced a national innovation system, as a new driver of growth, to increase manufacturing capabilities and facilitate the transition towards a knowledge-based economy.

Since the mid-1990s, the central government has highlighted the importance of development in science and technology and encouraged research institutions to implement new technology and innovations in the manufacturing process. According to

China's National Medium-to-Long-Term Plan (MLP) for Science and Technology Development (2006–2020), the central government pledged to build a self-sufficient innovation-based economy, and the concept of 'indigenous innovation' was developed as the core of China's national innovation and economic development strategy (Vinig & Bossink, 2015, pp. 621–622). The MLP intends to improve national innovation capability and promote original domestic innovation with numerous supporting policies and measures, such as government funding, government procurement for indigenous innovation, R&D tax incentives, etc. (Baark, 2021, p. 66). Since then, there has been a significant increase in resources devoted to R&D and the number of innovative activities. Nevertheless, the two most critical challenges are the successful development and commercialisation of innovation and utility models. Therefore, the State Council issued an official guideline in 2015, emphasising the private sector's and regional government's 'significant roles in the Chinese innovation system (Liu & Cheng, 2011, p. x). Besides, the central government stresses the importance of close interaction and collaboration between universities and research institutions, enterprises, and governments, in promoting the indigenous innovation strategy (Li, M. et al., 2020, pp. 511–512).

Notably, the concept of the triple helix model of innovation (THM) is proposed by Leydesdorff and Etzkowitz to investigate the dynamic interaction between university-industry-government in promoting the development of the knowledge-based economy (Cai & Etzkowitz, 2020, pp. 194–196). Thus, the THM with an evolutionary perspective is applied in this research to better understand the functions and interactions between three key actors in shaping the Chinese innovation system.

It is worth noting that, the transitional Chinese economy is characterised by significant regional differences in the level of economic development, resource bases, industrial, economic, and institutional configurations, marketisation and the state intervention level, etc. The innovation system and innovation performance exhibit substantial regional differences in China even under the same national-level indigenous innovation strategy. Therefore, to investigate the Chinese innovation system at the local level will achieve a better understanding of the diversity of regional innovation patterns and processes in the transitional Chinese economy.

Thus, this paper is to investigate the issue of innovation patterns and processes in the transitional Chinese economy within a regional context. More specifically, the economic and innovation performance in central, western, and northern China has been far below that in the eastern coastal area. For conducting this research, two contrasting cases: the early adopter Zhejiang, from the well-developed eastern area, and the latecomer Yunnan, from the less-developed western region, were selected to reflect significant regional differences in the level of economic development, resource bases, industrial, economic, and institutional configurations, the marketisation and the state intervention level, regional development trajectories, etc. Notably, as in the past decades, local predominate industries, the traditional light industries in Zhejiang and highly resource-dependent heavy industries in Yunnan, have played a determining role in local economic development; this paper focuses on the regional core industries.

Hence, the research objectives of the paper are to (a) study and compare the implementation of the THM at the regional level in the traditional local core industries, (b) explain the regional difference and investigate the impact of regional context on local innovation patterns and processes.

Three research questions are posed here:

- What are the regional innovation systems in Zhejiang and Yunnan?
- Does regional industrial, economic, and institutional context matter for implementing the THM in Zhejiang and Yunnan?
- How does regional context impact the regional innovation patterns and processes?

The paper is organised as follows: ‘Literature review’ and ‘Research methodology’ briefly review the concept of the triple helix interaction and elaborate research methodology; ‘The empirical findings’ and ‘The comparative analysis of triple helix interaction in Zhejiang and Yunnan’ present the results of the research and provide a detailed discussion on the roles and relations between university-industry-government in the two selected cases, and finally ‘Conclusions and new research agenda’ sums up the empirical findings of the research.

Literature review

In the past decades, research on innovation systems has generated a large body of literature and developed a wide variety of system approaches, which share a certain degree of similarity but also use different concepts and emphasise different aspects and actors of innovation systems (Johnson, 2001, p. 1). For instance, Porter (1990) stresses the critical role of the government in guiding innovative activities and providing incentives, financial support, infrastructure and education for firms (Johnson, 2001, p. 4). The concept of the national innovation system (NIS) asserts that the key to improving the technology performance in the innovative process is the interactions between innovation actors and highlights the economic importance of flows of knowledge (OECD, 1997, pp. 7–12). As Lundvall (2008, p. 11) argues, the innovation should be understood as a non-linear interactive process.

While many innovation approaches see firms or governments as key drivers in the innovation process, more and more researchers focus on the role of universities and research institutions in innovation (Lu, 2008, p. 251). In 1993, Etzkowitz expands the concept of public private partnerships (PPPs) by bringing academia into the study of the declining industrial region and identifies triadic interaction (Cai & Etzkowitz, 2020, pp. 194–195). In 1994, the concept of the triple helix interaction was proposed by Leydesdorff and Etzkowitz to understand the dynamic interaction between university-industry-government, thereby promoting entrepreneurship, innovation, and the knowledge-based (regional) economic development (Cai & Etzkowitz, 2020, pp. 194–195; Liu & Cai,

2018, p. 222). Leydesdorff and Etzkowitz (2000, p. 110) criticise the traditional way of innovation analysis, as linear approaches (e.g. market pull or technology push model), was insufficient to understand the transfer of knowledge and technology. The relations between university-industry-government should be nested and interacting (Leydesdorff & Etzkowitz, 2000, p. 113).

Etzkowitz and Leydesdorff (2000, p. 111) identify three major types of triple helix models, namely, the statistic model, the laissez-faire model, and the overlapping model. In the statistic model, the government controls both university and industry and plays a leading role in innovation activities, which is regarded as a failed developmental model due to the too little room for 'bottom-up' initiatives (Leydesdorff & Etzkowitz, 2000, p. 111). Zhou (2008, as cited in Cai & Etzkowitz, 2020, p. 201) labels the innovation system in China as a 'government pulled triple helix'. In the laissez-faire model, three institutional spheres are separate and independent with strong boundaries and highly circumscribed relations between actors (Leydesdorff & Etzkowitz, 2000, p. 111). The overlapping model indicates the tendency towards an ideal and balanced triple helix interaction and relations, which transfers from an innovation system with strong borders between actors to a flexible overlapping system with each taking the role of the other and hybrid organisations (Leydesdorff & Etzkowitz, 2000, p. 111; Cai & Etzkowitz, 2020, p. 200).

Therefore, as Etzkowitz (2008) points out, '... the core mechanism underlying the triple helix interactions as optimal condition for innovation is "taking the role of the other" ...' (Cai & Etzkowitz, 2020, pp. 203–204). Organisations, in terms of university, industry, and government, not only perform their traditional functions, but also take on new roles of the other, which is seen as 'a major potential source of innovation in innovation' (Leydesdorff & Etzkowitz, 1998, p. 197; Cai & Etzkowitz, 2020, pp. 203–204). Meanwhile, the triple helix model emphasises the role of universities and research institutions in capitalising knowledge, creating companies and other entrepreneurial tasks, as well as performing a quasi-governmental role as local innovation organisers (Leydesdorff & Etzkowitz, 1998, p. 197; Cai & Etzkowitz, 2020, pp. 203–204). In addition, the relations between university, industry, and government may change over time; Etzkowitz and Leydesdorff (2012, pp. 29–30) therefore apply an evolutionary perspective in understanding evolutionary mechanisms underlying the development of the triple helix model (Cai & Etzkowitz, 2020, pp. 203–204). Hence, the triple helix model is considered an evolutionary model of innovation (Leydesdorff & Etzkowitz, 2000, p. 120).

Notably, an increasing body of literature focuses on examining the implementation of the triple helix model in China. As mentioned in the previous section, the transitional Chinese economy is typified by significant regional differences; the regional variations in innovation performance and the functions and relationships between university, industry, and government are also investigated. Chinese regional innovation systems studies have provided possible explanations and factors that lead to better innovation outputs in the Chinese regional innovation systems and arrived at the conclusions that regions with better infrastructure, more exports, more expenditures and governments

subsidies upon R&D, secure property rights and better contract enforcement, etc. exhibit a better innovation performance (see, e.g. Sun, Li, Bai, Prodi et al; Zhou, as cited in Li M. et al., 2020, pp. 511–512). However, these studies do not provide comprehensive and dynamic perspectives for analysing and comparing distinctive Chinese regional innovation systems and the roles of three institutional spheres of the triple helix interaction. Therefore, to understand and compare the implementation of the triple helix model at the regional level in the transitional heterogeneous Chinese economy, a broader and more comprehensive perspective is required. In this research, the dominant regional industrial, economic and institutional features are studied for a better understanding of the implementation of the THM in two selected provinces.

As this research deploys the THM with evolutionary thinking in analysing innovation system at the regional level in the heterogeneous Chinese economy, Grabher's (1993) regional path dependence approach to understanding regional development is applied in this paper. He identifies a threefold lock-in of regional development, including functional, cognitive, and political lock-in (Grabher's 1993, pp. 260–264, as cited in Lu, 2021, pp. 18–19). For maintaining inter-firm cooperation and reducing transaction costs, firms tend to establish a long-term linkage, which leads to functional shortcomings, for example, cutting R&D and new product development spending and making strong personal connections (Grabher's 1993, pp. 260–264, as cited in Lu, 2021, pp. 18–19). The functional lock-in is reinforced by a cognitive lock-in, due to the strong personal connections and common interests and orientation (Grabher's 1993, pp. 260–264, as cited in Lu, 2021, pp. 18–19). Besides, close cooperative relations between local industry and local governments raise barriers to local market entry and the emerging of new industries to protect existing local core industries (Grabher's 1993: 260–264, as cited in Lu, 2021, pp. 18–19). Therefore, the threefold lock-in will cause technological lock-in, prevent reorganisation and innovation, and eventually hinder regional economic development (Grabher's 1993, pp. 260–264, as cited in Lu, 2021, pp. 18–19). This research employs Grabher's threefold lock-in in investigating the implementation of the THM in Zhejiang and Yunnan and understanding evolutionary regional innovation systems shaped by the existing regional industrial, economic and institutional factors and conditions.

It is worth noting that the available studies mainly focus on the newly emerging high-tech industries and the triple helix interaction and coordination mechanisms in the economic core area (Lu, 2008, pp. 252–253). Nevertheless, the novelty production process and product in traditional industries and the university-industry-government interaction in the less-developed regions have been substantially neglected (Lu, 2008, pp. 252–253). As the traditional light industries and highly resource-dependent heavy industries play a determining role in local economic development in Zhejiang and Yunnan, respectively (it will be demonstrated in 'The empirical findings'), this paper focuses on the regional core industries and fill a gap in comparative analysis between the well-developed economic core area and the less-developed regions in the transitional heterogeneous Chinese economy.

In sum, the THM with an evolutionary perspective is used to understand the Chinese regional innovation systems and the underlying mechanisms in this study.

Research methodology

As listed in 'Introduction', the research questions are exploratory, descriptive, and explanatory, so the paper adopts a mixed research method. A comparative case study method is applied with various research strategies to study and compare the implementation of the THM in two selected contrasting provinces to reflect regional differences. Both primary and secondary documents, and qualitative and quantitative data, are used to explore the regional innovation performance, patterns and processes, and investigate the functions and relationships between university, industry, and government embedded in the regional industrial, economic, and institutional context. Notably, due to the decisive role of domestic industrial enterprises in regional core industries, both private enterprises and SOEs, in promoting local economic development in two provinces, information on industrial enterprises in Zhejiang and Yunnan is collected in this paper.

To better understand the impact of regional context on implementing the THM, the national and local industrial characteristics and innovation performance within the jurisdiction are studied before the relationships between the three components are analysed. More specifically, this part shows and compares: (a) the dominant regional industrial, economic and institutional features in Zhejiang and Yunnan; (b) the regional innovation systems in Zhejiang and Yunnan, including the R&D efforts made by local enterprises, universities and research institutions, and local governments (i.e. innovation and R&D inputs); the innovation performance by three innovation actors (i.e. innovation outputs); and the collaboration and interaction between universities, governments and enterprises.

The innovation and R&D inputs can be measured by R&D expenditures and the number of R&D workers. The number of patent applications and grants, including invention patents and utility models, is used to measure innovation output and technological development. Although using patent data to measure innovation performance within a region has been criticised for omitting non-patented technological innovation and progress (Kleinknecht & Bain, 1993, pp. 110–112), patent data remains one of the most commonly used proxies for innovation output. Therefore, domestic patent applications and grants are employed in this paper to measure and compare innovation performance. The detailed information on relevant indicators is listed in Table 1.

To investigate the present collaboration and interaction between university, industry, and local governments in the regional innovation system, secondary data come from national and local statistical yearbooks, documentation, and archival records and data from a survey are used in this paper.

Table 1: Indicators of regional industrial structure and proxies for innovations inputs and outputs
(Source: compiled by authors).

Indicators	Spatial level	Source
Regional industrial structure		
- Level of economic development	Local	Statistics yearbook (2019)
- Industrial statistics	Local	Statistics yearbook (2019)
- Inter-firm relations	Local	Qualitative documentation
- Institutional environment	Local	Qualitative documentation
Innovation input		
- R&D expenditure	National	Statistics yearbook (1995–2019)
	Local	Statistics yearbook (2012–2019)
- Number of full-time R&D workers	National/Local	Statistics yearbook (2019)
Innovation output		
- Number of patents applications	National/	Statistics yearbook (2019)
	Local	Statistics yearbook (2012–2019)
- Number of patent grants	National	Statistics yearbook (2019)
	Local	Statistics yearbook (2012–2019)

The primary data were obtained through a survey conducted in four cities in Zhejiang and Yunnan (i.e. Wenzhou & Jinhua in Zhejiang & Kunming, and Qujing in Yunnan, 2015–2016) from 2015 to 2016. The survey covered 200 industrial enterprises in total, 50 in each of the four cities. An in-person interview was conducted with each sampled industrial enterprise, including private enterprises and SOEs (Lu, 2021, p. 57). Systematic sampling is an ideal sampling method; however, this sampling method is difficult to apply in practice. Therefore, the Ministry of Industry and Information Technology in Zhejiang and Yunnan were contacted asking to provide lists of contact information of industrial enterprises within their jurisdiction, and all the enterprises on the list were contacted and invited for a face-to-face interview (Lu, 2021, p. 57).

More specifically, domestic enterprises are the most prevalent type of sampled enterprises in Zhejiang and Yunnan (Lu, 2021, p. 57). The number of sampled private enterprises in Zhejiang far outweighs other types of sampled firms, accounting for 96%, while the sampled private enterprises and SOEs in Yunnan account for 63% and 29%, respectively (Lu, 2021, p. 57). The number of sampled small-sized firms among the sampled enterprises accounts for 66% in Zhejiang, and only six large enterprises were interviewed in the survey (Lu, 2021, p. 57). In contrast, the number of sampled medium and large-sized enterprises in Yunnan, mostly SOEs, accounts for 73% of the total number (Lu, 2021, p. 57). Besides, most sampled industrial enterprises in Zhejiang mainly engage in light industry and manufacture small consumer goods, while most of the sampled industrial enterprises in Yunnan, especially large firms and SOEs, engage in heavy industry (Lu, 2021, p. 57).

The data on collaboration and interaction between universities or research institutions and enterprises were collected through two questions:

- Whether firms have technical cooperation, including consultancies and technical support for upgrading manufacturing process, with universities or research institutions?
- Whether firms have R&D activities on the innovation of new products with universities or research institutions?

The data on collaboration and interaction between enterprises and local governments were collected through two questions:

- Whether firms have collaborated with local authorities?
- What types of activities have they conducted?

The major indicators are listed in Table 2 below.

Table 2: The indicators of triple helix interaction and collaboration (Source: compiled by authors).

