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Exploring the Competitiveness of Cambodia as an IT Outsourcing Destination

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ABSTRACT

Using assessment criteria from the A.T. Kearney global services location index, the authors explore Cambodia's competitiveness in the global IT outsourcing market (ITO), identifying how the country could become more competitive. The findings are discussed from the perspective of the Heeks and Nicholson software export success model, assessing Cambodia from a national competitiveness perspective. With ITO's export revenue and skills development potential, it is important to understand why Cambodia is not considered a significant ITO destination and what the country can do to increase its competitiveness in this area. This paper is useful for practitioners considering Cambodia as an ITO destination, for the Cambodian government as a guide to policy measures for increasing its competitiveness as well as for IT researchers, who could complement the study with primary data and development the conceptual approaches applied in this article, whether in Cambodia or other developing countries.

KEYWORDS

Cambodia, Competitiveness Diamond, Global Services Location Index, IT Outsourcing Destination, National Competitiveness, Software Export Success Factors

INTRODUCTION

The competition among nations to be recognised as an IT outsourcing (ITO) location is tougher than ever. Several papers address the attractiveness of particular countries, e.g. the UK (Oshri & Ravishankar, 2014), India (Javalgi, Benoy & Gross, 2013), Malaysia (Ramli & Syed, 2015), Bulgaria (Troev, Theodor, & Petrov, 2015) and Uganda (Overby, 2015). What is considered the best location differs between companies even for outsourcing of the same IT-related task and may change as IT outsourcing practices evolve. However, a mix of low cost (Fischer, 2008), focus on core capabilities and access to expertise/skills are often cited as the most common criteria (Lacity, Khan, & Willcocks, 2009).

Together with India, most of the Association of Southeast Asian Nations (ASEAN) member countries are recognised as prime locations for ITO (Marriott, 2014), and include several top ranked cities for this sector (Tholons, 2015). Cambodia is a notable exception. As a member of ASEAN and surrounded by several prime IT outsourcing locations, Cambodia faces increasing competition from its neighbours for its relatively small IT outsourcing sector with the implementation of the ASEAN

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Economic Community (AEC). In this paper, we look into the possibilities of Cambodia becoming a competitive IT outsourcing destination.

The main purpose of this paper is to explore the competitiveness of Cambodia as an IT outsourcing location and to identify policies and strategies that could improve its ability to compete. This is done by first presenting enabling conditions at a national level for successful operation in the IT outsourcing sector, using the criteria in the A.T. Kearney model, positioning Cambodia against these criteria and then identifying measures that could make it more attractive. While the A T Kearney model is useful in understanding why a country is or is not attractive for IT outsourcing, it is not a rigorous theoretical model, but nevertheless useful for an initial exploration of this issue. Analysing the indicators in that model with respect to Cambodia fills a knowledge gap in terms of a specific country. A more detailed study of a particular country informed by primary research would provide a better base from which to make recommendation of what the country can do to increase its competitiveness in this area. Studying the competitiveness of Cambodia and other developing countries as IT outsourcing destinations is an important research question, with practical as well as theoretical perspectives; the former in terms of guidelines it can provide to stakeholders and the latter for building a conceptual model identifying how different factors interact in making a country an attractive destination for IT outsourcing.

The paper starts with relevant background information about Cambodia. This is followed by considerations of conceptual frameworks for assessment of a country's competitiveness as a potential IT outsourcing location, application of these frameworks and presentation of our preliminary findings related to the feasibility of Cambodia becoming a major IT outsourcing location and policy recommendations for improving its capacity for a greater role in this sector. We emphasise the preliminary nature of our findings and conclude with suggestions for further study.

CAMBODIA – RELEVANT BACKGROUND INFORMATION

Cambodia's population is approximately 15 million, with a median age of 24.5 years (National Institute of Statistics, 2013). Approximately 80% of households live in rural areas (Asian Development Bank, 2014). During the genocide under the Khmer Rouge (1975-79), Cambodia lost approximately one fifth of its population (Chandler, 2008), particularly the elite, middle class, the educated, city dwellers and professionals (Lambourne, 2013). By 1991, at the time of the Paris Peace Accords, much of Cambodia's physical infrastructure was destroyed and the country lacked important attributes of a modern state, such as a legal system with property rights, trusted currency, civil service, education system and civil society (Naron, 2012). Low priority was given to higher education during the immediate post-conflict period, when most emphasis was placed on restarting primary and secondary education (Ahrens & McNamara, 2013).

Cambodia's economic growth since 1992 has been rapid, averaging about 7 per cent per annum, resulting in a doubling of per capita income (Hill & Menon, 2014). The export base is however quite narrow, with garments and tourism accounting for more than 95 percent of foreign exchange earnings (Unteroberdoerster, 2014). Cambodia was ranked 89 of 1138 countries in the World Economic Forum Global Competitiveness Index, with the current stage of development defined as "Factor Driven", in which low-cost labour and natural resources are the primary factor endowments (Schwab & Sala-i-Martín, 2016).

CONCEPTUAL FRAMEWORK

When considering how to assess the extent to which Cambodia might be a competitive location for outsourcing, we turned to reports that rank the suitability of countries to operate in this sector. There are a number of similar frameworks available in reports by different consulting firms, e.g. A.T. Kearney's Global Services Location Index, Gartner's 30 Leading Locations for Offshore Service (Marriott,

2014) and the Everest Group's Global In-house report (Aggarwal, Dhingra, Garg, & Karthik, 2015). These reports use comparable metrics in their assessments of different locations. One advantage of the A.T. Kearney framework is that it is available free of charge in the public domain. The other reports can be quite expensive and may require paid subscriptions, which make them more difficult to use for this type of research. While it could be argued that this is not an appropriate criterion for selection of a research framework, we contend that open access is particularly important for research dealing with developing countries.

The assessment of Cambodia's suitability for this sector is about its competitiveness compared with other locations and it is therefore necessary to complement the A.T. Kearney framework with a framework dealing with national competitiveness. For this, we turn to the software export success model (Heeks & Nicholson, 2004). This framework has previously been used to assess the competitiveness for outsourcing to countries like China, Malaysia and India (Zhao, Watanabe, & Griffy-Brown, 2009; Javalgi, Benoy, & Gross, 2013; Ramli & Syed, 2015)

The A.T. Kearney Global Services Ranking Indicators

A.T. Kearney's model (Figure 1) for assessing locations for global services consists of 27 metrics, grouped into the three domains of financial attractiveness, people skills and availability and business environment.

The A.T. Kearney framework distinguishes between offshoring defined as "locating resources in low-cost countries, using centres owned and operated by the offshorer" and outsourcing, defined as "back-office operations performed by specialised third parties under agreed contractual terms" (Laudicina, Gott & Peterson, 2014, p. 1). Figure 2 illustrates four basic operating models.

