Colombia’s Value Proposition for Global IT and Digital Services Delivery

*Final report*

April, 2017
Contents

- Highlights of Colombia’s proposition for export of IT and digital content services
- Detailed view of Colombia’s IT and digital content services export industry
- Success stories
- Appendix
The Global IT industry is witnessing rapid growth, especially in digital content technologies such as automation, big data analytics, Internet of Things (IoT), and cloud services.

Latin American locations offer considerable cost arbitrage along with unique advantages of time zone alignment and cultural affinity to the U.S.

Colombia offers one of the lowest costs of operations globally, after India and the Philippines. Operating costs are 30-60% higher in other LATAM locations (e.g., Mexico, Costa Rica, Chile) and 20-80% higher in Eastern European locations (e.g., Poland).

Beyond India and Philippines, Colombia offers one of the largest entry level IT graduate talent, ~12,000-15,000 graduates every year.

Multiple government initiatives such as tax benefits on development of new technology, Free Trade Zones (FTZs) and dedicated technology parks, are attracting leading players in digital and IT services to set up operations in Colombia.
The next wave of IT and digital services growth is expected to be driven by cloud services and emerging technologies such as IoT, mobile apps, big data analytics, and VR/AR

<table>
<thead>
<tr>
<th>Emerging IT services</th>
<th>Cloud services</th>
<th>Global cloud services market is worth ~US$63 billion, and is expected to grow at an annual rate of 24% over the next 5 years. Enterprises are increasingly adopting cloud to drive competitive differentiation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Big data and analytics</td>
<td>Majority of the global organizations are considering programs to develop big data capabilities and are looking at advanced analytics to provide predictive customer insights</td>
</tr>
<tr>
<td></td>
<td>Internet of Things (IoT)</td>
<td>The total market size in 2025 is expected to reach US$ 4-11 trillion. Enterprises going forward will focus on four areas - interoperability, adaptability, scalability, and security</td>
</tr>
<tr>
<td></td>
<td>Automation</td>
<td>Twin advantages of automation and offshoring add up to a significant value realization and a compelling business case for enterprises</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Emerging Digital content services</th>
<th>Mobile Apps</th>
<th>The global mobile app store revenue is expected to cross US$100 billion in 2020 driven by strong app adoption in developing economies</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Virtual Reality and Augmented Reality</td>
<td>VR/AR software market is expected to reach US$30-40 billion by 2025 with videogames leading the growth</td>
</tr>
<tr>
<td></td>
<td>Videogames</td>
<td>Compared to other regions, the growth rate of the videogames industry has been the highest in Latin America, followed by Asia. In 2016, the maximum revenue was generated by mobile games</td>
</tr>
<tr>
<td></td>
<td>Animation</td>
<td>Colombian animation industry is growing at about ~7% per year. The industry is driven by local demand as well as the demand for outsourced animation content from the U.S. and Canada</td>
</tr>
</tbody>
</table>
There are many established locations globally for delivery of IT and digital content services, each with different value propositions.

- **Accounts for over 80% of the demand for IT and digital services globally**
- **Established locations**: Mature tier-1 locations (e.g., San Francisco, New York, Chicago, Boston). Evidence of IT services delivery from multiple tier-2 locations (e.g., Seattle, Phoenix, Dallas, Austin, Atlanta)
- **High-end innovation and R&D across all IT services and speed-to-market are the key drivers behind the onshore tier-2 sourcing model**
- **Largest workforce for design and development of digital content services**

- **Accounts for more than 15% of the demand for IT and digital services globally**
- **Established locations**: UK, Spain, Germany, France
- **Predominantly leveraged for high-end work (e.g., design) across IT services**
- **Germany, UK, France and Spain are the leaders in the videogame industry**
- **The delivery centers primarily play the role of customer interaction center**

- **Accounts for 10-20% of the FTEs delivering global IT and digital services**
- **Established locations**: Poland, Ireland, Hungary, Czech Republic, Romania, Slovakia, Ukraine
- **Predominantly leveraged for regional / domestic delivery of IT services driven by moderate talent availability to delivery traditional IT services and significant cost arbitrage over onshore locations**
- **The locations offer multilingual support for social and interactive segment**
- **Evidence of providers setting up delivery centers that focus on customer interactions (e.g., user experience design)**

- **Accounts for 5-10% of the FTEs delivering global IT and digital services**
- **Established locations**: Brazil, Argentina, Colombia, Mexico
- **Key differentiators include time zone overlap with US and Europe, significant cost arbitrage w.r.t. onshore locations and large talent base for multilingual support**
- **LATAM is the fastest growing region for videogame industry**

- **Accounts for 5-15% of the FTEs delivering global IT and digital services**
- **Established locations**: Philippines, China, Malaysia, Singapore
- **Low evidence of global delivery esp. for traditional IT services except in Philippines and Malaysia. China and Japan remain largely domestic focused markets**
- **Vietnam and Malaysia are key locations for digital animation**
- **China is the largest contributor to videogames revenue globally, followed by Japan and South Korea**
- **Delivery centers in Singapore play primarily the role of client interaction center and as a global innovation/R&D hub**

Source: Everest Group (2017)
Compared to other global locations, LATAM offers unique advantages of time zone proximity and cultural affinity for U.S. focused delivery.