Indicators	Spatial level	Source
The implementors of universities R&D projects		
– R&D funds	National	Statistics yearbook (2019)
– R&D projects	National	Statistics yearbook (2019)
University-industry interaction and cooperation		
– Technical cooperation	Local	Survey (2015–2016)
– Development of new products	Local	Survey (2015–2016)
Business-government interaction and cooperation		
– Type of activities	Local	Survey (2015–2016)

In the next section, data from different sources will be showed the distinctive regional features, innovation inputs and outputs, as well as university-industry-government interaction and coordination mechanisms in Zhejiang and Yunnan.

The empirical findings

The transitional Chinese economy is typified by significant regional divergence. China's innovation system also exhibits huge regional differences under the same national-level indigenous innovation strategy. China's 'multi-layer-multi-regional form' of organisational structure (the M-form organisation) and the implementation of decentralisation reform have widened the regional divergence, as in the M-form structure, regional governments in China are semi-autonomous and financially self-sufficient (Qian & Xu,

1993, p. 544). In other words, the central government delegates greater administrative and financial autonomy to local governments, which allows local authorities to interpret and carry out national policies and regulations based on distinctive regional features and also to formulate regional development plans and policies, including local innovation plans and policies, according to local industrial, economic and institutional configurations. Therefore, uneven regional development and great regional diversity can be observed in the transitional Chinese economy. More specifically, the regional economic development in the eastern coastal area has far more developed than in central, western, and northern China. The gross regional product (GRP) of the eastern region accounted for 51.6% of total GDP in 2019, while western areas only took up 20.7% (National Bureau of Statistics, 2020). Therefore, to investigate whether the regional context can exert influence upon the implementation of the THM at the local level and to understand the regional differences in innovation performance, it is essential to first identify:

- The dominant regional industrial, economic and institutional features in Zhejiang and Yunnan;
- The regional innovation systems in Zhejiang and Yunnan.

This section is structured as follows: 'The overview of dominant features of Zhejiang and Yunnan' describes the existing industrial and economic features in Zhejiang and Yunnan, while 'The regional innovation systems in Zhejiang and Yunnan' presents the empirical findings of regional innovation systems in Zhejiang and Yunnan.

The overview of dominant features of Zhejiang and Yunnan

Zhejiang province is situated in the eastern coastal area of China, where the natural resources composite index per person is the third lowest (11.5) among 31 provinces and autonomous regions in China (Yang, 1992, as cited in Lu, 2021, pp. 62–63). Although Zhejiang possesses less natural resources, Zhejiang has maintained high economic growth in the past decades. In 2019, the GRP in Zhejiang reached 6.23 trillion CNY (0.88 trillion EUR), ranked 4th place (National Bureau of Statistics, 2020).

Zhejiang has been known as the 'birthplace' of the private sector in China, where domestic private enterprises, especially micro-, small and medium-sized enterprises¹ (MSMEs), are the major driving forces of local economic growth and contributed 79.29% of the total output of the industrial sector in 2019 (Zhejiang Bureau of Statistics, 2020). As the largest industry and biggest employment generator of the Zhejiang economy, the traditional textile industry, including manufacturing textiles, chemical

¹ Firms in industrial sector with annual revenue less than 400 million CNY (56.5 million EUR) (National Bureau of Statistics, 2019).

fibre, apparel, footwear, etc., has dominated the industrial sector in Zhejiang in the past four decades. The output of the textile industry in Zhejiang was 1.07 trillion CNY (0.15 trillion EUR), accounting for 14.54% of the total output in 2019 (Zhejiang Bureau of Statistics, 2020). Electrical machinery manufacturing and chemicals and chemical products manufacturing are the second and third-largest industries in Zhejiang (Zhejiang Bureau of Statistics, 2020). In short, domestic private enterprises, especially MSMEs in traditional low-tech, low-cost and family-based light industries, have dominated the Zhejiang economy for decades.

In the early 1980s, to protect and support the emerging private sector, Zhejiang local governments innovatively created the ‘one region, one firm, all families affiliated’ model, which let family and individual businesses affiliate with township and village enterprises (TVEs) and be responsible for its profits or losses (Cao, Z., as cited in Lu, 2021, p. 190). This model was widely applied in Zhejiang at the initial stage of economic reform and provided the basis for shaping the existing highly specialised and interdependent industrial cluster in Zhejiang (Cao, Z., as cited in Lu, 2021, p. 190). A considerably high density of clusters and concentration of enterprises can be observed in Zhejiang (Lu, 2021, p.70). The clusters in Zhejiang have already formed complete supply chains and distribution channels (Lu, 2021, p.70). The local core firms outsource manufacturing processes to other enterprises, mostly MSMEs, and trading companies develop distribution channels for marketing products (Lu, 2021, p.70). More than 800 industrial clusters, which covered 175 sectors, had developed in 2009 (Wu et al., as cited in Lu, 2021, p. 70). Notably, Zhejiang has the largest textile cluster in China.

Overall, Zhejiang has established an industrial structure dominated by low-tech, low-cost, and private family-based light industries with a highly specialised production network, high level of inter-firm relations and coordination, and long-term informal inter-firm commitment (Lu, 2021, p.70).

Yunnan, the border province situated in the southwest of China, has large reserves of mineral resources and the largest tobacco-growing and manufacturing base in China (Lu, 2021, p. 5). Thus, the resource endowment of Yunnan is one of the important factors in shaping the industrial structure and promoting local economic development, and a large number of resource-based industrial clusters have developed around large local core firms in Yunnan (Lu, 2021, p. 5). However, Yunnan has far lagged behind in terms of economic performance in China. The GRP in Yunnan was only about 2.32 trillion CNY (0.32 trillion EUR), ranked 18 out of 31 provinces and autonomous regions in 2019 (National Bureau of Statistics, 2019).

Yunnan’s economy has heavily relied on resource-dependent industries, such as the metal smelting and pressing industry, the tobacco industry, the mining industry, the metal manufacturing industry, the chemical industry, etc. In 2019, the output of resource-dependent heavy industries and the tobacco industry accounted for 69.5% and 12.8% of total output, respectively (Yunnan Bureau of Statistics, 2020). As major contributors to the Yunnan economy, the traditional metal smelting and pressing industry and

the tobacco industry have dominated the industrial sector in Yunnan for centuries. The output of the metal smelting and pressing industry in Yunnan was 305.5 billion CNY (43.4 billion EUR), accounting for 21.37% of total output in 2019 (Yunnan Bureau of Statistics, 2020). The tobacco industry is the second largest industry in Yunnan, and the output reached 162.2 billion CNY (23 billion EUR) in 2019 (Yunnan Bureau of Statistics, 2020). Besides, although SOEs only accounted for 14.7% of the total number of industrial enterprises, the output SOEs took up 51.1% of the total output of the industrial sector in 2019, while private enterprises made up 81.9% of the total number of industrial enterprises, but only contributed 45.8% of the total output (Yunnan Bureau of Statistics, 2020). In short, large domestic enterprises in highly resource-dependent industries with a vast input of capital and labour, especially SOEs, are the key driving force of the Yunnan economy (Yunnan Bureau of Statistics, 2020).

Notably, except for tobacco and pharmaceutical industries, many regional core firms in heavy industry in Yunnan are still using obsolete manufacturing technologies to produce simple or semi-finished products with high logistics costs, which puts firms in an unfavourable position in market competition (Lu, 2021, p. 95). Therefore, to maintain local revenues and reduce the financial and political burdens of unemployment, Yunnan local governments actively support regional core industries by providing financial support and asking regional core SOEs to establish a long-term stable collaboration with local unprofitable and loss-making firms (Lu, 2021, pp. 210–211). At the same time, to survive in the highly competitive environment, firms in Yunnan are very sensitive to and cautious about policy change and keen to establish close relationships with local governments and maintain a long-term risk-sharing commitment and stable relations with local core firms, especially SOEs (Lu, 2021, pp. 210–211).

Overall, Yunnan has established an industrial structure dominated by highly resource-dependent, capital and labour-intensive industries with highly (state-led) strategic integration and a high level of inter-firm coordination (Lu, 2021, pp. 210–211).

Based on the discussion above, a summary of regional industrial, economic, and institutional features in Zhejiang and Yunnan is provided in Table 3 below:

Table 3: The indicators of regional industrial, economic, and institutional features in Zhejiang and Yunnan (Source: Lu, 2021).

	Zhejiang	Yunnan
Level of economic development	Well-developed (rank 4 th in 2019)	Less-developed (rank 18 th in 2019)
Local resource endowment	Poor resource base	Rich resource base
Predominant type of industries and firms	Private firms, especially SMEs Low-tech, low-cost and family-based firms in light industries	Large-sized firms, especially SOEs Highly resource-dependent, capital-intensive large firms in heavy industries

Table 3 (continued)

	Zhejiang	Yunnan
Inter-firm relations	Highly specialised production networks High level of interfirm coordination Long-term informal interfirm commitment	Highly strategical integration and diversification into related sectors Sensitive to policy change Long-term partnership with regional core firms
Institutional environment	Strong private sector Market-led environment	Strong state sector State-led environment

The regional innovation systems in Zhejiang and Yunnan

The innovation approaches, such as the NIS and THM, see firms, universities and research institutions, and government as key components of the innovation system and emphasises that the interactions between different components are the basis for the development and operation of innovation (Edquist, 2001, pp. 4–6). Therefore, this section will present detailed information about the R&D and innovation inputs, the innovation performance, and collaboration and interaction between three innovation actors in Zhejiang and Yunnan to investigate the regional innovation system.

The innovation inputs and performance in Zhejiang and Yunnan

Since the importance of developing science and technology has been emphasised in national development strategies in the mid-1990s, there has been a significant increase in resources devoted to R&D and the number of innovative activities in China. From late 1998 to 2005, the expenditures on R&D increased from 48.6 billion CNY (6.9 billion EUR) to 231 billion CNY (32.5 billion EUR), and the number of people engaged in R&D activities doubled during this period (Li Xibao, 2009, p. 340). The number of patent applications and grants showed a strong upward trend, climbing from 3,958 and 918 in 1998 to 54,088 and 12,635 in 2005, respectively (Li Xibao, 2009, p. 340). According to China's National Medium-to-Long-Term Plan (MLP) for Science and Technology Development (2006–2020), the central government sought to raise overall R&D investment from 1.21% of GDP in 2004 to 2.5% of GDP by 2020.

Figure 1 looks at the R&D expenditure and the ratio of total national R&D expenditures to GDP from 1995 to 2019 and both of which show significant upward trends over time. The total R&D expenditures reached 2.21 trillion CNY (0.31 trillion EUR) and expenditures on R&D totalled 2.23% of GDP in 2019, nearly fulfilling the MLP (National Bureau

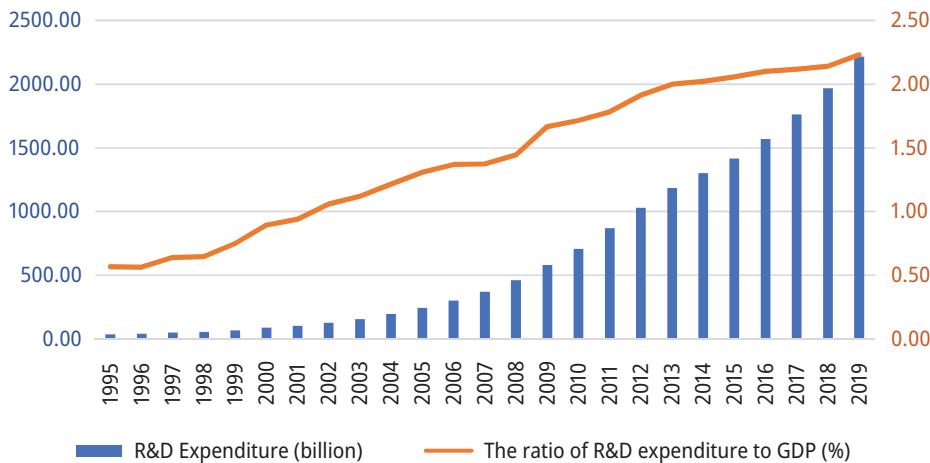


Figure 1: The R&D expenditures and the ratio of R&D expenditure to GDP (%) in China 1995–2019
(Source: National Bureau of Statistics, 2020).

of Statistics, 2020). The growth in R&D expenditures has largely increased the number of patent applications and grants in China. The filing of patent applications and the number of patent grants have grown at a substantial rate, i.e. from 476,264 applications and 814,825 patent grants in 2005 to 4.38 million applications and 2.59 million patent grants in 2019 (National Bureau of Statistics, 2020). Although there has been a large increase in resources devoted to R&D and the number of innovative activities, the expenditures on R&D, the number of people engaged in R&D activities, and the number of patent applications and grants in well-developed eastern areas are three to four times greater than in the less-developed central, western, and northern China. China's innovation system and innovation performance exhibit huge regional differences even under the same national-level indigenous innovation strategy.

Figure 2 looks at the R&D expenditure and the ratio of R&D expenditures to GRP in Zhejiang and Yunnan from 2012 to 2019 and both of which show upward trends over time. The total R&D expenditures in Zhejiang reached 166.98 billion CNY (23.9 billion EUR) and expenditures on R&D totalled 2.68% of Zhejiang's GRP in 2019 (National Bureau of Statistics 2020). Although, Yunnan R&D spending tripled during this period, Zhejiang R&D expenditures was about 7.6 times higher than in Yunnan. Besides, Yunnan only devoted 0.95% of its GRP, which was far lower than provinces in the eastern coastal region and the national average (2.23%) in 2019 (National Bureau of Statistics, 2020). At the same time, the number of people engaged in R&D activities in Zhejiang (0.71 million) was also about 7.7 times higher than in Yunnan (National Bureau of Statistics, 2020).

Huge regional differences are also found in innovation outputs. The number of patent applications and grants in well-developed eastern regions is multiple times

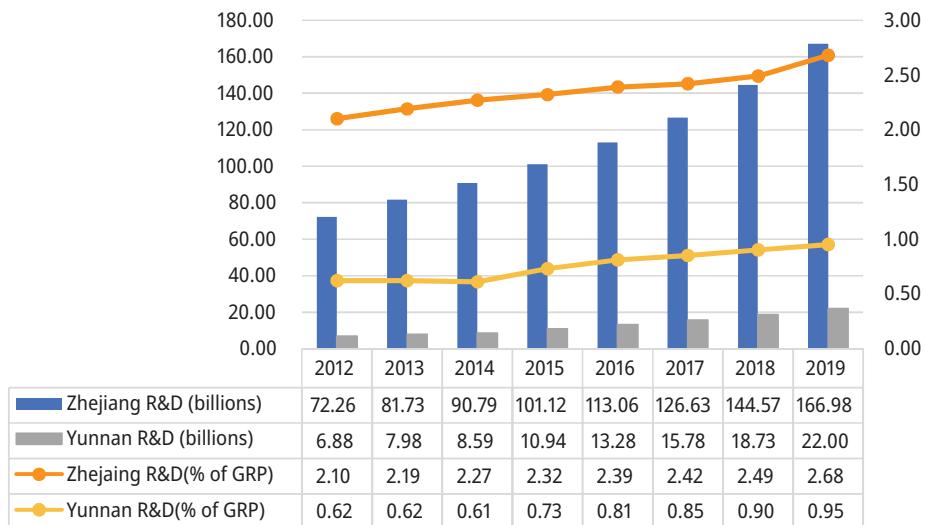


Figure 2: R&D expenditures and the ratio of R&D expenditures to GRP in Zhejiang and Yunnan
(Source: National Bureau of Statistics, 2020).

greater than in less-developed western regions and the same pattern is observed in Zhejiang and Yunnan.