Activities in the top left cell in the matrix are typically performed by an internal IT-department in the country where the company has its main business. The bottom left corner is where the function is performed by a local vendor. In the right column are the two scenarios applicable for this paper. The upper right represents tasks done by an internal IT-department, but in a different country than the head office. Typical examples of this are Nordic banks that have set up IT-departments in the Baltic States and US banks with IT-departments in India or the Philippines. The bottom right corner is the situation where IT functions are performed by a vendor in a different country – the scenario covered by the A.T. Kearney framework, which does not consider the location of the customer. The match between the two locations is important, as research indicates that countries and cultures influence the ease of collaboration (Sahay, Nicholson, & Krishna, 2003; Su, 2015).

Furthermore, the A.T. Kearney framework does not differentiate between the different outsourcing services despite the variation in skillset requirements. One example is the call-centre industry. India used to be the prime location for this sector, but it was overtaken by the Philippines (Palugod & Palugod, 2011). One main reason for this is that the US has a closer connection to the Philippines than India, and hence the English spoken there is easier for US customers to understand. Accounting for 60% and 31%, respectively, US and Europe are still the largest clients for Indian outsourcing (Bulloch & Long, 2012).

Another important factor not considered in the A.T. Kearney framework is the labour intensity of the tasks, which is a function of where the tasks fit in the outsourcing value chain (see Figure 3). Locations with low salary levels are preferred for labour intensive work, subject to other factors being satisfactory.

The left side of the figure shows services at all levels of the value chain. Traditionally, the services at the bottom of the figure are more labour intensive, while services at the top are more knowledge intensive. This is about to change, as robots take over many of the lowest level tasks and to optimise the benefits of outsourcing, the customer must take into account the medium-to long-term trends for the outsourced functions. The 2017 A.T. Kearney report (Sethi & Gott, 2017) considers robotic process automation as only the beginning of intelligent automation, which will evolve to include cognitive computing as a form of artificial intelligence. While this automation process creates jobs

Figure 1. A.T. Kearney framework (Laudicina, Gott, & Peterson, 2014)

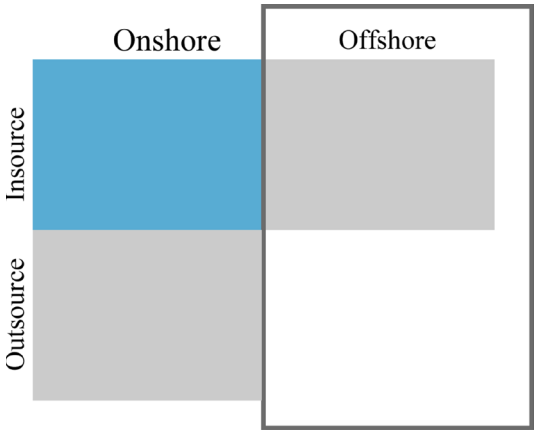
Category	Subcategories	Metrics
Financial attractiveness	Compensation costs	• Average wages • Median compensation costs for relevant positions(call-center representatives, BPO analysts, IT programmers and local operations managers)
	Infrastructure costs	• Rental costs • Commercial electricity rates • International telecom costs • Travel to customer destinations
	Tax and regulatory costs	• Relative tax burden • Corruption perception • Currency appreciation or depreciation
People skills and Availability	Remote services sector experience and quality ratings	• Size of existing IT and BPO sectors • Contact center and IT center quality certifications • Quality ratings of management schools and IT training
	Labor force availability	• Total workforce • University-educated workforce
	Education and language	• Scores on standardized education and language tests
Business environment	Country environment	• Investors' and analysts' ratings on overall business and political environment • A.T. Kearney Foreign Direct Investment Confidence Index • Security risk • Regulatory burden and employment rigidity
	Infrastructure	• Overall infrastructure quality • Quality of telecom, internet, and electricity infrastructure
	Cultural exposure	• Personal interaction score from A.T. Kearney Globalization Index
	Security of intellectual Property (IP)	• Investor ratings of IP protection and ICT laws • Software piracy rates • Information security certifications

involving design, maintenance, testing and calibration, these functions require more advanced skills than current outsourcing tasks.

For tasks requiring high competence levels, access to knowledgeable people is more important than labour costs. The opposite is the case for labour intensive functions, for which low-wage countries would be most competitive, other things being equal. Based on the scores in the A.T. Kearney ranking, Bangladesh and Senegal should be the most competitive locations for labour intensive, low skilled work, while the US and India are more competitive for functions requiring high level skills.

This means that what might be the most competitive IT outsourcing destination depends not only on the factors in the A.T. Kearney model, but also on the outsourced services and on the attributes, such as location and nationality, of the customer. Although a customer may pay more attention to the vendor than the country, the competitiveness of the software sector in a particular country is also an important indicator. To better understand the factors influencing the competitiveness of the software sector specifically, in a country rather than IT outsourcing in general, we turn to the Software Export Success Model.

Figure 2. The different operating models (Shao & David, 2007)



The Software Export Success Model

Informed by Porter's (1990) framework for understanding competitive advantage of countries, the software export success model (Figure 4) was developed to explain the success factors for the leading software export nations India, Ireland and Israel (Heeks & Nicholson, 2004).

