

**SCOPING STUDY ON AVAILABILITY AND USE OF INTELLECTUAL PROPERTY TOOLS  
TO PROTECT MOBILE APPLICATIONS IN THE THREE BENEFICIARY COUNTRIES  
NAMELY, KENYA, TRINIDAD AND TOBAGO AND THE PHILIPPINES<sup>1</sup>**

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## Table of Abbreviations

ACA	Anti-Counterfeit Authority
ARIPO	African Regional Intellectual Property Office
BICSI	Building Industry Consulting Service International
CARIRI	Caribbean Industrial Research Institute
CED	Centre for Enterprise Development
CIPIT	Centre for Intellectual Property and Information Technology
CMIP	Caribbean Mobile Innovation Project
EFG	Enterprise Finance Guarantee
EPC	European Patent Convention
GDP	Gross Domestic Produce
GUI	Graphical user interfaces
ICT	Information and communication technologies
IoT	Internet of Things
IP	Intellectual property
IPAS	Intellectual Property Administration System
IPOPHL	Intellectual Property Office of the Philippines
IPR	Intellectual property rights
ITU	International Telecommunications Union
KECOBO	Kenyan Copyright Board
KIPI	Kenyan Industrial Property Institute
MoU	Memorandum of Understanding
MSME	Micro- small and medium-sized enterprises
NCIPR	National Committee on Intellectual Property Rights
NIB	National Insurance Board
NIHERST	National Institute of Higher Education Research Science and Technology
PCT	Patent Cooperation Treaty
PPSA	Personal Property Security Act
SME	Small and medium-sized enterprises
TPM	Technological protection measures
TRIPS	Trade-Related Aspects of Intellectual Property
TTPS	Trinidad and Tobago Police Service
UTT	University of Trinidad and Tobago
UWI	University of the West Indies
VC	Venture capital

## 1. Size and characteristics of the mobile application sector in the three beneficiary countries

*The survey was answered by six respondents, including the Kenyan Industrial Property Institute (KIPI), the Kenyan Copyright Board (KECOBO), and representatives from academia, the software industry and legal services.*

Mobile applications are software applications (apps) developed for use on mobile devices such as smartphones and tablets. Once developed, a mobile app is usually sold via an application distribution platform, also known as app stores. Mobile app developers receive revenues through direct purchase of the app, subscriptions, in-app ads and in-app purchases.

Owing to the exponential smartphone penetration worldwide, increasing smartphone power, improved high-speed broadband and wireless access through mobile devices, further growth of the mobile app industry is inevitable.<sup>3</sup> As of the second quarter of 2019, the four leading app stores accounted for 5.568 million apps,<sup>4</sup> as compared to approximately 3 million in 2018. The mobile app revenue in 2019 has been forecasted to be 462 billion US dollars, with an estimated rise of more than 50% by 2023.<sup>5</sup>

The most downloaded non-gaming app publishers in the Google Play store in January 2018 were Facebook, WhatsApp and Google, with Facebook ranking first with over 130 million monthly app downloads worldwide. Statista reports that mobile games are also set to generate a large volume of app downloads to mobile devices, with all of the leading gaming app publishers in the Google Play store currently having double-digit download figures, without any sign of slowing down.<sup>6</sup>

Mobile apps can thus be regarded as one of the main new sources of innovation in this context, having improved the way people communicate, access information and obtain services.<sup>7</sup> The continuing convergence of communications, software, media and digitization not only spur the growth of the app economy, they are its foundation. This means, however, that traditional borderlines between these industries are considerably blurred.<sup>8</sup>

Despite its inexorable success as a new subsector of the software industry, and more generally the information and communication technologies (ICT) sector, measuring the size of the mobile

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<sup>3</sup> OECD (2013-12-16), "The App Economy", OECD Digital Economy Papers, No. 230, OECD Publishing, Paris, p. 5. [Hereinafter: OECD 'The App Economy' 2013] Available at <http://dx.doi.org/10.1787/5k3tftlv95k-en>.

<sup>4</sup> Statista, 'Number of Apps available in leading App Stores', available at <https://www.statista.com/statistics/276623/number-of-apps-available-in-leading-app-stores/>.

<sup>5</sup> The survey was undertaken by Statista from 2014-2018 and portrays numbers of mobile app in advertising and paid app revenue. Available at <https://www.statista.com/statistics/271644/worldwide-free-and-paid-mobile-app-store-downloads/>.

<sup>6</sup> Statista, 'Worldwide Free and Paid Mobile App Store Downloads', available at

<https://www.statista.com/statistics/271644/worldwide-free-and-paid-mobile-app-store-downloads/>.

<sup>7</sup> OECD, 'The App Economy', 2013, p. 5.

<sup>8</sup> Ibid.

app economy remains challenging. This is because mobile apps emerged within and across multiple industries, such as telecommunications, software and computers. Furthermore, its development spans other industries such as entertainment, accommodation and finance.<sup>9</sup>

However, intergovernmental organizations and policymakers have adopted the definition of the mobile app sector as defined by the International Telecommunications Union (ITU) in 2016 as “being the sum of all activity, products and services, required to deliver app functionality to end consumers.”<sup>10</sup>

Studies show that the digital economy, and more particularly the mobile economy, is growing faster than the overall economy, especially in developing countries. While ICTs as a whole account for around 17% of Gross Domestic Produce (GDP) growth in developing countries, the “Global South”<sup>11</sup> shows the fastest growth of e-commerce and an annual growth of the Internet economy of 15-25%.<sup>12</sup>

The dynamic growth of mobile communications technology is simultaneously creating opportunities for more economic growth beyond the mobile app sector, including social empowerment and grass roots innovation in developing countries.<sup>13</sup> Mobile apps may make significant contribution to local development, such as agricultural and rural development, by providing access to information, markets and services.

In emerging economies, formal small and medium-sized enterprises (SMEs)<sup>14</sup> contribute up to 60% of total employment and up to 40% of GDP. They are often aptly described as “engines of growth and catalysts for socioeconomic transformation” and play a crucial role in the development and growth of a myriad of industries and economies.

Particularly (but not only) in developing countries, SMEs are, *inter alia*, major contributors to the output of goods and services, employment creation and income generation, and the

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<sup>9</sup> Ibid.;

S. Molloy & S. W. Minehane *et al.*, International Telecommunication Union Global Symposium of Regulators 2016 discussion paper, ‘The Race for Scale: Market Power, Regulation and the App Economy’, p. 7. Available at [www.itu.int/en/ITU-D/Conferences/GSR/Documents/ITU\\_AppEconomy\\_GSR16.pdf](http://www.itu.int/en/ITU-D/Conferences/GSR/Documents/ITU_AppEconomy_GSR16.pdf).

<sup>10</sup> Ibid.

<sup>11</sup> ‘Global South’ is an emerging term used by, *inter alia*, the World Bank and the United Nations to refer to countries located in Asia, Africa, Latin America, and the Caribbean that are considered to be developing economies.

<sup>12</sup> Republic of Kenya, ‘Digital Economy Blueprint – Powering Kenya’s Transformation’, (2019), available at <http://www.ict.go.ke/wp-content/uploads/2019/05/Kenya-Digital-Economy-2019.pdf>.

<sup>13</sup> C. Zhenwei Qiang & S. Chew Kuek, *et al.* ‘Mobile Applications for Agriculture and Rural Development’, ICT Sector Unit World Bank, 2012, p. i, available at <https://openknowledge.worldbank.org/bitstream/handle/10986/21892/Mobile0applica0nd0rural0development.pdf?sequence=1&isAllowed=y>.

<sup>14</sup> The terminology of ‘formal’ SMEs refers to those businesses that are formally registered with a country’s company registered, as opposed to SMEs that decide not to register officially, which are called ‘informal’ SMEs. To that effect, see <https://blogs.worldbank.org/psd/a-universal-definition-of-small-enterprise-a-procrustean-bed-for-smes> and <https://www.worldbank.org/en/topic/sme/finance>.

development of a country's entrepreneurial basis.<sup>15</sup> In essence, SMEs are a vehicle for the achievement of national development objectives.<sup>16</sup>

Although successful SMEs are usually associated with innovation and technological upgrading, in developing countries they often face impediments, such as a lack of finance and access, lack of business skills and often the lack of operating space and adequate equipment.<sup>17</sup> In particular, lack of access to finance is a key constraint to SME growth, which may result in their stagnation.<sup>18</sup>

The institution of appropriate policy measures and legal regulation could support SME development and thereby encourage innovation and socioeconomic growth.

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<sup>15</sup> G. G. Fiseha & A. A. Oyelana, 'An Assessment of the Roles of Small and Medium Enterprises (SMEs) in the Local Economic Development (LED) in South Africa', *Journal of Economics*, Vol. 6(3), (2015), pp. 280-290 [Hereinafter: G. G. Fiseha & A. A. Oyelana].

<sup>16</sup> 'The Impact of SMEs on the Economy of Trinidad and Tobago', Bar Business Magazine Trinidad and Tobago, May 16<sup>th</sup> 2019, available at <http://barbusinessstt.com/the-impact-of-smes-on-the-economy-of-trinidad-tobago/>.

<sup>17</sup> G. G. Fiseha & A. A. Oyelana, p. 281.

<sup>18</sup> 'Small and Medium Enterprises (SMEs) Finance – Improving SMEs' Access to Finance and Finding Innovative Solutions to unlock Sources of Capital', World Bank, available at <https://www.worldbank.org/en/topic/smefinance>.



## 1.1 Characteristics of the mobile application sector in Kenya

Kenya, and in particular Nairobi, has proven to be a focal point for innovation and has not without reason earned the epithet “Silicon Savannah”<sup>19</sup>. Especially in the mobile app sector, Kenyan developers have produced several mobile apps with a unique focus on solving regional development issues, instead of simply repurposing foreign apps for a different audience. For instance, M-Pesa is an excellent example of the crucial role that mobile apps can play in socioeconomic development in emerging economies. M-Pesa is a mobile money transfer service that allows its users to deposit, withdraw, transfer money and purchase products and services through their mobile devices. In a strongly cash-based society like Kenya, the service has enabled millions of people to access a formal financial system<sup>20</sup> without the need for a bank account. Owing to the strong rural/urban divide, there has been restricted access to formal banking, with the majority of people either using very costly informal banking services or being completely excluded from the banking system. Hence, M-Pesa directly responded to the local needs of the population. Other mobile apps that were mentioned by the survey respondents as having contributed to development and growth are M-Farm<sup>21</sup> in the agricultural sector and M-Jali.<sup>22</sup>

The development of the mobile app sector will benefit from appropriate policy strategies and action plans. With its “Vision 2030” policy initiative,<sup>23</sup> the Kenyan Government aims to improve key elements that will help the Kenyan mobile app sector to grow. To that effect, the ICT sector, to which the mobile app sector belongs, will be strengthened through a new and improved policy and legal framework. This includes the review of the Telecommunications Sector Policy Framework, and the enactment of an ICT Bill, as well as the review of existing legislation that

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<sup>19</sup> The term’s origins are unclear, but is today commonly used to refer to the technology system in Kenya. A variety of media outlets and academia use the term. See, e.g., L. Mallonee, ‘The Techies Turning Kenya Into a Silicon Savannah’, WIRED, December 12<sup>th</sup> 2018, available here <https://www.wired.com/story/kenya-silicon-savannah-photo-gallery/>.

D. Smith, ‘Kenya building a digital future in Africa’s Silicon Savannah’, The Guardian, October 30<sup>th</sup> 2012, available at <https://www.theguardian.com/world/2012/oct/30/kenya-silicon-savannah-digital-technology>.

J. U. Bramann, ‘The Emergence of Kenya’s Silicon Savannah – Building ICT Entrepreneurship Ecosystems in Resource-Scarce Contexts and Mobile Technology’s Potential to Tackle Unemployment’, Dissertation for the degree of Doctor of Economics, Leipzig Graduate School of Management, (2016), available at <http://slub.qucosa.de/api/qucosa%3A15821/attachment/ATT-0/>.

<sup>20</sup> A financial system authorised by the Central Bank of a country, and executed through commercial and development banks, savings and loan companies. Informal finance systems, conversely, are not licenced by the central bank and operate through moneylenders, for example.

<sup>21</sup> M-Farm is a mobile app that seeks to provide farmers with price transparency on the market and to connect with buyers directly, by omitting intermediaries.

<sup>22</sup> M-Jali is a solution aimed at improving accuracy, timeliness and completeness of reporting for Community Health Units. It incorporates a mobile application for capturing data from the household level and transmitting it online to a web-based database.

<sup>23</sup> The Kenyan Government aims to transform Kenya into a newly industrialising, middle-income country providing a high quality of life to all its citizens in a clean and secure environment by 2030. For further information, see <https://vision2030.go.ke/about-vision-2030/>.

will enhance the sector's performance, such as the Copyright Act and the Science and Technology Act.

Furthermore, Vision 2030 aims to upgrade the ICT capacity by setting up ICT Incubation Hubs in the 47 Counties of Kenya in order to, inter alia, provide young people<sup>24</sup> with the necessary training and work experience to develop market-ready ICT services and products. Moreover, in order to encourage the further development of the ICT industry, Kenya plans to create Konza Technology City, a science park that aims to position Kenya as the ICT hub in Africa.<sup>25</sup> This will support mobile app developers with access to facilities and skill training for entrepreneurs in e-commerce.

### **1.1.1 Market size and volume; business shares**

According to the Kenya National Economic Survey report of 2019, the value of the ICT sector expanded by 12.9% from 345.6 billion Kenyan shillings in 2017 to 390.2 billion shillings in 2018, driven by the growth of the digital economy.<sup>26</sup> The ICT sector currently contributes approximately 1.6% to GDP.<sup>27</sup>

Measuring the mobile app sector remains nonetheless challenging, given the lack of information and data on its exact scope. This includes a lack of information about the contribution of the mobile app sector to the national economy in terms of revenue and GDP, the demographics of mobile app developers and the market share and economic contribution of local SMEs and international businesses.

Mobile apps, especially social media apps like WhatsApp, Facebook and Twitter, contributed to the high smartphone proliferation in Kenya.<sup>28</sup> Adding to that is an increasing growth in network coverage, with a bigger proliferation of 4G now reaching more than a third of the population.<sup>29</sup>

The most popular apps that could be identified through the survey information<sup>30</sup> were finance, social media and communications apps. These include locally developed mobile apps, such

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<sup>24</sup> Kenya has a very young population, with almost three-quarters of the population being under the age of 30, which is why investment, in terms of education, in young people is considered so important.

<sup>25</sup> Kenya Vision 2030, 'Foundations for the Pillars', available at <http://vision2030.go.ke/enablers-and-macros/#80>.

<sup>26</sup> Republic of Kenya, 'Digital Economy Blueprint – Powering Kenya's Transformation', 2019, available at <http://www.ict.go.ke/wp-content/uploads/2019/05/Kenya-Digital-Economy-2019.pdf>.

<sup>27</sup> P. Masese & L. Makena, 'Kenya Mobile Report 2019', available at <https://www.jumia.co.ke/mobile-report/>  
K. Namunwa, 'Kenya leads Africa in Smartphone usage' in Business Today, March 11<sup>th</sup>, 2019, available at <https://businesstoday.co.ke/kenya-leads-africa-smartphone-usage/>  
[Hereinafter: K. Namunwa, 'Kenya leads Africa in Smartphone usage'].

<sup>28</sup> Ibid.

<sup>29</sup> Ibid.

The Kenyan government provides a statistical overview of the ICT sector in 2018 and 2019 on: <https://ca.go.ke/wp-content/uploads/2018/12/Sector-Statistics-Report-Q1-2018-2019.pdf>.

<sup>30</sup> Unless explicitly mentioned otherwise, the terms 'survey information', 'survey responses', and 'survey respondents' is used in this work to refer to the survey that has been conducted for this study.

as Tala<sup>31</sup> and internationally developed ones such as Facebook, WhatsApp and Facebook Messenger. These were followed by mobile apps on transport, agriculture, health, education and information. As mobile app development is highly market-driven, these are also the areas that are of particular interest to SMEs that develop mobile apps, as corroborated by some of the survey respondents. Mobile apps with vernacular content are also rising in popularity, as the number of mobile apps in Swahili increased from 5,000 in 2014 to almost 30,000 in 2017.<sup>32</sup>

Furthermore, although home-grown apps are often intended for the local market to address local needs, they also expand internationally. M-Pesa, for example, is currently available in 10 countries<sup>33</sup> and Tala operates in four other countries in addition to Kenya.<sup>34</sup>

In terms of mobile app developing, there is a trend towards hybrid apps as opposed to native ones. This is not surprising since iOS is gaining more popularity on the Kenyan market, making it more appealing for apps to function on various operating systems.

As for the main participants in the local application sector, no uniform view was obtained. The survey responses were very different. Nonetheless, SMEs and start-ups play a pivotal role in the development of the app economy. In this regard it is important to consider the role of various stakeholders in the technological ecosystem in Kenya. Along with entrepreneurs, start-ups and universities, a growing number of venture investors play a prominent role in Kenya's technology and startup ecosystem, owing to the financial support they provide for young businesses.<sup>35</sup>

The survey respondents noticed growth in the past 10 years. The growth has been described as "very progressive", "exponential and still growing", with "SMEs contributing immensely to such growth."

Although SMEs play a pivotal role in contributing to the national economy, there is a lack of information concerning the market entry costs they incur. Similarly, no information was uncovered as to the average costs SMEs incur in relation to the launch of mobile applications. Notably, however, within its Vision 2030, the Ministry of Information and Communication Technology implemented the Madaraka PC Project to assemble a low-cost PC for the local market. The project is a collaboration between the Ministry of ICT and ICT incubators at various local universities and seeks to provide an incubation environment for students, while also

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<sup>31</sup> Tala is a mobile lending app that provides access to credit to people living in Kenya.

<sup>32</sup> K. Namunwa, 'Kenya leads Africa in Smartphone usage'.

<sup>33</sup> These include Albania, the Democratic Republic of Congo, Egypt, Ghana, India, Kenya, Lesotho, Mozambique, Romania, and Tanzania.

<sup>34</sup> These include India, Mexico, the Philippines, and Tanzania.

<sup>35</sup> R. Jung & F. Feferman, 'The Development of the Kenyan Mobile Ecosystem', p. 7. Available at [https://files.ihub.co.ke/ihubresearch/jb\\_TheDevelopmentOfTheKenyanMobileEcosystemVFINALpdf2014-11-17-11-17-31.pdf](https://files.ihub.co.ke/ihubresearch/jb_TheDevelopmentOfTheKenyanMobileEcosystemVFINALpdf2014-11-17-11-17-31.pdf) [Hereinafter R. Jung & F. Feferman].

providing access to affordable and robust PCs. Access and affordability of quality computers may help start-ups to operate within their financial resources and provide them with the necessary tools for the development of, among other things, mobile applications.

When it comes to funding, survey respondents indicated that market entrant SMEs were mostly self-funded, followed by investments from business angels and equity firms. An interesting trend in this regard is the role of holding companies<sup>36</sup> in Kenya. They are typically started by expatriates with supporting capital from their home country in Europe or North America, using their business experience and technical skills to start companies. Holding companies are often well-funded and operate several start-ups at once.<sup>37</sup>

### **1.1.2 Business and intellectual property**

As will be explained in detail in Chapter 2, intellectual property (IP) is a key factor for the growth and development of the mobile app sector. The survey and desk research showed that there is a lack of data concerning the use of IP by businesses in the mobile app sector. Furthermore, no information could be obtained as to how many intellectual property rights (IPRs) are owned by SMEs, nor was any information available concerning the registration of patents, designs, utility models, trademarks and industrial designs, or the amount of copyright ownership in the last 10 years, in relation to mobile applications and in the software sector in general.

### **1.1.3 Education and research**

Education and research are important aspects in improving the mobile app economy, as they provide for skills, knowledge and marketplace awareness.

Some of the survey respondents stated that the most common mobile app developer profile is self-trained, followed by developers trained by other institutions, such as local development workshops, or through higher education. The respondents unanimously stated that training by foreign companies is the least common type of app developer profile.

Mobile app development also forms part of the higher education syllabus, usually as a part of an IT degree, such as the Master of Science in Mobile Applications and Certified Mobile Technologist program at Strathmore University. Moringa School is a multidisciplinary coding school that offers training on mobile app development as part of its software development program. Innovation hubs, such as @iLabAfrica<sup>38</sup> and iHub<sup>39</sup> also provide for special training in mobile app development and support entrepreneurs with private and community facilities.

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<sup>36</sup> A holding company usually does not produce goods or services itself, but owns other companies' outstanding stock. This model is often used to own shares of other companies to form a corporate group, or to gain the majority of voting rights in it. Their roles are, however, mostly connected to investment and board policy decisions.

<sup>37</sup> R. Jung & F. Feferman, p. 8.

<sup>38</sup> @iLabAfrica, Certified Mobile Technology Programme, available at <http://www.ilabafrica.ac.ke/index.php/android/>.

<sup>39</sup> iHub, 'Join Our Community', available at <https://ihub.co.ke/membership>.

The Google Development Group Nairobi<sup>40</sup> organizes annual meet-ups and other events to explore the latest developments in Google technology, such as cloud, Internet of Things (IoT) and the web.

Furthermore, under the banner of Vision 2030, the Ministry of Public Service, Gender and Youth Affairs created the Youth Enterprise and Development Fund to provide financial and business development support services to enterprises owned by young people. However, KECOBO considered the procedure involved very bureaucratic and many SMEs ended up not getting the requisite help.

Some of the respondents stated that there is a need to raise awareness on IPRs in the mobile app sector and the software sector in general. To this effect, the Kenya National Commission for UNESCO holds workshops for the development of mobile applications on a regular basis, which also cover aspects of IPRs. Local ICT hubs, such as iHub, NaiLab, @iLabAfrica, Muva, Smartweb and Spacekenya, irregularly hold events on IP-related issues, and may provide for mentors trained in IP.

Closer collaboration between ICT hubs and IP institutes or research centers could be beneficial for raising awareness of IP issues in the mobile application sector.