Figure 3 indicates the number of patent applications and grants in Zhejiang and Yunnan from 2012 to 2019. The filing of patent applications and the number of patent grants have grown at a substantial rate in both Zhejiang and Yunnan. The number of patent applications and grants in Yunnan has quadrupled in the last ten years (National Bureau of Statistics, 2020). However, the number of patent applications and grants in Zhejiang was more than 13 times larger than in Yunnan (National Bureau of Statistics, 2020).

As shown above, Zhejiang and Yunnan show huge regional differences in innovation inputs and outputs. Compared with innovation actors in Yunnan, innovation actors in Zhejiang are actively involved in R&D and innovation activities. However, compared with Zhejiang, other provinces and autonomous regions in the eastern area, such as Beijing, Shanghai, Tianjin, Guangdong, and Jiangsu, devoted a much larger fraction of their GRP to R&D activities, and Guangdong and Jiangsu R&D spending were about two times higher than that in Zhejiang (National Bureau of Statistics, 2020).

Besides, enterprises are the major performers of R&D and innovative activities in China. According to the National Bureau of Statistics (2020), the government directed 80% of its total R&D investment to universities and research institutions, and enterprises only received up to 14.3% of R&D funds from the government in 2019, meaning that firms relied heavily on internal funds for financing R&D (National Bureau of Statistics, 2020). Looking at the composition of R&D expenditures in Zhejiang and Yunnan, the same story holds.

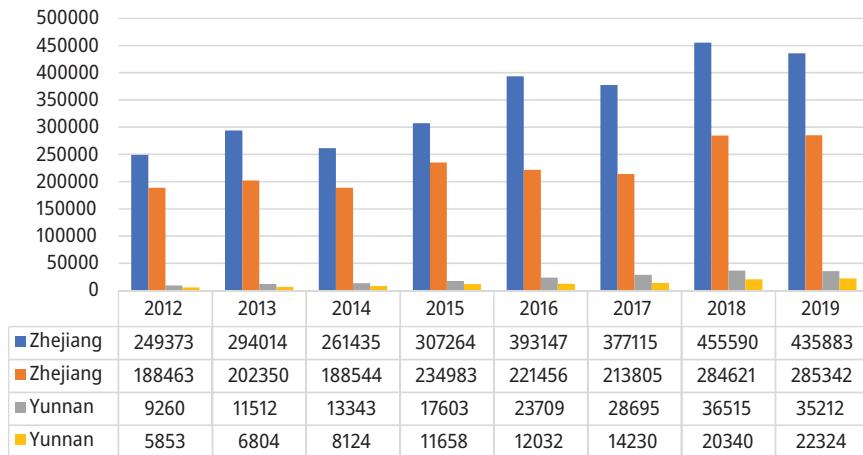


Figure 3: Number of patent applications and grants (piece) in Zhejiang and Yunnan (Source: National Bureau of Statistics, 2020).

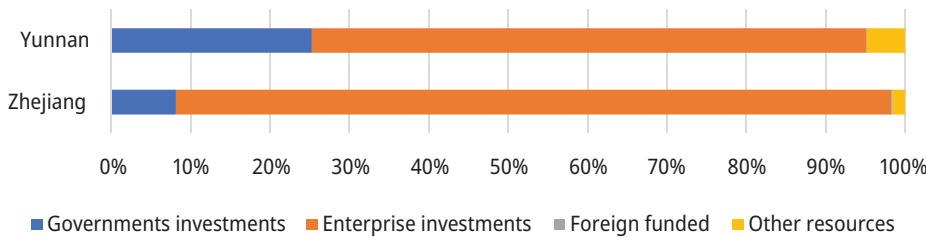


Figure 4: The composition of R&D expenditures in Zhejiang and Yunnan 2019 (billion CNY) (Source: National Bureau of Statistics, 2020).

As Figure 4 illustrates, the private sector invested most of the R&D expenditures in Zhejiang and Yunnan, and the next largest investor was government. Enterprises contributed 90.3% and 70% of total R&D expenditures in Zhejiang and Yunnan, respectively, while the proportion of Zhejiang and Yunnan government R&D expenditures only accounted for 8.2% and 25.2% (National Bureau of Statistics, 2020). Notably, industrial enterprises in Zhejiang and Yunnan only received up to 1.65% and 7.6% of R&D funds from the government, while 78.5% and 76.8% of universities and research institutions' R&D expenditures in Zhejiang and Yunnan were funded by the government in 2019 (National Bureau of Statistics, 2020). In other words, industrial enterprises in Zhejiang and Yunnan rely heavily on internal funds for financing R&D, accounting for 98.35% and 92.4%, respectively (National Bureau of Statistics, 2020). In addition, the number of patent applications by enterprises in Zhejiang and Yunnan

was 4.7 and 1.9 times greater than the number of patent applications by Zhejiang and Yunnan public research organisations in 2019 (National Bureau of Statistics, 2020).

Therefore, industrial enterprises are the major performers of R&D and innovative activities in Zhejiang and Yunnan. Industrial enterprises rely on internal funds for financing R&D, while universities and research institutions receive most of the government's funds for R&D activities in Zhejiang and Yunnan.

It is worth mentioning that R&D active enterprises are engaged in high-tech industries, including computer and electronic products, machinery, automobiles, and chemical products manufacturing. The aforementioned high-tech industries contributed 54.9% of total R&D expenditures and 62.8% of total patent applications in 2019 (National Bureau of Statistics, 2020). However, R&D inputs and outputs (e.g. R&D expenditures and the number of patent applications) of the traditional light and highly resource-dependent industries are far less than that of high-tech industries, as presented in Table 4 below.

Table 4: The ratio of R&D expenditures and patent data in traditional industries 2019 (Source: National Bureau of Statistics, 2020).

	R&D expenditures (% of TE)	Patent applications (% of TN)	Innovation in force (% of TN)
Textile industry	4.12	3	1.89
Metal smelting and pressing industry	9.78	3.12	3
Tobacco industry	0.22	0.47	0.37
Mining industry	1.84	0.95	0.85
Metal manufacturing industry	3.34	4.35	3.58

Note: The total expenditure is abbreviated to TE. Total number is abbreviated to TN.

As mentioned before, the textile industry in Zhejiang, and the tobacco, the mining and metal manufacturing industries in Yunnan are major driving forces and the biggest employment generator of Zhejiang and Yunnan's economy. However, industrial enterprises in these traditional industries devote less to R&D and innovation activities. Notably, although the metal smelting and pressing industry spent the most on R&D activities among listed industries, the number of patents applications and patents in force has not grown in concordance with its inputs (9.78%), as other industries with the same amount of R&D spending (National Bureau of Statistics, 2020). Therefore, we can conclude that although Zhejiang has shown better overall innovation performance, the regional traditional light industries, as the major contributor to economic growth in Zhejiang, are inactive in innovation. In other words, the new emerging R&D active high-tech industries in Zhejiang have not generated a 'positive externality' or 'spill-overs' of innovation in encouraging R&D activities in the regional traditional light industries. Similarly, Yunnan's traditional resource-dependent heavy industries are also inactive in R&D and innovation activities.

The collaboration and interaction between three innovation actors in Zhejiang and Yunnan

The data on collaboration and interaction between enterprise-universities-governments were collected through secondary data (i.e. statistical yearbooks) and the survey. Notably, the sampled enterprises in Zhejiang and Yunnan show the same regional features. About 94% of sampled firms in Zhejiang are family-based private firms, which engage in manufacturing simple consumer products (e.g. textile, apparel, footwear, or eyewear) and intermediate products for large local core firms and exhibit a high level of inter-firm coordination. Most of the sampled firms (66% of private enterprises and 29% of SOEs) in Yunnan are engaged in highly resource-dependent heavy industries, such as steel making, chemical, metallurgical products manufacturing, and exhibit a high level of inter-firm coordination and partnership with regional core firms. The sampled firms in both Zhejiang and Yunnan reflect the identical regional industrial features as mentioned above. Therefore, the survey results are used to reflect the university-industry-government relations and interaction in Zhejiang and Yunnan.

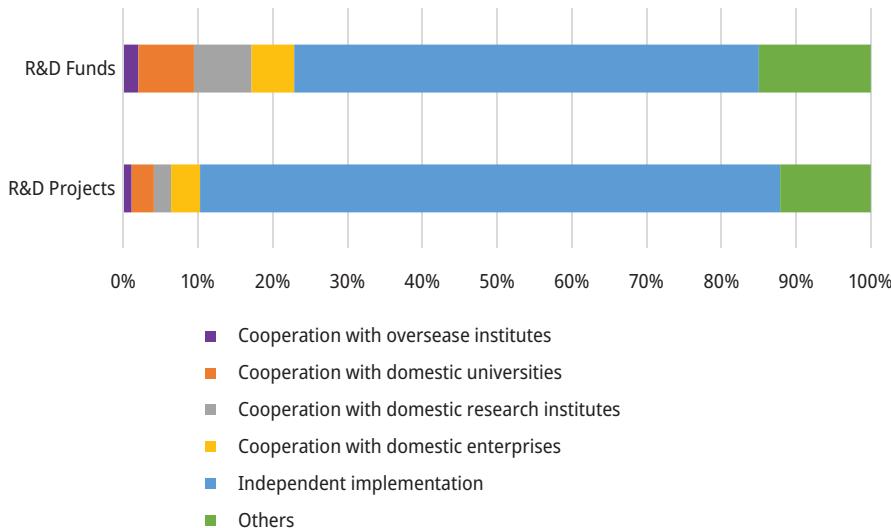


Figure 5: The implementors of universities R&D projects in China in 2019
(Source: National Bureau of Statistics, 2020).

Figure 5 reflects the implementor of universities' R&D projects. About 77.6% of R&D projects was solely accomplished by universities, and 3.9% of projects was implemented with domestic enterprises in 2019 (National Bureau of Statistics, 2020). Besides, only about 24% of R&D projects were launched by enterprises and entrusted to universities, while government funded projects accounted for more than 50% of universities' R&D projects (National Bureau of Statistics, 2020). In short, compared with

university-government collaboration and interaction, few enterprise-university collaboration and interaction activities are observed in implementation of universities' R&D projects.

The data on collaboration and interaction between universities or research institutions and enterprises were collected through two questions: (a) whether firms have technical cooperation, including consultancies, technical support for upgrading manufacturing process, with universities or research institutions and; (b) whether firms have R&D activities on the innovation of new products with university or research institutions.

Table 5: University-industry interaction and cooperation in Zhejiang and Yunnan
(Source: Own survey result).

	Zhejiang	Yunnan
Technical cooperation	6	41
R&D activities on the innovation of new products	8	39

The survey showed that 94% of sampled firms in Zhejiang have no technical cooperation with universities and 92% of sampled firms have no R&D activities on the innovation of new products with universities in Zhejiang. In contrast, 41% of sampled firms in Yunnan report technical cooperation with universities and 39% of sampled firms report R&D activities on the innovation of new products with universities in Yunnan. In short, compared to the sampled firms in Zhejiang, the sampled firms in Yunnan, especially SOEs and large enterprises, see the most frequent university-industry interaction, while very few interactions are observed in family-based SMEs, especially SMEs in making intermediate products, in both Zhejiang and Yunnan.

The data on collaboration and interaction between enterprises and local governments were collected through two questions: (a) whether firms have collaborated with local authorities; and (b) what types of activities they have conducted (Lu, 2021, p. 82, 104).

Table 6: Business-government interaction and cooperation in Zhejiang and Yunnan (Source: Lu, 2021).

	Infrastructure construction	Market development	Technical cooperation	R&D activities on the innovation of new products	Training and education
Zhejiang	5	2	4	4	4
Yunnan	28	7	18	19	4

The survey showed that 91% of sampled firms in Zhejiang have no collaboration with local government, while in Yunnan, 40% of sampled firms have close collaboration with local governments (Lu, 2021, p. 82, 104). More specifically, only nine firms in Zhe-

jiang reported industry-local governments collaborative activities, and the most frequent interaction is infrastructure construction, following by technical cooperation, the innovation of new products, and vocational training and education (Lu, 2021, p. 82, 104). Similarly, the most frequent interaction between sampled firms and local governments in Yunnan is infrastructure construction, following by the innovation of new products and technical cooperation with science and technology departments or universities, and very few collaborative activities are reported in market development and vocational training and education (Lu, 2021, p. 82, 104). The finding reveals that infrastructure construction, including municipal, transport, water and environment infrastructure construction projects, is the most common type of business-government interaction, which is confirmed by the public-private partnership (PPP) projects launched in both Zhejiang and Yunnan (Ministry of Finance, Government of China 2017; National Development & Reform Commission 2020).

In sum, compared to sampled firms in Zhejiang, firms in Yunnan, especially SOEs and large enterprises in heavy industry, see relatively frequent university-industry-government interaction; while very few triple helix interaction is observed in family-based SMEs, especially firms in making intermediate products, in both Zhejiang and Yunnan.

Overall, Zhejiang and Yunnan innovation systems are identified, which show huge regional differences. The features of the innovation system of Zhejiang and Yunnan are summarised below.

- Compared with Zhejiang's overall innovation performance, Yunnan shows a considerably poor innovation performance regarding R&D inputs and outputs. R&D active enterprises are mainly engaged in high-tech industries. However, the new emerging R&D active high-tech industries in Zhejiang have not generated a 'positive externality' or 'spillovers' of innovation in promoting technological change in the regional traditional light industries. In contrast, the local traditional low-tech, low-cost, and labour-intensive light industries in Zhejiang and highly resource-dependent, capital and labour-intensive industries in Yunnan are inactive in innovation. In other words, the local core industries in the two provinces are inactive in R&D activities.
- Industrial enterprises in both Zhejiang and Yunnan are the major performers among the three innovation actors. Industrial enterprises in both Zhejiang and Yunnan heavily rely on internal funds for financing R&D, while local universities and research institutions receive most of the government's funds for R&D activities and see very frequent university-government collaboration and interaction.
- Very few university-industry-government interactions can be observed in private enterprises, especially SMEs, in making intermediate products in Zhejiang and Yunnan. Enterprises, especially SOEs, in highly resource-dependent, capital and labour-intensive regional core industries in Yunnan see relatively frequent university-industry-government interaction and are keen to establish long-term and stable cooperation with universities, regional core firms, and local governments.

The comparative analysis of triple helix interaction in Zhejiang and Yunnan

The triple helix interaction in Zhejiang

As shown in the previous section, Zhejiang achieved a relatively high overall innovation performance. However, family-based private firms, especially SMEs, in the traditional core industries are far less engaged in innovation networks and university-industry-government interactions than R&D active enterprises in high-tech industries.

Several clusters in manufacturing and exporting simple consumer products with highly specialised and complete supply chains and distribution channels have been the major contributor to local economic development in the past decades. Private enterprises, which manufacture intermediate products for large local core firms, have embedded in local production chains, which form a long-term stable and close linkage between regional core firms and a large number of upstream private enterprises, especially SMEs. For decades, the positive feedbacks (i.e. good economic outcomes of the Zhejiang model) have substantially strengthened the continuity and stability of inter-firm relations. However, according to Grabher (1993, pp. 260–264), the positive feedback and the highly stable inter-firm relations may result in dispensing with investment in R&D and innovation activities and cutting spending on developing new products, which has confirmed by the survey results and secondary data as discussed above. Besides, Zhejiang's clusters have also shaped networks of informal long-term commitments between family-based private firms. The inter-firm relations have been enhanced and maintained due to the family-based personnel connections. Therefore, the highly stable inter-firm relations in Zhejiang cause a functional lock-in. Firms with common interests and orientation in the production network tend to maintain the status quo.