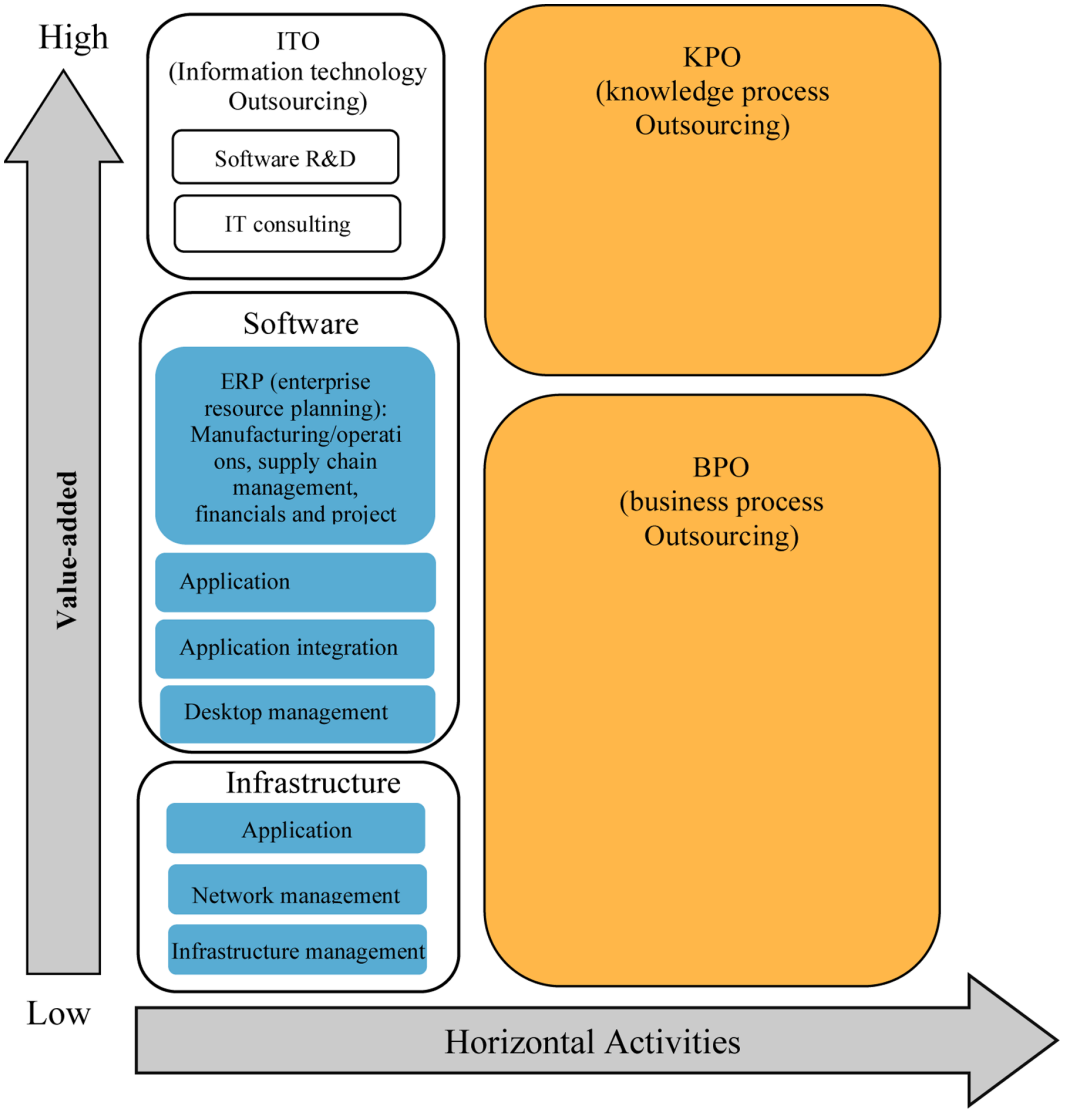
The framework consists of five interrelated tiers: national software vision and strategy, national software demand, national software-related inputs, national software industry, and international demand. Within each tier there are several factors contributing to an enabling environment for software exports. These factors were derived from a content analysis of relevant publications dealing with software exports from theoretical and empirical perspectives. The national vision is formulated by governments and/or industry associations for the role of software in the country's strategy. National software demand is considered important in the model due to the competence developed through this demand, while it is recognised that the absence of adequate local demand can encourage entrepreneurs to look for export opportunities. The national software related inputs refer to the national infrastructure required for software exports and include people, technology, access to finance, research and development, as well as the physical infrastructure (transport and communication) and adequate legal institutions. Most important is the nature of global demand, which in turn should influence the national vision and associated strategies for the sector. Expatriate and diplomatic linkages can contribute to increasing a country's market share of global demand.

In adapting the model to IT outsourcing in Cambodia, we focus on national IT vision/strategy, national market demand for outsourced IT-services, national IT-industry and international market demand for software, as the other factors are covered by the factors in the A.T. Kearney model.

RESEARCH APPROACH AND FINDINGS

The research findings, informed by secondary sources, are first presented under the domains of the A.T. Kearney approach. Appendix A contains a summary of how Cambodia scores on some indicators, compared to the other ASEAN members states. In the discussion section, this information is then interpreted to explore the competitiveness of Cambodia, using the categories of the Heeks and Nicholson model.

Figure 3. The offshore services global value chain, based on (Cattanei, Gereffi, & Staritz, 2010, p. 339)



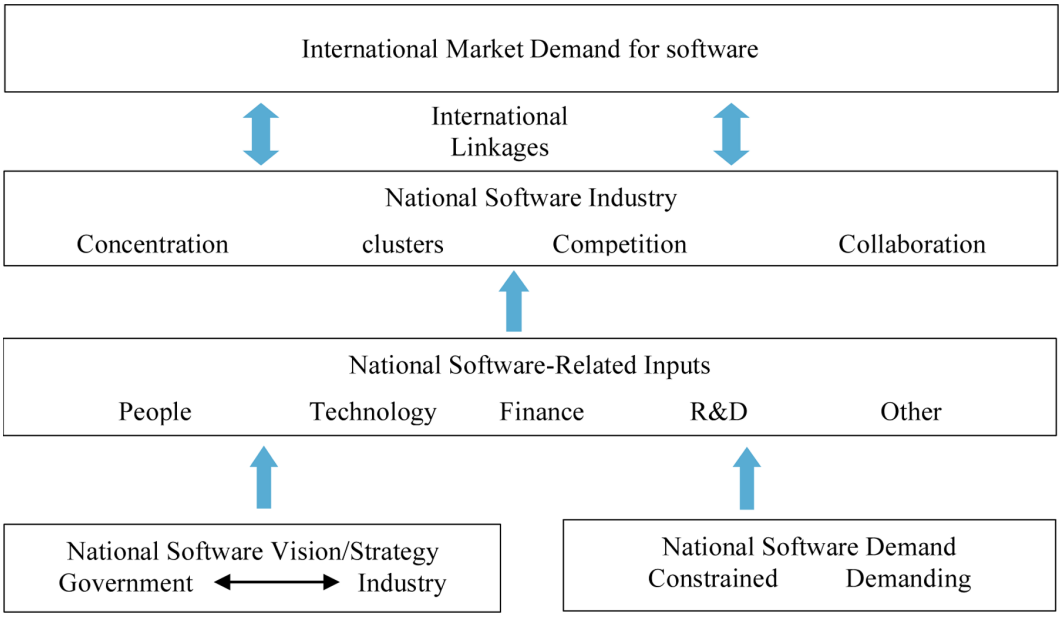
Financial Attractiveness

Compensation Costs

A search of one of the leading Cambodian recruitment sites (www.camhr.com) in October 2015 indicated that a position as an international web development manager, with 5 years' experience could command a monthly salary of USD 1,000-2,000 (USD 12,000 – 24,000 annually). This position required a bachelor's degree and excellent English skills. At the same website, app developers could expect a monthly salary of USD 550-650 (USD 6,600 – 7,800annually), while java/C++ developers and web developers both could expect USD 700-850 (USD 8,400 – 10,200 annually).