## **1.2 Characteristics of the mobile application sector in Trinidad and Tobago**

*This part of the survey was answered by the IP Office of Trinidad and Tobago (TTIPO).*

Following its Vision 2030<sup>41</sup> policy initiative, one of Trinidad and Tobago's goals is to establish a successful ICT sector. This includes high-speed, affordable broadband connectivity owing to its widely recognized socioeconomic benefits and the development of a robust and reliable ICT infrastructure in order to, inter alia, facilitate the integration of ICT systems in education and business development, and the greater use of technology in homes.<sup>42</sup> Through Trinidad and Tobago's National ICT Plan ICT Blueprint 2018 – 2022, the aspiration is to achieve the following main targets by or before 2022:

“85% broadband access of the minimum download speed detailed within the Telecommunications Authority of Trinidad and Tobago's national broadband goals;

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<sup>40</sup> Google Development Groups Nairobi, official website, available at <https://www.meetup.com/de-DE/GDG-Nairobi/>.

<sup>41</sup> Vision 2030 is the Government of the Republic of Trinidad and Tobago's national development plan to transform Trinidad and Tobago into a developed country by sustaining growth and development and optimising the quality of life of all its citizens.

The Government of the Republic of Trinidad and Tobago, 'Vision 2030: The National Development Strategy of Trinidad and Tobago 2016-2030', available at <https://www.planning.gov.tt/sites/default/files/Vision%202030-%20The%20National%20Development%20Strategy%20of%20Trinidad%20and%20Tobago%202016-2030.pdf>.

<sup>42</sup>Ibid., p. 19.

5 high demand/volume, strategically important Government services as end-to-end eServices;  
five enterprise-wide applications operationalized to run routine functions of Government;

50% adoption of Government shared services;

50% adoption of shared infrastructure;

30,000 direct jobs created;

50,000 users participate in eForums moderated by Government;

No. 1 in the Caribbean on relevant increases in the World Economic Forum Network Readiness Index; and

No. 1 in the Caribbean on the ITU ICT Development Index.”<sup>43</sup>

Such an enhanced and modern ICT system is intended to support a resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation.<sup>44</sup> The proper functioning of the ICT system may support the software sector, including the mobile app sector.

The vision of Trinidad and Tobago’s National ICT Plan ICT Blueprint 2018-2022 (the Blueprint) is “ultimately to support the National Development Strategy 2016-2030, Vision 2030, which outlines the country’s aspiration to attain “first world nation status” by 2030. While supporting Vision 2030, the plan is also intended to meet the country’s anticipated social and economic needs. Converging these needs with the potential of ICT, five strategic thrusts are proposed to realize the national ICT Vision. They are:

1. improving connectivity;
2. increasing human capacity;
3. digital government;
4. fostering economic development; and
5. advancing the environment for societal benefit.”<sup>45</sup>

Additionally, “the new national ICT Strategy complements and serves as the digital enabler of the National Development Strategy, Vision 2030, which was adopted by the Government as the vision and framework for the country’s sustainable development, recognizing the

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<sup>43</sup> [http://mpac.gov.tt/sites/default/files/file\\_upload/publications/NICT%20Plan%202018-2022%20-%20August%202018.pdf](http://mpac.gov.tt/sites/default/files/file_upload/publications/NICT%20Plan%202018-2022%20-%20August%202018.pdf).

<sup>44</sup> Ibid.

<sup>45</sup> [http://mpac.gov.tt/sites/default/files/file\\_upload/publications/NICT%20Plan%202018-2022%20-%20August%202018.pdf](http://mpac.gov.tt/sites/default/files/file_upload/publications/NICT%20Plan%202018-2022%20-%20August%202018.pdf).

transformation required across all segments of society to face and surmount developmental challenges.”<sup>46</sup>

### 1.2.1 Market size and volume; and business shares

According to an article entitled, “*Trinidad and Tobago – Telecommunications*,” by export.gov, Trinidad and Tobago’s ICT sector is small, amounting to approximately 3.5% of GDP. This comprises primarily software development, web design, data processing, ICT training and software solutions.<sup>47</sup> Despite constituting a rather small fraction of the total GDP, the ICT sector’s contribution to the national economy has grown significantly since 2006 and is projected to make additional gains.<sup>48</sup> In this regard, according to the Blueprint, one of the macroeconomic ICT-related targets is an increase of 5% in the ICT sector’s contribution to GDP.<sup>49</sup>

The Blueprint states that since 2003, “Trinidad and Tobago has made progress in developing the national ICT landscape. Some areas of advancement include:

- The growth of the Telecommunications and Broadcasting Sector:

This is a dynamic sector which continues to grow at a fast pace. Competition created by liberalization has resulted in, inter alia:

1. an increase in the number of service providers;<sup>50</sup>
2. an increase in the quality and choice of services;
3. a reduction in prices; and
4. an increase in industry revenues from 3.3 billion Trinidad and Tobago dollars in 2006<sup>51</sup> to 5.6 billion Trinidad and Tobago dollars in 2016.<sup>52</sup>

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<sup>46</sup> [http://mpac.gov.tt/sites/default/files/file\\_upload/publications/NICT%20Plan%202018-2022%20-%20August%202018.pdf](http://mpac.gov.tt/sites/default/files/file_upload/publications/NICT%20Plan%202018-2022%20-%20August%202018.pdf).

<sup>47</sup> U.S. Department of Commerce International Trade Administration, ‘Trinidad and Tobago – Telecommunications’, July 20<sup>th</sup> 2019, available at <https://www.export.gov/article?id=Trinidad-and-Tobago-Telecommunications>.

<sup>48</sup> Ibid.

<sup>49</sup> [http://mpac.gov.tt/sites/default/files/file\\_upload/publications/NICT%20Plan%202018-2022%20-%20August%202018.pdf](http://mpac.gov.tt/sites/default/files/file_upload/publications/NICT%20Plan%202018-2022%20-%20August%202018.pdf).

<sup>50</sup> See table in Appendix: “ICT Market Environment in Trinidad and Tobago” cited in [http://mpac.gov.tt/sites/default/files/file\\_upload/publications/NICT%20Plan%202018-2022%20-%20August%202018.pdf](http://mpac.gov.tt/sites/default/files/file_upload/publications/NICT%20Plan%202018-2022%20-%20August%202018.pdf).

<sup>51</sup> The Telecommunications Authority of Trinidad and Tobago, Annual Market Report: Telecommunications and Broadcasting Sectors – 2006. Trinidad and Tobago, the Telecommunications Authority of Trinidad and Tobago, 2007. Page 7 cited in [http://mpac.gov.tt/sites/default/files/file\\_upload/publications/NICT%20Plan%202018-2022%20-%20August%202018.pdf](http://mpac.gov.tt/sites/default/files/file_upload/publications/NICT%20Plan%202018-2022%20-%20August%202018.pdf).

<sup>52</sup> The Telecommunications Authority of Trinidad and Tobago, Annual Market Report: Telecommunications and Broadcasting Sectors – 2016. Trinidad and Tobago, the Telecommunications Authority of Trinidad and Tobago, 2017. Page 12 cited in [http://mpac.gov.tt/sites/default/files/file\\_upload/publications/NICT%20Plan%202018-2022%20-%20August%202018.pdf](http://mpac.gov.tt/sites/default/files/file_upload/publications/NICT%20Plan%202018-2022%20-%20August%202018.pdf).

The sector is expected to continue to evolve to meet increasing demand.

- ICT availability/connectivity:

The country's telecommunication infrastructure has expanded significantly, as reflected in the growth in access networks, which provide fast connectivity while enabling greater reliability and reach of service delivery. In addition, ongoing investment plans to increase capacity are being implemented.<sup>53</sup> More robust and widespread deployment of infrastructure will support ubiquitous broadband connectivity for households and businesses and may allow the country to meet its networking needs.

According to the 2013 Digital Divide survey conducted by the Telecommunications Authority of Trinidad and Tobago, Trinidad and Tobago boasts a 140% mobile penetration rate. The high smartphone penetration may partially explain the high demand for the development of mobile apps that are tailored to the market conditions and lifestyle of Trinidadians and Tobagonians.

No information was uncovered as to the overall share and contribution of the mobile sector to the national economy in revenue and GDP terms. The national ICT Plan states that the aspiration is to achieve an increased target of 5% in the ICT sector's contribution to GDP.<sup>54</sup>

No information was uncovered as to the most popular distribution platforms, particular areas in which SMEs develop mobile applications, or as to the most popular types of mobile application. Since Android has the biggest mobile operating system market share worldwide with 76.08%,<sup>55</sup> it may be assumed that Android is the biggest distribution platform in Trinidad and Tobago.

According to SimilarWeb, the most popular apps from the Google Play store in Trinidad and Tobago are related to music, gaming and shopping.<sup>56</sup> No data was uncovered concerning the popularity of apps from the App Store.

With regard to locally developed apps, the TTIPO suggests that those apps are intended both for the global and local market. mFisheries, for example, was developed to meet the regional need of supporting small-scale fishermen with a tool that provides navigation assistance, price information, practical tips and an SOS emergency service. The app also provides for tracking

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<sup>53</sup> See Strategic Thrust 1, "S1: Enhancing Infrastructure" for details on the investment programmes. Cited in [http://mpac.gov.tt/sites/default/files/file\\_upload/publications/NICT%20Plan%202018-2022%20-%20August%202018.pdf](http://mpac.gov.tt/sites/default/files/file_upload/publications/NICT%20Plan%202018-2022%20-%20August%202018.pdf).

<sup>54</sup> [http://mpac.gov.tt/sites/default/files/file\\_upload/publications/NICT%20Plan%202018-2022%20-%20August%202018.pdf](http://mpac.gov.tt/sites/default/files/file_upload/publications/NICT%20Plan%202018-2022%20-%20August%202018.pdf).

<sup>55</sup> Statcounter GlobalStats, 'Mobile Operating System Market Share Worldwide', (2019), available at <https://gs.statcounter.com/os-market-share/mobile/worldwide>.

<sup>56</sup> Ibid.



features that support the coastguards and data for livelihood support that can be used by the government. Originally intended for small-scale fishers in rural areas, the app can be configured to match each country's territorial waters, such as country-specific SOS and tracking services. Through its practical application, mFisheries helped to improve the socioeconomic situation of fishers in rural areas.

Triniberry<sup>57</sup> is a mobile application developed in Trinidad and Tobago that is used to access information on movie show times using a CPRS-enabled smartphone. Additionally, trinidadweddings.com is the premier wedding planning website in Trinidad and Tobago and the number one resource for finding wedding vendors in the country. Apple and Android users can download the Trinidad Weddings app for free.<sup>58</sup>

Another example of a local mobile application contributing to socioeconomic growth is AgriNeTT. Initially, AgriNeTT was an e-agriculture project that focused on empowering the agriculture sector through the use of ICTs. The development of mobile apps under the project was intended to assist farmers and policymakers. Two major problems were initially recognized in developing and advancing agriculture using such technology. Firstly, there was a lack of data at the farm level and national level and, secondly, there was a lack of ICT tools for farm management. To address those needs, the AgriNeTT project developed several mobile apps for farmers as well as two Open Data repositories that collect up-to-date data on various aspects crucial for agriculture, including topographical and soil layers.<sup>59</sup> These hurdles were not specifically mentioned by the respondents from Trinidad and Tobago, but reference the situation globally.

Bringing an app to the market in the first place can be a challenge, particularly for SMEs and notwithstanding their importance to the innovation economy, they encounter a number of hurdles. These include access to finance, lack of economies of scale and quality standards, technical, management and leadership skill deficiencies, and access to pertinent business information.<sup>60</sup>

The TTIPO stated that in addition to the market conditions, legal and administrative considerations as well as the economic climate of a country influence SMEs when they are entering the market. Among them are the registration of the company, value added tax, employment and payment to staff, registration of IPRs and occupational safety and health.

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<sup>57</sup> <http://triniberry.com/d/>.

<sup>58</sup> available online at <http://www.guardian.co.tt/article-6.2.384031.6671f55060>.

<sup>59</sup> M. Bernard, 'In Trinidad, a regional model for how apps can help farmers', International Telecommunication Union News, February 7<sup>th</sup> 2017, available at <https://news.itu.int/in-trinidad-a-regional-model-for-how-apps-can-help-farmers/>.

<sup>60</sup> *Supra*, note 15.

No information was available regarding the costs SMEs incur on average in relation to the development and launch of mobile apps. Market entrant SMEs use a wide variety of funding mechanisms, such as self-funding, local investment and foreign investment.

### **1.2.2 Business and intellectual property**

In Trinidad and Tobago, SMEs utilize various types of IPRs, namely, trademarks. Search reports generated from the Intellectual Property Administration System (IPAS) reflected trademarks registered at the TTIPO in the last 10 years in Class 9 for software applications. The search revealed that the total number of registrations was 1,132 trademarks, of which 57 were local and 1,075 were international. Also, in 2016, approximately 29% of the trademarks applications were filed by local applicants, many of which are micro- small and medium-sized enterprises (MSMEs). Local MSMEs consume or distribute a considerable amount of IP but some of it may belong to other creators.

### **1.2.3 Education and research**

*The survey was answered by five respondents, including the TTIPO, the Building Industry Consulting Service International (BICSI), the National Insurance Board (NIB), the University of the West Indies (UWI) and the Caribbean Industrial Research Institute (CARIRI).*

Demographically, mobile app developers in Trinidad and Tobago vary widely in terms of age, gender and income.<sup>61</sup> The Caribbean Industrial Research Institute (CARIRI) recognized that there was a growing interest in becoming a mobile app developer, or developing ideas for mobile apps.<sup>62</sup> The TTIPO suggested that present trends showed an increasing number of people seeking both formal and informal training in app development, as well as participating in proof-of-concept competitions with mobile app ideas, prototypes or fully built solutions. Mobile app developers are also at varying levels of experience, expertise and activity. Some are self-taught developers, while others have received formal training.<sup>63</sup>

According to an article entitled “The Local Mobile App Industry” published by CARIRI, “several educational institutions in Trinidad and Tobago offer mobile app development training at certificate, diploma, Bachelor’s or Master’s degree level.”<sup>64</sup> The article indicates, indicating that that there are over 400 ICT graduates each year from local universities.

The article further indicates that in all cases where the training is offered at tertiary level, these courses are offered as individual modules, or even as part of an ICT module, rather than as a

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<sup>61</sup> Caribbean Industrial Research Institute, ‘The Local Mobile App Industry’, available at [http://www.cariri.com/index.php?option=com\\_content&view=article&id=240:mobile-app&catid=83&Itemid=646](http://www.cariri.com/index.php?option=com_content&view=article&id=240:mobile-app&catid=83&Itemid=646) [Hereinafter: CARIRI, ‘The Local Mobile App Industry’].

<sup>62</sup> Ibid.

<sup>63</sup> Ibid.

<sup>64</sup> [http://www.cariri.com/index.php?option=com\\_content&view=article&id=240:mobile-app&catid=83&Itemid=646](http://www.cariri.com/index.php?option=com_content&view=article&id=240:mobile-app&catid=83&Itemid=646)

specialism or main area of focus.<sup>65</sup> The School of Business and Computer Science, for example, offers a one-time course in Application Development for Mobile Devices, and the UWI offers an MSc in computer science with a specialization in mobile computing. UWI also offers a BSc in Software Engineering. Further, the CTS College of Business and Computer Science offers a course on mobile application development.

In honor of International Girls in ICT Day, the National Institute of Higher Education Research Science and Technology (NIHERST) hosted 108 female students for a series of ICT workshops and a hackathon from May 2-4, 2017 at the NIHERST National Science Centre. Focusing on such topics as robotics, 3D printing, mobile app development and computer construction, the sessions exposed the students to concepts such as coding and programming, and their practical applications in a range of fields. The students learned skills such as writing code for robots and circuit boards, controlling and giving functionality to these devices. They were also challenged to create a mobile application that solves a real-world problem. NIHERST also facilitated a robotics workshop for 15 fourth form IT students on May 5, 2017 as part of the Girls in ICT celebrations by the Telecommunications Authority of Trinidad and Tobago.<sup>66</sup>

The TTIPO reports that app developers require: mobile web programming, advanced Android application development, advanced application development for iOS devices and mobile game development. SMEs or consumers of mobile apps in particular require courses on the characteristics of wireless, mobile applications with examples, service requirement and technical challenges of mobile platforms, wireframing workshops and understanding the anatomy of a mobile app and its suitability for particular business environments. (See CARIRI's response from the survey).

In terms of development and growth, the Centre for Enterprise Development (CED), a flagship of CARIRI, provides lasting initiatives in the mobile app sector in the Caribbean. One of its initiatives is the mCentre, a mobile app lab that provides a shared space where technology entrepreneurs can interact, work, gain access to tools and expertise and start their business.<sup>67</sup> As part of the mCentre, the Caribbean Mobile Innovation Project (CMIP) seeks to build mobile innovation communities by bringing together a variety of stakeholder groups. Mobile app entrepreneurs using the services of CMIP are able to access technical, business and project management training, mentoring and business incubation services.<sup>68</sup>

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<sup>65</sup> [http://www.cariri.com/index.php?option=com\\_content&view=article&id=240:mobile-app&catid=83&Itemid=646](http://www.cariri.com/index.php?option=com_content&view=article&id=240:mobile-app&catid=83&Itemid=646)

<sup>66</sup> <http://www.niherst.gov.tt/projects/girls-in-ict.html>

<sup>67</sup> Caribbean Industrial Research Institute – Centre for Enterprise Development's mCentre official website, available here: <http://www.cedcariri.com/mcentre/>.

<sup>68</sup> CARIRI, 'The Local Mobile App Industry'.

Various institutions in Trinidad and Tobago have been raising awareness to the use of IP in the mobile app sector.

Furthermore, UWI's Faculty of Science and Technology offers a course on research methods, entrepreneurship and IP. The World Intellectual Property Organization (WIPO) and the UWI Centre for Innovation and Entrepreneurship also collaborated on a Regional Entrepreneurship and Intellectual Property Project, which was funded by the Inter-American Development Bank and was aimed at developing IP strategies for SMEs.

Public education initiatives by the TTIPO to increase IP education and awareness ("building respect for IP") include the following:

- an IP clinic with second-year law students at the Sir Hugh Wooding Law School (HWLS);
- a roving IP exhibit, complemented by a roving IP clinic which includes presentation and discussion to a wide audience;
- a Memorandum of Understanding (MoU) with CARIRI to provide IP information:
  - On December 21, 2015, the TTIPO signed an MoU with CARIRI to formalize and promote collaboration between the agencies to expand and deepen collaboration in the area of IPR, with a focus on capacity-building in patent searching and mining, technology transfer, licensing and the establishment of a Technology Transfer Office at the CED.
- An MoU with the University of Trinidad and Tobago
  - In April 2017, an MoU was signed between the University of Trinidad and Tobago (UTT) and the TTIPO to promote continued cooperation between UTT and TTIPO in the field of IP and national development of IP via training programs and public outreach, intended to improve the lives of creators and people who consume creative works.<sup>69</sup>
- exporTT IP Clinic to sensitize the business sector in IP and protection of IP assets;
- seminars and workshops with various stakeholders inclusive of schools (primary and secondary), universities and other research institutions, individual inventors, Government, including ministries and departments, and other enforcement officials;
- The Alma Jordan Library IP Helpdesk, in collaboration with the Office of Research Development and Knowledge Transfer, UWI St Augustine. The

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<sup>69</sup> <http://www.looptt.com/content/utt-ipo-sign-mou-intellectual-property>

objective is to afford the entire UWI community ease of access to education, information, training and advisory services in the field of IP;

- The national IP library of Trinidad and Tobago at the Intellectual Property Office. The IP Library is a technical library and was granted depository library status by WIPO. WIPO has and continues to support the depository status of the IP Library by providing the TTIPO with annual publications including books, magazines and reports on various topics. Services offered include access to online patent and non-patent (scientific and technical) resources and IP-related publications; assistance in searching and retrieving technology information; training in database search; on-demand searches; monitoring technology developments; basic information on industrial property laws, management and strategy; and technology commercialization and marketing.
- Patent mining is also conducted with UWI, UTT and NIHERST (searching for prior art and requirements for patentability).

### **1.3 Characteristics of the mobile application sector in the Philippines**

*No survey information was provided for this part of the study.*

#### **1.3.1 Market size and volume, and business share**

The Department of Information and Communications Technology is the primary policy, planning, coordinating, implementing and administrative entity of the Executive Branch of the government that plans, develops and promotes the national ICT development agenda. Its mission is to “provide every Filipino access to vital ICT infrastructure and services, ensure sustainable growth of Philippine ICT-enabled industries resulting in the creation of more jobs, establish a One Digitized Government (One Nation), support the administration in fully achieving its goals, and to be the enabler, innovator, achiever and leader in pushing the country’s development and transition towards a world-class digital economy.”<sup>70</sup> The ICT sector in the Philippines currently accounts for 4.13% of the market share.<sup>71</sup>

Around 89% of the population uses mobile phones, of which 65% are smartphones.<sup>72</sup>

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<sup>70</sup> Republic of the Philippines Department of Information and Communications Technology, ‘Mission and Vision’, available at <https://dict.gov.ph/about-us/vision-and-mission/>.

<sup>71</sup> Bureau of Small and Medium Enterprise Development, Department of Trade and Industry, ‘MSME Development in the Philippines’, (2016), available at <http://www.dict.gov.ph/wp-content/uploads/2016/07/8.-SMEs-in-the-Philippines-Empowering-LGUs-through-ICT-Partnership-with-SUCs.pdf>.

<sup>72</sup> S. Kemp, ‘Digital 2019: The Philippines’, Datareportal, (2019), slide 18. Available at <https://datareportal.com/reports/digital-2019-philippines> [Hereinafter: S. Kemp, ‘Digital 2019: The Philippines’]

With the Philippines often being described as the social networking capital of the world,<sup>73</sup> 83% of Filipinos are members of a social media network. It is therefore not surprising that social media apps are among the most popular mobile apps in the Philippines. According to a 2019 report on the digital economy, around 76 million people<sup>74</sup> in the Philippines actively use social media, with 72 million people doing so while using a mobile device.<sup>75</sup> The five most popular social media platforms are Facebook, YouTube, Facebook Messenger, Instagram and Twitter.<sup>76</sup>

According to CIIT, other mobile app development trends in 2019 may evolve around the IoT, augmented reality, chatbots, artificial intelligence and machine learning, and cashless payments.<sup>77</sup>

The local market for domestically developed mobile apps does not appear to be significant,<sup>78</sup> which might be because the Philippines is one of the top foreign markets for apps from South Korea, China and the United States.<sup>79</sup>

Nonetheless, like to Kenya and Trinidad and Tobago, the Philippines has its home-built apps that have contributed to growth and positive socioeconomic change.