However, firms in Zhejiang have gradually lost their advantages in the global competition and confront challenges, as labour-intensive and low-tech manufacturing industries start shifting to inner China and Southern Asian countries (Lu, 2021, p. 207). Thus, to introduce the knowledge-based innovation system for increasing manufacturing capabilities and productivity and upgrading or renewing manufacturing processes and to develop new products is key to ensure a sustainable economic growth in Zhejiang. Although the Zhejiang government has provided favourable policies for encouraging innovation, such as tax reduction and R&D subsidies, most of the private enterprises, especially SMEs, in traditional light industries are not eligible for any favourable policies, as these policies are mainly designed for enterprises in new emerging high-tech industries (Lu, 2021, pp. 75–77). At the same time, without innovation platform, universities and research institutions take a very limited role in transfer and capitalisation of knowledge and technology with enterprises, especially SMEs, in traditional industries.

Therefore, due to the lack of incentives and platform for innovation and deviation from the existing path, private enterprises in traditional core industries in Zhejiang will be trapped into a process of technological lock-in, which will eventually hinder regional economic development (Lu, 2021, p. 207).

Scholars (see Cai & Etzkowitz, 2020, p. 201) label the innovation system in China as a 'government pulled' triple helix. However, neither 'government pulled' nor 'technology push' can represent the triple helix interaction in regions like Zhejiang, where has strong private sector, which predominate by family-based SMEs in traditional light industry with highly stable inter-firm relations. Zhejiang case seems hard to fit any of the THM, as the absence of university-industry-government interactions in regional core industries.

The triple helix interaction in Yunnan

Yunnan shows a considerably poor overall innovation performance. However, according to the survey result, enterprises, especially SOEs, in highly resource-dependent, capital- and labour-intensive regional core industries in Yunnan are actively engaged in innovation networks and university-industry-government interactions.

In Yunnan, universities and research institutions; industry, especially the resource-dependent heavy industry; and local governments actively interact and collaborate, especially after the implementation of de-capacity policies in 2017. The local government are actively involved in promoting innovation and entrepreneurship. The regional core firms, especially SOEs, closely collaborate with universities and research institutions for upgrading or renewing manufacturing processes and developing new products. It seems that a flexible overlapping interaction and relations between three institutional spheres can be observed in Yunnan, as each of the innovation actors takes the role of the other. According to Etzkowitz and Leydesdorff (2000, p. 111), the overlapping model indicates an ideal and balanced triple helix interaction and relations. However, has the overlapping model been successfully created in Yunnan? The answer is no.

Both economic and innovation performance of Yunnan are far from satisfactory. The seemingly overlapping interaction and relations between three institutional spheres in Yunnan is the reaction to the 'unexpected external shock': the implementation of de-capacity policies, which forces local core firms into upgrading manufacturing process and developing new products.

More specifically, the real estate investigate craze in the past years results in relatively high demand for steel and other building materials (Lu, 2021, pp. 100–101). The overinvestment in the steel-making and other related heavy industries causes serious problems of overcapacity (the oversupply of steel, building material, and other related products, and a sharp fall of market prices) (Lu, 2021, pp. 100–101). Therefore, the central government required firms to reduce their output, especially firms which produce

simple products and using obsolete manufacturing technologies (Lu, 2021, pp. 100–101). At the same time, banks immediately reacted to the market and policies by terminating funding (Lu, 2021, pp. 100–101). Therefore, as major contributors to Yunnan economy, these regional core industries have to confront with the strict policy control of output, a sharp decline of the market price of their products, and the termination of bank loans. Under this circumstance, firms in related heavy industries have become active in technical cooperation and R&D activities with other firms, research institutions, and universities for upgrading and renewing manufacturing processes and also for searching for new opportunities or developing new technologies or new products to recoup losses (Lu, 2021, pp. 100–101). Besides, as mentioned previously, Yunnan local governments play a key role for protecting local core firms and supporting regional core industries to maintain local revenues and reduce the financial and political burdens of unemployment, especially when local core firms encounter difficulties (Lu, 2021, pp. 210–214).

Therefore, the strong intention of seeking alternative path and protecting firms from bankruptcy mutually shape the overlapping interaction between universities and industry. Rather than promoting innovation and ensuring a sustainable regional economic development with long-term project, the short term-oriented university-industry-government interaction and collaboration in Yunnan aim at protecting existing regional core industries (Lu, 2021, pp. 210–214). The ‘government pulled’ or ‘policy driven’ triple helix interaction can represent Yunnan case.

However, it is difficult to de-lock the heavy industry enterprises in Yunnan from the inefficient and inferior path of development through the short term-oriented university-industry-government interaction and collaboration, as the functional, political, and technological lock-in processes can be found in Yunnan case.

Due to the inferior position in market competition, enterprises in Yunnan, especially intermediate products manufacturers in heavy industries, are eager to establish and maintain a long-term inter-firm relation with regional core firms (Lu, 2021, pp. 210–214). Meanwhile, the production chain of the highly resource-dependent heavy industries is highly technically interrelated, which substantially strengthen the continuity and stability of inter-firm relations (Lu, 2021, pp. 210–214). Therefore, the highly stable inter-firm relations in Yunnan cause a functional lock-in. Moreover, as regional core SOEs undertake semi-political tasks to assist local governments in supporting local firms (Lu, 2021, pp. 210–214), a highly developed and close cooperative relations between local core industries and local governments typify Yunnan industrial structures. Due to the protective role of local governments, firms are keen to establish a stable linkage with local governments for accessing to the production chain with local core firms (Lu, 2021, pp. 210–214). Therefore, the close connections between firms and local governments lead to a process of political lock-in (Lu, 2021, pp. 210–214). Additionally, although firms in Yunnan have conducted technical cooperation and R&D activities with university and science and technology department and most of firms are manufacturing simple products, regional core firms in highly resource-dependent and capital-and labour-intensive heavy industry do not have sufficient possibility to deviate from the existing

development trajectory due to a low degree of reversibility of vast investment and transferability of technology (Lu, 2021, pp. 210–214). Because of enormous investments in equipment, technology, facilities, and labour input, and highly technically interrelated upstream or downstream firms in the production chain, it is difficult for regional core firms and their upstream firms to adopt and capitalise alternative or new technologies and develop new products (Lu, 2021, pp. 210–214), which leads to technological lock-in process.

Overall, the triple helix interaction and relations in both Zhejiang and Yunnan substantially confines to regional resource base, local industrial and economic structure and institutional environment, which explains the substantial regional difference between innovation system and university-industry-government interaction and relations in Zhejiang and Yunnan. Local context does matter.

Conclusions and new research agenda

China introduced the knowledge-based innovation system as a new driver of economic growth to ensure sustainable economic growth and increase manufacturing capabilities and productivity. The indigenous innovation strategy has become the core of China's national innovation and economic development strategy. As a great regional disparity is typical of the transitional Chinese economy, and the existing studies have not provided a comprehensive systematic analysis to understanding and comparing the triple helix interaction at the local level, this paper provides a comprehensive understanding of the triple helix interaction and coordination mechanisms at two contrasting regions with different resource bases, industrial and economic structure and institutional environment in the transitional heterogeneous Chinese economy. This research is descriptive and explanatory, so the paper adopts a mixed research method. A comparative case study method is applied with varieties of research strategies.

Zhejiang and Yunnan innovation systems are identified, which show huge regional differences. Zhejiang achieved a relatively high overall innovation performance, while Yunnan showed a considerably poor overall innovation performance. R&D active enterprises are mainly engaged in high-tech industries, which have not brought about a 'positive externality' of innovation in promoting technological change in the regional traditional light industries. Therefore, family-based private firms, especially SMEs, in the traditional core industries in Zhejiang are far less engaged in innovation networks and the triple helix interactions. In contrast, enterprises, especially SOEs, in highly resource-dependent, capital and labour-intensive regional core industries in Yunnan are actively engaged in innovation networks and university-industry-government interactions, due to the serious problems of overcapacity caused by overinvestment in the real estate industry and the implementation of de-capacity policies.

The absence of university-industry-government interactions in traditional industries in Zhejiang are caused by functional lock-in in traditional core industries in Zhejiang, the absence of innovation platform, universities and government support for private enterprises, especially SMEs, in traditional light industries. Although it seems that a flexible overlapping interaction and relations between three institutional spheres can be observed in Yunnan, the overlapping interaction is the reaction to the 'unexpected external shock': the implementation of de-capacity policies, which forces local core firms into upgrading the manufacturing process and developing new products. The 'government pulled', or 'policy-driven' triple helix interaction can represent the Yunnan case. It is difficult to de-lock the heavy industry enterprises in Yunnan from the inefficient and inferior path of development through the short-term-oriented university-industry-government interaction and collaboration, as the functional, political, and technological lock-in processes can be found in the Yunnan case.

Overall, regional resource base, local industrial and economic structure and institutional environment and the existing development trajectories substantially determine university-industry-local governments interaction and collaboration in promoting innovation. The regional context substantially impacts regional innovation patterns and processes.

Based on the findings, this paper suggests that the implementation of regional innovation policies should consider distinct local industrial features and needs, so policymakers can provide innovation actors with incentives for innovation.

- First, although the Zhejiang government has provided favourable policies for encouraging innovation, private enterprises, especially SMEs, in traditional light industries have been substantially neglected. Therefore, policymakers should pay more attention to providing incentives to traditional industries.
- Second, industrial enterprises are the major performers among the three innovation actors; however, industrial enterprises heavily rely on internal funds for financing R&D. Besides the inadequate government financial support, the innovation platform in Zhejiang and Yunnan should be established.
- Third, a short-term-oriented university-industry-government interaction and collaboration will not lead to a successful technological change and economic growth, let alone to de-lock from the inferior path of development. Therefore, a long-term-oriented interaction is required.

In sum, regional features are important considerations in creating favourable environments and optimal conditions for technological innovation, manufacturing processes, and products.

Besides, this research suffers from three major limitations:

First, according to Yin (2003, p. 37), the major challenge of a case study is to test whether the findings can be generalised. Therefore, one of the new research agendas is to conduct more research on replicating the results in different regions.

Second, the THM has been applied to understand distinctive regional innovation systems in this study. However, the theoretical and analytical framework of the THM has been criticised for lacking solid theoretical foundations and limited explanatory power for many practical issues, especially when comparing different contexts (see Brundin et al., 2008; Giuliani & Arza, 2009; Tuunainen, 2002; Balzat & Hanusch, 2004; Cai, 2014, Mowery & Sampat, 2004, as cited in Cai & Etzkowitz, 2020, p. 196). Therefore, to provide better theoretical explanations of the underlying mechanism of the implementation of THM, a new research plan is to include alternative explanations, factors, and various aspects, for instance, externality and spillovers effects, in analysing the evolutionary regional innovation systems.

Finally, a notable weakness of this research is that no unified operational measures have been developed in THM. As Frenken (2000) and O'Malley et al. (2002) criticised, the methodology of the THM shows a limited study on developing its own method of analysis (Lu, 2008, p. 252). Hence, providing an operational set of measures could be another element of a new research agenda.

Overall, the comparative analysis of regional innovation systems in the heterogeneous Chinese economy offers a wide variety of opportunities for further research.

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15 How triple helix ecosystems can support climate smart agriculture innovation uptake by farmers

Abstract: For emerging economies in Africa, the great challenge ahead is to build and maintain its breadbaskets to supply the growing food demand from the urban centres. This requires a rural transformation. If managed well, it could also create new economic opportunities for producers and agribusiness. In this chapter, we take climate smart agriculture (CSA) as a concept to steer this transformation. Yet CSA depends on the uptake of climate adaptation and mitigation technologies by individual farmers. We argue that farmers need CSA ecosystems to support them in this transition process. Based on literature research, we first link the development of such ecosystems to what is known from existing theories, using the innovation management and triple helix theory. We then develop a triple helix platform model, resulting in a triple helix ecosystem development approach specifically designed for supporting CSA farmers. Through quantitative research, we test the relevance of this approach among CSA farmers and stakeholders and recommend further research.

Keywords: Climate smart agriculture (CSA), triple helix, ecosystem, innovation management, agriculture market development, need assessment

Introduction

While all countries are affected by climate change, McKinsey (2020a) found that poorer countries are more exposed than others, as they often have climates closer to dangerous physical thresholds. Climate change effects, such as drought, lower harvests, degrading land, and water scarcity are common practice in Africa. Climate smart agriculture (CSA) involves proven techniques and innovative practices that aim to mitigate and adapt to these effects. This can include new varieties of plant material, different use of inputs, soil improvements, or use of water efficiency instruments. Yet the use of CSA technologies in Africa's emerging economies is still limited to larger, commercial farmers (Van Eck, Van der Hout-Smit, Van den Bos, 2017). African farmers also rely more on outdoor work and natural capital and have fewer financial means to adapt quickly. Climate change already has a measurable socioeconomic impact, including on food systems. Africa's emerging economies are also vulnerable, as their crop yields have already been at a very low level for many years. At the same time, their economy depends on agriculture. In another study, McKinsey (2020b) describes how adaptation to climate change is challenging for these economies, because 'African farmers are more vulnerable to increase

in temperatures, fluctuations in rainfall, and variable yields than farmers in developed countries. They cannot easily secure crop insurance, adjust what they plant, irrigate their fields, or apply crop protection chemicals and fertilisers’.

In this chapter we look at CSA as a way of transforming and reorienting agricultural development taking climate change into account. We will look at CSA as “an approach that helps guide actions to transform agri-food systems towards green and climate resilient practices” (FAO, 2021) and as an innovative approach that leads to a sustainable increase in agricultural productivity and incomes, and adapts and builds resilience of people and agri-food systems to climate change (FAO, 2021).

With agriculture being critical to growth and development of most of Africa’s emerging economies, climate change could destabilise local markets, curb economic growth, and heighten risks for agricultural investors (Woetzel et al., 2020a). Rural areas that now feed the cities, the so-called ‘breadbaskets’, can become less reliable. There is a fear that rising climate hazards might cause such systems to fail, for example if key production hubs are affected McKinsey (2020a). This scenario is very realistic. While urban demand for food is growing, rural supply is facing huge challenges. The 2020 World Population Data Sheet (SDG Knowledge Hub, 2020) indicates that world population is projected to increase from 7.8 billion in 2020 to nearly 10 billion by 2050. This level represents an increase of more than 25% from 2020. It also reflects that many sub-Saharan African countries experienced rapid population growth and still have high fertility rates. As a result, it has the youngest population of any region, with 43% under age 15. The population of 25 sub-Saharan African countries is expected to double between 2020 and 2050. Meanwhile, according to the World Resource Institute (2018), the population growth and growing incomes across the developing world will see overall food demand increase by more than 50%. Agriculture uses currently almost half of the world’s vegetated land and generates one-quarter of annual greenhouse gas (GHG) emissions. About one-quarter of arable land is degraded and needs significant restoration before it can again sustain crops at scale (Goedde et al., 2020). Our present food production system threatens the functioning of the existing natural ecosystem. The point will be reached that this will lead to a sharp fall in productivity and agricultural yields (Lobell et al., 2011). Agriculture does not provide sufficient income to most farmers; 75% of them worldwide are living in poverty (New Foresight, 2017). Rural poverty is in fact the biggest threat to, but also the main reason for, food insecurity (WWF, 2016).

The Food and Agriculture Organization (FAO, 2021) estimates that currently 30% of the world’s population lives in water-stressed environments, and that climate variability and uncertain rainfall discourages farmers from intensifying and/or diversifying production, which leads to a new growth of malnutrition. Yet agricultural transition needs farmers with access to a varied diet, schooling, and simple healthcare, to improve their labour productivity (WWF, 2016). A healthy farmer-base will more easily make the transition to more productive, sustainable, resilient, and market-oriented production. Such a transition can slow down the concluding scenario of a study by the FAO (2017) in which many small-scale farmers – the production base of breadbaskets – are likely

to leave agriculture in the coming decade. For most of them there will not be alternative employment in low-productivity rural economies, and many will migrate to the major urban centres.