In the Philippines, average annual salaries were USD 8,000 for a software engineer, USD 14,400 for a project manager, USD 8,200 for a network engineer, USD 12,600 for a senior software engineer, USD 4,300 for a web developer and USD 10,500 for an information technology consultant (PayScale,

Figure 4. The software export success model, based on (Heeks & Nicholson, 2004)



2016). In Malaysia, in 2013, the median annual salary was USD 92,660 for a software developer, USD 63,160 for a web developer and USD 76,140 for a computer programmer (PIKOM, 2014). According to PIKOM (2014) Singapore had the highest IT salaries among ASEAN member countries. In terms of salaries, Cambodia is quite competitive compared with key ASEAN IT outsourcing destinations.

Infrastructure Costs

Rental Costs

According to the Japan External Trade Organization (JETRO), the average monthly rental cost for office space in Phnom Penh was USD 24 per sq.m. in 2012 (JETRO, 2013). This was slightly higher than in Manila and Bangkok, equal with Kuala Lumpur and lower than Hanoi and Ho Chi Min City.

Commercial Electricity Rates

Cambodia has approximately the same ratio of primary energy supply to GDP, as the comparative ASEAN countries (International Energy Agency, 2015), most of which have similar ratios. Cambodia established an electricity regulator and passed the Electricity Law in 2001. However, there is no national grid and most towns are supplied from isolated systems. The problem is particularly acute in rural areas; only 10 per cent of the population, largely residing in Phnom Penh, use 90 per cent of the electricity. Although the average tariff is around 0.16 USD/kWh, the tariffs of rural electricity enterprises range from 0.30-0.90 USD/kWh (ILO, 2014, p. 34).

Telecommunications Pricing

Cambodia does not have an extensive fixed-telephone network and the lack of competitiveness is reflected in the prices. Its mobile market is very competitive, which has contributed to a high rate of mobile access with the cheapest mobile-broadband prices in the region (ITU, 2017). This market has been characterised by predatory pricing, which the Telecommunications Regulator of Cambodia tried to prevent, but has instead opted for intervening only if one of the operator becomes dominant.

Travel to Customer Destinations

In October 2015, we used Tripadvisor.com to compare travel costs from London, Paris and New York to a number of potential outsourcing destinations (Phnom Penh, Manila, Mumbai, Bangalore, Singapore, Ho Chi Minh City, Jakarta, Kuala Lumpur and Bangkok) for one week with the date of departure was one month ahead of the booking date. The comparison showed that Phnom Penh was the most expensive destination to travel to from London and Paris. From New York, it was cheaper to travel to Phnom Penh than to Mumbai or Bangalore. With considerable flexibility in pricing, related to factors such as season, day and date of travel, the price comparisons are only indicative. Convenience is another issue that might disadvantage Cambodia, in that it is reachable by direct flights from only a limited number of places. Stopovers, particularly if overnight stays are required, add to travel costs, time and inconvenience.

Tax and Regulatory Cost

Relative Tax Burden

Tax on profit (TOP) is a corporate income tax. "The standard rate is 20% and is imposed on the resident taxpayer's worldwide income. A resident taxpayer is primarily an enterprise that has a place of management and carries on business in Cambodia" (DFDL Legal & Tax, 2013, p. 27). In a 2016 survey, only 6.5% of firms in Cambodia identified tax rates as a major constraint and 6.4% identified tax administration. The corresponding figures for East Asia and the Pacific were 19.6 and 12.3, respectively (World Bank, 2016a).

Corruption Perception

Ranked 156 (together with the Democratic Republic of Congo and Uzbekistan) out of 176 countries on Transparency International's 2016 Corruption Perception Index (Transparency International, 2016), Cambodia is perceived as more corrupt than it neighbours Thailand and Vietnam, which were ranked 101 and 113, respectively. The World Economic Forum identified corruption as the single most problematic factor impeding business in Cambodia, and according to estimates from 2012, as much as 10 per cent of the country's annual GDP is lost to corruption (ILO, 2014, pp. 60-61).

Cambodia accepted the United Nations Convention against corruption in 2007, and the Anti-Corruption Action Plan for Asia and the Pacific was endorsed in 2003 (OECD, 2003). The legislation on anti-corruption in Cambodia has recently undergone substantial changes. The latest amendment to the country's anti-corruption law is from 2011(DFDL Legal & Tax, 2013, p. xiii). The law is available on-line[1] and it might potentially help against corruption. The Anti-Corruption Unit (ACU), particularly its public complaints process, has assisted with raising public awareness about corruption and several high-ranking government officials have been sentenced to prison terms for corruption.

Currency Fluctuations

Cambodia operates with two currencies: USD and Cambodian Riel (KHR) and an exchange rate of approximately 4000 KHR/USD. In this partially dollarised economy, the US dollar circulates as legal tender in parallel with Cambodia's official national currency – riel (Duma, 2014, p. 27). The dollarisation has increased from approximately 60 percent in the late 1990s to over 80 percent in 2017. This high level can have adverse impact on local costs, reducing the competitiveness of Cambodia's exports [2].

People Skills and Availability

Remote Services Sector Experiences and Quality Ratings

Size of Existing ITO and BPO Sectors

While the ICT Federation of Cambodia (ICTF) showed only 16 members in late 2017, research based on information from the Cambodian Yellow Pages, conducted by the Royal University of

Phnom Penh (RUPP) in 2013 identified some 1250 Cambodian IT companies (Phal Des, 2013), grouped into those involved with hardware (60%), software development (32%), online content (5%) and telecommunications (3%). A survey by RUPP covering 34 respondents (of 43 companies contacted), showed that 77% had 1- 30 employees, 12% had 31 - 50 and 11% 51- 200 employees. Only 15 companies exported their products in the form of offshore outsourcing.

IT Centre Quality Certifications

As this research is on the topic of ITO, and not BPO, we consider only relevant certificates for IT outsourcing companies, and not for contact centres. There are a number of relevant certifications in the IT industry, including ISO 27001 (Information security management), ISO 26000 (guidance on social responsibility), ISO 14001 (Environmental management system) and ISO9001 (Quality management systems). It has been challenging to identify companies with relevant certifications in Cambodia. The only one we found is the impact outsourcing company Digital Divide Data (DDD), which is ISO 9001 certified. It receives donor funding from sponsors (Bulloch & Long, 2012). Although a few companies provide Capability Maturity Model Integration (CMMI) training in Cambodia, a search for CMMI certified companies there gave no results[3].