PhilCare, one of the leading health maintenance organizations, is using digital technology to redefine customer experience in the health care sector through mobile apps with artificial intelligence (AI) capability. These mobile apps allow members of the public to consult with doctors using smartphones, avoid long waiting lines for medical care, produce electronic vouchers, find the nearest clinics, generate letters of authority or obtain an electronic medical prescription.<sup>80</sup> With its array of different apps, such as Go!Mobile and Digimed, it has enabled

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<sup>73</sup> The term was originally coined in the Universal McCann ‘Power to the People – Wave3’ study, and has since been commonly used, see e.g.: M.C. Pablo, ‘Internet Inaccessibility Plagues Social Media Capital of the World’, The Asia Foundation, October 24<sup>th</sup> 2018, available at <https://asiafoundation.org/2018/10/24/internet-inaccessibility-plagues-social-media-capital-of-the-world/>.

‘Filipinos still world’s top social media user – study’, ABS CBN News, January 31<sup>st</sup> 2019, available at <https://news.abs-cbn.com/focus/01/31/19/filipinos-still-worlds-top-social-media-user-study>.

<sup>74</sup> With a total population of 108,233,265 (2019).

<sup>75</sup> S. Kemp, ‘Digital 2019: The Philippines’, slide 31.

<sup>76</sup> Ibid., slide 33.

<sup>77</sup> ‘The Biggest Mobile App Development Trends in 2019’, College of Arts and Technology Blog, December 15<sup>th</sup> 2018, available at <https://www.ciit.edu.ph/mobile-app-development-trends/>.

<sup>78</sup> B. Pon, ‘Winners and Losers in the Global App Economy’, Caribou Digital Publishing, (2016), p. 39. Available at <https://www.cariboudigital.net/wp-content/uploads/2019/01/Caribou-Digital-Winners-and-Losers-in-the-Global-App-Economy-2016.pdf>.

<sup>79</sup> Ibid., p. 34.

<sup>80</sup> R. T. dela Cruz, ‘Mobile app change Philippines healthcare sector’ in [manilastandard.net](http://manilastandard.net), June 9<sup>th</sup> 2018. Available at <http://manilastandard.net/business/power-technology/267659/mobile-apps-change-philippines-healthcare-sector-.html>

access to medical care for a myriad of people who were previously unable to obtain these services.<sup>81</sup>

AppLERT is another app that was developed to tackle local needs. Given to the high number of natural disasters in the Philippines, AppLERT allows its users to report incidents and disasters for immediate rescue, or even preventive measures.<sup>82</sup>

Although no information could be obtained from the survey concerning the number of app developers in the Philippines, or how many SMEs contribute to the app development sector, the business environment for start-ups, including those in the mobile app development sector, appears to be high on the priority list. The Barangay Micro Business Enterprise Act, for example, grants microenterprises incentives to start a business, such as income tax exemption, or the exemption from minimum wage.<sup>83</sup>

Given that microenterprises<sup>84</sup> account for 89.94% of the Philippine's economy, providing such support appears to be sensible.

From an entrepreneurial perspective the Go Negosyo Act promotes the "ease of doing business and facilitates access to services for MSMEs"<sup>85</sup> through Negosyo Centers, which are business support centers. They offer services for business registration, monitoring and evaluation, as well as business advice, and information on advocacy.<sup>86</sup> Since the scheme was launched in 2016, more than 170 centers have opened.

### **1.3.2 Business and intellectual property**

There is a lack of information concerning the use of IP by SMEs.

### **1.3.3 Education and research**

The MSME Development Council established a special task force for the development of MSME enterprises operating in the ICT sector. The Task Force on E-Commerce aims to provide MSMEs access to comprehensive and focused support for tapping business

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<sup>81</sup> Ibid.;

J. Fenol, 'Swipe for a doctor: Health services go digital in Philippines', in ABS-CBN News, June 27<sup>th</sup> 2018. Available at <https://news.abs-cbn.com/business/06/27/18/swipe-for-a-doctor-health-services-go-digital-in-philippines>

<sup>82</sup> B. S. Fabito, F. F. Balahadia & J. D. N. Cabatlo, 'AppLERT: A mobile application for incident and disaster notification for Metro Manila, Conference Paper for the 2016 Institute of Electrical and Electronics Engineers Region 10 Symposium, *Institute of Electrical and Electronics Engineers*, (2016), p. 288-291. Available at <https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=7519420>

<sup>83</sup> S. 7-9, Republic Act No. 9178 Barangay Micro business Enterprises (BMBEs) Act of 2002.

<sup>84</sup> Enterprises with up to Php 3 million (USD 57,000), according to the Philippine Magna Carta for MSMEs.

<sup>85</sup> MSME is the abbreviation for: Micro, small, and medium enterprises. According to Filipino law business sizes are categorized according to their financial value in assets. For further details see the Philippine Magna Carta for MSMEs.

<sup>86</sup> The Negosyo Center, official website, available at <http://www.gonegosyo.net/>

opportunities and expanding markets through innovative and effective promotion of SMEs and their products. Another institution that focuses on the development of SMEs is the SME Roving Academy. It offers a continuous learning program for the development of MSMEs so as to enhance competitiveness and enhance their contribution to GDP and total employment. Their services include, inter alia, training on how to start a business and product development.<sup>87</sup> The Academy also offers ICT-related training, such as business expansion through e-commerce. However, no information was uncovered on training concerning software development, mobile application development or IP.

The College of Arts and Technology offers a course on mobile app development, including Android mobile development, general foundations of mobile app development and app design.<sup>88</sup> It also offers a course in computer programming for senior high schools students, which focuses on developing knowledge and skills in the current methods of software development and design.<sup>89</sup>

Fasttrack IT Academy appears to be a specialist institute that offers training in mobile app development.

## **2 The availability and use of IP tools to protect mobile applications in the three beneficiary countries**

This chapter gives an overview of IP tools available for the protection of mobile applications (apps) in general, as well as an analysis of the IP regimes and mobile apps in the three beneficiary countries.

The WIPO “Intellectual Property for Business” series provides a number of introductory guides for SMEs on the use and benefits of the copyright, trademark, industrial design and patent systems and franchising.<sup>90</sup> These publications can also be used by governmental institutions and adapted to particular jurisdictions to provide a coherent overview of a national IP system. In addition, WIPO has published a study on IP and mobile apps, which gives an in-depth analysis of the nature, scope, complexity and costs of the IP legal ecosystem for mobile apps.<sup>91</sup>

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<sup>87</sup> SME Roving Academy, Republic of the Philippines Department of Trade and Industry <https://www.dti.gov.ph/programs-projects/sme-roving-academy>

<sup>88</sup> Mobile App Development Course Description, College of Arts and Technology, <https://www.ciit.edu.ph/mobile-app-development-course/>

<sup>89</sup> Senior High School Program Course Descriptions, College of Arts and Technology, <https://www.ciit.edu.ph/senior-highschool/>

<sup>90</sup> The “Intellectual Property for Business” series can be found here: <https://www.wipo.int/publications/en/series/index.jsp?id=181>

<sup>91</sup> N. Shemtov, ‘Intellectual Property and Mobile Applications’, WIPO, available at [https://www.wipo.int/export/sites/www/ip-development/en/agenda/pdf/ip\\_and\\_mobile\\_applications\\_study.pdf](https://www.wipo.int/export/sites/www/ip-development/en/agenda/pdf/ip_and_mobile_applications_study.pdf)



In today's information-driven and knowledge-based society, IP has become a key consideration in everyday business decisions. From a socioeconomic perspective, investment in IP is vital because it stimulates innovation and creativity, bringing forth new products, services and business models, which attract investment and contribute to economic growth. SMEs are often the driving force behind such innovation,<sup>92</sup> with formally registered SMEs account for up to 60% of total employment and up to 40% of national income in emerging economies.<sup>93</sup>

IP therefore plays a pivotal role for SMEs, as they can use it to boost productivity, earn licensing fees and generate royalties.<sup>94</sup> Investing in IP also helps to enhance competitiveness, create monopolies and offer protection against commercial exploitation. By taking full advantage of the IP system and establishing a (strong) IP portfolio, SMEs can turn their ideas into real market value and attract investors. However, SMEs often do not fully exploit their innovative and creative capacity, due to either insufficient awareness of the IP system or the considerable associated costs. Furthermore, acquiring and maintaining IP assets requires substantial investments of time and money, both of which SMEs often lack.

To be able to capitalize on the IP system, SMEs must first know the various IPRs available for the protection of mobile apps, which are outlined below.

### Copyright

Copyright is an unregistered IPR that comes into existence upon the creation of a literary or artistic work, without requiring any additional formalities.<sup>95</sup> The subject matter eligible for copyright protection can range from traditional literary works to computer programs; however, eligibility may vary from jurisdiction to jurisdiction. Provided a work is original and falls within a copyrightable subject matter, protection lasts for the duration of the life of the author of the work and 50 or 70 years after their death, depending on the jurisdiction.

Copyright conveys exclusive rights to the author of a work, allowing them to control the use of their work and the ability to earn from it, by excluding others from using the work without prior authorization. These exclusive rights generally include the rights of reproduction, adaptation, publication, performance and display. The author is commonly understood to be the creator

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<sup>92</sup> A.S. Saleh, P. Caputi & C. Harvie, 'Perceptions of business challenges facing Malaysian SMEs: some preliminary results', in M. Obayashi & N. Oguchi (eds.), *5<sup>th</sup> SMEs in a Global Economy Conference 2008*, Senshu University, pp. 79-106. Available at <https://ro.uow.edu.au/cgi/viewcontent.cgi?referer=https://www.google.com/&httpsredir=1&article=2949&context=commpapers>

<sup>93</sup> *supra* note 16.

<sup>94</sup> WIPO, 'Why is Intellectual Property Relevant to Your SME', available at [https://www.wipo.int/sme/en/ip\\_business/importance/relevant.htm](https://www.wipo.int/sme/en/ip_business/importance/relevant.htm)

<sup>95</sup> Although some jurisdictions allow for copyright registration, such registration is not mandatory and does not affect eligibility for protection.

and original owner of the work, but in some circumstances (for example, where an employment relationship exists), ownership may not be vested in the author. Infringement occurs when one of the exclusive rights is used without the authorization of the rights holder.

It is important to bear in mind that copyright law does not protect ideas, but is limited to the original expression thereof. In the context of mobile apps, the underlying computer program or screen displays generated by mobile apps are eligible for copyright protection.

## Patents

Patents are monopoly rights that protect inventions and commonly encompass products and processes. The monopoly right granted to the inventor allows them to exclude others from making, using, selling and importing an invention for a limited period of time, in exchange for publishing an enabling public disclosure of the invention. Importantly, a monopoly right such as a patent not only protects the invention against unauthorized copying but also against the independent creation of a process or product falling within the scope of the claims of the patent.

The three patentability requirements for an invention are novelty, non-obviousness or inventive step and industrial applicability or utility. Patent rights are conferred once the relevant authority has registered the application and granted the patent. The term of protection is generally up to 20 years from the filing date, subject to an annual renewal fee. The first owner of a patent is usually the inventor. However, as in copyright law, if an invention was created in the course of employment, the employer will often be the legal rights holder.

Once granted, a patent can be a powerful tool in the marketplace owing to its broad legal monopoly. For this reason, patents may provide a satisfactory security for investors. However, the patent application process can be not only time-consuming and lengthy but also costly, once the fees for patent attorneys, filing, prosecution and grant and renewal are taken into account. This may be problematic for early-stage SMEs because they do not usually have the financial resources to apply for a patent, which may in turn prove decisive in whether they obtain financial investment.

In the context of mobile apps, depending on the invention, patents might not be the most straightforward right to pursue. Some jurisdictions may grant patents for software-related inventions, including aspects of computer programs, as long as the patent claims do not relate to abstract or non-technical subject matters.

## Utility models

Some jurisdictions offer protection for utility models, which is generally very similar to the protection afforded through a patent right but with less stringent requirements. This allows

minor improvements to existing products to be protected, as they may have an important role in local economies. Utility models are generally less costly to register than patents. They are also shorter in duration than patents, which can be beneficial in a fast-moving, dynamic industry like the mobile app sector. However, utility models are not available in all jurisdictions.

### Industrial designs

Industrial design laws vary greatly from jurisdiction to jurisdiction and have not yet been harmonized on an international level. Consequently, they differ in terms of the type, duration and scope of protection. Depending on the jurisdiction, designs can be registered either under a quasi-patent framework as design patents, or simply within independent realms of design law. The scope of protection usually encompasses the esthetic appearance of a design, which may consist of three-dimensional features, such as the shape of an article, or two-dimensional features, such as patterns, lines or color. However, functionality as a whole is excluded from protection. Design law may be a useful tool for the protection of graphical user interfaces (GUIs) of mobile apps.

### Trademarks

Trademark protection may be afforded to any sign, such as a word, name, symbol, design or color, used in trade by one business to identify its products or services and distinguish them from those of other undertakings in the market. It can be obtained by filing an application for registration with the national or regional authority responsible for trademark registration. International trademark registration can be obtained via either the national authority or the WIPO Madrid System. The subject matter must be clearly defined, non-descriptive and distinctive. Upon successful registration, the owner obtains an exclusive right to use the registered trademark in relation to the prescribed goods or services. Protection does not extend to functional aspects of the subject matter.

With regard to mobile apps, trademarks may protect the logo, sign or name of the app or the appearance of its icon. All or part of the GUI could also be eligible for trademark protection, on the condition that it is not functional.

### Trade secrets

Trade secrets protect any kind of commercially valuable confidential information, as long as reasonable steps are taken to keep it secret; they do not require registration. While domestic laws may vary, Article 39 of the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS Agreement) stipulates that the information must: (1) be secret, in that is not generally known among, or readily accessible to, circles that normally deal with the kind of information in question; (2) have commercial value because it is a secret; and (3) have been

subject to reasonable steps by the rightful holder of the information to keep it secret, such as confidentiality or non-disclosure agreements. When kept secret, there is no limitation on the term of protection.

With respect to mobile apps, trade secrets may be an effective form of protection for code, algorithms and other aspects of a mobile app before market release; for example, through confidentiality and non-disclosure agreements with third parties and employees. Trade secrets may also protect mobile apps that operate in a cloud environment, even after market release. Since the code of such an app would not be available for competitors, trade secrets may in fact serve as primary protection against the misappropriation of the code and underlying architectural software features of these apps.

## **2.1 The availability and use of intellectual property tools to protect mobile applications in Kenya**

*The survey was answered by five respondents, including the KIPI, the KECOBO and representatives from the software development sector, the legal sector and academia.*

Copyright, patents, industrial designs, trade secrets, utility models and trademarks are forms of protection available for mobile apps in Kenya. However, there is a lack of information on the number of IPRs registered by SMEs in the software and mobile app sector. The numbers provided by the survey respondents were irregular and did not indicate exact or accurate data. KECOBO stated that it was not easy to determine the number of SMEs, because an applicant is usually only identified either as an individual or as an organization, without specific numbers or details on business size. The survey respondents considered the accessibility and complexity of filing, registration and maintenance procedures to be average.

### Copyright

The relevant legislation on copyright laws and regulation in Kenya is the Copyright Act of 2001. Copyright protection accrues automatically upon fixation of a work in a material form.<sup>96</sup> However, authors of copyright works can register their copyright with the Kenya Copyright Board,<sup>97</sup> subject to fee.

Kenyan copyright law provides for an exhaustive list of subject matters that are eligible for copyright protection.<sup>98</sup> A work is eligible as long as it reflects sufficient efforts by its author.<sup>99</sup>

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<sup>96</sup> Sect. 22(5) of the Copyright Act (Act No. 12 of 2001) (2017). [Hereinafter: Kenya Copyright Act]

<sup>97</sup> Kenya Copyright Board, '7 Steps to Register your Copyright Online', available at <https://www.copyright.go.ke/8-program/2-copyright-registration.html>

<sup>98</sup> Kenya Copyright Act sect. 22(1).

<sup>99</sup> Kenya Copyright Act sect. 22(3).

Copyright vests with the author, unless the work was commissioned under a service contract or made in the course of employment.<sup>100</sup>

Computer programs are protected as literary works under the Copyright Act.<sup>101</sup> According to Section 2, “computer program” means “a set of instructions expressed in words, codes, schemes or in any other form, which is capable, when incorporated in a medium that the computer can read, of causing a computer to perform or achieve a particular task or result”. This makes the underlying computer program of a mobile app eligible for copyright protection.

The term of protection is set out in Section 23(2) and depends on the type of copyrightable subject matter:

Type of work	Date of expiration of copyright
Literary, musical or artistic work other than photographs	Fifty years after the end of the year in which the author dies.
Audiovisual works and photographs	Fifty years from the end of the year in which the work was made, first made available to the public or first published, whichever date is the latest.
Sound recording	Fifty years after the end of the year in which the recording was made.
Broadcasts	Fifty years after the end of the year in which the broadcast took place.

The respondents considered this type of protection to be very effective in relation to mobile apps. Nonetheless, mobile app developers should consider registering their copyright with KECOBO or having a proper record of the creation process with dates, either through official registration or by sending emails to themselves. This may serve as *prima facie* evidence in future disputes.

KECOBO indicated that copyright registration was the least costly, at only 10 US dollars per application, making it an affordable solution for young businesses and SMEs.

<sup>100</sup> Kenya Copyright Act sect. 31(1).

<sup>101</sup> Kenya Copyright Act sect. 2.

## Patents

Patent law is regulated by the Industrial Property Act of 2001.<sup>102</sup> It defines an invention as a solution to specific problem in the field of technology, which is or relates to a product or process.<sup>103</sup> An invention is patentable if it is: (1) new, that is, not anticipated by prior art, which is assessed on a global level; (2) involves an inventive step, that is, not obvious to a person skilled in the art; and (3) is a new use or is industrially applicable, that is, usable in any kind of industry.<sup>104</sup>

The right to a patent belongs to the inventor or co-inventors, unless the invention was made in the execution of a commission or an employment contract, in which case it belongs to the person who commissioned the work or to the employer.<sup>105</sup>

Patent applications can be filed with KIPi or the African Regional Intellectual Property Office (ARIPO). The application route with ARIPO enables the applicant to file for patent registration in ARIPO member states, if designated, or to make use of the international application procedure under the Patent Cooperation Treaty (PCT). Additionally ARIPO offers an online registration system, unlike KIPi.

Similarly, applying for a patent with KIPi may also serve as a basis for an international application through the PCT. The advantage of the PCT route is that it provides a unified patent application procedure and protects inventions in each of its Contracting States. However, no online application system is available at KIPi. Details on the requisite documentation for a patent application can be obtained from the KIPi website.<sup>106</sup> The application fee for a patent with a provisional specification is 1,000 Kenyan Shillings, and with a final specification 3,000 Kenyan Shillings. The annual renewal fee is 2,000 Kenyan Shillings until the seventh year of renewal. Further details can be obtained from the KIPi website.<sup>107</sup> The duration of patent protection can last up to 20 years, if annual renewal fees are paid.

Thus, patent protection may be available for mobile apps, if the underlying aspect of the app fulfills the above-mentioned requirements for patentability. Nevertheless, some respondents considered patent protection very ineffective for mobile apps. According to KECOBO, the high threshold of grant requirements, in particular inventive step, is difficult to satisfy in relation to software, making patents an inappropriate form of protection. Furthermore, SMEs might not have the financial resources to meet the costs associated with a patent application, rendering

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<sup>102</sup> Parts III-XI of the Industrial Property Act (Act No. 3 of 2001) (2017). [Hereinafter: Kenya Industrial Property Act]

<sup>103</sup> Kenya Industrial Property Act sect. 21(1) and (2).

<sup>104</sup> Kenya Industrial Property Act sects. 22, 23(1), 24 and 25.

<sup>105</sup> Kenya Industrial Property Act sects. 30 and 32(1).

<sup>106</sup> KIPi, 'How to Apply for A Patent', available at <https://www.kipi.go.ke/index.php/how-to-apply-for-a-patent>

<sup>107</sup> KIPi, 'Fees', available at [http://www.kipi.go.ke/images/forms/patent\\_forms/fees.pdf](http://www.kipi.go.ke/images/forms/patent_forms/fees.pdf)

patents less attractive. Although no legal representation is required to file for a patent, drafting a patent claim often requires expert know-how, which in turn involves additional costs.

### Utility models

Part XII of the Industrial Property Act concerns the legal rules on utility models. Owing to the great similarity to patents, patent-related rules apply *mutatis mutandis* to utility models.<sup>108</sup> The main difference lies in the eligibility requirements: an invention qualifies for a utility certificate if it is new and industrially applicable,<sup>109</sup> omitting the non-obviousness requirement of patent law. A utility model is valid for up to 10 years, subject to an annual fee.<sup>110</sup> In addition, the fees from registering utility models were considerably lower than for patents. A detailed plan of the fees is available on the KIPI website.<sup>111</sup>

The lower registrability threshold might be attractive to SMEs wishing to use IPRs to protect their invention. The term of protection for utility models, while considerably shorter than that for patents, may nevertheless prove adequate, given the fast development of the mobile app industry.

KECOBO considered utility models a very ineffective IP tool for mobile app protection because of the high degree of similarity to patents. KIPI, in contrast, considered utility models a very effective means of IP protection for mobile apps, without giving any further information.

### Industrial designs

Part XIII of the Industrial Property Act deals with industrial designs. It defines an industrial design as “any composition of lines or colours or any three dimensional form, whether or not associated with lines or colours, provided that such composition or form gives a special appearance to a product of industry or handicraft and can serve as a pattern for a product of industry or handicraft”.<sup>112</sup> Protection does not extend to aspects serving solely to obtain a technical result; thus, only esthetic elements of a design can be protected.

Compared to patents, industrial designs have a lower protection threshold, as they merely need to be new.<sup>113</sup> According to the Act, “an industrial design shall be deemed to be new if it has not been disclosed to the public, anywhere in the world, by publication in tangible form or,

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<sup>108</sup> Kenya Industrial Property Act sect. 81(1).

<sup>109</sup> Kenya Industrial Property Act sect. 82(1).

<sup>110</sup> Kenya Industrial Property Act sect. 82(3).

<sup>111</sup> KIPI, ‘Fees’, available at [http://www.kipi.go.ke/images/forms/patent\\_forms/fees.pdf](http://www.kipi.go.ke/images/forms/patent_forms/fees.pdf)

<sup>112</sup> Kenya Industrial Property Act sect. 84.