In this chapter we will look at how governance structures can support transition toward CSA at farmer level, which could ultimately lead to a rural transformation of Africa's agriculture sector. Policy makers and governments need to better understand the socio-economic dynamics between cities, towns and rural areas, and the different roles they each play across the food system (FAO, 2017). Besides the increasing demand, the higher income urban populations move away from traditional staple crops, towards higher-value products such as processed foods, and vegetables, fruits, meat, fish, and dairy products. However, if managed well, this urban demand for more and processed food could also be used to create new economic opportunities for producers and agribusinesses within the rural-urban spectrum. (FAO, 2017), even with the additional pressures caused by climate factors.

The chapter is organised as follows. 'Challenges for Africa's agri-food systems' briefly describes the future challenges on Africa's agri-food system. 'Theoretical framework' describes the need to study (CSA) innovation uptake, and the need for local ecosystems to provide support in this. The methodology of the research is discussed in 'Methodology'. In 'Literature research' we conclude on relevant theory and concepts that we found through literature research, followed by 'Findings; constructing and testing the triple helix ecosystem conceptual design' where we present findings on a most appropriate conceptual design of a triple helix ecosystem to support CSA farmers, and on the testing of this design among CSA stakeholders. 'Conclusions' then summarises key conclusions of the chapter, and in the final section recommendations for further research are provided.

Challenges for Africa's agri-food systems: Technological transformation

Agriculture has seen a great transformation over the past 50 years. Especially advances in farm machinery have contributed to great yield increases. Also farm inputs, such as fertilisers and seed, as well as irrigation technology and equipment have seen large improvements. However, inputs such as fertiliser and crop protection also made farmers more dependent on suppliers, credit, and equipment. Besides the environmental need to reduce application of chemical inputs, there are also financial reasons for doing so. According to the World Bank (2021) most fertiliser prices soared in 2021, driven by strong demand and higher raw material prices, and are projected to remain high. A problem mentioned is that in Africa, farmers (and other value chain actors) usually do not fully capture the benefits from good years. This is due to a limited ability to sell bumper harvests into shallow local markets, the absence of a rural storage

infrastructure to smoothen supply over a longer period, and poor transportation infrastructure that makes sales into other (regional) markets difficult. At the same time, a bad year can have longer-lasting effects for farmers. For subsistence farmers, they may for example have to borrow and may not be able to service existing debts (McKinsey 2020a).

With the broad range of external pressures in mind, we want to explore how CSA-driven innovation can promote a sustainable modernisation of Africa's agricultural sector. This should combine the aspects of rural-urban dynamics (e.g., rural areas supplying food to urban consumers, migration from rural areas to urban centres) and climate pressures. We agree with the recommendation by the Food and Agriculture Organization that 'transformation should come from technological solutions for increasing food production under changing climate conditions' (FAO, 2013).

FAO (2017) underlines the need for expanding off-farm employment opportunities. This can be achieved, by coordinating the 'clustering of trading, processing, packaging, distribution, and storage, by which small cities and towns become the hubs of a growing non-farm rural economy, linking rural production with urban consumers'. From there, the road to urban food markets may lead through large (international) traders and retailers, or through an emerging agricultural processing sector. With the transformations of food, the domestic food market is becoming more attractive for farmers than traditional export of cash crops (OECD-FAO, 2016).

We therefore argue that the great challenge ahead for emerging economies in Africa is to create a climate-smart production base that also balances the competing needs mentioned. Or, as the World Resource Institute (2018) puts it, 'by 2050 these economies must feed more people, make agriculture an inclusive sector that reduces poverty, while dealing with production pressures caused by climate change'.

Theoretical framework

The need to study the uptake of CSA innovations

The purpose of our study is to determine how governance structures can support farmers in their transition from traditional toward CSA farming. We do this against the background of finding means to build governance structures that support farmers to adopt to CSA production methods. According to FAO (2021) the overall goal of CSA innovations are food security and development.

When testing this in the field however, in a study conducted for the Dutch Government in South Africa it was revealed that CSA innovations uptake among farmers is not an easy task. There are various reasons for this. Key issues that were identified among emerging (new, medium-scale) farmers in South Africa were the: lack of management skills; lack of willingness due to low expected additional income (among me-

dium-scale farmers); lack of clear sustainability objectives and business case calculations; and a lack of policy incentives and skilled extension officers. Other issues identified were the: lack of CSA understanding; lack of good examples; lack of skills to change; lack of evidence of technology effectiveness. In addition, the lack of access to finance by farmers, to invest in CSA technology, remains a key issue.

Need for local CSA ecosystem support

Nevertheless, CSA innovations will continue to spread among horticulture producers and agribusiness regardless of these challenges. According to Goedde et al. (2020), agriculture is now at the beginning of a data and connectivity revolution. Artificial intelligence, analytics, connected sensors, and other emerging technologies could further increase yields, improve water and inputs efficiency, and build sustainability and resilience across crop cultivation. Identifying constraints requires the identification of needed knowledge, skills, and financial means at farm level, depending on the selected technology-solution combination. To achieve this, horticulture farmers need a climate-smart business ecosystem that will support them with knowledge, skills and other projects, enabling them to make an informed decision to shift towards CSA production. A selected technology-solution combination is a starting point for defining further support required from CSA ecosystems. Examples of CSA issues, technical CSA solutions, and CSA ecosystem support action are presented in Table 1.

Table 1: Examples of climate change issues, adopted technical CSA solutions, and ecosystem support in South Africa.

CSA issue	Technology solution	Ecosystem support
1 Inefficient water usage (open field)	Improve irrigation methods (drip), use moisture probes, smartphone apps, resilient seed varieties, crop rotation.	Practical skills training, promotion by showcasing. Supply of complementary inputs.
2 Inefficient water usage (greenhouse)	Improve dosing of nutrients through precision irrigation and connected-sensor data and simple ICT-systems.	Practical skills training, promotion by showcasing.
3 Soil degradation	Soil improvement by re-using biomass, smart usage of crop varieties, crop rotation, soil coverage.	Practical skills training, promotion by showcasing. Supply of complementary inputs.
4 Soil health	Soil testing using quick and cheap analysis with immediate advice, customise fertilisation, usage of different varieties.	Promote networking and matchmaking with suppliers, also technical services.

(Source: Field research carried out by the Maastricht School of Management and Stellenbosch University among South African farmers, 2021–2022).

Although climate-smart technological solutions now enter agriculture, in general the sector remains less digitised compared with many other industries. Past advances were mostly mechanical, in the form of more powerful and efficient machinery, and genetic, in the form of more productive seed and fertilisers. To deliver the next productivity leap, more sophisticated, digital tools are needed (McKinsey, 2020b). These new technologies can upgrade decision making, allowing better risk management to optimise yields. As shown in Table 1 above, some are being applied by horticulture farmers in Africa, while other more advanced technology has not seen farmer uptake yet or are still being adopted.

During a workshop held in South Africa, in 2018, key issues on the effects and risks of climate change were ranked by commercial farmers. They expressed their needs for and gave directions for a CSA ecosystem development. The questions that received the highest ranking included: How will changes in rainfall and water availability affect food production and demand, pests and diseases, and land use? What can be grown where, in view of rainfall patterns and water availability? What options for adaptation are there in the agricultural sector? How will climate change elsewhere affect the potential for trade (export markets and import trade flows)? How will government mitigate the impacts of climate change? Will international efforts to address climate change be successful? (SSAFS, 2018).

Unlike the table suggests, CSA ecosystem support goes beyond practical skills training, promotion through showcasing, and matchmaking with suppliers. An ecosystem will include a wide range of horticulture stakeholders. As such it can act as a platform for commercial farmers that helps them in making the actual decisions on selecting the most suitable CSA technology-solution combination. We assume that successful adaptation to climate change depends primarily on changes in farmer's behaviour (e.g. use of better seeds), institutional improvements (e.g. better localised supply-demand planning), and collaboration between affected stakeholders on certain adaptation measures (e.g. solve storage issues) (McKinsey, 2020a). We also believe that this is exactly what a CSA ecosystem is supposed to offer.

Methodology

The overall goal of the transition towards CSA farming is to stimulate a rural transformation of Africa's agriculture sector. Such a transformation will be based on technological solutions that consider the use of climate adaptation and mitigation technologies. We will study these technological developments as innovations for rural transformation, and we will focus on innovations in the horticulture sector in Africa. This chapter identifies the needs for ecosystems to achieve this and discusses the role they can play.

Our hypothesis is that a triple helix ecosystem, being a community of interacting organisations and individuals, increases the success of CSA operations. To test this, we

formulated the following as a main research question ‘what the expressed needs for an ecosystem for developing CSA in two selected African countries’ are, and split this main question into the following sub-questions: (1) Can we use the triple helix platform model and develop a triple helix ecosystem approach, which is specifically designed to support CSA farmers?, and (2) What is the relevance of this triple helix ecosystem approach for CSA farmers?

Once we have anchored the suggested ecosystem approach in theory in the literature section, we aim to combine the findings with the triple helix concept. In this chapter we define triple helix as the way by which three key institutional actors are linked and work together: industry, academia, and government to develop, adapt and introduce an innovation. Their joint purpose is to drive innovation in support of agriculture, through the transfer of knowledge, skills, and technology. We combine both approaches into a triple helix ecosystem conceptual framework, specifically aimed at supporting CSA innovation uptake by farmers.

We will then test the relevance of this triple helix ecosystem approach among CSA horticulture farmers and stakeholders in the agricultural transition process. Using quantitative data collected by researchers of Stellenbosch University and the Maastricht School of Management, in 2019, through face-to-face interviews in South Africa and Tanzania. These surveys had the purpose of mapping the challenges of CSA horticulture farmers in relation to their struggle to find practical and modern skilled staff. The focus is on identifying labour market and capacity building constraints. We used a pre-coded questionnaire to gain up-to-date insights in required skill sets of college graduates. The observations were, due to their various geographic locations within each country and a carefully selected sample of respondents (see Table 2 below), highly representative. Based on pre-defined scores that respondents gave to a list of issues, these issues could be measured on a 1–5 scale and ranked.

Prior to the field research, numerous discussions with CSA farmers and agribusiness companies showed that a key challenge of CSA horticulture farmers is to find practical and modern skilled workers. The root cause of this is the mismatch between skills demand from the agriculture sector and agriculture college skills supply (graduates). Based on the discussions a semi-structured questionnaire was designed and CSA stakeholders were interviewed. For most interviews CSA multi-stakeholder workshops were organised for private, academic, and government experts. Other interviews were held one-on-one at the farm. Most of the time, the workshops were the first time that the three triple helix actors met and exchanged views. Besides general CSA topics, the focus was directed towards the skills gap of graduates during the workshops. Actors discussed how to improve curricula of the colleges, and how each of the three actor groups can contribute to this. The workshops confirmed that a triple helix ecosystem approach delivers the best results for having a multi-angle dialogue and buy-in for joint understanding and action.

Sampling and sample size

In total, 91 CSA horticulture stakeholders filled the questionnaire during face-to-face meetings, of which 46 were in Tanzania and 45 in South Africa. Of the total number, 56% were private sector, 29% government, and 12% academic respondents. 78% of private sector respondents were farmers, and 22% from agribusiness companies. The sample is shown in Table 2 below.

Table 2: Sample of interviews with CSA horticulture actors in Tanzania, and South Africa.

Respondents	Tanzania	South Africa	Totals
1 Farmers	25	15	40
2 Agribusiness companies	9	2	11
3 Government	6	20	26
4 Academic	6	6	12
5 Civil society	0	2	2
Totals	46	45	91

(Source: Results from labour market needs assessment studies in Tanzania and South Africa, 2019–2020).

Literature research

Our literature research focuses on the innovation management theory to develop hypotheses. We chose this theory because it targets the area of organising management of innovations within an organisation (in our case the CSA farm). The theory was initially developed in the 1970s when the big boom of innovations around technological advancement first started. Various research paradigms evolved from the theory, with the open innovation ecosystem (Bouwer, 2017) being the most suitable related to ecosystems supporting CSA innovation uptake by farmers. We define CSA as ‘an innovative response from the agriculture sector to deal with climate change factors’, and considering the title of this section, we believe that uptake of CSA ‘requires collective action from multiple stakeholders that drive local solutions’ (Ostrom, 2009).

Innovation management theory

Moore (1996) was among the first to use the word ‘ecosystem’ as a metaphor for ‘*an economic community supported by a foundation of interacting organisations and individuals*’, making these the ‘*organisms of the business world*’ (Peltoniemi & Vuori, 2008). We link the term ecosystem to our hypothesis in which the stakeholder partner-

ships, as an economic community of interacting organisations and individuals are the ecosystem stakeholders that can increase the success of CSA operations.

With artificial intelligence, analytics, connected sensors and other emerging technological approaches, innovation management must keep up with all areas of this industry's needs (Goedde et al., 2020). To do so, in this study we argue that following the innovation management theory makes practical sense. This theory aims to take an academic and theoretical approach to explaining phenomena observed in the real world. As the world became more and more digitalised, six research models evolved from this theory. The open innovation ecosystem is one such model (Bouwer, 2017) and we selected it as the most suitable to investigate our research question on how to anchor the ecosystem approach to literature and theory, suitable for the practical CSA context.

The open innovation ecosystem model

The open innovation ecosystem model is one of the research paradigms which evolved from the innovation management theory. It captures the organisational structure that is needed for successful innovations (Bouwer, 2017). The open innovation ecosystem model is built upon three main research areas: the open innovation area researched by Chesbrough (2006); the ecosystem innovation area researched by Adner (2016); and the business model innovation researched by Osterwalder (Bouwer, 2017).

The theory is now often used to research how corporations should network to build competitive advantage. Similarly, in this study we use this theory by taking it into the agriculture (horticulture) industry to investigate how CSA innovation development and uptake can succeed, taking stakeholder partnerships as our measuring tool. Since CSA innovations are increasingly digitalised, using a theory that evolved from the digital world also makes sense. We also looked at the open digital innovation platform ecosystem theory, which was developed as an extension from the open innovation ecosystem. This theory fully focuses on digital platforms to support business innovation. We decided that since CSA-uptake by farmers builds on a strong 'human touch', including face to face network building with different CSA stakeholders, we will not make use of this digital ecosystem in our study. Instead, and for this reason, we selected Adner's (2016) definition of an ecosystem, who defines it as '*the alignment structure of the multilateral set of partners that need to interact in order for a focal value proposition to materialise*'. In our study, the '*alignment structure*' refers to the roles and activities of each CSA-related partner, '*multilateral*' refers to how, with multiple CSA stakeholder perspectives, backgrounds, and resources they, the '*set of partners*' aims to achieve a common '*focal*' goal — which in our case is to support farmers in their uptake of CSA production methods.

The open innovation model was first proposed by Chesbrough in 2003, to describe how the process of managing innovations should evolve (Bénézech, 2012). The open innovation model is a business management model which stems from the wish for creating an industry ecosystem and encourage collaborations beyond one's own business to

enhance innovations (Bouwer, 2017). In other words, this means that businesses are open to using outside resources within their innovation process, including ideas, technologies, processes, and sales channels (Bower, 2017). In fact, organisations across the industry in an ecosystem can benefit from open innovation even if they themselves do not create new products or processes (Vanhaverbeke & Roijakkers, 2013).

Using the open innovation ecosystem model

Open innovation was mainly aimed at large corporations who should organise their innovations in a new way. However, Chesbrough (2006) argued that it should not be limited to large technological corporations and that more industries should take on the open innovation model. We argue that this includes the agriculture and horticulture industries. Nevertheless, Bénézech (2012) argues that an open innovation model should be followed not only by one organisation, but by all organisations involved from that industry. This is conditional for all organisations benefitting from an 'open system' for innovation.