Quality Ratings of Management Schools and IT Training

We were unable to find Cambodian universities listed among the top 100 in any of the rankings of Asian universities, let alone in any of the global rankings.

RUPP, the largest university in Cambodia, had 16,578 scholarship and full-fee paying students and 916 full-time staff in 2015. However, only 50 of the academic staff members held a PhD degree. RUPP has full membership of the ASEAN University Network and Agence Universitaire de la Francophonie (Royal University of Phnom Penh, 2015). According to data from RUPP, approximately 800 computer science students graduate from the university per year (Phal Des, 2013). The new RUPP faculty of engineering, which includes information technology engineering, was established in 2013. The university also offers master programs in IT engineering and mathematics and has an IT Centre, with the objective of building IT capacity and promoting scientific research. One of its initiatives is to develop offshore software outsourcing in Cambodia by studying qualification requirements for this sector[4]. Another school offering engineering training is the Institute of Technology of Cambodia.

Labour Force Availability

Total Workforce

Low literacy levels in general and digital literacy in particular, are major impediments for building a competitive outsourcing sector. There are different estimates of the level of education in the workforce. Pina, et al (2012, p.18) estimated that 77 per cent of the total labour force had no more than primary education, which many have not even completed, while the Asian Development Bank and International Labour Organization (ADB & ILO 2015, p.45) reported the following education levels among the employed population in 2011-2012: none: 12.5%, primary: 44.9%, secondary: 35.5%, vocational: 3.3% and university: 3.8%,

University-Educated Workforce

Information on the number of university graduates varies between different sources, but they all indicate that the number of people with a proper university degree is quite low. In the academic year 2012-2013, more than 1400 students were enrolled from first year to final year in IT education (Phal Des, 2013, p. 28). This will help to address the problem of insufficient number of qualified IT workers, which hinders competitiveness and increases turnover rates (UNDP, 2009, p. 47). Statistics from UNESCO indicate that the university-educated workforce in Cambodia is lower than its neighbouring ASEAN countries (UNESCO, 2014).

However, the lack of a tertiary educated workforce cannot be addressed just by improving the higher education system, as there is a lack of secondary students with adequate education to qualify for university study. Lower secondary education completion rates, at 47.4 percent in 2016, were the lowest in the region (World Bank, 2018a) and only about 30% of youth completed high school. Inadequate quality and relevance of education in combination with poverty drive many children to enter the workforce without completing their education. Malnutrition affects their ability to learn when in school (ADB & ILO, 2015). Even those completing secondary education may have poor learning outcomes that could be attributed to a combination of fewer and poor-quality teachers and fewer learning ours than countries in the region (World Bank, 2018 a).

Having identified problems at the primary and secondary teacher levels, Madhur (2014) suggested that continuous review and update of the curriculum, continuous improvement of the teaching pedagogy and local community involvement especially parent involvement in school management be pursued.

Education and Language

Scores on Standardised Education and Language Tests

An inadequately educated workforce is ranked as the second most problematic factor for business operations in Cambodia. Skilled and specialised labour is in limited supply in the country, in large due to the lasting negative impact of the destruction of the education system under the Khmer Rouge (ILO, 2014, p. 42).

Technical and vocational education is still in its infancy, but an externally supported pilot project has been introduced. The main challenge for the government is that investment in technical education is costly, as facilities, materials, equipment, and maintenance are expensive, and technical education facilities can quickly become obsolete due to technological and market changes (OECD, 2012).

English language proficiency is critical for a successful global outsourcing business. Two different datasets are used to look at the English proficiency score: Test of English as a Foreign Language (TOEFL), which is the most common test for students applying to study in the UK and USA and the English Proficiency Index (EF). Cambodians achieved 69 per cent of the total possible TOEFL score (ETS, 2015), with best results for speaking and writing, and slightly lower in reading and listening. This is the second lowest of the ASEAN countries, just ahead of Laos, where the score was 64. On the 2017 EF index, Cambodia, ranked 77 of 80, just ahead of Laos[5].

Business Environment

Country Environment

Investors' and Analysts' Ratings on Overall Business and Political Environment

Cambodia was ranked 138 out of 190 countries for ease of doing business for 2019. (World Bank, 2018a), declining from 135th in 2018 and 131st in 2017 (scoring particularly poor for starting a business (185), enforcing contracts (182) and dealing with construction permits (182). The categories where Cambodia scored the best were: getting credit (22) and resolving insolvency (79) (World Bank, 2018b). In terms of changes from the previous report, the World Bank noted that it has become more difficult starting a business by increasing the time required to register and by requiring companies to submit evidence of capital deposit after registration. On the positive side, it reported that access to credit information has improved as the credit bureau has started providing credit scores to financial institutions. Cambodia entered into its first ever double taxation agreement (with Singapore) in 2016[6].

Safety and Security

The majority of crimes are opportunistic and for financial gain. Pickpocketing and purse-snatching are common. Despite efforts to reduce these and random gunfire incidents and gunfire exchanges

due to traffic accidents, the still occur. The country is ranked low for frequency of terrorist attacks (UK Government, 2016).

While road infrastructure in major urban areas is acceptable, drivers do not exercise sufficient caution and road safety is a major issue. Like most of South East Asia, Cambodia's climate is highly affected by monsoons, so weather conditions are another potential risk area. During the rainy season (July to November), severe storms and widespread seasonal flooding, including localised flash flooding, can occur without warning, even in Phnom Penh. On the other hand, Cambodia is not heavily affected by other natural disasters, such as earthquakes.

Having been in power since 1985, the current prime minister Hun Sen has used various tactics to deal with protesters, several of which have been criticised from a human rights perspective. Some journalists have reported that they have been harassed. In the latest report of press freedom, Cambodia was ranked 152nd out of 199 countries (Freedom House, 2017). Branded enemies of the state, many journalists who worked in Cambodia's once free press are now living in exile. Cambodia Daily, an independent paper had to close its operations in 2017 after having been presented with a sudden, disputed USD 6.3M tax bill. In early 2018, another independent English language paper, the Phnom Penh Post, was sold to the owner of a Malaysian PR company with links to the regime of the Hun Sen. The day after the takeover, the editor and several reporters were fired by the new owner, while the managing editor and others resigned in protest (Ellis-Petersen, 2018).

However, unrest in the streets and political tension in Cambodia's neighbour's Thailand, have not prevented it from a high ranking (number 6) in the A.T. Kearney report. Also, the political situation in Cambodia does not seem to have affected foreign direct investment in other sectors, so it is reasonable to assume that it would not inhibit the growth of a competitive outsourcing sector.