<sup>113</sup> Kenya Industrial Property Act sect. 86(1).

in Kenya by use or in any other way, prior to the filing date or, where applicable, the priority date of the application for registration.”<sup>114</sup>

The creator of the industrial design has the exclusive right to sell the goods into which the design is incorporated, for commercial or industrial purposes, or cause them to be sold.<sup>115</sup> The duration of protection extends to five years and be can renewed for two further consecutive periods of five years upon payment of a prescribed fee.<sup>116</sup> Registration is made with KIPi. Detailed information on the filing and registration process,<sup>117</sup> as well as fees,<sup>118</sup> are available on the KIPi website.

## Trademarks

Kenyan law provides for the protection of both registered and unregistered trademarks.

Registered trademarks are protected under the Trade Marks Act, while the common-law tort of passing off protects the goodwill associated with an unregistered trademark from misrepresentation.

A trademark is a sign that can consists of one or more distinctive, letters, numbers, drawings, monograms, colors or a combination thereof and serves to distinguish the goods or services of a business from other businesses. Under the Act, a protectable trademark must be distinctive in relation to the goods and services for which it is registered.<sup>119</sup>

A trademark can be registered at the national level with KIPi, or at the regional level with ARIPO. ARIPO offers online registration through its website, with a concise overview of the trademark application procedure, including online filing, pre-search, relevant forms and publications.<sup>120</sup> KIPi is the designated national authority in Kenya mandated with the registration of trademarks. Contrary to ARIPO, there is no online or electronic application process with KIPi. Applications with both KIPi and ARIPO may also apply internationally under the Madrid Agreement, which allows the protection of a trademark in a large number of countries through an international registration effective in each designated Contracting State. The trademark application process with KIPi may take from six months to two years, depending on compliance with registration requirements and the occurrence of any opposition proceedings.

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<sup>114</sup> Kenya Industrial Property Act sect. 86(2).

<sup>115</sup> Kenya Industrial Property Act sect. 85(1).

<sup>116</sup> Kenya Industrial Property Act sect. 88(1) and (2).

<sup>117</sup> KIPi, ‘Filing Requirements for Industrial Designs’, available at <https://www.kipi.go.ke/index.php/filing-requirements>

<sup>118</sup> KIPi, ‘Fees’, available at [http://www.kipi.go.ke/images/forms/patent\\_forms/fees.pdf](http://www.kipi.go.ke/images/forms/patent_forms/fees.pdf)

<sup>119</sup> Sect. 12(2) of the Trade Marks Act (Chapter 506) (2012). [Hereinafter: Kenya Trade Marks Act]

<sup>120</sup> ARIPO e-Services, available at <http://eservice.aripo.org/pmi/PMIMain.do>



The term of protection can be renewed every ten years indefinitely, upon payment of a renewal fee. Although the Trade Marks Act does not require any proof of use of the mark, any person may apply for its removal from the register if the mark has not been used for five consecutive years.

Given the subject matter and scope of protection, trademark protection may cover various insignia used in GUIs for marketing purposes or as signs visible in an app store.

KIPI advises adequate budgeting and preparation for the overall costs related to the trademark registration process, which include the cost of creating a word, logo or any other sign that is to be used as a trademark, and trademark search fees, if done by KIPI. Costs may vary depending on whether the trademark is intended solely for the local market or whether other countries will be designated, and how many classes the application covers.<sup>121</sup> Engaging a trademark agent to assist in the registration process involves further costs but can save a valuable amount of time. Local legal representation is required only for applicants who are not resident in Kenya.

#### Trade secrets

In Kenya, the protection of trade secrets is mostly available by way of common law and equity in the form of jurisprudence developed by the courts. However, Kenyan case law on the misappropriation of confidential information does not provide a coherent framework for a trade secrets regime, as only a few decisions are available.<sup>122</sup> Other forms implicating the protection of trade secrets may be found in existing legislation, such as employment law and contract law. In addition, Kenya is a TRIPS signatory. The mentioned requirements for information to be protected as a trade secret under the TRIPS Agreement could serve as a guideline for businesses aiming to protect their valuable information as trade secrets.

The advantages for SMEs of using trade secrets is that they are not limited to a particular time frame and could therefore be effective indefinitely, as long as the information remains secret. Furthermore, trade secrets have a broad scope of protectable subject matter. Owing to their secret nature, trade secrets do not involve registration costs *per se*. Access to the information must be restricted to a minimum and an appropriate confidentiality policy implemented in the SME; for example, by means of confidentiality agreements with employees and business

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<sup>121</sup> The KIPI fees can be found here: [http://www.kipi.go.ke/images/forms/trade-mark\\_forms/trade%20mark%20fees%20local%20and%20foreign.pdf](http://www.kipi.go.ke/images/forms/trade-mark_forms/trade%20mark%20fees%20local%20and%20foreign.pdf)

<sup>122</sup> D. Opijah & J. Syekei, 'How to Strengthen Protection and Enforcement of Trade Secrets in East Africa' (August 16, 2018), available at <https://www.bowmanslaw.com/insights/intellectual-property/how-to-strengthen-protection-and-enforcement-of-trade-secrets-in-east-africa/>

partners. SMEs should therefore identify and catalogue trade secrets and put in place physical, technical and contractual measures to protect them.

No information as to the effectiveness of trade secret protection for mobile apps could be uncovered through the surveys.

#### Intellectual property awareness

Some survey respondents indicated that IP audits were usually carried out together with general legal audits. The costs of a legal audit, within a law firm, range from 1,000 US dollars to 5,000 US dollars for SMEs, depending on scope and complexity. SMEs tend to carry out legal audits a few years from the date of inception in a bid to streamline their operations. Although SMEs are likely to require support in planning and executing IP strategies and portfolio development, conducting IP audits through a law firm may place a high financial burden on a young SME, particularly in its early development stages. KIPI considered IP audit or associated services a valuable asset for SMEs in particular and for the economy in general.

One way forward might be to increase awareness of IPRs among SMEs to enable them to develop an IP strategy and build a strong IP portfolio, which may make their profiles more appealing to potential investors. KECOBO and KIPI, individually as well as in conjunction with other organizations, carry out various awareness-raising activities for mobile app developers. In addition, the Law Society of Kenya organizes legal awareness weeks in which the IP registration branches participate. The annual Nairobi Tech Week offers dedicated sessions on IP protection, and free legal advice on IP issues is available at the Centre for Intellectual Property and Information Technology Law at Strathmore University.

## **2.2 The availability and use of intellectual property tools to protect mobile applications in Trinidad and Tobago**

*The survey was answered by the Intellectual Property Office of Trinidad and Tobago (TTIPO).*

Similarly to Kenya, Trinidad and Tobago lacks quantitative information concerning IPR registration in the software and mobile app sector. It follows that there is also no indication as to which business size is more likely to register its IP in the respective fields. TTIPO confirmed that mobile apps could be protected through copyright, industrial designs and trademarks. The complexity and accessibility of filing, registering and maintaining IPRs was considered straightforward.

#### Copyright

In Trinidad and Tobago, copyright protection is governed by the Copyright Act. As in Kenya, copyright subsists in literary and artistic works that are original creations in the literary and

artistic domain,<sup>123</sup> including computer programs, which are considered literary works.<sup>124</sup> The Act defines computer programs as “a set of instructions expressed in words, codes, schemes or in any other form, which is capable, when incorporated in a medium that the computer can read, of causing a computer to perform or achieve a particular task or result.”<sup>125</sup> Thus, copyright is an IP tool available for the protection of mobile apps.

Copyright comes into existence upon creation of the work, without any further requirements. Unlike Kenya, however, the TTIPO does not provide for registration of copyrights. In Trinidad and Tobago, copyright is also protected by means of the “Poor Man’s Copyright” and a statutory declaration.

The principle of idea–expression dichotomy is also recognized in Trinidadian and Tobagonian copyright law.<sup>126</sup> Consequently only original *expressions* may be protected under copyright law.

The exclusive rights to do, authorize, or prohibit exclusive rights granted to the author of an original work include the reproduction, translation, adaptation or other types of transformation of the work, the first public distribution of the original and each copy of the work, the rental or public lending of the work and communication to the public of the work.<sup>127</sup>

The original owner of copyright is the author who created the work,<sup>128</sup> unless the work was created as part of the employee’s role in the course of employment in which case the employer is the owner of the copyright.<sup>129</sup>

The duration of copyright protection is regulated under section 19 of the Copyright Act, and depends on the type of copyrightable subject matter:

Type of work	Date of expiration of copyright
Literary and artistic works	During the life of the author and for 50 years after his death.
Collective works and audiovisual works	Copyright and moral rights shall be protected for (a) seventy-five years from the date on which the work was first published; (b) seventy-five years from the date on which the work was first made available

<sup>123</sup> Trinidad and Tobago Copyright Act sect. 5(1), Chapter 82:80 (Act 8 of 1997) (2008).

<sup>124</sup> Trinidad and Tobago Copyright Act sect. 5(1)(a).

<sup>125</sup> Trinidad and Tobago Copyright Act sect 3.

<sup>126</sup> Trinidad and Tobago Copyright Act sect. 7(1)(a).

<sup>127</sup> Trinidad and Tobago Copyright Act sect. 8(1).

<sup>128</sup> Trinidad and Tobago Copyright Act sect. 26.

<sup>129</sup> Trinidad and Tobago Copyright Act sect. 26 (4).

	to the public, if the work has not been published before 25 years after its making; or (c) one hundred years from the making of the work, if the work had neither been made available to the public nor published before 25 years after its making.
Joint authorship	Copyright and moral rights shall be protected during the life of the last surviving author and for 50 years after his death.
Work published anonymously or under a pseudonym,	Copyright and moral rights shall be protected for (a) seventy-five years from the date on which the work was first published; (b) seventy-five years from the date on which the work was first made available to the public, if the work has not been published before 25 years after its making; or (c) one hundred years from the making of the work, if the work had neither been made available to the public nor published before 25 years after its making, provided that where the author's identity is revealed or is no longer in doubt before the expiration of the said period the provisions of subsection (1) or (2) shall apply, as the case may be.
Applied art	Copyright and moral rights shall be protected for 25 years from the making of the work.

The originality requirement must also be satisfied under Trinidadian and Tobagonian law.

There appears to be a lack of consistency in the use of concepts such as “originality” and “substantial part” under copyright law. Hence, legislation does not provide for a clear definition of the threshold of originality. Following a recent decision in *Full Blown Entertainment v Matthews*, originality was defined to mean “original skill, labour or originality of thought.” It is yet to be seen whether this standard is applied consistently by lower courts so that a clear originality threshold emerges. As Justin Koo from the UWI, St. Augustine explains, it is of the

utmost importance to develop a coherent copyright framework with clear and precise standards for determining substance and infringement.<sup>130</sup>

## Patents

As in Kenya, a patent is an exclusive right granted for an invention, which is a product or a process that provides a new way of doing something or offers a new technical solution to a problem.

The patentability requirements are that the invention: (1) is new; (2) involves an inventive step; and (3) is capable of industrial application.<sup>131</sup> Section 12(1)(b) of the Patents Act, Chap. 82:76 excludes literary works from patentability. Consistent with the definition in the paragraph on copyright, computer programs are considered literary works. Software by itself that performs no technical effect is therefore excluded from patentability. However, software that works in tandem with hardware or software-enabled hardware may be considered patentable.

As in Kenyan patent law, a patent may be granted to the inventor, unless the invention was made in the course of employment, in which case the employer may be the legitimate rightholder.<sup>132</sup> The patent right lasts for up to 20 years<sup>133</sup> provided an annual renewal fee is paid.<sup>134</sup>

## Utility certificates

In Trinidad and Tobago, the provisions relating to patents also apply *mutatis mutandis* to utility certificates.<sup>135</sup> Therefore, the same reasons given for the non-patentability of software by itself also applies to utility certificates.

Utility certificates differ from patents in three respects. Firstly, eligibility only depends on novelty and industrial application. Secondly, the maximum term of protection provided by law is 10 years, without the option to renew the right. Thirdly the fees required for obtaining and maintain the rights are generally lower.

Thus, provided the requirements for registration and function are met, certain aspects of a mobile application can be protected as utility models.

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<sup>130</sup> J. Koo, 'Full Blown Entertainment: a missed opportunity for advancing the copyright law of developing Commonwealth countries with hybrid systems', *Journal of Intellectual Property Law & Practice*, Vol. 13(10), 2018, pp. 782-794.

<sup>131</sup> Sect. 8 of the Patents Act, Chapter 82:76 (Act No. 21 of 1996) (2000). [Hereinafter: Trinidad and Tobago Patents Act]

<sup>132</sup> Trinidad and Tobago Patents Act sects. 14 and 15.

<sup>133</sup> Trinidad and Tobago Patents Act sect. 91(4).

<sup>134</sup> Trinidad and Tobago Patents Act sect. 30.

<sup>135</sup> Rule 43(1) of the Patents Rules, 1996.

## Industrial designs

According to Section 3(1) of the Industrial Designs Act, “any composition of lines or colours, any three-dimensional form or any material whether or not associated with lines or colours, is deemed to be an industrial design where such composition, form or material gives a special appearance to a product of industry or handicraft, can serve as a pattern for a product of industry or handicraft and appeals to and is judged by the eye.”<sup>136</sup> Protection does not extend to designs that solely serve a technical or functional result.

Industrial designs are registered IPRs. An industrial design must be new to be eligible for protection, meaning that it has not been disclosed to the public anywhere in the world prior to the filing date or the priority date of the application for registration.<sup>137</sup>

The owner of an industrial design is its creator,<sup>138</sup> or co-creator,<sup>139</sup> unless the design was created in the execution of an employment contract, in which case the industrial design right belongs to the employer.<sup>140</sup> The duration of protection of an industrial design is five years, renewable for two further consecutive periods of five years, subject to a fee.<sup>141</sup>

Applications must be submitted in printed form to the TTIPO, following the formal requirements under the Industrial Design Rules and Regulations, namely (1) to use the Industrial Design Request form and (2) [to] provide four graphic representations, drawings or tracings of each of the different sides of the industrial design for three-dimensional designs.<sup>142</sup> Upon receipt of the request form and drawings, the application is examined as to eligibility and is then prepared for publication. Lastly, a certificate of registration is issued to the applicant after the publication page has appeared in the local newspaper. Further details can be found on the TTIPO website.<sup>143</sup>

The eligibility requirements are more lenient than those for a patent or utility model. Moreover, industrial designs are generally considered more effective for the protection of mobile apps, as they can protect parts of a mobile app, such as the GUI. Furthermore, the cost of registering

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<sup>136</sup> Trinidad and Tobago Industrial Designs Act, Chapter 82:77 (Act No. 18 of 1996) (2007).

<sup>137</sup> Trinidad and Tobago Industrial Designs Act sect. 4.

<sup>138</sup> Industrial Designs Act, sect. 5(1).

<sup>139</sup> Industrial Designs Act, sect. 5(2).

<sup>140</sup> Industrial Designs Act, sect. 5(5).

<sup>141</sup> Industrial Designs Act, sect. 10.

<sup>142</sup> Industrial Designs Rules and Regulations, 1996, Schedule II Continued, Forms, available at [http://ipotrinbago.com/downloads/Industrial\\_Designs/Industrial\\_Designs\\_Application\\_Form.pdf](http://ipotrinbago.com/downloads/Industrial_Designs/Industrial_Designs_Application_Form.pdf)

<sup>143</sup> Intellectual Property Office of Trinidad and Tobago, ‘Application Procedure for and Industrial Design’, available at <http://www.ipo.gov.tt/related-links-id/application-procedure-for-an-industrial-design/#payment>

an industrial design is half that of a utility model and about one quarter that of a patent,<sup>144</sup> making it a more viable option for SMEs.

### Trademarks

In Trinidad and Tobago, registered trademarks are regulated under the Trade Marks Act.<sup>145</sup> However, like in Kenya, unregistered trademarks are protected through the law of passing off. Trademarks can be registered by submitting an application form and the relevant fees to TTIPO, both of which available on the TTIPO website.<sup>146</sup>

The TTIPO website also provides information concerning the registration application procedure.<sup>147</sup> Once the application form is submitted and checked for compliance with formal requirements, the goods and services to be registered are examined, and a search is conducted for prior rights and similarity between earlier marks and the mark in question. If the application is approved, TTIPO notifies the applicant or representative and has the trademark published in a designated daily newspaper, which then requests and collects the publication fee from the applicant. Third parties may oppose the registration of a trademark within three months of publication. Provided there is no third-party opposition, a certificate of registration is issued, subject to a certificate fee. The registration process usually takes nine to 12 months but could last considerably longer, if the application is opposed. Once successfully registered, the trademark is protected for ten years from the filing date and may be renewed for successive ten-year periods by submitting the prescribed renewal application form and fees.

Search Reports generated from the IPAS show trademark registrations for the past 10 years in Class 9 for software applications. The total number of registrations was 1,132 trademarks, of which 57 were local and 1,075 were international.

### Trade secrets

The above-mentioned requirements under the TRIPS Agreement in relation to trade secrets are contained in the Protection Against Unfair Competition Act.<sup>148</sup>

Trade secrets are protected without registration or other formalities. The unauthorized disclosure of a trade secret constitutes an act of unfair competition under Section 9(1) of the Protection Against Unfair Competition Act. It states that “any act or practice, in the course of

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<sup>144</sup> The industrial design application fees can be found on the TTIPO website, available at <http://www.ipo.gov.tt/related-links-id/application-procedure-for-an-industrial-design/#renewal>

<sup>145</sup> Trade Marks Act (Act No. 11 of 1955) (1997). [Hereinafter: Trinidad and Tobago Trade Marks Act]

<sup>146</sup> The trademark application fees can be found on the TTIPO website, available at **Error! Hyperlink reference not valid.**<http://www.ipo.gov.tt/types-of-ip/trade-marks/#tma>

<sup>147</sup> TTIPO, ‘Trade Marks’, available at <http://www.ipo.gov.tt/types-of-ip/trade-marks/>

<sup>148</sup> Sect. 9(3) of the Protection Against Unfair Competition Act, Chapter 82:36 (Act No. 27 of 1996) (2000). [Hereinafter: Trinidad and Tobago Protection Against Unfair Competition Act]

industrial or commercial activities, that results in the disclosure, acquisition or use by others of secret information without the consent of the person lawfully in control of that information [...] and in a manner contrary to honest commercial practices shall constitute an act of unfair competition.”

The disclosure, acquisition or use of secret information by others without the consent of the rightful holder may result from breach of contract, breach of confidence, industrial espionage or the inducement to commit any of those acts either intentionally or due to gross negligence.<sup>149</sup>

With respect to mobile apps, the rationale for using trade secrets as a form of protection is the same as that explained in sections 2.F. and 2.1.F. above.

#### Intellectual property awareness

The TTIPO’s website provides for easily accessible information on all types of IPRs, as well as overviews with respect to the different registration procedures. Information is easily accessible on the TTIPO’s website at <http://ipo.gov.tt/>. The public is free to visit the office during working hours and interact with the TTIPO on its social media platforms.

For more information on the public education initiatives by the TTIPO to increase IP awareness, see section 1.2.3 “Education and research.”

### **2.3 The availability and use of intellectual property tools to protect mobile applications in the Philippines**

*There was no indication as to who answered the survey for this part of the study.*

Filing, registration and maintenance of IP are considered straightforward. Philippine IP law is governed by the Intellectual Property Code of the Philippines.<sup>150</sup>

#### Copyright

Part IV of the Intellectual Property Code covers the law on copyright. Copyright comes into existence upon creation of the work, irrespective of its content, quality, purpose and mode or form of expression.<sup>151</sup> As in the other jurisdictions, the idea–expression dichotomy is also applicable under Philippine copyright law.<sup>152</sup>

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<sup>149</sup> Trinidad and Tobago Protection Against Unfair Competition Act sect. 9(2).

<sup>150</sup> Intellectual Property Code of the Philippines (Republic Act No. 8293) (2015). [Hereinafter: Intellectual Property Code]

<sup>151</sup> Intellectual Property Code sect. 172.2.

<sup>152</sup> Intellectual Property Code sect. 175.



Various types of literary and artistic works, including computer programs,<sup>153</sup> are eligible for protection, provided that they are original. Computer programs are defined as a “set of instructions expressed in words, codes, schemes or in any other form, which is capable when incorporated in a medium that the computer can read, of causing the computer to perform or achieve a particular task or result.”<sup>154</sup> The underlying computer program of mobile app is therefore protected in the Philippines as a literary work, while elements of the GUI may be protected as artistic works.

Copyright gives the author the exclusive right to carry out, authorize or prevent, inter alia, the reproduction of the work or a substantial part thereof, and the dramatization, translation, adaptation, abridgement, arrangement or other transformation of the work.<sup>155</sup> The term of protection lasts for the life of the author and for 50 years after the author’s death.<sup>156</sup>

The author is the person who created the work. If the work is created during the course of employment, the copyright belongs to the employer. However, if the creation of the work was not a part of the employee’s regular duties, the copyright in the work belongs to the employee, even if the employer’s time, facilities and materials were used.<sup>157</sup>

Although there are no formalities for copyright protection, a work may be registered online, for a fee, with the National Library of the Philippines or the Intellectual Property Office of the Philippines (IPOP HL).<sup>158</sup>

## Patents

Part II of the Intellectual Property Code governs the law on patents. According to Section 21, “any technical solution of a problem in any field of human activity which is new, involves an inventive step and is industrially applicable shall be patentable. It may be, or may relate to, a product, or process or an improvement of any of the foregoing.”<sup>159</sup> The requirements for patentability are the same as in Kenya, Trinidad and Tobago and other states party to the TRIPS Agreement.

The right to a patent belongs to the inventor or the inventor’s heirs or assigns; in the case of co-inventors, the patent right belongs to them jointly.<sup>160</sup> With respect to inventions created pursuant to a commission, the person who commissions the work owns the patent, unless the

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<sup>153</sup> Intellectual Property Code sect. 172.1(n).

<sup>154</sup> Intellectual Property Code sect. 171.4.

<sup>155</sup> Intellectual Property Code sects. 177.1.-177.6.

<sup>156</sup> Intellectual Property Code sect. 213.1.

<sup>157</sup> Intellectual Property Code sect. 178.3.