This leads us to blending the open innovation model of Chesbrough with the ecosystem innovation model of Adner, aimed at creating successful innovations in an open innovation ecosystem. We will use the open innovation ecosystem model as a basis to analyse the types of ecosystem support functions that are needed for uptake and management of CSA innovations.

By using this model, we underline the need for CSA farmers to be open to sharing their own experience and knowhow, to build and maintain the ecosystem. This includes forming (in)direct partnerships and networks. Our own research and the literature on CSA initiatives show that such partnerships and networks must include a variety of ecosystem actors, such as other CSA farmers, sector organisations, agribusinesses, agriculture financing entities, development organisations, research institutes, education and training providers, and civil society organisations (Nijhoff, 2021). All must take on the responsibility of flexible planning and working together (Williams et al., 2015). The role of the public sector is meanwhile highlighted in relation to introducing CSA supportive policies at the national, regional, and local levels, reducing CSA knowledge gaps, and facilitating financial support to CSA initiatives.

The triple helix concept

Van Dijk, Nijhoff and De Boer (2021) use the triple helix partnership concept in the agricultural sector and emphasise the importance of:

- Information sharing of market opportunities, government regulations and policies, labour market requirements, education programs and research activities, or other topics that are relevant to growth of an agricultural sector or region.

- Joint project activities, in which triple helix partners pool financial and human resources to undertake joint activities in a sector or region, such as applied research in new crop varieties, or low-cost technologies for water efficiency.
- Developing a short-term strategy, for growth of a sector or region while considering new government policies and plans, in which clear roles are defined for each partner.

A triple helix partnership can institutionalise existing networks or collaborations for the long-term. It can for example establish a legal entity charged with a formalised goal to boost growth of the sector or region and create jobs and income among youth. The main scope of the triple helix partnerships is to stimulate private sector growth and competitiveness, by making available scientific knowledge and a skilled workforce, and by linking this to government facilitation, financing, and support. In this way:

- Industry (farmers, agribusiness, service providers) can draw on a wider pool of technical expertise, experience and professional networks for R&D and problem solving. It can strengthen practical skills and competencies of students so it can employ talented and motivated graduates in return.
- Academia (agriculture universities and colleges, research) can do research in a more demand-driven way, see their knowledge being applied in practice, get inputs from the industry to help improve curricula of teaching and training programs, and create practical learning opportunities for their students (such as guest lectures, student projects, internships, apprenticeships). Collaboration with the private sector may also lead to funding for applied research and knowledge creation.
- And government (policy makers, extension officers) get the opportunity to better spearhead interventions aimed at sector or regional development, which contribute to job creation and rural economic development.

Triple helix partnerships could in this way contribute to local, collective action from multiple stakeholders to drive solutions, as suggested by Ostrom (2009).

Findings: Constructing and testing the triple helix ecosystem conceptual design

A main concern in transforming rural production into a food system that produces enough food to satisfy the growing demand from urban centres is ‘sustainability’. We argue that the triple helix partnership concept (which offers different partners the ecosystem space to produce joint objectives and solutions) is highly relevant in this respect. The real question is complex: ‘how build a future that delivers growth and

sustainability and inclusion? This is the route that change makers from business, government, academics, and society in the rural production zones need to explore. The three elements of growth, sustainability, and inclusion are deeply connected. They can strengthen and reinforce one another. As Sternfels et al. (2021) writes: 'Growth supports inclusion, by creating meaningful jobs and lifting incomes, and correcting labour-market inadequacies. Growth enables sustainability by encouraging investment (but growth also frustrates sustainability through greater resource consumption). And greater inclusion and sustainability promote growth through new demand and investment opportunities'.

We argue that this is also true in the CSA domain. According to Lipper et al. (2014), CSA is an approach for transforming and reorienting agricultural systems to support food security under the new realities of climate change, which promotes co-ordinated action by farmers, researchers, private sector, civil society, and policy makers. CSA approaches emphasise implementing flexible, context-specific solutions, supported by innovative policy and financing actions.

Triple helix is a highly suitable approach to plan for this. It can help in designing and developing a triple helix-based ecosystem, aimed at a future that delivers growth, sustainability, and inclusion. We believe that supporting the uptake of CSA innovations by farmers will be key in this process. A conceptual design to support this may look as follows.

The conceptual design is based on the idea that the agriculture sector, besides growth, has a complicated set of objectives to consider alongside sustainability and climate goals, including biodiversity, nutritional need, food security, and the livelihood of farmers and farming communities. Yet agriculture has always responded to the greatest challenges. The sector has increased food production to a level that many believed impossible. The sector now has an opportunity to offer a perspective on how farming could change to reduce the emissions intensity of food production (Aminet-zah et al., 2020).

CSA horticulture farmers are in favour of an ecosystem approach if it focuses on problem solving at farm-level. They do not want it to be an academic project. They stress that the ecosystem should focus on the local (context-specific) situation, with local partners on board, enabling it to work on local solutions for local challenges. CSA farmers want to be part of defining the specific purpose and direction of the ecosystem, but not of its daily coordination. They also indicate that they are keen to contribute to ecosystem development and implementation. When we asked them 'what holds back horticulture growth' in their country, as can be seen in Table 3, Tanzanian CSA farmers gave the highest score to a lack of skilled graduates and skilled workers, followed by a lack of coordination among horticulture actors, and a lack of access to water-smart knowledge and technology. In South Africa, a lack of access to finance received scored highest, followed by the lack of access to water-smart knowledge and technology, and poor policy planning and implementation by government. This con-

Triple Helix partners**Triple Helix Ecosystem objectives:**

- Open space to develop and scale local solutions for local problems
- Local, farmer-focused, win-win and innovative partnering
- Showcasing tech & farmer uptake of CSA technology and knowhow
- Practical skills trainings, farming as a business, youth opportunities

Triple Helix spaces**CSA knowledge space:**

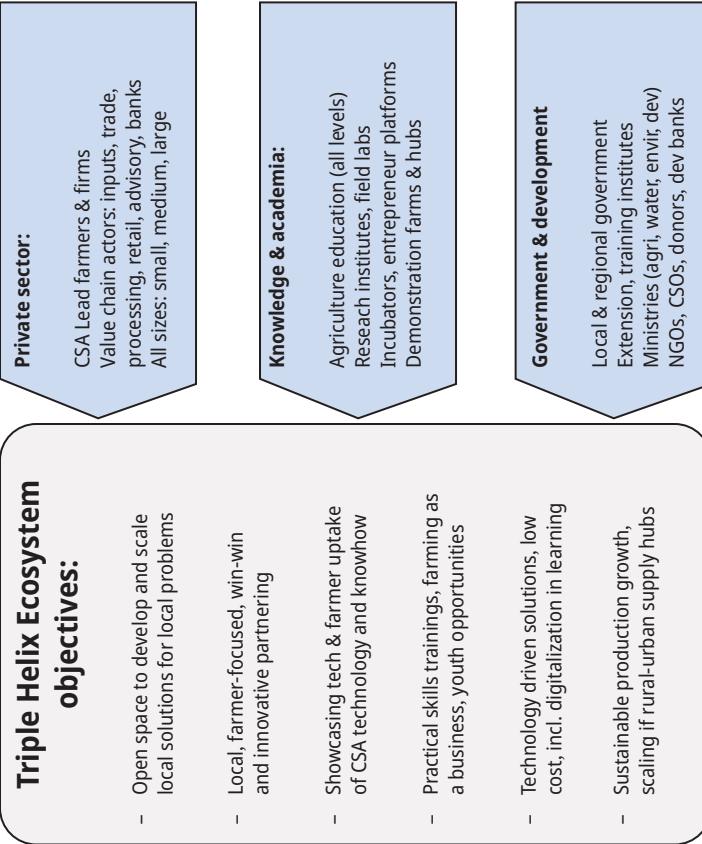
Applied research agenda
Data collection & data management
Labour market needs
Curricula & practical skills upgrades

CSA innovation space:

Fully farmer-focused
Lead firms, value chain clusters
Technology showcasing & uptake
Centres of excellence

CSA consensus space:

Shared purpose, targets, action
Field days, company visits
Working groups, exposure visits
Forums, round tables, conferences

**Figure 1:** Triple helix conceptual design in a CSA context.

(Source: Adapted from the TH model presented by Maastricht School of Management during its Academic Conference, December 2021).

firms our view on the need to have a supportive ecosystem in place with actors from private, academic, and government sectors.

Table 3: What holds back growth of CSA horticulture growth in two countries.

What, if anything, is holding back growth of the agriculture/horticulture industry?		Top-5 score in South Africa	Top-5 score in Tanzania
	<i>(10 = most important, 1 = least important)</i>		
1	Lack of coordination among actors	243	282
2	Lack of skilled graduates/skilled local staff	257	297
3	Lack of availability of agri-inputs		252
5	Lack of access to water-smart knowledge and technology	267	273
7	Poor policy planning and/or implementation	265	259
9	Lack of access to finance	273	

(Source: Results from labour market needs assessment studies in Tanzania and South Africa, 2019–2020).

CSA farmers indicated their willingness and commitment to support agriculture colleges in improving their teaching and practical training of students. Their contribution, facilitated by the ecosystem, would include dialogue, field days, student projects, internships, and guest lectures. They offer this because of their need for young graduates which will possess modern and practical skills. The present-day lack thereof hinders CSA farmers in applying new technologies at farm level. We further tested the approach of having various triple helix actors in one room during the workshops by asking them to zoom in on the skills-gap issue, asking industry actors to comment on the existing curriculum focus of the colleges.

As potential employers of the college's graduates, they scored various general skills and competencies aspects when hiring staff (score of 1–10, with 10 being most important). In South Africa, quality standards and certification, followed by farm management, were seen as most important aspects. In Tanzania, farm management was seen as most important, followed by the negotiation skills (contracts, prices) aspect. Scores of these and other aspects can be seen in the Table 4. It is a good example of how the sector (farmers and agribusiness), facilitated through the triple helix dialogue, can support agricultural colleges in giving focus to their programs.

The actors also scored various technical skills and competencies aspects (Table 5). This showed the colleges that soil types and land preparation and cultivation are the key aspects in South Africa, and soil types and knowledge on seed the key aspects in Tanzania. Their message to colleges on these key and other important issues was that besides knowledge, practical skills, and competencies (through field practice) are most important to them.

Table 4: Required general skills and competencies of graduates.

How important are the following ‘general skills and competencies’ of staff to your company/organisation?		Top-5 score in South Africa	Top-5 score in Tanzania
	<i>(10 = most important, 1 = least important)</i>		
1	Partnership development	254	324
2	Farm management and crop production	290	353
3	Quality standards and certification	314	
5	Understanding markets and contracts		339
6	Networking and relationship building	256	328
7	Negotiations		344
8	Finance and risk assessment	280	

(Source: Results from labour market needs assessment studies in Tanzania and South Africa, 2019–2020).

Table 5: Required technical skills and competencies of graduates.

How important are the following ‘technical skills and competencies’ of staff to your company/organisation?		Top-5 score in South Africa	Top-5 score in Tanzania
	<i>(10 = most important, 1 = least important)</i>		
1	Seeds (disease resistance, adaptability/suitability)		373
2	Crop protection and IPM	266	370
3	Nursery establishment and management, seedling production technologies	229	359
4	Fertilisation and crop nutrition, specific per crop/family	254	371
5	Soil types, land preparation, cultivation	287	376
7	Farm planning and land cultivation	225	

(Source: Results from labour market needs assessment studies in Tanzania and South Africa, 2019–2020).

The actors were also asked to score the various business skills and competencies of new staff. The results are shown in Table 6. In South Africa, networking and relationship building scored highest, while the sales, marketing and client management aspect scored highest in Tanzania. On required skills related to value chain collaboration, partnership development and networking scored highest in both countries. This aspect also scored highest in relation to advocacy skills and competencies.

Table 6: Required business skills and competencies of graduates.

How important are the following 'business skills and competencies' of staff to your company/organisation? <i>(10 = most important, 1 = least important)</i>	Top-3 highest scores in South Africa	Top-3 highest scores in Tanzania
A Related to understanding markets and demand:		
1 Networking and relationship building	305	255
2 Sales, marketing, and client management	281	298
3 Market research and statistical analysis	297	261
B Related to collaboration across the value chain:		
1 Community organising, collective bargaining	282	245
2 Partnership development, networking	287	269
3 Market research, competitive positioning	267	244
C Related to advocacy and government policy:		
1 Partnership development, competitive positioning	283	236
2 Demand forecasting, product pricing	262	191
3 Government lobbying, policy advocacy	218	209

(Source: Results from labour market needs assessment studies in Tanzania and South Africa, 2019–2020).

Conclusions

This chapter linked ecosystems development approach to innovation management theory and combined the ecosystems theory with the triple helix concept. It tested how a triple helix ecosystem approach can be designed for the specific purpose of CSA innovation uptake by farmers. Testing of the approach among CSA farmers and stakeholders proved its relevance.

Our hypothesis for further research is that a triple helix ecosystem increases the success of CSA operations. We use one main research question to test this hypothesis, defining two areas of research: (1) how to combine the ecosystem concept and the triple helix concept into one concept, arriving at a theoretical base, through literature research; and (2) testing the relevance of a triple helix ecosystem among CSA farmers, through field research.

We conclude that CSA horticulture farmers need a supportive ecosystem. This is shown by their expressed need for skilled staff that understand the importance and means of coordinating with other players in the value chain, that can build partnerships, and can network and build relationships. These are all areas that underline the need for an ecosystem as a space for collaboration to support transition towards CSA farming.

We also conclude that the triple helix partnership concept and the ecosystems concept can be combined in a triple helix ecosystem approach, which can be designed, by stakeholders, specifically for the purpose of supporting CSA farmers.

Taking farmer's access to skilled labour as an entry point, we conclude that bringing triple helix partners together in a facilitated dialogue worked well. During the various triple helix stakeholder meetings, CSA farmers dedicated time and effort to support agricultural colleges in further sharpening their agriculture college program delivery (now based on the expressed needs of the future employers of graduates). CSA farmers offered additional support to realize professional network between them, other industry players, and the colleges.

The overall conclusion is that CSA can transform agricultural development under the new realities of climate change, while guiding it towards green and resilient practices while matching the experienced needs of farmers. Yet CSA technology (innovation) uptake by farmers does not come easy and requires collective action from multiple stakeholders. This chapter explored how the triple helix ecosystem concept can contribute to this.

Recommendations

This chapter argues that CSA technology (innovation) uptake requires solid embedding in the farmer's local setting and in the farm's overall business model. It introduced the triple helix ecosystem concept as an approach to specifically support CSA technology uptake by (horticulture) farmers. It has anchored the approach in the literature and theory and tested it in a real-life CSA horticulture setting. We recommend that further research is done helping to identify the success factors of ecosystems according to the theory and testing how these relate to ecosystems that support CSA farmers. Additional research is necessary to identify: (1) types of services that should be offered by triple helix ecosystems; (2) optimal governance structure for such ecosystems; and (3) required managerial capacities of triple helix ecosystem lead actors.

Related to the last point, we recommend research on the role of business schools in CSA ecosystem development. One of its roles can be that of planning and developing the ecosystem. Another that of managing the ecosystem, ensuring that the business case of participating CSA farmers remains the leading factor. A third can be to collect and make available knowledge on the different governance structures and business models that make ecosystems successful in what they do. We consider a business school to be in a good position to do this.

We recommend further research to arrive at new insights in the success factors and best practices. This research should be done in the context of promoting a sustainable modernisation of the agriculture sector in Africa's emerging economies, in which the rural-urban dynamics and climate pressures are leading factors.