Regulatory Burden and Employment Rigidity

The average number of days it took to register a business in Cambodia was 99 in 2017. This is higher than in Malaysia, Thailand, Vietnam and the Philippines with 18.5, 25.5, 24 and 28 respectively. It is much higher than Singapore where it only takes 2.5 days (World Bank, 2017). Cambodia scored comparatively equal to Thailand, Laos, the Philippines and Vietnam for employment protection legislation (Packard & Nguyen, 2014, p. 129).

Infrastructure

Overall Infrastructure Quality

A 2017 World Bank report (Baker, et al. 2017) on urban development in Phnom Penh identified challenges in the provision of basic services, including drainage, wastewater treatment, public transport and solid waste management. While the provision of clean water supply has been relatively successful Phnom Penh, this is not the case in peri-urban, regional and rural areas. Only 64 per cent of the population had access to improved water sources in 2010, up from 54 per cent in 2005 (ILO, 2014, p. 35).

In 2017, Cambodia was ranked 99th (of 137 nations) in the Quality of Overall Infrastructure Index. This placed the country ahead of the Philippines, but behind Indonesia, Thailand and far behind Singapore and Malaysia (Schwab & Sala-i-Martín, 2017).

Quality of Telecom, Internet, and Electricity Infrastructure

Only around five percent of the schools in Cambodia had access to Internet in 2013 (ITU, 2014, p. 21). In 2017, Cambodia ranked 124t out of 176 countries for IT access, a composite of fixed-telephone subscribers per 100 inhabitants, mobile-cellular telephone subscriptions per 100 inhabitants, international internet bandwidth, percentage of households with a computer and percentage of households with Internet access (ITU, 2017).

Cultural Exposure

According to Chua, et al. (2012), IT outsourcing relationships will be more positive where there are cultural similarities between organisational cultures that enable project participants to share values, norms and objectives. A few surveys include cultural exposure of populations in different countries. One of these is A.T. Kearney's Globalization Index. Another is KOF Index of Globalization, published by Eidgenössiche Technische Hochschule Zurich (ETHZ). Cambodia is not included in the former, but is in the latter, which is based on three dimensions of globalisation (economic, social and political). It ranked as number 119 of 207 countries in this index in 2015, one place ahead of Vietnam. This is well below the other ASEAN countries in the KOF Index, which were among the top 100.

Security of Intellectual Property (IP)

Investor Rating of IP and Protection of IT Laws

An important aspect of Cambodia's intellectual property rights (IPR) regime is its compliance with WTO member commitments. The WTO negotiations prompted the National Assembly to adopt a full set of laws on IPR to conform to the WTO Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS). Cambodia has accepted the basic principle that, in the event of conflict or inconsistency between WTO agreements and national laws, the provisions of the WTO agreements shall prevail (DFDL Legal & Tax, 2013, pp. 87-88).

Software Piracy Rates

Cambodia is not mentioned in the latest ranking from Business Software Alliance (Business Software Alliance, 2016) and it is doubtful that this is an indication that there is no software piracy there. Microsoft Cambodia has estimated the loss for the Cambodian economy to be USD 50 million a year due to pirated software (de Carteret & Kimsay, 2013).

DISCUSSION

In this section, we consider our findings in the context of the software export success model to understand how Cambodia could become a more competitive outsourcing destination. Where relevant findings are not covered by this model, we refer instead to the competitiveness diamond model in the discussion.

National Vision and Strategy: The Goal and Ambition to Build an Outsourcing Sector

Some emerging economies, including Kenya, Ghana, Rwanda and Uganda, have included IT outsourcing in their national growth strategies (Bulloch & Long, 2012). In Kenya, for example, the government has plans to make the business process outsourcing (BPO) sector a significant contributor to GDP and employment growth through the provision of incentives, skills development, establishment of a BPO park and marketing the country as a BPO destination. Policy and strategy development for the ICT sector is the responsibility of The Ministry of Post and Telecommunications and the administration of these through regulations is the responsibility of the Telecommunication Regulator of Cambodia (2015), established in accordance with the Law on Telecommunications adopted in 2015 (ITU, 2017, p. 34). The Telecom/ICT Development Policy 2020, adopted in 2016, established a three key objectives and associated targets to be achieved by 2020: 1) to improve and expand telecommunication infrastructure and usage; 2) to develop ICT human capacity; and 3) to diversify the ICT industry and promote ICT applications (KOICA, 2014). There does not seem to be sufficient awareness in this policy of the potential of outsourcing for Cambodia or recommendations on steps the government could take to stimulate this sector. One way in which this might evolve without government intervention is through a highly IT-literate population. The Ministry of Education, Youth and Sport

(MoEYS) has over the years created a number of plans to integrate information and communication technology in education. For example, a plan covering the period from 2009 – 2013 (MoEys, 2009) had four main objectives 1) to increase access to formal and non-formal education through the use of ICT, 2) improve relevance and effectiveness of education through using ICT in teaching and learning, 3) focus on increasing skills of Cambodian students and 4) focus on increasing efficiency of school management as well as efficiency within MoEYS. The plan fell short in committing the required resources to achieve these ambitious objectives (Richardson et al., 2015, p. 162) and could be seen as a good starting point for improving the ICT competence, rather than building the foundation for a competitive outsourcing business.

Several initiatives with vendors and foreign governments also support ICT education. One example is a 2018 joint venture human development program involving MoEYS, the Ministry of Posts and Telecommunications, Cambodia International Education Support Foundation, and the Japanese government to strengthen the quality of instruction and professionalism in Cambodia's ICT sector. This four-year program incorporates practical ICT training including in high schools, promotion of ICT education in rural areas and ICT job creation (Kimsey, 2018).

A common factor among successful outsourcing countries is the collaboration between the governments and the industry, often manifested in strong associations such as the IT & Business Process Association Philippines (IBPAP) and the Bangladesh Association of Software and Information Services (BASIS). Bangladesh has taken particular steps to establish itself as a major outsourcing location (KPMG, 2012), also focusing on freelance outsourcing. Myanmar is another example of where the government has taken measures to improve the IT sector. The Myanmar Computer Federation, established in 1998 as some form of pseudo government forum through the 1996 "Computer Science Development Law" has been collaborating with the government to "contribute towards the emergence of a modern developed State through ICT" (Myanmar Computer Federation, 2013).

In April 2016, the ICT Federation of Cambodia (ICTF) was relaunched with the by-line "Empowering Cambodia's Digital Economy". Two years later, only 16 companies were shown in the membership directory. Its board members represent six major ICT sectors: software development, telecoms, Internet service providers, hardware, new media and services & solutions. While outsourcing is not specifically listed, some companies in the other categories can potentially engage in outsourcing. Independently managed by the private sector, ICTF has been recognised by the Ministry of Post and Telecommunication, thereby facilitating collaboration on strategic ICT initiatives and events. It is too early to know the extent to which the relaunch of the ICTF has stimulated and strengthened the outsourcing sector of Cambodia.