Advantages of global IT and digital services delivery from Latin America:

- LATAM locations offer substantial cost arbitrage over source geographies (esp. the United States)
- Considerable time zone overlap with source geographies (U.S.) facilitates real-time collaboration
- Geographical proximity leads to ease of governance
- Leveraged for global as well as regional delivery
- High quality IT graduate talent

1 Based on analysis of global in-house centers of Forbes 2000 companies and delivery centers of leading service providers

Source: Everest Group (2017)
The global IT industry has expanded to multiple cities in Colombia, each having unique industry specialization.

**Cartagena (Caribbean)**
- Major center for companies fulfilling regional demand for IT and digital services in the transportation industry
- Key companies: Nativapps

**Barranquilla (Caribbean)**
- Large presence of companies providing software and IT services for logistics and transportation industry as well as project management software for infrastructure projects
- Key companies: Koombea and Joonik S.A.S.

**Medellin (Antioquia)**
- Recognized as the “most innovative city in the world 2013”, the city has a high concentration of software firms providing technology solutions for the energy sector
- Key companies: TCS, Unisys, Choucair, PSL, Intergrupo, and Ingeneo

**Bucaramanga (Santander)**
- Located at the heart of the Colombian oil industry, it serves as the centre of activity for development of software and IT services for the Oil & gas industry
- Key companies: Indra (Center of Excellence (CoE))

**Cali (Valle del Cauca and Cauca)**
- The hub for development of software and IT services for agribusiness industry
- Key companies: Carvajal, Open International, and Siesa

**Bogota**
- With a large number of national and international banks concentrated in and around the capital, it is the center for development of banking and financial services software
- Key companies: Everis, Softtek, Globant, Digiware, and TCS

**Pereira (Coffee Triangle)**
- The region hosts the first center for bioinformatics and computational biology in Latin America
- Key companies: Indra

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1 Awarded by Citi Group in partnership with the Wall Street Journal and the Urban Land Institute (ULI)

Source: MinTIC (Ministry of Information Technologies and Communications); Everest Group (2017)
Colombia offers an attractive business environment for delivering IT services

Ranked second in LATAM region in ease of doing business according to the World Bank economy rankings
Colombian government is aggressively promoting foreign investment into the region by offering incentives in terms of tax benefits, Free Trade Zones (FTZs), and other hiring and investment benefits

Ranked second highest in Index of Economic Freedom among Latin American countries
Ranked 37th worldwide in 2017 Index of Economic Freedom of the U.S.-based Heritage Foundation Wall Street Journal, evaluated on measures of regulatory efficiency, rule of law, economic openness, and competitiveness

Third largest delivery market in Latin America for supporting global IT services
One of the most sought-after locations for delivering IT and digital services from Latin America (after Brazil and Mexico), as per International Data Corporation (IDC)

Sixth best ranked country in Latin America on electronic services adoption by the government
Colombia stands 6th in the LATAM on government’s adoption of online features and services, according to the Survey of the Economic and Social Department of the United Nations

Fourth highest FDI inflow in Latin America in 2015
Receiving foreign investment of over US$12 billion, Colombia is ranked fourth amongst the top host countries in Latin America after Brazil, Mexico, and Chile, as per the World Investment Report, 2016

Beyond India, Colombia offers one of the largest entry level talent for IT and digital services

Entry-level graduate talent availability
2016; ‘000 per annum

- Colombia has a large graduate population with specialized degrees across multiple technology fields
  - Over 14% of Colombia’s university students graduate from areas related to technology
- The high quality education system and large population leads to a higher availability of entry level IT services talent as compared to most of the Latin American locations
- While many Latin America countries have the IT talent concentrated in one or two central cities, Colombia offers multiple attractive location options. Apart from Bogota, there is substantial availability of talent in tier-2 cities such as Medellin, Cali, Barranquilla, and Cartagena

1 Analysis includes tertiary graduates with degrees in engineering / information technology, who are typically employed for IT services delivery in the city. Includes talent migrating from adjacent cities

Source: Government statistical organizations & education ministries, inputs from market players, recruitment firms, investment agencies, and Everest Group (2017)
High domestic demand has also improved the proposition for foreign investors to establish IT delivery centers in Colombia.

- **Oil and gas sector**, one of the largest domestic industries, is looking for innovative solutions in digital technology to optimize procedures and derive operational efficiency.
- **Banking, Financial Services and Insurance sector** is moving towards traditional ERP solutions such as online banking and digital solutions such as mobile payment systems.
- **High demand in power sector** for technologies such as big data and analytics to foster process optimization and network management.
- **Rising demand for technological solutions** such as IoT and analytics in healthcare sector to facilitate advanced medical care for patients.
- **Government plans** to strengthen the digital economy by achieving 75% internet penetration in the next 2 years.
- **Large presence of MSMEs adopting technologies** such as cloud, social media analytics, and mobility, to enhance reach in global markets.