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Julius Gatune

16 Triple helix model for rice value chain in Kenya

Abstract: In many emerging economies Agriculture has potential for not only solving the food security challenge but more crucially driving the larger economic transformation and thus improving livelihoods. However agricultural value chains continue to be besieged by many challenges that see highly underdeveloped value chains. Locally relevant innovations are needed to solve the challenges as well as innovations in technologies, business models, and policy and social innovations. The triple helix model has potential to provide the needed innovations as it brings key local actors, in particular industry, academia and government in deliberately structured relations to drive and commercialise innovations. We explore how the triple helix model can help upgrade the rice value chain in Kenya and support the local economic development of the rice growing region. The study finds significant potential for not only improving productivity (by about one third more rice) while lowering production cost and upgrading the value chain, but also potential for developing a rice cluster that can be basis for emergence of a dynamic agro-processing sector. The points to potential of triple helix model to drive local economic development in emerging countries.

Keywords: Triple helix, innovation, food security, Kenya, local economic development, rice value chain

Introduction

Kenya has a challenge of food self-sufficiency. In particular, the country has been experiencing food deficit of all food categories except for starch roots (KER, 2017). In 2016, the country's food self-sufficiency ratio (SSR) was 75.6% underscoring the importance of food imports in meeting food self-sufficiency (KER, 2017). Indeed the 2015/16 Household Survey indicated that food poverty stood at 32% of the population (14.5 million people; BD, 2018).¹ KER (2017) attributes the deficit to low production² and post-harvest losses, which account for about 15% of food production. Drought is also a major challenge. Be-

¹ The overall poverty at 36.1% (16.4 million people) and hard-core poverty at 8.6% in 2015/16 (3.9 million people); in all cases poverty is higher in rural than urban areas.

² The low levels of food crop supply has been as a result of several factors, namely: high cost of farm inputs, low adopting of technology, rising prevalence of pests and diseases, climate change and variability, collapsed marketing system, and the conversion of agricultural land into other uses. In addition, migration from rural to urban areas especially among young people has meant that only old people are left in rural areas to carry on agricultural production activities (Laibuni et al., 2018).

tween 2006 and 2016, Kenya experienced 76 drought incidences that affected about 22 million people (about 50% of the population).³ The government has taken a number of measures to boost the country's food security. For example, National Food Security and Nutrition Policy (NFSNP) aims at enhancing food and nutrition security, information management systems and coordination of the roles of various ministries and agencies to achieve food security (Laibuni et al., 2018).

Though rice is not a traditional staple-food,⁴ it has increasingly become key to food security. It is now the third most important cereal (after maize and wheat), and annual consumption of rice is estimated to be increasing at a rate of 12%, compared to 4% for wheat and 1% for maize. This fast growth has largely been met by imports as production can only meet about 20% of the demand (this has fluctuated between 8% and 33% over the last few years; MOA, 2011; MoLAF, 2014; KNBS, 2018; Mulinge et al., 2012).

Essentially, rice is becoming a staple in Kenya (Onyango et al., 2016; Ruiga & Mulinge, 2012). Self-sufficiency in rice is now a matter of top priority in government and as such, the government has developed the National Rice Development Strategy (NRDS). NRDS is a 10-year strategy that seeks to increase rice production and productivity through:

- Enhanced facilitation of market access and development of marketing channels
- Improved mainstreaming of rice stakeholder for an at all levels
- Reduced field and postharvest losses using timely and efficient mechanisation strategies
- Expansion of area under rain-fed and irrigated rice
- Reduction in field and storage losses of rice
- Improved farmers' access to credit and to high-quality inputs
- Improved farmers' access to certified rice seed
- Enhanced research, advisory support services, human resource development and technology application
- Increased farmer access to affordable credit and high-quality inputs
- Increased availability and access to certified rice seeds
- Improved adaptation of participatory, monitoring and evaluation system

In summary NRDS seeks to increase rice production through increasing area under rice and also rice yields. The key targets are summarised in Figure 1:

A simulation by the government (NRDS) indicates that self-sufficiency can be achieved by 2030 by ramping growth in production of rice by a further 10% above the historical growth rates of 6%. This is entirely feasible. Uganda managed to increase growth by 10% annually in the period 2005–2010 and Tanzania by 9% over the same period. This was largely driven by an increase in acreage at constant yields, rather than by a rise in productivity (Nzomoi & Anderson, 2013). The major question is what

³ EM-DAT database (accessed March, 2017) http://www.emdat.be/advanced_search/index.html.

⁴ Rice was introduced in the country around 1907 (MOA, 2011).

National Rice Development Strategy (NRDS) seeks to increase yield by more than two times through expanding area planted and increasing yields

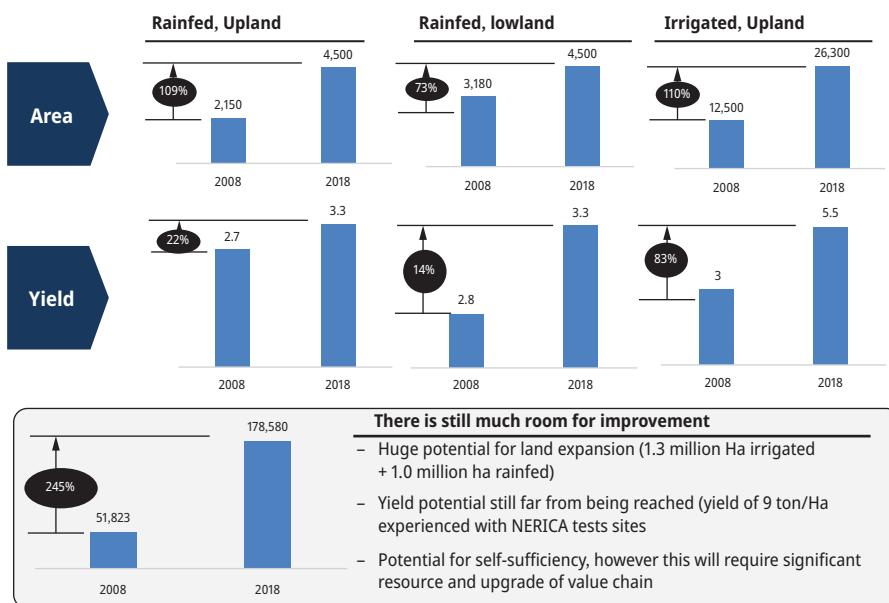


Figure 1: National Rice Development Strategy (Source: MoLAF, 2014).

it will take to mobilise needed resources to open new areas while ensuring that rice production remains competitive on the market. Currently, competitiveness of rice appears to be largely dependent on high tariffs and taxes,⁵ raising the question of whether a competitive rice sector can emerge even if production is boosted. Given rising consumption of rice in both urban and rural areas, high tariffs are likely to be unsustainable as they are likely to become progressively difficult to defend.

Achieving self-sufficiency will require significant upgrading of the rice value chain, so that increased production is also accompanied by an efficient value chain that responds to the market in terms of both pricing and product diversity. This calls for significant innovation across the whole value chain. The rest of the chapter is structured as follows; the first section below explores the rice value chain challenges, following that we explore what a triple helix driven rice cluster can look like. We then go on to examine the impact of innovations, followed by the implementation of the triple helix value chain, and the final section concludes.

⁵ Tariffs are 35% for rice from Pakistan and 75% for rice imported from other countries.

The rice value chain challenges

The rice value chain is currently highly under-developed and not able to deliver rice competitively to the market. We will explore the challenges at the various nodes and potential innovations identified.

Production

The production node is characterised by low yields. The approximately 300,000 small farmers are the key producers of rice (MoLAF, 2014; Emogpr et al., 2011). These farmers grow rice on plot sizes that are on average 1.0 Ha. Rice produced in Kenya remains uncompetitive to imported rice. This is due to (i) low yields and (ii) high cost of production. Tackling these two challenges is key to improving competitiveness. The challenge can be boiled down to efficiency improvement. Yield, which seems to occupy much of the concern is actually a secondary challenge as there are high yielding seeds and also practices developed to help farmers deliver high yields. Indeed, variation in yields across farmers is huge. Gitau et al. (2010) classifies three types of rice farmers, low-input farmers, medium input farmers and high input farmers. The three classes deliver very different results underscoring the presence of inefficiencies. They compared the competitiveness of the three types of farmers against imports. They revealed that if no duty is imposed, only the high input users were competitive with a mark-up of 8%. With a 35% duty on imported rice, only high and average input users are competitive with a mark-up of 39% and 10% respectively. With a 75% import tariff in place, all three categories of farmers would be competitive. This shows that there are competitive farmers who do not need protection from imports.

The key policy and innovation challenge is how to move farmers from low-input category to high input category. Some reasons why farmers remain low-input include:

- Risk aversion: poor farmers are highly vulnerable. Moving to higher productivity means investment, experimenting with new seeds, and new techniques. However, this can be a disaster if it fails, as they have no fall-back. As such, they tend to stick with low productivity practices.
- Lack of knowledge: farmers may not be aware of new seeds or management techniques to increase yields.
- Poorly function input markets: Improved seeds, equipment may not be available or too expensive. Markets failure due to poor, low quality and counterfeit inputs that discourage farmers.
- Lack of credit: farmers may lack access to credit to make needed investments.

- Insufficient surveillance of water stress, pests and diseases impacts yields. Mwea scheme management⁶ estimates that yields can be increased by as much as 20% through better surveillance.

Improving efficiency of rice production will therefore require a number of interventions.

Labour scarcity is cited as one of the key challenges. The impact of mechanisation can be huge. Time is saved as harvesting is much faster. Labour is also saved. These can be employed for other activities. Due to mechanical harvesting losses are also reduced. It is estimated that about 3 bags per hectare can be saved. A saving that can cover the cost of renting the harvester!

The other key challenge is the bird challenge. Birds eat an estimated 2 bags per acre. Current management approaches are inefficient as employing people to scare away birds is highly labour intensive and thus expensive (use of children is unethical and illegal). Second, destroying birds is difficult since identifying the roosting places to eliminate them, is challenging.

Addressing these challenges requires a series of innovations in technologies, business models and also social innovations. Some of these include:

- Innovation to reduce risk perception and improve information and knowledge uptake by farmers, and also safeguard to allow poor farmers to experiment (insurance).
- Innovation in extension approaches to cost-effectively reach farmers.
- Innovations to lower cost of inputs and also increase trust in the inputs system (business models to deliver inputs for cost-effectivity and to create trust).
- Innovation in increasing access to finance by farmers.
- Innovation in improved surveillance and early warning system for diseases and pests, and also water management surveillance system.
- Innovation in machines and equipment for mechanising production and business models to make mechanisation available and affordable.
- Innovative methods to scare the birds or trap them are needed.

Triple helix model (THM) intervention

Many of the needed innovations can be brought through the triple helix model. Some of the interventions include:

- Private sector can deploy new financing with insurance as a component. Insurance component can be subsidised by government.

⁶ The Mwea Rice Irrigation is a government project and has a management structure that runs the water irrigation infrastructure.

- Technology schools can be used by students and faculty to develop innovative technologies, delivering extension in collaboration with government extension system.
- Business schools can work with government extension officers to help improve business acumen and reduce risk perception of farmers.
- Private sector and university can work further to develop and adapt machines to local conditions. Local government can fund the needed research.
- TVETs can develop mechanisation services business models and incubate graduates to set up these businesses. Private sector can provide mentoring and financing. Local government can also finance seed funding to these enterprises.

Logistics node

The logistics node is characterised by many small local traders (middlemen)⁷ who buy paddy from farmers and transport to mills for milling. The middlemen add little value and undeniably thrive on the inefficiency of the sector to reap huge arbitrage positions. Perhaps the biggest arbitrage derived by this intermediary is exploiting (i) the lack of storage and (ii) lack of access to credit by farmers.

Rice is harvested in one season yet consumed over a longer period; harvest paddy is stored and milled as need be. Farmers need cash after harvest and thus tend to sell early and consequently losing significant value as prices rise significantly between one harvest and the next. This provides significant arbitrage opportunities for traders who buy from farmers, store the rice and release it to market at the opportune time. Price variation can be very huge. Buying at harvest time and selling just before the next harvest can lead to a 78% return on investment. Even if the farmer did not want to sell immediately, there is also the challenge of storage. Many farmers lack proper storage and hence tend to store at home. Storage at home has the challenge of mould infection, pest damage and theft, which is a major problem. Millers take advantage of farmers' lack of storage solution. They offer free storage on the condition that farmers must mill with them. The free storage is also for one month, after which they are charged for storage. Essentially farmers become captives to the millers.

Farmers need working capital for production, especially at weeding, which comes at a time when all farmers have serious cash flow problem. For a trader who doubles as a shylock, he/she lends money to a farmer with a promise to buy rice at a given price. The huge difference means that the trader can make a return of close to 167% on investment. Although they are definitely providing a service, as others are not willing to lend the money, the middlemen make more money in this type of predatory lending than on other business.

⁷ At NICE factory, approximately 450 traders mill and sell rice on the premises.

The innovations/interventions needed to upgrade the logistics leg of the rice value chain include:

- For farmers to capture a greater value there is a need for innovation in affordable storage solutions.
- Innovations in providing finance for farmers working capital so that they do not rely on predatory traders for working capital.

The potential roles the THM can play include:

- Private sector can invest in storage system warehouse receipt systems. Potential for PPP arrangement where private sector can take over some of the government warehouse and upgrade them.
- Universities and TVETs can develop simple and cheap storage solution for home storage and cheap transport solutions. Private sector can commercialise, government can subsidise uptake.
- Government can fund research, providing incentives for investing in logistics.

Milling

The milling industry is divided between a few large mills that mill 60% of the rice and many small mills that have a 40% market share. Most mills offer a milling service to the client. Some of the large mills also buy some rice from their clients, then package and brand them for sale. The challenges associated with the milling node include:

- *Energy*: Energy is the biggest cost incurred in operating mills. Electricity from the grid is generally very expensive yet unreliable (subject to blackouts).
- *Narrow product range*: The mills produce a narrow range of products, mainly rice and rice bran, meaning potential value creating opportunities are lost.
- *Capacity utilisation*: Mill utilisation is low. Capacity utilisation has been estimated at 55–60% for large mills and about 20–50% for small mills (MoALF, 2014). In India mill utilisation of up to 77% is achieved through planning and good plant maintenance to ensure high availability (Singha, 2013). The low utilisation can be attributed to excess milling capacity and also milling practices where each farmer or trader's rice has to be milled separately thus not allowing economies of scale that would accrue if all rice was milled together.⁸
- *Conversion rate*: Perhaps the bigger problem is the low conversion rate of paddy to rice. Using best in class practices conversion rates of 70% are achievable (Singha, 2013). However, the milling sector has a conversion rate of 50% for small

⁸ At one of the big mills, NICE, the average batch is 20–30 bags though some traders can mill as much as 300 bags in a run.

mills and 60% average for large mills. Though better drying and parboiling can improve the conversion rate the high costs of energy make this unattractive.

The innovations required in the processing and milling phases and the application of the THM model are summarised below.

- A measure of the quality of delivered paddy so that the output can be determined independently before milling. The amount of rice that comes out of a unit of paddy is a function of variety of rice, the drying process, storage etc. and can show great variation from farmer to farmer. For this reason, each farmer paddy is milled on own. In this way, rice from different customers can be mixed and milled as part of a bigger batch, increasing mill optimisation.⁹
- Innovation in rice drying is needed. For example, rice dryers that can use rice husks as fuel. In Ghana, there are bin dryers that use sawdust to dry cassava (Gatune, 2016). These designs can be adapted to local conditions.
- Parboiling technologies utilising rice husks can be developed.
- Milling process monitoring and optimisation technologies to reduce the level of brokens.
- Innovations in new food products based on rice and rice milling by-products.
- Innovations in the high-quality animal feed using rice by-products.
- Innovations in building materials using rice by-products.
- Innovations in electricity cogeneration using rice husks.