National Input Related to Outsourcing (People, Technology, Finance, R&D, Other)

People – People skills and availability is the one A.T. Kearney category in which Cambodia probably struggles the most. It will be necessary to break out of the vicious circle of insufficient number of people with adequate IT skills and the relatively small IT business sector, in order for Cambodia to increase its competitiveness as an outsourcing location. One factor that might facilitate this is the ambition of the AEC to transform ASEAN into a single market in a highly competitive economic region, integrated into the global economy (ASEAN, 2015). This could encourage top universities in the region to open campus sites in Cambodia (Sen, 2013). On the other hand, AEC makes it easier for skilled Cambodians to find employment in other ASEAN countries, further decreasing the competitiveness of the Cambodian IT industry. IT outsourcing represents only 8% of Cambodia's total service export. Of ASEAN members for which such data are available, it is the only country where such exports are below 20% (World Bank, 2016b). For the Philippines, the figure is as high as 70%.

Technology – There are encouraging signs for the improvement of the IT infrastructure in Cambodia, e.g. the launch of the Malaysia-Cambodia-Thailand (MCT) submarine cable, including its landing station in Cambodia in early 2017, as well the implementation of a Universal Service Obligation (USO) Fund the same year. Using the proceeds from a levy on telecommunication operators, this

fund is designed to finance extension of telecommunication infrastructure in rural areas. Cambodia may get its own communications satellite, "Techo 1", if a 2018 framework agreement between the local conglomerate Royal Group and China Great Wall Industry Corporation, to conduct feasibility studies, progresses to the next stage. Implementation of additional improvements outlined in the ICT Masterplan (KOICA, 2014) would also benefit the IT business, and hence the country's potential as an IT outsourcing location.

Finance –The private sector has made considerable investments in ICT, as evidenced, e.g. by the many mobile carriers operating in the country. The extent to which investment will be affected by new laws and stricter enforcement announced in 2016 is uncertain. Foreign investment through NGOs, such as the establishment of DDD, has decreased (Khieng, 2014) and it is unlikely that there will be much financial support from NGOs to support the expansion of the outsourcing sector with the increasing restrictions placed on the NGO sector (ICNL, 2018).

R&D – While awareness of the importance of R&D for the sector appeared to be low when the Cambodia ICT Masterplan 2010 was developed, this would mainly affect software exports, but is less relevant for the simpler outsourcing tasks. However, the construction of the ICT Innovation Center, commenced in early 2018 and funded by the national R&D Fund is an indication of the government's realisation of the importance of innovation and R&D (Chan, 2018). One way in which Cambodia could increase its competitiveness is by selecting one or more particular niches for its outsourcing initiatives, e.g. one or a few particular programming languages and become recognised for this expertise.

National Software Industry (Concentration, Clusters, Competition, Collaboration)

One potential advantage that could increase competitiveness is that most of the IT industry is located in one city, Phnom Penh. This means that even if the overall infrastructure quality across the country is inadequate for this sector, high quality infrastructure in Phnom Penh would be sufficient for building a competitive outsourcing sector. Being comparatively small compared to the Asian mega-cities, might have some advantages, as it makes it easier to travel around in the city, which enhances the opportunities to collaborate. As the sector grows, clusters could be established in other geographic areas of the country to spread employment opportunities.

While there is no information on the current level of collaboration between IT-companies in Cambodia compared with other countries, the relatively small size of this sector might be an advantage for such collaboration, as owners and employees are more likely to know each other, than in a country with a larger population and more dispersed IT sector.

Global Demand

According to Flinders (2016), the global demand for IT-outsourcing tends to remain high, even when there is a downturn in the global economy due to pressure on companies to cut costs, encouraging them to look for cheaper outsourcing locations. Downturns might also have the opposite effect as appears to have been the case in the US, which has seen IT jobs brought back from outsourcing destinations (Reshoring Initiative, 2016).

International Linkages

In order to successfully export IT-services and to attract outsourcing customers, it is important to have strong connections in countries with high demand for such services. The most successful IT export nations, e.g. India, tend to have a large number of IT specialists working in IT customer countries, e.g. in the US (Heeks & Nicholson, 2004). The same applies for the Philippines, which for decades has encouraged its citizens to work abroad, from where they maintain strong relations to their home country and can help companies there. Cambodia historically had stronger connections to France, which, compared to the US, buys less global IT services (Information Services Group, 2016). France also has strong connections to former colonies in Africa, making them tough competitors for Cambodia, which lacks strong connections to other buyer countries. During the Khmer Rouge genocide, most of

the educated population was killed, and only a small number managed to escape abroad. Some of those and their descendants, together with students returning from overseas studies continue to bring skills and experience to Cambodia, as well as bonds with potential outsourcing customers (Wijers, 2013).

Other international connections that could be exploited for this purpose are the many international NGOs, their employees and volunteers with links to Cambodia and may wish to retain these after returning to their home countries. In 2012, more than 50,000 people were employed by NGOs across the country (Khieng, 2014). NGOs have traditionally been actively involved with education. As there is increasing emphasis on IT education, cooperation between IT outsourcing companies and IT education institutions would be beneficial for both parties, and could help strengthen the competitiveness of IT outsourcing vendors in Cambodia.

Chance

The main factor in the Porter model not included in the Heeks & Nicholson model or the A.T. Kearney frameworks is chance, defined as "unexpected events that just happen" (Javalgi, Benoy, & Gross, 2013, p. 481). Governments have a critical role to play in this area, particularly with respect to negative chance, such as disasters, and can support this fledging industry with improving business continuity and disaster management skills and processes.

Chance might happen at different levels, and some are more challenging to mitigate or adapt to than others. Porter mentioned "political decisions by foreign governments" (Porter, 1990, p. 124). The 2016 elections in both the US and the Philippines are two relevant examples. Should the US increase the back sourcing of IT-related jobs, this would significantly impact the whole global software sector. As a major outsourcing destination in the region, the competitiveness of the sector in the Philippines may affect Cambodia, but it is still unclear whether and how the election results have impacted this sector.