<sup>158</sup> The IPOP HL copyright e-registration service is available at <http://www.ipophil.gov.ph/services/copyright/submit/>

<sup>159</sup> Intellectual Property Code sect. 21.

<sup>160</sup> Intellectual Property Code sect. 28.

contract stipulates otherwise. The patent of an invention made in the course of employment belongs to the employer, unless the inventive activity was not part of the employee's regular duties, even if the employer's time, facilities and materials were used, or there is an explicit or implicit agreement to the contrary.<sup>161</sup>

Patent applications can be filed in Filipino or English and must include a request for the grant of a patent; a description of the invention; drawings necessary for the understanding of the invention; one or more claims; and an abstract.<sup>162</sup> A patent may not be granted if the inventor is not identified in the application.<sup>163</sup> Applying for a patent usually requires support from an expert such as a patent attorney or other legal representative. Applicants who are not residents of the Philippines must appoint and maintain a resident agent or representative for judicial or administrative procedures relating to the patent application.<sup>164</sup>

The term of protection lasts up to 20 years, provided that the annual renewal fee is paid. A detailed overview of fees can be found on the IPOPHL website.<sup>165</sup>

The Philippine law on patents expressly excludes computer programs from patent protection, adopting language similar to the European Patent Convention (EPC) 1973.<sup>166</sup> As with the EPC, it is not clear if certain elements of computer programs may be patented under specific circumstances, notwithstanding the aforementioned explicit exclusion.

#### Utility models

Except for the requirement of inventive step, the provisions governing patents, including the ineligibility of computer programs, apply, mutatis mutandis, to the registration of utility models.<sup>167</sup>

Registration fees for utility models are considerably lower than for patents. A fee schedule is available on the IPOPHL website.<sup>168</sup>

#### Industrial designs

Chapter XIII of the Intellectual Property Code concerns industrial designs, defined as "any composition of lines or colours or any three-dimensional form, whether or not associated with

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<sup>161</sup> Intellectual Property Code sect. 30.

<sup>162</sup> Intellectual Property Code sect. 32.1; sects.34-40 specify in detail the information to be included.

<sup>163</sup> Intellectual Property Code sect. 32.2.

<sup>164</sup> Intellectual Property Code sect. 33.

<sup>165</sup> IPOPHL, 'Schedule of Fees on Patents', available at <https://www.ipophil.gov.ph/services/schedule-of-fees/patents/>

<sup>166</sup> Intellectual Property Code sect. 22.2.

<sup>167</sup> Intellectual Property Code sects. 108 and 109.

<sup>168</sup> IPOPHL, 'Schedule of Fees on Utility Model & Industrial Design', available at <https://www.ipophil.gov.ph/services/schedule-of-fees/utility-model-industrial-design/>

lines or colors, provided that such composition or form gives a special appearance to and can serve as pattern for an industrial product or handicraft.”<sup>169</sup>

To be eligible for registration, an industrial design must be new and ornamental; functional features may not be protected.<sup>170</sup> As explained in section 2.D above, industrial designs may be useful in protecting the GUI of a mobile app. The term of protection is five years from the application filing date and may be renewed for not more than two consecutive periods of five years each, subject to the payment of a renewal fee.<sup>171</sup>

Industrial designs can be filed with IPOPHL, either online or in person. The applicable fees, which are largely the same as for utility models, and relevant forms can be found on the IPOPHL website.<sup>172</sup>

If there is no third-party opposition to the application, an industrial design can be registered and published within six months from its filing date. A detailed overview and explanations can be found online.<sup>173</sup>

## Trademarks

Trademarks are regulated in Part III of the Intellectual Property Code. A mark is any visible sign capable of distinguishing the goods or services of an enterprise from those of another. As in the jurisdictions above, trademarks, service marks and trade names can protect names, logos, colors or a combination thereof and other symbols relating to mobile apps as well as to the enterprise developing the app. Thus, trademarks are an available and relevant IP tool for the protection of mobile apps in the Philippines.

Eligibility requirements for trademark registration are set out in Section 123 of the Intellectual Property Code. Generally, the distinctiveness of the mark is a key point of consideration.

The registration of a trademark remains in force for ten years, on the condition that the registrant files a declaration of actual use and evidence to that effect. If no valid reason for non-use can be brought forward, the mark is removed from the trademark register.<sup>174</sup> A

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<sup>169</sup> Intellectual Property Code sect. 112(1).

<sup>170</sup> Intellectual Property Code sect. 113.

<sup>171</sup> Intellectual Property Code sect. 118.1-118.2.

<sup>172</sup> IPOPHL, ‘Schedule of Fees on Utility Model & Industrial Design’, available at <https://www.ipophil.gov.ph/services/schedule-of-fees/utility-model-industrial-design/>. The industrial design application form is available at <https://drive.google.com/file/d/1A5w7PSP1NHsaFa43XUTBO2BOVoPH6Tgo/view>.

<sup>173</sup> An overview of the application process is available at [https://docs.google.com/document/d/1LjQtFFRgi8KPSO\\_YxXtr5SxRqbENt-2INY6RI36W488/edit](https://docs.google.com/document/d/1LjQtFFRgi8KPSO_YxXtr5SxRqbENt-2INY6RI36W488/edit).

<sup>174</sup> Intellectual Property Code sect. 145.

trademark registration can be renewed every ten years, subject to the submission of the required forms and the renewal payment.<sup>175</sup>

The IPOPHL website provides a concise overview of trademarks, with embedded links to each aspect of the application processes.<sup>176</sup> Applications can be made online or in person.<sup>177</sup>

Fees for application, filing, examination and registration depend on various factors, including whether the trademark is filed nationally or internationally; how many classes of goods and/or services are to be covered; and the business size, as small entities pay lower fees.<sup>178</sup> Additional fees, such as for renewal or filing for declaration of actual use, should also be taken into account. An overview of the applicable fees can be found on the IPOPHL website.<sup>179</sup>

### Trade secrets

The Intellectual Property Code includes the “protection of undisclosed information” as an IPR, without giving any further information.<sup>180</sup> Article 39 of the TRIPS Agreement, to which the Philippines is a party, may serve as guidance on how to define such undisclosed information.

In the absence of a unified definition of trade secrets under the legislation, the Supreme Court of the Philippines, in *Air Philippines Corporation v Pennswell, Inc.*, held that:

A trade secret is defined as a plan or process, tool, mechanism or compound known only to its owner and those of his employees to whom it is necessary to confide it. The definition also extends to a secret formula or process not patented, but known only to certain individuals using it in compounding some article of trade having a commercial value. A trade secret may consist of any formula, pattern, device, or compilation of information that: (1) is used in one’s business; and (2) gives the employer an opportunity to obtain an advantage over competitors who do not possess the information. Generally, a trade secret is a process or device intended for continuous use in the operation of the business, for example, a machine or formula, but can be a price list or catalogue or specialized customer list. It is indubitable that trade secrets constitute proprietary rights. The inventor, discoverer, or possessor of a trade secret or similar innovation has rights therein which may be treated as property, and ordinarily

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<sup>175</sup> Intellectual Property Code sect. 146.1.

<sup>176</sup> IPOPHL, ‘Trademarks’, available at [https://www.ipophil.gov.ph/services/trade mark/](https://www.ipophil.gov.ph/services/trade%20mark/).

<sup>177</sup> The trademark application form is available at [https://drive.google.com/file/d/1amZi1FD5n1he\\_bbQbT8goFDo8u5tNSQ1/view](https://drive.google.com/file/d/1amZi1FD5n1he_bbQbT8goFDo8u5tNSQ1/view)

<sup>178</sup> IPOPHL, ‘Schedules of Trademark-related Fees’, available at <https://www.ipophil.gov.ph/services/schedule-of-fees/trademark-related-fees/>.

<sup>179</sup> Ibid.

<sup>180</sup> Intellectual Property Code sect. 4.1(g).

an injunction will be granted to prevent the disclosure of the trade secret by one who obtained the information “in confidence” or through a “confidential relationship”.<sup>181</sup>

However, there is currently no specific statute on trade secrets and their protection in the Philippines. The approach to the protection of trade secrets therefore remains largely fragmented. For example, the Consumer Act of the Philippines prohibits any person to reveal or use to their own advantage any information concerning any method or process that, as a trade secret, is entitled to protection.<sup>182</sup> The Revised Penal Code prescribes a prison sentence and a fine for “the person in charge, employee or workman of any manufacturing or industrial establishment who, to the prejudice of the owner thereof, shall reveal the secrets of the industry of the latter.”<sup>183</sup>

Within the realm of employment relationships, a duty of confidence for employees must be established through a contract of employment. In relation to the cessation of an employment relationship, the decision on *Portillo v. Rudolf Lietz, Inc.* permitted an employment contract to include a "non-compete clause", where necessary.<sup>184</sup> Such a clause may restrict an employee from lending their expertise to a competitor, whether or not this involves the disclosure of trade secrets.

Thus, although trade secrets can be beneficial to SMEs in the mobile app sector, particularly in the inception and development stage, they should take vigilant steps to protect their commercially valuable information, such as a regular use of non-disclosure agreements.

#### Intellectual property awareness

No survey information was provided for this part of the study.

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<sup>181</sup> *Air Philippines Corporation v Pennswell, Inc.* [G.R. No. 172835, December 13, 2007].

<sup>182</sup> Art. 40(f) of the Consumer Act of the Philippines (Republic Act No. 7394 of 1992).

<sup>183</sup> Art. 292 of the Revised Penal Code (Republic Act No. 3815 of 1930).

<sup>184</sup> *Marietta N. Portillo v Rudolf Lietz, Inc. Rudolf Lietz and Court of Appeals* [G.R. No. 196539, October 10, 2012].

### **3 The use of IP in the software sector as a means to raise capital and secure investment**

#### **3.1 Intellectual property-backed funding**

In simple terms, funding backed by IP, or “IP-backed funding”, involves using a portfolio of IPRs as security to obtain or secure finance. Its key objectives are to enable IP owners to use their IPRs as security for credit, to the extent permitted under IP law, and to enable secured creditors to obtain security interest in an IPR, determine its priority and enforce it within the limits of IP law.<sup>185</sup>

Given that more than 80% of enterprise value is built around intangible assets, including IP,<sup>186</sup> and that investment in intangibles regularly exceeds investments in traditional assets,<sup>187</sup> it is only sensible to have an effective finance regime to foster innovation and economic growth. Surprisingly, however, most jurisdictions lack adequate legal means for the regulation of IP-backed finances. Likewise, the finance system has failed to keep step with the shift from a global product-based economy to a global knowledge-based economy, remaining focused on more traditional assets. As a result, traditional financial institutions, such as banks, as well as other lenders and financiers, rarely consider IP assets in credit appraisal decisions for SMEs. This is due to a variety of difficulties faced by both parties and creates obstacles for economic growth and productivity. Financial institutions and lenders are rather inclined to develop risk aversion towards the use of IP as security, because IP products may, for instance, be difficult to value and enforce. Special expertise is needed in both situations, which increases administrative effort and costs.

Unlike large companies with an established portfolio of tangible and intangible assets, SMEs often lack the time and financial resources needed to establish a proper IP portfolio in the first place. Furthermore, SMEs often cannot provide other, more traditional security means, which excludes them from obtaining the necessary financial support to foster their innovations and creative works.

In light of the economic importance of IP-backed funding, and in particular its significance for helping SMEs to contribute to the economy, it would be beneficial if it became a viable alternative to the current status quo of funding raising.

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<sup>185</sup> J. Denoncourt, ‘IP Debt Finance and SMEs: Revealing the Evolving Conceptual Framework Drawing on Initiatives from Around the World’, in T. Kono (ed.), *Security Interests in IP*, Springer Nature Singapore Pte Ltd. (2017), p. 8.

<sup>186</sup> Brand Finance, *Global Intangible Finance Tracker 2018*, (2018). Available at <https://brandfinance.com/images/upload/gifft.pdf>

<sup>187</sup> Ibid.

### 3.1.1 Traditional funding

#### A Equity finance

Owing to the high risk, banks do not usually lend to small business ventures until they have successfully entered the growth phase. In the interim, alternative funding sources are needed.<sup>188</sup>

Financiers in equity financing may be venture capitalists, angel investors and private equity partners, as well as business incubators and business accelerators. These types of financier are often individual investors but can also be institutional investors seeking to invest in SMEs that have high growth potential.<sup>189</sup> Equity financing involves issuing investors with an ownership interest in the company in exchange for up-front capital. On the one hand, the SME benefits from not incurring debts and having to repay specific sums to the investors at specific intervals of time.<sup>190</sup> On the other hand, the equity of original ownership of the firm is diluted. In terms of access to finance, economies with robust IP regimes are more likely to attract venture capital and private equity funding.<sup>191</sup>

#### B. Angel investors/business angels

An angel investor, or business angel, is a high-net-worth individual with considerable business experience who invests their own time and money in a new enterprise with the aim of profiting from its long-term growth. In addition to providing funding, they also contribute their business experience and knowledge, to help the company succeed. Compared to other financiers, angel investors seem to have a more personal motivation for providing funding, such as personal interests, the desire to give back or the thrill of being involved with an innovative company.<sup>192</sup> Unsurprisingly, they often invest in SMEs during the early, growth and expansion stages.

In terms of monetary investments, angel investors usually invest between 10,000 US dollars and 2 million US dollars – and sometimes more – of their personal disposable finance in exchange for an equity stake in the firm.<sup>193</sup> Investing in early-stage SMEs is high risk, so angel

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<sup>188</sup> G. B. Halt Jr., et al., *IP and Financing Strategies for Technology Startups*, Springer International Publishing AG (2017), p. 19.

<sup>189</sup> Ibid.

<sup>190</sup> Ibid at p. 20.

<sup>191</sup> Global Intellectual Property Centre of US Chamber of Commerce (2016), available at [http://www.theglobalipcenter.com/wp-content/themes/gipc/map-index/assets/pdf/2016/GIPC\\_Index\\_2016\\_Final.pdf](http://www.theglobalipcenter.com/wp-content/themes/gipc/map-index/assets/pdf/2016/GIPC_Index_2016_Final.pdf).

<sup>192</sup> 'Creating your own Angel Investor Group: A Guide for Emerging and Frontier Markets', International Bank for Reconstruction and Development / The World Bank (2014), p. 5. Available at <https://openknowledge.worldbank.org/bitstream/handle/10986/21081/930370WP0Box380ups0guidbook0final00.pdf?sequence=1&isAllowed=y>.

<sup>193</sup> 'Introduction to Angel Investment', UK Business Angels Association, available at <https://www.ukbaa.org.uk/services-for-entrepreneurs/support-and-advice/angel-investment-right-business/>.

<sup>193</sup> Ibid.

investors often require a higher return than other financiers. They tend to invest locally, as this reduces administrative burdens.<sup>194</sup>

### C. Venture capital

Venture capitalists differ from angel investors in that they invest other people's money. Venture capital (VC) funds are granted in exchange for a stake in the company and are typically derived from a pool of professionally managed funds,<sup>195</sup> which are usually contributed by individual venture capitalists or institutional investors. Unlike angel investors, they are usually more inclined to invest in SMEs (and larger firms) that are further along in, or beyond, the product development stage. This is particularly true in the field of technology, as technological products are considered well developed at that point.<sup>196</sup> To better assess the risks connected to the investment, venture capitalists often prefer to invest in companies that have an established IP portfolio.

### D. Debt financing

Given the importance of IP to companies and the economy, and in particular to SMEs, debt finance may become a viable alternative to VC and private equity finance, the availability of which has also decreased over the past decade.<sup>197</sup> Unlike equity finance, the lender earns interest on the amount borrowed, instead of retaining an ownership stake in the business.<sup>198</sup> Debt financing is still largely based on the assessment of traditional assets and liabilities, rather than intangible assets.

### E. An example from the United Kingdom

The UK may serve as a good example of raising awareness and facilitating access to funding for SMEs. The Enterprise Finance Guarantee (EFG) of the British Business Bank is a national debt guarantee scheme that allows viable small businesses without sufficient physical security to access conventional loans.<sup>199</sup> Since its launch in 2009, the EFG has supported the provision of more than 3 billion pounds sterling of loans, with 17% of the loans being made to companies with at least one IP right.<sup>200</sup>

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<sup>194</sup> Ibid.

<sup>195</sup> J. Denoncourt (2017), p. 7.

<sup>196</sup> Ibid.

<sup>197</sup> Ibid.

<sup>198</sup> G.B. Halt (2017), p. 23.

<sup>199</sup> British Business Bank, 'Enterprise Finance Guarantee – EFG for Advisors and SMEs' available at [www.british-business-bank.co.uk/ourpartners/supporting-business-loans-enterprise-finance-guarantee/efg-for-advisors-smes](http://www.british-business-bank.co.uk/ourpartners/supporting-business-loans-enterprise-finance-guarantee/efg-for-advisors-smes).

<sup>200</sup> Ibid.



### 3.1.2 Importance of intellectual property to companies and the economy

Intangible assets are considered the main drivers of wealth, aggregate productivity and living standards across the global economy.<sup>201</sup> Research suggests that intangible assets account for more than 80% of enterprise value attributed by the stock market. In 2005, IP contributed around 23% of labor productivity growth in the European Union and 32% in the United States.<sup>202</sup>

Although investment in intangibles has been somewhat stifled by the global economic crisis, it is growing faster than investment in tangibles.<sup>203</sup> This is partly because intangibles, and IP more specifically, are pervasive across virtually all business sectors and in every major industrial economy.<sup>204</sup> Furthermore, the importance of intangible assets is evident from the speed of technological advancements and the numerous novel products regularly introduced to the market by technology giants, which make significant investments in research and development.<sup>205</sup>

### 3.1.3 Relevance of intellectual property-based funding for SMEs

Large size enterprises, the primary investors in intangibles, are often able to fund their investments through internal resource allocations alone. They can also obtain external funding more easily, as they usually have a bigger portfolio of tangible and intangible assets to offer as security.

The situation is different for SMEs. Although they play a key role in economic growth, job creation and regional and social cohesion, obtaining funding may prove very complicated. This is due to several factors. One particular difficulty for SMEs, especially in the development phase, is not only the lack of financial means but also the lack of tangible assets that could serve as security for obtaining a loan. Despite the increasing prevalence and importance of intangible assets, the finance system is still strongly focused on the economy around traditional tangible assets.<sup>206</sup>

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<sup>201</sup> K. L. Stathis, 'Ocean Tomo Releases 2015 Annual Study of Intangible Asset Market Value', Ocean Tomo Insights Blog (March 5, 2015), available at <http://www.oceantomo.com/blog/2015/03-05-ocean-tomo-2015-intangible-asset-market-value/>; Organisation for Economic Co-operation and Development (OECD), *Enquiries into IP's Economic Impact*, (2015), p. 458, available at <http://www.oecd.org/sti/ieconomy/KBC2-IP.Final.pdf>

<sup>202</sup> C. Corrado et al. 'Innovation and intangible investment in Europe, Japan, and the United States', *Oxford Review of Economic Policy*, Vol. 29(2), (2013), p. 271.

<sup>203</sup> United Kingdom Intellectual Property Office (UKIPO) & British Business Bank, 'Using IP to Access Growth Funding', (2018), p. 8. Available at [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/753562/ip-funding.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/753562/ip-funding.pdf)

<sup>204</sup> J. Hand and B. Lev (eds.), *Intangible Assets: Values, Measures and Risks*, (2003), p. 2.

<sup>205</sup> G. B. Halt Jr. (2017), p. 1.

<sup>206</sup> UKIPO & British Business Bank, 'Using IP to Access Growth Funding', (2018), p. 6.

One of the trickiest aspects in this context is that the difficulty involved in IP valuation makes the returns riskier and more uncertain for lenders, as shall be discussed below. Inadequate financial resources in SMEs also leads to a lower rate of IP asset registration, which in turn results prevents them from building an IP portfolio and decreases their chances of obtaining funding altogether. Recent observational studies found that young and innovative firms preferred to protect their intangible outputs through confidentiality agreements or secrecy.<sup>207</sup>

Furthermore, capital markets are subject to imperfections that may lead to sub-optimal investments in knowledge-intensive start-ups and young SMEs.<sup>208</sup> The resultant slower pace of knowledge-driven growth could be remedied by relaxing the financing constraints on young SMEs.

Some cash-constrained SMEs could leverage their IP assets to open new funding channels, either by attracting investors or through licensing.<sup>209</sup> In fact, empirical evidence suggests that SMEs have strong monetary motivations to seek out funding possibilities. However, it has also been suggested that SMEs usually find it relatively hard to acquire the resources necessary to exploit their inventions.<sup>210</sup> Thus, the economic impact of providing access to IP-backed finance to secure investment loans could be greatest among smaller IP-rich firms.

## **3.2 Potential barriers to accessing finance using intellectual property**

### **3.2.1 Key issues**

Despite its potential for funding innovation, IP-based funding is widely believed to be under-exploited, especially by those fledgling SMEs that could benefit from it most.<sup>211</sup> One of the most obvious key issues is that SMEs do not have the necessary financial resources to either back up security or invest in their innovations in the first place. This ultimately restricts access to IP-backed funding, as potential revenues are difficult to estimate, placing a higher risk on the investor. Moreover, access to IP-backed funding is already restricted by the very nature of the financial system. This is applicable for both debt and equity IP-backed finance, although the former is probably more constrained now.<sup>212</sup>

IP registration costs and IP asset valuation are the first hurdle to overcome, requiring a substantial amount of expertise and, hence, financial resources. With respect to IP asset measurement and valuation, although managers and financial analysts intuitively understand

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<sup>207</sup> OECD, *Enquiries into IP's Economic Impact*, (2015), p. 459.

<sup>208</sup> Ibid.

<sup>209</sup> Ibid.; De Rassenfosse, G. (2012). "How SMEs exploit their IP assets: evidence from survey data", *Small Business Economics*, Vol. 39-2, pp. 437-452.

<sup>210</sup> Ibid.

<sup>211</sup> UKIPO & British Business Bank 'Using IP to Access Growth Funding', (2018), p. 17.

<sup>212</sup> OECD, *Enquiries into IP's Economic Impact*, (2015), p. 464.

the importance of intangibles to business success, there is lack of knowledge about their economic attributes and how their value contributes to economic growth.<sup>213</sup> The lack of available tools for assessing the return on investments in intangibles is also problematic. An international or harmonized standard on IP valuation would therefore be hugely valuable.