Potential THM interventions that can be deployed include:

- Private sector and county government can invest in cogeneration though a PPP. Universities can adapt or develop the needed technologies.
- Business model that offers drying and parboiling services can be incubated by government and private sector.
- Universities can develop better technologies for monitoring mill performance and optimising.
- Universities can work with private sector to develop new products.
- Universities can develop testing kits to predict milling outcome.

⁹ Note that coffee farmers in Nyeri (central Kenya) had the problem of not knowing the milling output of their coffee and relied on millers to tell them and they were paid on this. Since coffee millers milled all coffee together, the farmer had not an independent way of verifying the quality of the milling output his coffee. Dedan Kimathi University of Technology came to their aid by developing an independent test that farmers could provide a sample and given a certificate to show their milling output. It turned out that millers had been cheating farmers all along and grading them lower quality.

Marketing node

Rice market is very narrow and thus many opportunities for value capture are missed. Currently, the Mwea rice value chain produces two products for human consumption: grade 1 rice (5% broken) and grade 2 rice (25% broken). Basmati/pishori is also the main variety due to people's rice cooking habits, while 'sticky' NERICA rice is normally shunned by farmers, yet NERICA rice has a much higher yield of 45–48 bags/acre compared to pishori rice of 25–30 bags/acre (key informant interviews).

Market development challenge: There is an opportunity to develop the market through better segmentation accompanied by market development efforts. Rice is increasingly becoming a food for all income groups as we saw. However, the market is not segmented enough to make rice food for all people. Opportunities for market development include:

- *Broken rice market:* a good example of market segmentation is the utilisation of broken rice in Senegal, where special dishes have been developed that are best prepared with broken rice. As a result, broken rice is now the most preferred variety of rice in Senegal and this has made Senegal the biggest importer of broken rice.¹⁰ Similar recipe developments can be made to utilise broke rice.
- *Sticky rice market:* There is potential for developing a low-end local rice market through increased production on NERICA rice or 'sticky rice'. In Mwea, the sticky rice is currently grown for home consumption and not for sale, as there is no market. However, in Ghana sticky rice is popular for making rice balls, a recipe that is regarded as a middle-class food. Rice balls can particularly resonate with Kenya as it can compete with Ugali in both textures and providing a feeling of fullness.
- *Parboiled rice market:* Parboiled rice is also a potential market development opportunity. Parboiled has higher nutrition quality and can be positioned for health-conscious consumers. Parboiling can also create new markets for the high yielding NERICA rice.

Product adulteration challenge: Market development will require solving the adulteration challenge. The high price offered for pishori rice means that farmers and traders have the temptation to adulterate the pishori variety with NERICA and imported rice. Pishori sells at about 8,000/bag, while NERICA sells at 2,000 KES per bag. Thus, creating a huge incentive to adulterate pishori with NERICA. Millers are usually on the lookout for adulteration and will refuse to mill for any trader found to have mixed varieties. This is because will also sell branded rice bought from the traders

¹⁰ [https://oec.world/en/profile/hs/rice-broken#:~:text=Rice%20broken%20are%20the%20world%27s%201128th%20most%20traded,Indonesia%20%28%24165M%29%2C%20Cote%20d%27Ivoire%20%28%24121M%29%2C%20and%20Belgium%20%28%24118M%29. \(Accessed May 12, 2023\).](https://oec.world/en/profile/hs/rice-broken#:~:text=Rice%20broken%20are%20the%20world%27s%201128th%20most%20traded,Indonesia%20%28%24165M%29%2C%20Cote%20d%27Ivoire%20%28%24121M%29%2C%20and%20Belgium%20%28%24118M%29. (Accessed May 12, 2023).)

are keen to protect their brand. Traders are also encouraged to police each other to protect the premium price received for pishori rice.

Thus, market innovations are needed and potential intervention using the THM model are summarised below:

- Marketing innovations that can shift diets and introduce people to new ways of eating rice, such as cookery competitions to display new recipes.
- Quality assurance and traceability (QA&T) to stamp-out product adulteration.

Potential THM interventions include:

- Private sector + Government + University can form a joint social marketing campaign to shift diets. Private sector to leverage its advertising expertise; university its expertise in nutrition; government its outreach capacity.
- University can develop test kits that can easily detect product adulteration. Private sector and government can fund the research.

Towards a rice cluster

Beyond innovations, the reorganisation of the rice value chain will be key. Currently, the value chain is highly skewed with some actors capturing a disproportionate share. Upgrading requires innovations and investments. This requires the emergence of stronger actors. The innovation needed to facilitate needed re-organisation include:

Empowering the farmer - from subsistence to business orientation

Diversifying farmers income can help farmers change risk perceptions and see them move towards more risk taking and thus to high inputs-high output production regime. Some farmers have already produced straw that they sell as cattle feed. In addition, rice processing produces a bran and broken rice that are sold for animal feeds. Therefore, the potential for developing an alternative livelihood exists. Farmers can be supported to establish dairy and poultry ventures. Millers can develop high-quality animal feeds that they sell to farmers creating mutual interdependency. This can be key in creating a trust relationship key for good contract farming arrangement. The THM model can play a big role in catalysing this model:

- Universities can do research on developing profitable livestock enterprises and R&D on animal feeds.

- Government can strengthen this symbiotic model by routing support it provides to farmers through the model to thus strengthen it. This can be a more efficient way of distributing subsidies.
- TVETs can develop the needed extension skills to develop the needed skills.

Improving farming systems efficiency – inputs-as-a-service business model: Inputs are costly and people may not apply them properly. Some inputs e.g. herbicides require investments in equipment to apply. Additionally, the presence of fake inputs might deter some from investing in high-quality inputs. A business model that can solve this challenge is for farmers to buy a service rather than input. Thus, if a farmer wants to weed he can buy a ‘weed elimination’ service. This business model has several advantages especially if the service provider is part of a bigger franchise that the good controls: Farmers need not be experts on the right herbicide, as a service provider has expertise. Indeed, with their expertise, the service provider can also provide extension service. The farmer only buys the amount of herbicide needed. As big service providers, there is an opportunity for providing credit services ultimately, saving farmers the agony of relying on shylocks or predatory traders for financial aid. Quality is a better guarantee as an established franchise with proper controls is unlikely to have fake products in its systems.¹¹ Since service providers are highly trained and properly equipped, the model can reduce abuse and improper use of inputs, which in turn, reduces inputs and saves cost for farmers and certainly a better environment. The THM can catalyse this model through:

- TVET can develop the incubation platform and train young people in needed skills.
- Private sectors can develop a franchise model to and put the trained people into franchises.
- Government can provide seed funding to help entrepreneurs buy franchises.
- Universities can develop innovations to expand the range of services the franchises can provide.

Upgrading middlemen to logistic service providers: It is clear that middlemen capture a disproportionate share of the value created lending credence to the common refrain that middlemen exploit farmers. The sheer number of middlemen (most are women) means that, though margins are high, the absolute value capture is modest. Indeed, a cursory look at the women traders at various mills does not strike one as looking at rich traders. The fact that there are many traders also means that long-running relationships are not built, because many of the traders could be part-timers who come to the market only during the trading season. What lacks in the value

¹¹ Note that policing of regular agro-vets is left to government agencies that are understaffed and underfunded which explains the preponderance of fake inputs.

chain is strong traders that can offer many services especially storage and drying services and credit. These are the kind of traders who can upgrade the value chain. Also given that, this is normal businesses with long-run outlook the predatory tendencies are limited and see farmers as partners. Consolidation of the trading sector may thus help in improving the value chain. The THM helix can be leverage here.

- Government can provide incentives (e.g. cheap finance) and mandates (expected services) to help in the consolidation of the sector. Government can also route agricultural support thus expanding range of services.
- Universities can work to build the business skills and also technologies e.g. grading, drying etc.
- TVETs can develop the skills needed.

Providing shared business development and manufacturing facilities: As pointed out there is need for significant product development needed to capture a whole range of products developed from rice. These will require entrepreneurs to engage in product development. Given that many will have limited resources and new markets will need to be developed, a business model that can help budding entrepreneurs have the breathing space to incubate ideas, develop products and market products is needed. A potential approach is to develop a campus that provides many shared services e.g. testing, manufacturing facilities, space etc. Entrepreneurs pay for services offered as need. These type of facilities can provide incubation or acceleration services for starting entrepreneurs and thus provide business mentorship and capacity development. The role of THM in developing a rice cluster includes:

- University departments of agriculture: (breeding and also support in development of animal feeds and support farmers in breeding livestock; food science/engineering help in product development; marketing departments to help in market development for new products.
- The miller can provide a wide range of services beyond the milling services offered and incubate other small firms to make niche food products from rice by products including food products, animal feeds, building products. The private sector essentially runs a campus of shared facilities. Significant R&D is needed and part of this maybe farmed to universities.
- The TVET can develop skills and entrepreneurs for the clusters.
- The government can come is an investor in the shared facilities and as a facilitator. The central government provide research support and seed funding for enterprise development.

Potential impact

The potential impact of these innovations is huge. There is significant opportunity that can be unlocked from upgrading the rice value chain. Figure 2 summarises the potential impact. Innovation can see more bags of rice produced from same plot (about one third more bags) at a lower cost, while also creating new business opportunity that can provide jobs as well as help stimulate rural economies.

Innovations can mean more rice produced per acre, cost saving in production and also new business creating a vibrant rice cluster

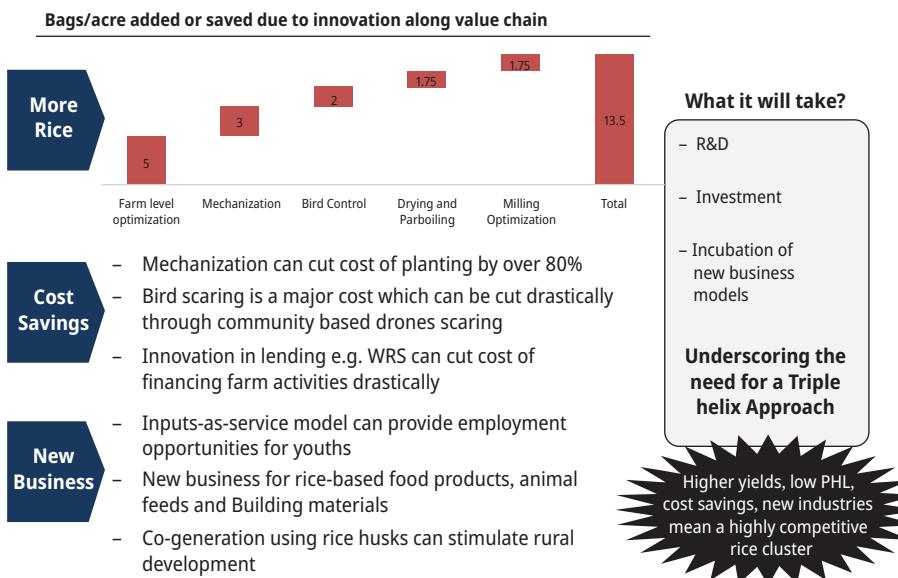


Figure 2: Impact of rice value chain innovations. (Source: Compiled by the author).

As discussed, significant re-organisation of the value chain is required. With this new regime, the sector can capture large local (and regional) markets. Realising this will require concerted and coordinated actions across three domains: (i) research and development, (ii) investment, (iii) incubation of new business models. The best model to achieve this is the close collaboration between industry, university and government as partners in developing the cluster.

Implementing the THM for rice value chain

The building blocks for THM for rice value chain are already in place. As fig shows, the actors are various levels of preparedness. The country government of Kirinyaga is keen to adopt a triple helix model to drive its development. In this regard, it has already put in place and MOU with a local university, Dedan Kimathi University of Technology (DeKUT). The county is also keen to partners with private investors and is in process of putting in place an investment company to be able to more effectively partner. It is also keen to upgrade its TVET system. The universities and private sector actors have also shown keen interest in collaborating. The Jomo Kenyatta University of Agriculture and Technology has also been active in developing technologies to upgrade the rice value chain.

Building the THM model can be jumpstarted by picking on some quick win projects that have little investment overhead and risk for the parties involved. This can then help on building confidence and trust. More and more projects can be undertaken as medium to longer term. Potential project include:

- *Short term – rice drying and parboiling services:* Using gasifier technology is already being piloted by a local TVET. Rice dryers and parboilers can be built with input from a university. The country government can collaborate with the private sector to incubate this technology and deploy it. TVET students incubated to provide drying service. The drying service can be used to pilot a franchise business model where the investor can put in place the franchise operation. In particular, develop the proof of concept needed to attract investors.
- *Medium term – rollout inputs-as-a-service franchising business model:* The input-as-a-service franchising business model can be developed building on the drying service. The franchises can expand to providing farm services especially weeding services and slowly expanding to other services including planting, harvesting, monitoring and surveillance and bird scaring. Services will be brought in as technologies are developed and investments to add services secured. The private sector and the county government can set-up a fund to develop the technologies needed. The university can develop these. The TVET can develop the needed skills to equip youth to be franchisees.
- *Long term – building a rice cluster:* In the longer terms, the focus should be on developing shared space for development, incubation and manufacturing various products. The cluster will also have co-generation of electricity using rice husks as one of the investments. Promoting rice consumption in different way is key to increasing demand of rice in particular the 'sticky' and broken rice that have little market demand. This will be a long-term effort of social marketing. One way of promotion is regular food festivals that can introduce people to new rice products recipes.

Building an effective consensus space

It seems that what remains is integrating the key partners more. This is easier said than done. Field interviews with researchers at MIAD, which is charged with incentivising, diffusing and approving new technologies for the sector, found that private sector has been reluctant to bring new technology as local rice sector is still small and thus more risk averse. Also new technology roughly requires 3–4 seasons of trials before it can be approved. This has been a disincentive for the private sector. This underscores the need for consensus space that can help build shared vision and build trust.

Building the rice cluster based on triple helix will very much depend on having the right policies. The current policy anchored in the NRDS is more focused on increasing production through yield and land expansion and fails to adequately address the other issues in the value chain. Again, a consensus space which brings stakeholder together can help.

All the same, the rice policy recognises the need for multi-stakeholder approach and has formed the rice unit at the Ministry of Agriculture Livestock and Fisheries (MoALF), that brings together key stakeholders in the sector including Universities and government is putting the key building block together. This platform can thus serve as a consensus space for the THM. However, the policy as it is misses the key role that industry can play in incubating new technologies, new products and uptake of innovations. The county government involvement also seems very peripheral. There is thus a need to rethink the rice platform and re-align it more to the THM. The basic elements are there so one can build on the existing rice initiatives. The country government with support of LIWA can potentially develop a more appropriate consensus space that is more localised. This platform can coordinate closely with the MoLAF platform on areas where the agendas overlap.

Conclusion

Rice consumption in Kenya is rising rapidly as diets shifts. This demand is largely served by imports. The rice value chain is currently a highly fragment and inefficient and thus ill equipped to compete with imported rice. The sector is now largely shielded from global markets through import tariffs.

All the same, the sector has potential to be competitive with the right intervention along the value chains. The foregoing discussions have pointed to several challenges and potential innovations needed that can upgrade the value chain. The many innovation opportunities can mean a transformation of the rice value from a fragmented industry with uncoordinated many players doing the same thing to a vibrant and highly competitive cluster of a coordinated actors.

The triple helix model can help unleash the innovations needed to capture these opportunities. The building block for a triple helix driven rice value chain are already in place. To further develop the rice platform, is especially to redefine the roles of county government and millers, so that they can be the drivers of the efforts. More crucially, there is need for identification of quick win projects that can help build confidence, trust and shared vision. Developing rice drying technology using rice husk is one such project. In the medium term, inputs-as-a-service business model can be built. In the longer term, an integrated rice cluster that incorporates a shared manufacturing and R&D campus incubating and developing rice-based products and powered by electricity produced from rice husk should be the goals.

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