While innovation and entrepreneurship are two examples of chance, the extent to which these occur is often a function of government policies and support and the Cambodian government has indicated its intention to prioritise the enhancement of R&D capability, e.g. in Cambodia's Industry Development Policy, 2015-2025 (RGC, 2015). A concrete example is the construction of the new ICT Innovation Centre in Phnom Penh, starting in 2018, signals a willingness by the Cambodian government to address gaps between capabilities of students and what is required to pursue R&D, innovation and the realisation of an entrepreneurial startup culture. In the meantime, the private sector is also encouraging innovation, as illustrated by the SmartStart initiative by the mobile operator SmartAxiata, the objective of which is to help young Cambodians launch their own start-ups through app competitions. Students from different universities in Cambodia were among the top teams in the 2018 competition. These and other recent initiatives pave the way for Cambodia to become not only an outsourcing location, but also a knowledge-based economy more generally, as envisaged in its IDP.

CONCLUSION

Our findings and the discussion give a mixed view of Cambodia's competitiveness as an ITO destination. The recommendations in this section are designed to address the factors for which Cambodia is lagging its competitors, as identified in this research. The lack of skilled people is a challenge. However, as evidenced by the small outsourcing sector, this challenge has been overcome in a small scale, but this is far from an indication of a competitive sector. Potential customers might be found among organisations and companies with previous connections to Cambodia, if they are confident they can receive good service. The many young Cambodians studying IT abroad should be encouraged to establish connections with industry in the countries of study with a view to future collaboration in the IT outsourcing sector. There are several ways in which such connections could be established, e.g. seeking work practice in that specific sector in the country of study and maintaining

relationships with fellow students doing the same course, particularly those who intend to seek employment in the ITO sector.

By working together with the government, the ITO sector, e.g. through ICTF, may be able to influence the legislative and regulatory environment to become more conducive to attracting ITO businesses. The quality of the education system must improve and the number of graduates with relevant IT-skills has to increase for Cambodia to become competitive in the global IT-industry. Subject to financial viability, outsourcers could invest in the appropriate training initiatives. Although governments are often not good at "picking winners", a combined effort by the government, customers and vendors to identify particular segments in the ITO sector on which to concentrate, might be a good way to proceed. One segment where the government has significant influence is of course the public sector and, subject to AEC regulations, the Cambodian government could stipulate a certain level of local participation in outsourcing its own IT contracts. There might also be organic growth in this sector from existing outsourcers and individual freelance IT outsourcers growing their operations into formal businesses. The government should explore how this can be encouraged.

Limitations and Further Research

This initial research into the ITO sector in Cambodia is informed by secondary data. In order to be more useful for the government, customers, vendors and the IT research community, a study of this nature should be complemented with primary data for a set of empirically testable propositions informed by further theory development, derived from interviews with stakeholders. In particular, there is a need to get input from companies in the IT-industry in Cambodia, government officials as well as ITO clients outside Cambodia. Considering the sector from their perspectives is likely to give deeper insights into opportunities and challenges and more importantly, result in additional useful recommendations for stimulating the ITO sector in Cambodia.

Interviews with existing and potential customers are also necessary to understand Cambodia's competitive advantages and weaknesses. A study on the benefits to Cambodia of becoming more competitive in this sector in terms of economic value (exports and import substitution) as well as employment would also be necessary to justify government investment in the sector.

Another way of expanding this research to make it more useful both for theory development and practice would be to model the indicators in Appendix A against success in the ITO sector in different countries. This could build on metrics used in other research to identify the most critical factors. The country being studied could then be compared with other countries in the region, in this case members of ASEAN, as well as with more developed countries, e.g. those in G-8, G-20 and/or OECD. The resulting model would indicate in which areas a country should focus to improve its ITO potential.

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ENDNOTES

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APPENDIX A – COMPARING CAMBODIA WITH THE OTHER ASEAN NATIONS

Table 1. Financial attractiveness

	Cambodia	Brunei	Indonesia	Laos	Malaysia	Myanmar	Philippines	Singapore	Thailand	Vietnam	Total ranked
Fixed broadband price as % of GNI p.c. 1)	129	61	113	126	70	N/A	116	3	98	66	165
Mobile broadband prices, prepaid computer based 1 GB price as % of GNI p.c. 1)	84	10	42	98	48	N/A	73	N/A	65	N/A	142
Corruption perception index 2)	156	N/A	107	145	50	156	85	7	85	119	174
Total primary energy supply / GDP 3)	0.15	0.12	0.10		0.15	0.17	0.08	0.07	0.16	0.15	

1) (ITU, 2014), 2) (Transparency International, 2015), 3) (International Energy Agency, 2015)

Table 2. People skills and availability

	Cambodia	Brunei	Indonesia	Laos	Malaysia	Myanmar	Philippines	Singapore	Thailand	Vietnam	Total ranked
Score % on TOEFL test 1)	69	N/A	84	64	89	78	89	98	74	79	

1) (ETS, 2015)

Table 3. Business environment

	Cambodia	Brunei	Indonesia	Laos	Malaysia	Myanmar	Philippines	Singapore	Thailand	Vietnam	Total ranked
Starting a business 1)	184	179	155	154	13	189	161	6	75	125	189
Dealing with construction permits 1)	183	53	153	107	28	130	124	2	6	22	189
Getting electricity 1)	139	42	78	128	27	121	16	11	12	135	189
Registering property 1)	100	162	117	77	75	151	108	24	28	33	189
Getting credit 1)	12	89	71	116	23	171	104	17	89	36	189
Protecting minority investments 1)	92	110	43	178	5	178	154	3	25	117	189
Paying taxes 1)	90	30	160	129	32	116	127	5	62	173	189
Trading across borders 1)	124	46	62	156	11	103	65	1	36	75	189
Enforcing contracts 1)	178	139	1727	99	29	185	124	1	25	47	189
Resolving insolvency 1)	84	88	75	189	36	160	50	19	45	104	189
Freedom of the press 2)	154	166	97	183	142	161	86	148	166	186	199
ICT service export (% of service export) 3)	8		30		23	20	70	27	18		

1) (World Bank Group, 2014) 2) (Freedom House, 2015) 3) (World Bank, 2016)

Eskelund is a doctoral researcher at the University of Manchester, UK and a senior adviser at leading Norwegian sourcing advisory company Infocom Group. For more than 20 years he has worked in the global outsourcing industry, where his focus is on sourcing strategies and complex projects across multiple countries and continents. His academic research is primarily focused on how technology can help disadvantaged people, and in the juncture of impact sourcing, ICT4D and digital inclusion/exclusion.

Following a career spanning over 30 years in the information and communication (ICT) sector, mainly in Australia, working for the incumbent telecommunications operator Telstra, and participating in the establishment of a new carrier, Uecomm, Helena Grunfeld combined her interests in ICT and development and completed her PhD in ICT4D in 2011. For her thesis, she developed a framework for understanding how ICT can contribute to development. Fieldwork for the thesis was done in Cambodia. She authored and co-authored several papers in this field of study during and after completing her PhD and is now a Research Associate with Victoria University, Melbourne, Australia.

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