Moreover, property rights in intangibles are not fully secured, and there is no transparent and competitive market in intangibles. The deficient accounting for intangibles makes owners of, and investors in, intangibles vulnerable to unexpected changes in business conditions.<sup>214</sup>

### 3.2.2 Banking regulations

The banking sector itself poses another great barrier to the IP-based funding regime, in particular for SME access. This is due to banking regulations that are designed to regulate security interests for traditional assets, and internal banking policies. The problem goes back to the global financial crisis of 2007, which ultimately led to a decline in the general availability of loans (or credit), coupled with the tightening of conditions required to take a loan, also known as the credit crunch.<sup>215</sup> Despite government initiatives, the financial system still appears resistant to the dramatically increasing value of IP as a percentage of corporate value.

An obstacle for financial institutions themselves is that in order to collateralize an IP asset, they need to understand its function, its relationship with cash flows and its potential value if disposed in isolation from the company. The complexity of these factors makes understanding them more difficult. Moreover, most financial institutions have not developed the necessary methods to streamline the assessment of IP assets, adding to the complexity of the issue. For example, while IP assets qualify as securities and potentially contribute to raising capital adequacy, banks usually lack the experience to provide regulators with the necessary risk assessment to meet regulatory standards.<sup>216</sup>

Hence, although IP is a valuable enterprise asset, which drives technological twenty-first-century innovation and creativity, IP-backed debt finance is still underdeveloped in virtually every country in the world. This is because many banks are understandably risk-averse to

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<sup>213</sup> J. Hand & B. Lev, (2003), p. 2.

<sup>214</sup> B. Lev, *Intangibles: Management, Measurement, and Reporting*, Brookings Institution Press (2001), p. 37.

<sup>215</sup> J. Denoncourt, (2017), p. 6.

<sup>216</sup> OECD, *Enquiries into IP's Economic Impact*, (2015), p. 462; M. Brassell & K. King, "Banking on IP?: The role of IP and intangible assets in facilitating business finance." published by The IP Office of the United Kingdom, (2013), available at [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/312008/ipresearch-bankingip.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/312008/ipresearch-bankingip.pdf); European Commission (2014). Final Report from the Expert Group on IP Valuation, Publications Office of the European Union, pp. 12-20, available at [http://ec.europa.eu/research/innovation-union/pdf/Expert\\_Group\\_Report\\_on\\_Intellectual\\_Property\\_Valuation\\_IP\\_web\\_2.pdf](http://ec.europa.eu/research/innovation-union/pdf/Expert_Group_Report_on_Intellectual_Property_Valuation_IP_web_2.pdf)

dealing with intangible assets, which are considered difficult to identify, value and register as security interests.<sup>217</sup>

### 3.2.3 Legal enforceability

The issue of the legal enforceability of IP security in cases of default also gives rise to uncertainty. Firstly, IP litigation is often very time-consuming and expensive, making it less attractive for either party to pursue. IP insurance can, in such circumstances, mitigate the costs and risks associated with expensive litigation, but adds another administrative layer to the investment procedure. Moreover, the manner of separating IP from the firm that holds it may prove difficult as IP and other intangible assets are often embedded within the firm that developed them. While it might be more straightforward with registered IP, cases involving trade secrets are less so. If a clear-cut separation is either impossible or proves difficult, the ability of lenders to exercise claims on these assets may be challenging.<sup>218</sup> This makes IP as security less attractive because if a lender is unable to take possession of the asset and monetize it, he or she is unable to recover losses through the sale of IP. Furthermore, there are not many insolvency practitioners in the field of intangible asset valuation and recovery, which presents lenders with an additional layer of difficulties when attempting to realize their security.

### 3.2.4 Valuation

Research has shown that more than 80%– and rising – of enterprise value can be attributed to intangible assets, proving their great importance to businesses. Nevertheless, IP, as well as other intangible assets, remains difficult to value. This is particularly true for new technological innovations, as they are still untested. It can be equally difficult to establish a value for other intangible assets as their value is often context specific, in that they may only be valuable within the firm where they were developed owing to the way they interact with the firm's other assets and therefore may not be as valuable outside that firm.<sup>219</sup> The lack of a single market-wide or agreed methodology for valuing IP contributes to the valuation problem. Furthermore, the lack of transaction data further impairs the independent evaluation of IP, rendering specialist expertise a necessity. This, in turn, increases the costs of determining IP value and, in the absence of a scalable process, limits growth.<sup>220</sup>

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<sup>217</sup> Ibid.

<sup>218</sup> Intellectual Property Office of the United Kingdom and British Business Bank, "Using intellectual property to access growth funding", *british-business-bank.co.uk*. Web. <[https://www.british-business-bank.co.uk/wp-content/uploads/2018/10/502-IP-Report\\_singles.pdf](https://www.british-business-bank.co.uk/wp-content/uploads/2018/10/502-IP-Report_singles.pdf)>.

<sup>219</sup> Ibid.

<sup>220</sup> Ibid. Directorate-General for Research and Innovation, "Final Report from the Expert Group on Intellectual Property Valuation". European Commission, May 6, 2014. Web.

In terms of investment, the difficulty of valuing IP also contributes to the information asymmetry between potential lenders and SMEs. As a result, lenders are faced with uncertainty over the value of IP and the amount that may be recovered in the event of default.<sup>221</sup> Often SMEs do not even attempt to assess the value of their IP because of the costs, time and complexity associated with valuation.

### **3.2.5 Liquidity**

At present, there is no established liquid secondary market for IP, making it difficult for both price discovery and asset disposal. When using IP as security, lenders risk becoming encumbered with an asset that they are unable to sell and that therefore has no immediate liquid cash value. Transactions involving intangible assets are infrequent and not publicly recorded. The limited frequency of intangible asset transactions may be partially caused by a lack of appropriate supporting infrastructure, such as valuers, agents and value logs.<sup>222</sup>

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<https://publications.europa.eu/en/publication-detail/-/publication/797124c6-08cb-4ffb-a867-13dd8a129282>.

<sup>221</sup> Ibid.

<sup>222</sup> Ibid.

#### **4. Software sector collaboration with research institutions and information and communication technology hubs in the three project beneficiary countries, and the role IP plays in these countries**

##### **4.1 Research institutions and information and communication technology hubs in Kenya**

*The survey for this part of the study was answered by four respondents, including KIPI and representatives from the software industry and academia.*

While Nairobi is the center of ICT innovation hubs in Kenya, a number of them are also emerging in other Kenyan cities and towns, such as SwahiliBox in Mombasa,<sup>223</sup> LakeHub in Kisumu,<sup>224</sup> EldoHub in Eldoret,<sup>225</sup> Sote Hub in Voi,<sup>226</sup> Ubunifu in Machakos<sup>227</sup> and Mt Kenya Hub in Nyeri.<sup>228</sup> Other ICT Hubs include iHub,<sup>229</sup> @iLabAfrica,<sup>230</sup> NaiLab<sup>231</sup> and AkiraChix.<sup>232</sup> ICT hubs or innovation spaces are often a combination of co-working offices, accelerators and incubators. These offer entrepreneurs flexible workspaces and time-limited programs designed by relevant mentors on the development of ideas and businesses. Simply put, they function as catalysts for local and regional economic development. Some of these hubs operate independently, while others operate within the framework of academic institutions.

With regard to collaboration with the software sector, iHub, for example, partners with Facebook, Google and Safaricom, among others.<sup>233</sup> AkiraChix and NaiLab are supported by Microsoft.<sup>234</sup> One ICT hub is discussed in detail below.

##### **A. @iLabAfrica**

@iLabAfrica is a center of excellence in ICT innovation and development, and is involved in interdisciplinary research, student engagement and collaboration with government, industry and funding agencies. It was established in 2011 under the Faculty of Information Technology at Strathmore University in Nairobi, and became independent in 2017. Its mission is “to provide an environment that promotes technological innovation and provides

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<sup>223</sup> SwahiliBox official website: <<https://swahilibox.co.ke/>>.

<sup>224</sup> LakeHub official website: <<https://lakehub.co.ke/>>.

<sup>225</sup> EldoHub official website: <<https://www.eldohub.co.ke/>>.

<sup>226</sup> Sote Hub official website: <<http://www.sotehub.com/>>.

<sup>227</sup> Ubunifu official website: <<http://www.ubunifuhubs.net/>>.

<sup>228</sup> Mt. Kenya Hub official website: <<https://mtkenyahub.com/ea/>>.

<sup>229</sup> iHub official website: <<https://ihub.co.ke/>>.

<sup>230</sup> @iLabAfrica official website: <<http://www.ilabafrica.ac.ke/>>.

<sup>231</sup> NaiLab official website: <<http://nailab.co.ke/>>.

<sup>232</sup> Akirachix official website: <<http://akirachix.com/>>.

<sup>233</sup> iHub official website: <<https://ihub.co.ke/>>.

<sup>234</sup> Akirachix official website: <<http://akirachix.com/>>.

business support structures and policy direction to harness the potential of ICT as a genuine tool for sustainable development.”<sup>235</sup>

The main areas of operation of @iLabAfrica are: (1) ICT research and innovation; (2) entrepreneurship and incubation; (3) ICT outsourcing; and (4) ICT policy research.

Within its areas of operation, @iLabAfrica offers a variety of programs, ranging from academic programs to industry training. Owing to its location at Strathmore University, @iLabAfrica continues to work in close association with the academic environment of the university. For instance, master’s programs in Science in Information System Security (M.Sc. ISS) and in Mobile Telecommunication Innovation and Development are jointly run by @iLabAfrica and Strathmore University. It also offers short courses in data visualization and the development of mobile applications.

As discussed below, notable software collaborations include those with Samsung Electronics East Africa to support research and development and with VMware International Ltd. on the development of an IT academy.

As part of the aforementioned initiative, Samsung provided financial support to @iLabAfrica for research and development, which was aimed at helping students to develop new ideas and innovative products. The project started in 2011 and continued for three years, in which students were provided with research support, expert guidance and the necessary facilities for developing mobile applications. The partnership contributed to the development and launch of more than 80 mobile applications, which are in use and available for download exclusively on Samsung devices via Samsung Galaxy Apps.

In August 2019, a collaboration between Strathmore University and VMware International Ltd.<sup>236</sup> was announced, which will be spearheaded by @iLabAfrica. Together they will establish the VMware IT Academy, with the tagline “Virtualize Africa”, to facilitate collaboration between key stakeholders across academia, government and industry. The aim is to equip African students with the technical skills and qualifications required to succeed in the digital economy. @iLabAfrica will provide 20 experts to conduct the training, in which over 100 Strathmore University students will participate. Furthermore, Strathmore University has already begun integrating into its curricula a range of courses developed by VMware on topics such as virtualization, cloud computing, AI and the IoT. This is facilitated through subsidized software licenses and certification vouchers from VMware. The students will benefit from access to high-quality online learning resources, hands-on laboratory

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<sup>235</sup> @iLabAfrica official website: <<http://www.ilabafrica.ac.ke/index.php/ilabafrica/>>.

<sup>236</sup> A software company headquartered in the United States of America.

experience to develop their technical skills and the opportunity to achieve industry-recognized VMware certification to complement their chosen fields of study.

IP advice and legal support is available through entrepreneurship and training programs offered by @iBizAfrica, the entrepreneurship arm of @iLabAfrica. @iBizAfrica also acts as a focal point for investors, including VCs, angel investors, private equity groups and banks, in order to engage potential technology entrepreneurs. In that regard, @iBizAfrica has managed to forge valuable partnerships with Deloitte, CIO East Africa and others. In order to use the services offered by @iBizAfrica, a business is required to purchase a startup package, ranging from 9,000 to 25,000 Kenyan shillings per month for use of the organizations' facilities.<sup>237</sup> Start-ups are required to submit applications, which are evaluated by the @iBizAfrica Selection Committee, and rated according to the strength of the business plan and how well the space can assist the company in 6 to 12 months of use.

#### B. Centre for Intellectual Property and Information Technology Law

Strathmore University also hosts the Centre for Intellectual Property and Information Technology Law (CIPIT). CIPIT offers academic courses on IP and business, patent drafting and IT-focused training. Furthermore, CIPIT has an IP clinic, which offers consultations to entrepreneurs, individual inventors and start-ups on issues pertaining to IP and IP protection, as well as assistance in navigating the most complex aspects of IP law. The service is free of charge. CIPIT has obtained funding from several international sources, including the Ford Foundation, the Canadian International Development and Research Centre and the Canadian Social Sciences and Humanities Research Council. Funded projects have received sponsorship from, inter alia, Pfizer, Facebook and Mozilla.

The survey responses did not provide any information on the benefits of raising awareness of IP through such collaborations.

While training on legal issues pertaining to IP is offered under the condition of a membership, for example with @iLabAfrica, there is no continuous effort outside this framework to raise awareness of IP. Similarly, iHub offered an intensive course on IP for developers and entrepreneurs in collaboration with uWakili.<sup>238</sup> It therefore falls to specialized institutions, such as CIPIT, to engage in endeavors to raise awareness of IP-related issues.

Some of the survey respondents found the collaborations mentioned above to be highly beneficial to raising awareness of IP and to developing the software sector. This is

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<sup>237</sup> For further details on what the costs entail, please visit:  
<<http://www.ibizafrica.co.ke/index.php/incubation/>>.

<sup>238</sup> uWakili is an online legal services platform that provides pro bono legal services to start-ups.



particularly important as some survey responses indicated that ICT hubs have communicated the need for change in order to optimize the use of IP in their sector.

## 4.2 Research institutions and information and communication technology hubs in Trinidad and Tobago

*This part of the survey was answered by four respondents: the Intellectual Property Office of Trinidad and Tobago (TTIPO), the BICSI, the NIB, and the UWI.*

In Trinidad and Tobago, a national ICT Plan, the ICT Blueprint 2018-2022 (the Blueprint) was crafted to address the needs and priorities of the Government, business and the citizens of Trinidad and Tobago – as well as the country’s regional and international obligations. The Plan lays down the ICT agenda, builds on the country’s past performance in ICT and sets forth a bold vision of a future transformed through ICT and characterized by empowered people, competitive businesses and transformational government.<sup>239</sup>

### A. Research institutions and software sector collaborations

One example is the collaborations between the UWI and the local company Teleios.<sup>240</sup> The collaboration started as early as 2008, when the UWI supported the development of Teleios Code Jam.<sup>241</sup> Teleios Code Jam is an internationally recognized software development program that seeks to inspire and motivate students to solve real-world problems in a collaborative manner.<sup>242</sup>

Some of the respondents indicated another collaboration between the software sector and a research institute, specifically between Huawei and the UTT.<sup>243</sup>

On September 26, 2019, an MoU was signed between UWI St. Augustine Campus, bmobile and Huawei for a state-of-the-art, 1,600 square feet innovation lab named “*bmobile-UWI Innovation Lab powered by Huawei.*” Huawei has donated over 13 million dollars (2 million US dollars) in equipment to support testing, commercial research and development in ICT.<sup>244</sup>

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<sup>239</sup> [http://mpac.gov.tt/sites/default/files/file\\_upload/publications/NICT%20Plan%202018-2022%20-%20August%202018.pdf](http://mpac.gov.tt/sites/default/files/file_upload/publications/NICT%20Plan%202018-2022%20-%20August%202018.pdf)

<sup>240</sup> Teleios is a software company in Trinidad and Tobago, and a leader in cloud, mobile and automation services. <<https://www.teleios-systems.com/>>.

<sup>241</sup> University of West Indies St. Augustine, “Global Microsoft recognition for UWI/Teleios Collaboration”. *sta.uwi.edu*. Jun. 5, 2014. Web. <<https://sta.uwi.edu/news/releases/release.asp?id=1274>>.

<sup>242</sup> Teleios Code Jam, official website. <<https://www.teleioscodejam.com>>.

<sup>243</sup> University of Trinidad and Tobago, “Press Release: Huawei / UTT sign MoU”. *utt.edu.tt*. Mar. 21, 2018. Web. <[https://utt.edu.tt/index.php?wk=1&articles=1&article\\_key=6554](https://utt.edu.tt/index.php?wk=1&articles=1&article_key=6554)>.

<sup>244</sup> <https://newsday.co.tt/2019/09/29/huawei-powers-innovation-lab-at-uwi/>

The equipment will be configured to resemble the bmobile network and, in addition to individual workspaces, will include a smart classroom with seating for 15.<sup>245</sup>

The initiative is a direct fit with the national ICT Plan and is intended to create opportunities for employment within the ICT sector, make T&T more digitally attractive and competitive on the world stage, and create new lines of business, thereby facilitating the emergence of small and microentrepreneurs.<sup>246</sup>

In addition, the UTT signed an MoU to partner with the Huawei “Seeds for the Future”<sup>247</sup> program. The program offers top ICT students at the university level the opportunity to travel to Huawei’s headquarters in Shenzhen, China, to receive cutting-edge technology training over a two-week period. Huawei aims to support students from Trinidad and Tobago in developing a national knowledge-based and innovative society, as well as in furthering research and innovation ties between Trinidad and Tobago and China.

Furthermore, CARIRI and Microsoft Trinidad and Tobago have been collaborating since 2014, when they opened the Microsoft Innovation Centre.<sup>248</sup> The Innovation Centre has been assisting developers, independent software vendors, entrepreneurs, researchers and students in developing and deploying innovative software solutions based on Microsoft technology. Furthermore, the Innovation Centre offers ICT training courses, workshops and competitions, an Incubatee Program and individual and business mentorship sessions. The collaboration between CARIRI and Microsoft aims to enhance ICT development and foster the growth of the local software industry.<sup>249</sup>

## B. Tamana InTech Park

Tamana Intech Park should be mentioned in that regard, being as it is the first Science and Technology Park in the country. It was established to assist Trinidad and Tobago to become a knowledge-based economy.

Tamana Intech Park is an eco-industrial park located at Wallerfield with an academic and research focus. The area is currently being developed and has been segmented into four areas of operation: ICT and knowledge-based; high value manufacturing; agro-industrial; and mixed use. One of the Park’s largest tenants, the UTT, will provide the necessary synergy

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<sup>245</sup> <https://newsday.co.tt/2019/09/29/huawei-powers-innovation-lab-at-uwi/>

<sup>246</sup> <https://newsday.co.tt/2019/09/29/huawei-powers-innovation-lab-at-uwi/>

<sup>247</sup> Huawei, ‘Seeds for the Future’, *huawei.com*. Web. <<https://www.huawei.com/uk/about-huawei/sustainability/win-win-development/social-contribution/seeds-for-the-future>>.

<sup>248</sup> Centre for Enterprise Development, Microsoft Innovation Centre Trinidad and Tobago. <<https://www.cedcariri.com/microsoft-innovation-centre-trinidad-tobago/>>.

<sup>249</sup> Centre for Enterprise Development, “CARIRI and Microsoft T&T sign new partnership agreement”. *cedcariri.com*. Dec. 7, 2017. Web. <<http://www.cedcariri.com/2017/12/>>.

between industries and academia in the areas of industry-sponsored research and the management of innovations and IP.

As a member of the United Kingdom Science Parks Association,<sup>250</sup> Tamana Intech Park will be able to access a range of networking, advocacy, information and promotional opportunities in order to develop and sustain an environment for supporting the innovative, high-tech and knowledge-based businesses located on its site and beyond. Tamana Intech Park also aims to attract a number of foreign investors.<sup>251</sup>

Some of the survey responses indicated that collaborations between industry and research institutions may prove highly beneficial to raising awareness of IP and developing the software sector, stating that the “strengthening and building of IP awareness is critical to software development.” Other survey responses found such collaborations to be of average benefit for both sectors. No further information was obtained in this context.

#### **4.3 Research institutions and information and communication technology hubs in the Philippines**

*No survey information was provided for this part of the study.*

Although there is an increasing number of Fintech business incubators and accelerators in the Philippines, such as AIM-Dado Banatao Incubator,<sup>252</sup> Cerebro Labs,<sup>253</sup> Impact Hub Manila,<sup>254</sup> Startup Village,<sup>255</sup> Upscale<sup>256</sup> and xchange<sup>257</sup>, no particular collaborations with the software sector were found.

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<sup>250</sup> The United Kingdom Science Park Association (UKSPA) is an organization of science parks in over 130 locations. Its mission is to “support and encourage the growth of Science Parks, Innovation Centres and other Innovation locations.” UKSPA promotes the development of Science Parks in the United Kingdom and beyond through a diverse network, funding opportunities and a program of sharing good practices, research, promotion and advocacy. More information may be found on UKSPA’s website, available at <<http://www.ukspa.org.uk>>.

<sup>251</sup> Tamana Intech Park official website.

<<http://www.tamana.com/apps/cms/info/2park.aspx?articleid=2&zoneid=2>>. Conley, Timothy, “Tamana Intech Park marries ecology with technology”. *fdiintelligence.com*. fDi Magazine, Jun. 15, 2017. Web. <<https://www.fdiintelligence.com/Locations/Americas/Trinidad-and-Tobago/Tamana-Intech-Park-marries-ecology-with-technology>>. InvesTT, Tamana InTech Park. <<http://www.investt.co.tt/industries-and-opportunities/tamana-park/>>.

<sup>252</sup> Asian institute of Management, the Aim-Dado Banatao Incubator. Official website available at <<https://www.aim.edu/dado-banatao-incubator>>.

<sup>253</sup> Cerebro Labs, official website: <<https://www.cerebrolabs.io>>.

<sup>254</sup> Impact Hub Manila, official website: <<https://impacthub.ph/>>.

<sup>255</sup> Startup Village, official website: <<http://www.startupvillage.ph/>>.

<sup>256</sup> UPSCALE Innovation Hub, official website: <<https://www.facebook.com/upscaleinnovationhub/>>.

<sup>257</sup> xchange, official website: <<http://xchange.ph>>.

The leading incubator-accelerators are Launchgarage,<sup>258</sup> IdeaSpace<sup>259</sup> and QBO Innovation.<sup>260</sup> The idea behind these innovation spaces is to provide and enhance opportunities for Fintech businesses to thrive in the Philippine economy.

#### A. IdeaSpace Foundation

The IdeaSpace Foundation is a non-profit organization dedicated to supporting innovation, technology development and entrepreneurship to spur economic growth in the Philippines. Based in Manila, IdeaSpace helps technology entrepreneurs to develop groundbreaking innovations and transform them into successful businesses. Since its launch in 2012, IdeaSpace has supported 74 tech start-ups and close to 500 startup founders. Those who participate in IdeaSpace's incubation or acceleration programs are supported with funding, informal learning sessions, entrepreneurship development programs, market assistance and expert mentoring. While no specific information could be identified on how IP-related matters are addressed in these programs, the mentors and advisors who provide participating start-ups with industry expertise include legal experts in IP and patent specialists.<sup>261</sup> It can thus be assumed that IP education forms part of IdeaSpace's incubation and acceleration programs. No information on specific software sector collaborations was found.

#### B. Huawei ICT Academy – Philippines

The Huawei ICT Academy, also called Huawei Authorized Information and Network Academy, is a not-for-profit partnership program authorizing educational institutions worldwide to deliver Huawei Certification courses on ICT skills to their students.<sup>262</sup> The collaboration between Huawei and universities in the Philippines started in 2018 with four partner universities.<sup>263</sup> In 2019, Mapua University and the Polytechnic University signed a MoU with Huawei to participate in the Huawei ICT Academy. Those institutions were selected on the basis of the courses offered on the syllabus, as well as their focus on ICT-related education as a whole.

Being part of the Huawei ICT Academy allows students to access free online courses on the Huawei Academy website, along with other ICT-related resources. The online courses include lectures and training modules that aim to support students in acquiring the skills

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<sup>258</sup> Launchgarage Manila, official website: <<https://www.launchgarage.com>>.

<sup>259</sup> ideaspace, official website: <<http://www.ideaspacefoundation.org>>.

<sup>260</sup> QBO, official website: <<https://www.qbo.com.ph>>.

<sup>261</sup> ideaspace, acceleration program, official website: <<http://www.ideaspacefoundation.org/acceleration.html>>.

<sup>262</sup> The Huawei Certificates were created by Huawei and are awarded upon successful attendance and completion of the Huawei ICT programs.

<sup>263</sup> These include the University of Southeastern Philippines, Mindanao State University - Iligan Institute of Technology, Bulacan State University and the De La Salle University Science Campus.

needed to obtain the internationally recognized Huawei Certification. These courses are augmented by classroom sessions led by university tutors who have received specific training from Huawei in order to be able to supplement the online courses; they have also earned the Huawei Certification themselves.

In the Philippines, the Huawei ICT Academy is focused on sharing knowledge and cultivating ICT talent. Moreover, students who obtained Huawei Certificates may have the opportunity to obtain employment with Huawei after graduation.

Furthermore, the Huawei ICT Academy founded the Huawei ICT competition, in which students from Huawei's partner universities may participate to test their ICT skills. The first round of the competition takes place at the national level. Winners of the national round are then invited to the regional meeting, in order to compete against students from Malaysia, Indonesia, Singapore, New Zealand and Australia. From there, the winners join the global competition in China.

## **5 The availability of local and foreign intellectual property-based funding and collaboration mechanisms for the software sector in the three beneficiary countries**

The lack of funding, whether traditional or IP-based, has often affected the ability to engage in research and development and, consequently, to generate growth. As stated earlier, IP has great socioeconomic value in that it drives innovation and creativity in a society through this economic growth. However, despite the recognition of the economic value of IP, many tech start-ups, including IP-rich ones, continue to face difficulties when seeking funding for the development of their intangible assets. Although equity investors, for example, consider intangible assets, such as IP, to be critical in evaluating prospective investments, SMEs remain largely reliant on bank lending or asset finance to raise capital.<sup>264</sup> As explained in Chapter 3, the challenge with bank lending is that such financiers still strongly focus on traditional assets and thereby exacerbate the difficulties of knowledge-intensive businesses trying to obtain funding. Providing for a regulatory framework for IP-based funding and collaboration between governments and financial institutions may therefore bridge the financing gap for IP-rich SMEs and start-ups.

### **5.1 Intellectual property-based funding in Kenya**

*KIPI, KECOBO and two other respondents from the software sector and academia respectively provided responses to the survey.*

The study's responses do not paint a clear picture. Opinion is split as to whether IP-based funding mechanisms are available, who may provide such services and whether the government would facilitate such mechanisms. Some of the survey respondents were of the view that IP-based funding mechanisms do exist in Kenya, while others indicated that such funding mechanisms are available through universities. Needless to say, IP developed by university staff under an employment relationship framework may be owned by the university itself.<sup>265</sup>

The survey respondents were less divided, however, on the benefits such funding mechanisms may bring. All respondents considered IP-based funding to be a viable means of securing funding for SMEs, with the potential to be highly valuable in the mobile app sector. Furthermore, the survey respondents unanimously indicated that IP-based funding

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<sup>264</sup> Ogier, John P., "Intellectual Property, finance and economic development". *WIPO Magazine*, Feb. 2016. World Intellectual Property Organization. Web.

<[https://www.wipo.int/wipo\\_magazine/en/2016/01/article\\_0002.html](https://www.wipo.int/wipo_magazine/en/2016/01/article_0002.html)>.

<sup>265</sup> University of Nairobi, "Intellectual Property Policy". *dvcfpd.uonbi.ac.ke*. Mar. 2013. Web.

<<https://dvcfpd.uonbi.ac.ke/sites/default/files/centraladmin/dvcf/IP%20policy%20UMB%20final%20oc%20%281%29.pdf>>.

mechanisms would contribute to the growth and development of the software sector, with the representative of KIPi saying that “it will encourage more software developers to come up and develop software and apps, particularly if they were not able to do this because of financial constraints.” Others indicated that “funding may assist the development of more applications that may solve problems in society” and that IP-based funding mechanisms “will open up new capital and encourage more players to enter development stages for individual projects as opposed to those commissioned by clients.” The survey respondents were therefore united as to the potential of IP-based funding mechanisms to make a valuable contribution to local growth and development in the software sector, and to the mobile app sector in particular.

The survey responses demonstrated a degree of familiarity with and awareness of IP-based funding mechanisms by referring to international examples, such as that of the United Kingdom.

#### A. The Movable Security Rights Act 2017

Contrary to some of the responses, which indicated that IP-based funding mechanisms are not available, the Government of Kenya has introduced the Movable Property Security Rights Act, which was enacted on June 2, 2017. The Act aims to facilitate the use of movable property including IP, as collateral for credit facilities, to establish a Registrar of security rights and to provide for the registration of security rights in movable property. The Act was developed by the Kenya Law Reform Commission, in collaboration with the Office of the Attorney General and Department of Justice, through the Registrar General’s Office and the National Treasury. The project was supported by Financial Sector Deepening Kenya, a non-profit organization and the World Bank.

Section 2 of the Act defines the acquisition of security rights as “a security right in a tangible asset or IP, which secures the obligation to pay any unpaid portion of the purchase price of the asset or other credit extended to enable the grantor to acquire it to the extent the credit is used for that purpose.” IPRs include copyrights, industrial property rights, trademarks and all other related rights<sup>266</sup> and they may therefore serve as a registrable form of security.

The Act is divided into nine parts, providing for preliminary provisions in Part I and the creation of a security right in Part II. Additionally, a security right in any movable assets, including IP, is effective against third parties, if a notice with respect to the security right is registered with the Registrar.<sup>267</sup> Part IV deals with the registration of notices relating to security rights and Part V concerns priorities with regard to competing security interests. The

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<sup>266</sup> Section 2 of the Movable Property Security Rights Act 2017.

<sup>267</sup> Part III, Movable Property Security Rights Act 2017.

rights and obligations of the parties and third-party obligors are dealt with in Part VI, while Part VII is concerned with the enforcement of a security right; Part VIII deals with the applicable law. General provisions are considered in Part IX of the Act.

The passing of the Movable Property Security Rights Act demonstrates that policymakers are fully aware of the significance of IP rights as a potential source of finance.

The respondents indicated that the valuation of IP, legal enforceability and liquidity present the greatest barriers to IP-based funding mechanisms, in a similar vein to the discussion in Chapter 3. KIPi commented in this regard that legal enforceability and liquidity may be facilitated through a viable IP valuation system. The need for a coherent valuation mechanism in Kenya has also been indicated by the Innovation Research Symposium, among others.<sup>268</sup> A few companies, such as ProspectIP Africa – a sister company of ProspectIP UK, specialize in IP and innovation management and are able to provide businesses with tools for identifying and evaluating their IP.<sup>269</sup>

Although the Movable Security Rights Act allows for the use of IP as a security in order to obtain financial support, regrettably, no information could be found on the extent to which it is used by financial lenders and inventors.

## 5.2 Intellectual property-based funding in Trinidad and Tobago

*TTIPO provided the responses to this part of the survey.*

One of the main obstacles to SME growth is limited access to finances. This is usually either because SMEs are considered a high-risk investment or because interest rates are too high to be attractive to SMEs.<sup>270</sup> One of the key problems identified in that regard is the inability of SMEs “to communicate business models and plans to banks, as well as the inability of commercial banks to engage in a structured methodology to evaluate and price credit risk.”<sup>271</sup>

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<sup>268</sup> Ogot, Madara, *et al.* (eds.), “Proceedings of the 2<sup>nd</sup> Annual Innovation Research Symposium”. *uonresearch.org*. University of Nairobi. <<https://uonresearch.org/irs/wp-content/uploads/2018/07/2018-Innovation-Research-Symposium-Proceedings-University-of-Nairobi.pdf>>. Michira, Kamami Christine, “Kenya Moveable Property Security Rights Act, 2017”. *bowmanslaw.com*. Bowmans, Nov. 6, 2017. Web. <<https://www.bowmanslaw.com/legal-updates/moveable-property-security-rights-act-2017/>>.

<sup>269</sup> ProspectIP Africa, official website. <<http://www.prospectipfrica.com>>.

<sup>270</sup> Caribbean Development Bank, “Micro, Small and Medium Enterprise Development in the Caribbean: Towards a New Frontier”, May 19, 2016. <<https://www.caribank.org/publications-and-resources/resource-library/thematic-papers/micro-small-and-medium-enterprise-development-caribbean-towards-new-frontier>>.

<sup>271</sup> Oxford Business Group, “Trinidad and Tobago launches initiatives to secure funding for small and medium-sized enterprises”. *oxfordbusinessgroup.com*. Web. <<https://oxfordbusinessgroup.com/analysis/economic-backbone-initiatives-help-secure-funding-and-opportunities-small-and-medium-sized>>.



According to research conducted by the Central Statistical Office in Trinidad and Tobago, only 11% of SME startup funding comes from the banking system. The majority of funding is usually generated through personal and family savings.<sup>272</sup> This may limit the growth potential the country's SMEs and prevent them from achieving their full potential.

Research conducted by WIPO in 2015 also highlighted the difficulties concerning the availability of finance for SMEs. It indicated that governmental sources and the private sector offer very few possibilities for funding.<sup>273</sup>

In order to overcome the inability of SMEs to communicate business models and plans to financial institutions in an effective manner, the Inter-American Development Bank approved a grant of 150,000 US dollars to enable a local credit agency to expand into a rating service for SMEs, with the aim of enabling SMEs that work with commercial banks to obtain a credit rating. The aim was to improve the assessment of default risk, thereby increasing the efficiency of SME lending for banks, as well as boosting access to finance for SMEs.<sup>274</sup>

Additionally, through the Ministry of Trade and Industry, the Government has expanded the Grant Fund Facility, which provides funding to qualified SMEs. The revision will provide a broader scope of funding opportunities to local manufactures and service providers that qualify. It is administered by the National Export Facilitation Organization of Trinidad and Tobago (exporTT), and assists SMEs in eight designated sectors, including software designs and applications. In this regards, the funding will cover new software, patents for new technology, and the creation of new applications and designs for businesses that conceive and develop computer related programs and frameworks.<sup>275</sup>

Achieving the vision of the national ICT Plan will require the mobilization of significant financial resources. Funding for the Plan will come from Government, International Development Partners and private sector institutions.<sup>276</sup>

Funding allocations by Government would be guided by the benchmark set by ICT progressive developing countries. These countries allocate 5% to 1.5% of GDP to ICT investment

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<sup>272</sup> 'Trinidad and Tobago launches initiatives to secure funding for small and medium-sized enterprises', Oxford Business Group, available at <https://oxfordbusinessgroup.com/analysis/economic-backbone-initiatives-help-secure-funding-and-opportunities-small-and-medium-sized>.

<sup>273</sup> Radauer, A., *et al.*, "Integrating Intellectual Property Into innovation Policy Formulation in Trinidad and Tobago". World Intellectual Property Organization, May 5 2015. <[https://www.wipo.int/edocs/pubdocs/en/wipo\\_report\\_inn\\_tt.pdf](https://www.wipo.int/edocs/pubdocs/en/wipo_report_inn_tt.pdf)>.

<sup>274</sup> SME Finance Forum, "CariCRIS to start rating local SMEs throughout the Caribbean". *smefinanceforum.org*. Feb. 10, 2014. Web. <<https://www.smefinanceforum.org/post/caricris-to-start-rating-local-smes-throughout-the-caribbean>>.

<sup>275</sup> Article extracted from page 6 of the Express Newspaper entitled "Govt expands Grant Fund Facility" dated September 18, 2019

<sup>276</sup> [http://mpac.gov.tt/sites/default/files/file\\_upload/publications/NICT%20Plan%202018-2022%20-%20August%202018.pdf](http://mpac.gov.tt/sites/default/files/file_upload/publications/NICT%20Plan%202018-2022%20-%20August%202018.pdf)

annually.<sup>277</sup> This investment is subdivided into 50% on hardware, 30% on software, and 20% on services.<sup>278</sup>

### 5.3 Intellectual property-based funding in the Philippines

*No answers were obtained for this part of the study.*

#### A. The Personal Property Security Act 2017

The Philippines recently introduced the Personal Property Security Act (PPSA), which allows the use of personal property, including IP rights, as collateral to secure finance.<sup>279</sup> Similarly to the Movable Property Security Rights Act in Kenya, the PPSA establishes a Registrar for the registration of security rights.

The PPSA is divided into eight chapters. Chapter 1 outlines its scope and relevant definitions, followed by Chapter 2 on the creation of security interests. The provisions of Chapter 3 concern the perfection of security interests, such as a registration notice with the Registry submitted by the creditor. The relevant provisions on the priority of security interests can be found in Chapter 4. Matters relating to the registration of security rights may be found in Chapter 5. Chapter 6 covers issues pertaining to the enforcement of security interest.

While the enactment of the Act demonstrate the willingness of policymakers to bring change to the present finance landscape in relation to the use of IPRs as securities, the extent to which any such change has actually been effectuated is unclear as no relevant information could be obtained. While valuation of IP was considered one of the main barriers to IP-based funding in the other jurisdictions, the Department of Science and Technology, the Intellectual Property Office of The Philippines (IPOP HL) and the Department of Trade and Industry established a committee to develop guidelines on IP valuation and commercialization,<sup>280</sup> which have not yet been published.

In addition to the PPSA, two other pieces of legislation can be mentioned. The Philippines recently introduced two new pieces of legislation with a view to assisting the further

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<sup>277</sup> World Bank statistics of ICT investment as percent of GDP in Developing Countries, Developed Countries led by the UK account for as high as 4% of GDP cited in

[http://mpac.gov.tt/sites/default/files/file\\_upload/publications/NICT%20Plan%202018-2022%20-%20August%202018.pdf](http://mpac.gov.tt/sites/default/files/file_upload/publications/NICT%20Plan%202018-2022%20-%20August%202018.pdf)

<sup>278</sup> [http://mpac.gov.tt/sites/default/files/file\\_upload/publications/NICT%20Plan%202018-2022%20-%20August%202018.pdf](http://mpac.gov.tt/sites/default/files/file_upload/publications/NICT%20Plan%202018-2022%20-%20August%202018.pdf)

<sup>279</sup> Section 4 of the Personal Property Security Act 2017.

<sup>280</sup> Republic of the Philippines Department of Science and Technology of the Philippines and the Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development, "Guidelines on IP Valuation and Commercialization to be issued soon". *pcaarrd.dost.gov.ph*. Web. <<http://www.pcaarrd.dost.gov.ph/home/portal/index.php/quick-information-dispatch/1945-guidelines-on-ip-valuation-and-commercialization-to-be-issued-soon>>.

development of SMEs. First is the Philippine Innovation Act, which came into force in August 2019 and is intended to generate and scale up action at all levels and in all areas of education, training and research and development in relation to innovation and the internationalization of SME activities. Secondly, the Innovative Startup Act seeks to streamline governmental and non-governmental initiatives in order to create new employment opportunities and advance innovation and trade in the Philippines.

**6. Canvassing recent or ongoing studies and initiatives in other intergovernmental organizations on the mobile application economy to ascertain whether research findings on the IP ecosystem will enrich or create synergies with the project**

**6.1 Recent and/or ongoing research in other intergovernmental organizations**

**6.1.1 International Telecommunication Union – Regional initiatives – Africa**

“The App Economy in Africa: Economic Benefits and Regulatory Directions Report”<sup>281</sup> is a study on the app economy in Africa, which was prepared by an expert from the ITU, Mr. Simon F. Molloy of Australian Economic Consultancy, Systems Knowledge Concepts Pty Ltd., under the direction of the ITU Telecommunication Development Bureau. It was first presented at the ITU Regional Economic Forum of Telecommunications/ICT for Africa in Zimbabwe in 2017.

The report draws on the importance of governments and national regulatory authorities in the field of telecommunications and ICT in national ICT development. The report focuses on the opportunities and challenges of the app economy in Africa, and on South Africa and Ghana in particular, albeit not exclusively. The study elaborates on general considerations concerning the regulation of the app economy, while also providing guidelines and recommendations. Furthermore, it investigates the disruptive effects mobile apps may have on the economy in general, and the kind of regulatory measures or policies that could be considered in that regard.

The study may therefore provide valuable insights regarding opportunities and challenges in the app economy with reference to the relevant regulatory frameworks.<sup>282</sup>

**6.1.2 International Telecommunication Union – Regional initiatives – Asia-Pacific**

“Harnessing ICTs to support the digital economy and an inclusive digital society - Asia-Pacific Regional Initiatives”<sup>283</sup> is an ongoing project conducted by ITU.

The project aims to assist Member States in the Asia-Pacific region in utilizing ICT to the advantage of the digital economy. To that effect, the project addresses the challenges of

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<sup>281</sup> Molloy, Simon F., “The APP economy in Africa: economic benefits and regulatory directions”, International Telecommunication Union, 2017. <[https://www.itu.int/dms\\_pub/itu-d/opb/pref/D-PREF-EF.APP\\_ECO\\_AFRICA-2017-PDF-E.pdf](https://www.itu.int/dms_pub/itu-d/opb/pref/D-PREF-EF.APP_ECO_AFRICA-2017-PDF-E.pdf)>.

<sup>282</sup> Although the study does not address the regulatory framework in relation to IPRs, it notes the importance of IP to tax regulations.

<sup>283</sup> International Telecommunication Union, “Harnessing ICTs to support the digital economy and an inclusive digital society”. <<http://www.itu.int/net4/ITU-D/CDS/projects/display.asp?ProjectNo=9RAS18061>>.

human and technical capacities in the region to bridge the digital divide. Ultimately, the project seeks to contribute to the deployment of ICT, including mobile apps, to improve the delivery of value added services, such as health, education and the development of cross-sector national digital skills programs.<sup>284</sup>

The initiative may be of potential significance in contributing valuable insights on the ICT sector and the mobile application economy in the Asia-Pacific region, with regard to the beneficial effects of the deployment of ICT in improving the socioeconomic situation in areas such as education, agriculture, governance and financial services. The development of a cross-sector national digital skills program may also reference the role of IP and its use in the digital economy.

## **6.2 Initiatives and/or projects in other organizations that could enrich or create synergies with the project**

### **6.2.1 The Caribbean Industrial Research Institute's CED – mCentre**

Caribbean Industrial Research Institute (CARIRI) and the CED's mCentre<sup>285,286</sup>

CARIRI has become a center of excellence, with a commitment to enhancing local and regional development. Testing in laboratories and in the field, consulting, research and development and training in areas including ICT and business development are among the services provided by CARIRI.

CARIRI's CED, in partnership with Microsoft and Digicel Business,<sup>287</sup> created the mCentre. mCentre is a mobile app lab; it is indeed the only mobile app laboratory and accelerator in the region, and incubates mobile app developers with high potential. It offers various services ranging from business and technical training on mobile app development and entrepreneurship to an incubation and testing program for web and mobile app technology start-ups.

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<sup>284</sup> Further information has been requested, but, regrettably, no answer was provided at the time of writing. Project details and further contact information can be found here: <<http://www.itu.int/net4/ITU-D/CDS/projects/display.asp?ProjectNo=9RAS18061>>. For the contact form, please visit: <<http://www.itu.int/net4/ITU-D/CDS/gg/generic/questionnaire.asp?ProjectID=314&prjProjectNo=9RAS18061>>. For general contact information please follow this link: <<https://www.itu.int/en/about/Pages/contact.aspx>>.

<sup>285</sup> CARIRI Centre for Enterprise Development, mCentre, official website. <<http://www.cedcariri.com/mcentre/>>.

<sup>286</sup> CARIRI's contact details are available at <[http://www.cariri.com/index.php?option=com\\_content&view=article&id=144&Itemid=637](http://www.cariri.com/index.php?option=com_content&view=article&id=144&Itemid=637)>. CED's contact details are available at <<http://www.cedcariri.com/contact-us/>>.

<sup>287</sup> Digicel is a Caribbean mobile phone network and home entertainment provider in the Caribbean, Central America and Oceania.

On December 21, 2015, the TTIPO signed an MoU with CARIRI to formalize and promote collaboration between the agencies with a view to expanding and deepening collaboration in the area of IPRs, with a focus on capacity-building in the areas of patent searching/mining, technology transfer, licensing and the establishment of a Technology Transfer Office at the CED. Synergies may be established with the present project with a view to adopting a holistic approach towards the development of the mobile app sector.

In addition, UWI's collaborations with the Teleios, discussed under Part 5.2. (A) above, may also serve as an initiative with which potential synergies may be created.

### **6.2.2 Open African Innovation Research Project – Centre for Intellectual Property and Information Technology Law**

Open African Innovation Research (Open AIR) Project<sup>288</sup>

The Open African Innovation Research<sup>289</sup> project is a unique collaborative network of researchers spread across 14 African countries, Canada and beyond. Its goal is to enhance Africa's role in the global knowledge economy and, through research, identify which knowledge governance policies may be best suited to ensuring that the social and economic benefits of innovation are shared inclusively.

The Centre of Intellectual Property and Information Technology Law at Strathmore University, together with the University of Cape Town, the Nigerian Institute for Advanced Legal Studies, the American University in Cairo and the University of Ottawa, currently conducts research on IP and innovation policies and considers ways to reconcile tensions between IP and access to knowledge. The research is conducted within the overall framework of the Open AIR project, which focuses on various research areas including high technology hubs, indigenous entrepreneurs and informal sector innovation.<sup>290</sup> Two of the research themes may be of relevance to the creation of synergies with the present project. Firstly, research that explores the nuances of innovation at high technology hubs and, secondly, analysis of informal sector entrepreneurship<sup>291</sup> in relation to innovative practices.

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<sup>288</sup> Centre for Intellectual Property and Information Technology, "Open African Innovation Research (Open AIR) Project". *cipit.org*. Web. <<https://www.cipit.org/index.php/blog/open-air>>.

<sup>289</sup> Open African Innovation Research, official website. <<http://openair.africa>>.

<sup>290</sup> *Ibid*.

<sup>291</sup> Informal entrepreneurs are defined as those starting a business who engage in monetary transactions that are not declared to the State for tax, benefit and/or labor law purposes when they should be declared, but which are legal in all other respects.

## **7. The local software sector's challenges and needs for enhancing the use of intellectual property in support of mobile applications**

The IPR enforcement regime is key to the success of a country's IP system as a whole. Acquiring and maintaining IPRs is of little use if they may not be effectively enforceable. Providing workable mechanisms to ensure that IPRs are respected in an effective, timely and accessible manner is therefore of high importance.

### **7.1 Intellectual property enforcement in Kenya**

*Responses to this part of the survey were provided by five respondents including KIPi, KECOBO and representatives from academia, the software sector and the legal sector.*

The Superior Courts in Kenya<sup>292</sup> exercise general criminal and civil jurisdiction over various IP-related matters in accordance with the subject matter of the IP under review. However, the enforcement of IPRs in Kenya is mainly facilitated by the High Court, which exercises broad jurisdiction over disputes involving unfair competition, trade secrets, passing off and infringement of patents, copyright and trademarks. The court has exclusive jurisdiction over passing off and trademark infringement cases. Despite having issued various landmark decisions in relation to IPR enforcement, only one software-related case could be identified. In *Microsoft Corporation v. Microskills Kenya Limited*<sup>293</sup>, the High Court found the defendant liable to pay damages for illegally preloading Microsoft's business software on to hundreds of computers without Microsoft's prior consent. The lack of information on cases concerning the software and mobile application sector has been attributed by some respondents to the lack of a specialized IP court and case law register. Others have noted that the information that can be obtained from the National Council for Law Reporting may not be conclusive as not all cases are reported, and that criminal cases tried in the magistrate courts are excluded from that group. Specialized IPR Tribunals are in operation in Kenya. These include: 1) the Industrial Property Tribunal; 2) the Registrar of Trade Marks; 3) the Seed and Plant Varieties Tribunal; and 4) the Competent Authority. Furthermore, the Managing Director of KIPi may also hear opposition to industrial design applications. Decisions taken by the Managing Director may be appealed before the Industrial Property Tribunal.

IPR enforcement is also facilitated by the Kenyan Anti-Counterfeit Authority (ACA), which has the mandate to educate and inform the public on matters relating to, inter alia, combatting counterfeiting, trade in counterfeit goods and other dealings in counterfeit

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<sup>292</sup> Superior Courts in Kenya are made up of the Supreme Court, Court of Appeals, High Court, Industrial Court, Environment and Land Court. The subordinate courts are made up of Magistrate Courts, Courts Martial and Kadhi Court.

<sup>293</sup> *Microsoft Corporation v. Mitsumi Computer Garage Ltd & another* [2001] eKLR.

products, and to devising and promoting training programs to combat counterfeiting in collaboration with national, regional and international organizations. Moreover, as was mentioned by some survey respondents, KECOBO assists with the enforcement of the copyright of works through its online filing system. The filing system is considered easily accessible, while proving helpful in infringement-related disputes. Specifically trained copyright-enforcement officers from the national police are attached to KECOBO to further support the enforcement of copyright. KIPI found the enforcement officers able to respond quickly and efficiently to claims of copyright infringement.

The additional support to the Kenyan IP enforcement regime through agencies like KECOBO and ACA is considered one of the key strengths of the IP system in Kenya, both by survey respondents and others.<sup>294</sup> In that regard, the International IP Index<sup>295</sup> highlighted that dedicated IP bodies and enforcement agencies had made efforts to address IP infringement, although fragmentation remains an issue and further action is required to establish a harmonized and effective approach.<sup>296</sup>

There is a general lack of information concerning any shortcomings in the IP enforcement regime in Kenya. Some of the respondents indicated that the main weaknesses of the Kenyan IPR enforcement regime are the costs of enforcement and remedies, as well as lengthy procedures, while others pointed out to the judges' lack of expertise in adjudicating in IPR disputes, as well as a general lack of awareness of IPRs. With regard to the latter, during an interview with WIPO, KIPI reported that "building respect for IP among Kenyans remains a constant challenge", and that in order for businesses to thrive there must be a continuous effort to raise public awareness of the negative impact of illegal trade in counterfeited and pirated goods on legitimate businesses, employment, consumer safety and the economy at large.<sup>297</sup>

In 2019, Kenya ranked forty-first in the International IP Index.<sup>298</sup>

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<sup>294</sup> Global Innovation Policy Center, "International IP Index – Kenya". *theglobalipcenter.com*. Web. <<https://www.theglobalipcenter.com/wp-content/uploads/2019/02/Kenya.pdf>>.

<sup>295</sup> The International IP Index is an independent study conducted by the US Chamber of Commerce's Global Innovation Policy Centre, in order to assess the IP environment of 50 world economies. The report covers all forms of IP and highlights movements in almost half the Index economies over the last year.

<sup>296</sup> Global Innovation Policy Center, "International IP Index - Kenya". *theglobalipcenter.com*. Web. <<https://www.theglobalipcenter.com/wp-content/uploads/2019/02/Kenya.pdf>>.

<sup>297</sup> Mbuimwe, Festus, "Strengthening Kenya's IP Landscape". *WIPO Magazine*, Aug. 2016. World Intellectual Property Organization. Web. <[https://www.wipo.int/wipo\\_magazine/en/2016/04/article\\_0007.html](https://www.wipo.int/wipo_magazine/en/2016/04/article_0007.html)>.

<sup>298</sup> Global Innovation Policy Center, "International IP Index - Kenya". *theglobalipcenter.com*. Web. <<https://www.theglobalipcenter.com/wp-content/uploads/2019/02/Kenya.pdf>>.



## 7.2 Intellectual property enforcement in Trinidad and Tobago

*TTIPO provided the responses to this part of the survey.*

The TTIPO grants IP rights to entrepreneurs, creators, inventors and researchers to enhance business competitiveness. The TTIPO is not responsible for IPR enforcement. Those responsibilities are assumed by enforcement agencies including the Trinidad and Tobago Police Service (TTPS) and the Customs and Excise Division. However, the TTIPO heavily promotes the use of the IP system and assists enforcement agencies.

While the TTIPO does not enforce IPRs, it has embarked on several initiatives to increase IPR enforcement of in Trinidad and Tobago, including the following:

- replacing piracy with partnership initiatives such as communicating with stakeholders to provide increased licensing opportunities;
- cooperation with the United States Patent and Trademark Office (USPTO) IP Attaché;
  - anti-counterfeit training for Customs, Police and other enforcement agencies on January 15, 2018; and
  - anti-counterfeit/enforcement training for municipal police

Round-table discussions have been held among stakeholders such as the Bureau of Standards, the Customs and Excise Division, TTPS, Crime Stoppers International and the TTIPO.

The TTIPO has been in discussion with the Trinidad and Tobago Police Academy to have IP incorporated into its curriculum. Further, there have been discussions regarding the establishment of an IP Enforcement Unit within the TTPS.

Additional endeavors to enforce IPRs in Trinidad and Tobago include the continued efforts of TTIPO through measures such as the Maya II project, which was coordinated by the Trafficking in Illicit Goods and Counterfeiting Unit of the International Criminal Police Organization (INTERPOL) in March 2015 to seize fake electronic goods.

However, there are challenges surrounding the enforcement of IPRs. The need for more awareness of IPRs and their scope of protection persists. There is a need to increase IP awareness among software app developers. In this regard, the TTIPO currently offers education, information and training services in IP, IPRs and the IP system in general.

The TTIPO also highlighted the need to recognize IP as a capital asset. The lack of understanding of the value of IP and its importance to the growth and development of businesses, competitiveness and technology transfers may affect the development momentum. In this regard, the TTIPO has embarked on several initiatives to increase IP education and awareness.

According to, “The Economic Contribution of Copyright-Based Industries in Trinidad and Tobago,” for the period of 2007 to 2011 (September), there were a total of 55 cases brought before the courts by the Copyright Music Organisation of Trinidad and Tobago, of which seven ended in a decision and conviction and 48 are still pending<sup>299</sup>.

Training on IPRs has also been conducted for judges.

The TTIPO conducts opposition hearings regarding trademark applications, geographical indications and new plant varieties. Matters may be referred to the High Court, with appeals going to the Court of Appeal and then to the Judicial Committee of the Privy Council<sup>300, 301</sup>

Furthermore, on December 6, 2018, an MoU concerning the use of alternative dispute resolution procedures for IP disputes in Trinidad and Tobago was signed by the Director General of WIPO, Mr. Francis Gurry and Ambassador Makeda Antoine-Cambridge, Permanent Representative of [Trinidad and Tobago](#).<sup>302</sup>

With regard to the main strengths of the IPR enforcement regime, the TTIPO indicated its membership in international IP conventions. The TTIPO will be acceding to the Rome Convention and the Singapore Treaty on the Law of Trademarks.

#### *Trinidad and Tobago’s national ICT Plan ICT Blueprint 2018-2022*

According to *Trinidad and Tobago’s National ICT Plan ICT Blueprint 2018-2022*, the Government is committed to establishing an enabling environment for ICT, a key component of which is the e-Legislative Agenda. This agenda provides for the elaboration and delivery of a body of policies, harmonized legislation and regulations that underpin the electronic delivery of products and services by Government (digital government) and the electronic facilitation of business processes (e-business), including the electronic sale and procurement of goods and services (e-commerce). Over the next five years, Government will remain focused on ensuring the full proclamation of critical pieces of eLegislation and instituting the related supporting regulations, inclusive of the following:

- the Electronic Transactions Act (ETA);
- the Data Protection Act; and

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<sup>299</sup> [http://www.ipo.gov.tt/downloads/Relevant\\_Studies/econ\\_contribution\\_cr\\_tt.pdf](http://www.ipo.gov.tt/downloads/Relevant_Studies/econ_contribution_cr_tt.pdf)

<sup>300</sup> The Judicial Committee Privy Council in London is the highest court of appeal for certain Commonwealth countries, including Trinidad and Tobago.

<sup>301</sup> R. W. Zuallcobley et al., ‘Study on Specialized Intellectual Property Courts’, International Intellectual Property Institute and United States Patent and Trademark Office, (2012), p. 41. Available at <https://iipi.org/wp-content/uploads/2012/05/Study-on-Specialized-IPR-Courts.pdf>

<sup>302</sup> <https://www.flickr.com/photos/wipo/46205014922>

– Electronic Funds Transfer Regulations.<sup>303</sup>

With respect to jurisdictional responsibility, attention will be paid to the specific role of the Tobago House of Assembly and its discrete areas of control.<sup>304</sup> Such an approach will avoid or reduce duplication or overlap of authority while providing for certainty. The encouraged pervasiveness of ICT is intended to stimulate the creation of a digital economy. Traditional financial structures are evolving and new paradigms are emerging, such as mobile money and financial inclusion. The Government will undertake initiatives to address digital financial services, in addition to e-transaction and e-payments. Tax incentives to promote the use of ICTs will also be explored.<sup>305</sup>

Moreover, the Government recognizes that the Internet, its governance and the policies for its use constitute critical success factors in determining the benefits that society derives from ICT. Therefore, there will be a focus on the development of a national Internet policy, which will guide critical issues such as governance, management of the country code top level domain (that is, “.tt” domain), net neutrality and treatment of “Over the Top” services, information security policy and cloud policy. Another key regulatory issue is the Telecommunications (Amendment) Bill, which seeks to amend the Telecommunications Act Chapter 47:31 to provide for improved regulation of the telecommunications and broadcasting sectors through international best practice and international treaty obligations.<sup>306</sup>

Trinidad and Tobago is also acceding to the Beijing Treaty on Audiovisual Performances. The Beijing Treaty was conceived to fill the gap in the international copyright system by extending to audiovisual performers protections previously accorded to authors, performers and producers of phonograms (sound recordings) inclusive of economic rights and moral rights. The Copyright (Amendment) Bill, 2019 includes provisions to the extent that adequate legal protection and effective legal remedies are provided against the circumvention of technological protection measures (TPMs) while at the same time allowing for limited circumvention when undertaking acts permitted by a limitation or an exception contained in the Copyright Act. The Copyright (Amendment) Bill, 2019 provides the copyright owner with a civil remedy, damages, for infringement where copies of a work have been made or offered for sale or rental in an electronic form that has TPMs or a TPM circumvention device. As required under the Beijing

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<sup>303</sup> [http://mpac.gov.tt/sites/default/files/file\\_upload/publications/NICT%20Plan%202018-2022%20-%20August%202018.pdf](http://mpac.gov.tt/sites/default/files/file_upload/publications/NICT%20Plan%202018-2022%20-%20August%202018.pdf)

<sup>304</sup> [http://mpac.gov.tt/sites/default/files/file\\_upload/publications/NICT%20Plan%202018-2022%20-%20August%202018.pdf](http://mpac.gov.tt/sites/default/files/file_upload/publications/NICT%20Plan%202018-2022%20-%20August%202018.pdf)

<sup>305</sup> [http://mpac.gov.tt/sites/default/files/file\\_upload/publications/NICT%20Plan%202018-2022%20-%20August%202018.pdf](http://mpac.gov.tt/sites/default/files/file_upload/publications/NICT%20Plan%202018-2022%20-%20August%202018.pdf)

<sup>306</sup> [http://mpac.gov.tt/sites/default/files/file\\_upload/publications/NICT%20Plan%202018-2022%20-%20August%202018.pdf](http://mpac.gov.tt/sites/default/files/file_upload/publications/NICT%20Plan%202018-2022%20-%20August%202018.pdf)

Treaty, the Copyright (Amendment) Bill, 2019 also provides that circumvention of a TPM is not prohibited when undertaking acts permitted by a limitation or exception in the Copyright Act.

### **7.3 Intellectual property enforcement in the Philippines**

There was one anonymous survey response for this part of the study.

In the Philippines, various institutions facilitate the enforcement of IPRs. While specialized IP courts used to be a feature of the judiciary, they fell into disuse owing to a lack of cases and were eventually merged with commercial courts. IP cases may therefore be filed with Special Commercial Courts. The Commercial Courts provide for specialized IP judges who were specifically trained by the Philippine Judicial Academy, or who were sent to international IP schools and seminars to receive expert training. The number of cases has been rising recently with a total caseload of 937 cases related to IPR violations in 2017, an increase of 44.15% compared to the previous year, according to the Department of Justice's National Prosecution Service. An additional Commercial Court was established in the City of Manila owing to the comparatively heavy IP caseload in the region. For this reason, the IPOPHL is contemplating the reintroduction of specialized IP courts in the near future.<sup>307</sup> Currently, however, a large amount of narcotics-related cases are preventing other cases from further consideration.<sup>308</sup> It is noteworthy that IPR cases may also be addressed before Criminal Courts. The survey response indicated that other institutions, such as the Bureau of Legal Affairs of the Intellectual Property Office, the Bureau of Customs, the Philippine National Police and the National Bureau of Investigation, also participate in the enforcement of IPRs.

The accessibility of the enforcement regime in the Philippines is considered straightforward and the complexity of procedures is considered low. The survey response also considered the IPR enforcement regime effective, despite a lack of information as to the numbers of IP cases tried before national courts.

The survey response indicated that one of the main weaknesses of the IPR enforcement regime is speed, as a trial may be prolonged owing to a delay caused by litigants. To that effect, the Supreme Court Rules of Procedure on Continuous Trial of Cases, which cover IPR cases, were implemented in 2015. However, there is not yet any data on the effectiveness of such rules in relation to the enforcement of IPRs. Furthermore, the IPR enforcement procedure has been identified as another weakness in the Philippine enforcement regime, particularly with regard to online infringement. The International IP

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<sup>307</sup> Lim, Janina C., "IPOPHL lobbying for revival of special courts for IP cases". Business World, Apr. 22 2019. Web. <<https://www.bworldonline.com/ipophl-lobbying-for-revival-of-special-courts-for-ip-cases/>>.

<sup>308</sup> Ibid.

Index also identified the rampant nature of online piracy and noted that IPR protection in the digital sphere is still largely unaddressed in the Philippines.<sup>309</sup> In that regard, it has been reported that stronger penalties and an increased focus on online commerce may help to tackle the growing problem of piracy and counterfeiting in the Philippines.<sup>310</sup> To that effect, the IPOPHL proposed amendments to the Intellectual Property Code that include higher penalties, secondary liability for copyright infringement and the option to request statutory damages.<sup>311</sup>

The proposed amendments to the Intellectual Property Code were also considered one of the country's key strengths by the International IP Index.

Another improvement that may strengthen the local IP infrastructure and enforcement regime, as mentioned by the survey response, is the new Philippine Action Plan on IPR Protection and Enforcement 2017-2022. The survey response stated that: "the action plan will serve as the road map in steering the direction of the country's journey towards what we envision to be an effective road map for enforcement." The fundamental components of the 2017-2022 Philippine Action Plan are: legal and policy infrastructure and international relations; information and awareness campaign; and education and enforcement. Another strength of the IPR enforcement regime identified in the survey is the contribution of each member of the National Committee on Intellectual Property Rights (NCIPR) through the continued adoption of a holistic approach in fighting counterfeiting and piracy. The response provided that: "the coordination and good working relationship with other government agencies is also part and parcel of the success as no single government agency has all the capabilities to initiate and implement reforms and programs. The NCIPR is an inter-agency body that formulates and implements plans and policies, as well as strengthen the protection and enforcement of IPRs in the country." The response explains that: "the NCIPR is composed of 12 members, with the Department of Trade and Industry as Chair and the IPOPHL as vice-Chair. NCIPR is composed of the following:

1. Department of Justice;
2. Bureau of Customs;
3. Food and Drug Authority;
4. National Bureau of Investigation;

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<sup>309</sup>Global Innovation Policy Center, "International IP Index - Philippines". *theglobalipcenter.com*. Web. < <https://www.theglobalipcenter.com/wp-content/uploads/2019/02/Philippines.pdf>>.

<sup>310</sup> Ibid.

<sup>311</sup> The proposed amendments to the current Intellectual Property Code can be found here: <[https://drive.google.com/file/d/1hShp6GrTenMdKQfJaRNQs\\_M6GR5memHi/view](https://drive.google.com/file/d/1hShp6GrTenMdKQfJaRNQs_M6GR5memHi/view)>.

5. Philippine National Police;
6. Optical Media Board;
7. National Book Development Board;
8. Office of the Special Envoy on Transnational Crime;
9. Department of Interior and Local Government; and
10. National Telecommunications Commission.

Its functions are to:

1. Intensify public information and education campaigns on the importance of IPR to national development and global competitiveness;
2. Intensify regular and effective enforcement of laws against IPR violations, and to allocate sufficient resources to ensure the efficient prosecution of pirates and counterfeiters;
3. Maintain appropriate coordination with the judiciary to ensure that courts are adequately skilled in intellectual property cases, and improve the adjudication of IP cases;
4. Provide the executive and legislative branches with policy and legislative proposals on IP laws, ensuring that these are in compliance with the country's existing international obligations embodied in treaties and other agreements;
5. Maintain a database and enforcement monitoring system, consolidate information and reports from other agencies, and submit quarterly reports to the President and provide copies to the Executive Secretary and the Cabinet Secretary.”

**8. In consultation with the project beneficiary countries and the Secretariat of the World Intellectual Property Organization, propose specific activities in each of the beneficiary countries to implement the project and achieve the expected results**

**8.1 Recommended activities to implement projects and achieve the expected results**

The list a below include activities that were mentioned in the official project document. The viability and utility of the activities enumerated below will be confirmed in consultation with the beneficiary countries.

- Publication and translation of planned WIPO publication on IP and mobile applications;
- Typology of various IPRs relevant to protecting mobile applications, including, where applicable, copyright, patent, utility model, trademark, design and trade secrets;
- Training module on the role of IP in the development and commercialization of mobile applications (including on accessing third-party information and using third-party protected subject matter), as well as on how IP can be used as a means of raising capital and securing investments;
- Training module on key contracts in the mobile applications sector, including end user licenses and app developer agreements;
- Training modules on mediation and arbitration in the software sector to be developed in cooperation with the WIPO Arbitration and Mediation Center (one for mobile application developers and entrepreneurs and a more advanced course for lawyers and government officials);
- Interactive dialog between software sector stakeholders and financial institutions, venture capitalists and other investors in the three beneficiary countries;
- Connecting ICT hubs in the three beneficiary countries by videoconference to foster the exchange of knowledge and experience among software sector stakeholders on the use of IP, including collaborations with universities and other research institutions, commercial partnerships, IP success stories, challenges and solutions;
- Basic IP awareness material targeting computer science students at secondary schools, universities and other research institutions in beneficiary countries;
- Mentoring program connecting experienced business leaders and specialized lawyers volunteering to assist software start-ups in the beneficiary countries;
- Developing an IP toolbox for use in the project beneficiary countries and to be replicated in other interested countries, including through a WIPO Academy distance learning course for software sector professionals;

- Online platform to foster international exchanges of IP knowledge and good practices in the software sector;
- Two workshops in each of the beneficiary countries (first workshop to launch the project with local stakeholders; second workshop to validate final deliverables);
- Two coordination meetings with national focal points from the three beneficiary countries at WIPO headquarters in Geneva (first meeting following completion of the scoping study; second meeting to complete and validate final deliverables);
- Videoconferences with project beneficiaries whenever requested to further the above activities and deliverables;
- Workshops on IP enforcement  
[Addressing, inter alia, developers, entrepreneurs and government officials].