*Colombia has a large domestic market for IT and digital services.*
The high potential of the domestic market is supported by best-in-class digital infrastructure

- **Total sales** in IT industry in Colombia, 2015:
  - IT services – US$2.4 billion
  - Software – US$878.9 million

- **Colombia ranks second in the ‘readiness for business services in the cloud’ in Latin America**

- **One of the best submarine cable connectivity in the Americas** with over 10 submarine cables equipped with 4G technology

- **One of the most widespread internet connections across Latin America** with over 57% Colombians connected over the internet

- **Colombia ranks second in smartphone users penetration in Latin America** and more than 2000 mobile apps have been developed under the Vive Digital program

- **60,000 + entrepreneurs have created or renewed projects or companies with a focus on software and ICT**

Source: ProColombia; Pyramid Research; Emarketer; Everest Group (2017)
A sound digital infrastructure has facilitated the growth of emerging technologies such as Internet of Things (IoT), Big Data, and cloud.

Colombia ranks second in smartphone users penetration trailing only Chile in the region. It is ahead of Argentina and ranks third after Mexico and Brazil in total smartphone users in the region.

Colombia has one of the best submarine cable connectivity in the Americas with over 10 submarine cables equipped with 4G technology and has the second highest internet penetration in Latin America.

### Smartphones Users and Penetration

<table>
<thead>
<tr>
<th>Country</th>
<th>Smartphones User</th>
<th>Smartphone User Penetration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mexico</td>
<td>39.4</td>
<td>52.1%</td>
</tr>
<tr>
<td>Colombia</td>
<td>55.1%</td>
<td>18.2</td>
</tr>
<tr>
<td>Peru</td>
<td>42.3%</td>
<td>8.3</td>
</tr>
<tr>
<td>Chile</td>
<td>60.3%</td>
<td>7.9</td>
</tr>
</tbody>
</table>

### Internet Users and Penetration

<table>
<thead>
<tr>
<th>Country</th>
<th>Internet Users</th>
<th>Internet User Penetration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mexico</td>
<td>58.02</td>
<td>45.1%</td>
</tr>
<tr>
<td>Colombia</td>
<td>56.9%</td>
<td>27.66</td>
</tr>
<tr>
<td>Peru</td>
<td>41.0%</td>
<td>13.04</td>
</tr>
<tr>
<td>Chile</td>
<td>77.8%</td>
<td>14.11</td>
</tr>
<tr>
<td>Costa Rica</td>
<td>2.74</td>
<td>56.4%</td>
</tr>
</tbody>
</table>

Source: Emarketer; Everest Group (2017)
Cost of IT service delivery in Colombia is the lowest amongst Latin American nations, and one of the lowest globally after India and the Philippines

Operating cost per FTE\(^1\) for U.S. focused IT services delivery  
2016; ‘000 USD per annum

<table>
<thead>
<tr>
<th>Location</th>
<th>Operating Cost (‘000 USD per annum)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colombia (Bogota)</td>
<td>28-33</td>
</tr>
<tr>
<td>Peru (Lima)</td>
<td>30-35</td>
</tr>
<tr>
<td>Mexico (Mexico City)</td>
<td>40-45</td>
</tr>
<tr>
<td>Costa Rica (San Jose)</td>
<td>47-52</td>
</tr>
<tr>
<td>Chile (Santiago)</td>
<td>46-51</td>
</tr>
<tr>
<td>India (Bangalore)</td>
<td>14-19</td>
</tr>
<tr>
<td>Philippines (Manila)</td>
<td>21-26</td>
</tr>
<tr>
<td>Poland (Krakow)</td>
<td>35-40</td>
</tr>
<tr>
<td>Ireland (Dublin)</td>
<td>100-105</td>
</tr>
</tbody>
</table>

- Colombia offers one of the lowest cost of operations globally for IT services delivery.  
  - Compared to Colombia, operating costs are higher by 30-60% in locations such as Mexico, Costa Rica, and Chile and and 5-10% higher in Peru  
  - Operating costs are higher by ~20% in Poland and significantly higher in other Central and Eastern European locations

- Lower cost of IT service operations are driven by low compensation costs (accounting for over 70% of the total operating costs) due to low cost of living in Colombia

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\(^1\) Compares like-for-like costs across cities. Includes compensation and benefits for delivery, as well as administration & support functions, real estate & facilities, telecom, and other ongoing costs. Excludes cost of expatriate staff, ongoing travel, governance & initial setup, and investments

Note: Reflects market average costs for steady state of operations in global companies; does not include the impact of incentives

Source: Salary surveys, inputs from real estate firms, recruiters, investment support agencies, and market players; Everest Group (2017)
Companies and professionals in the IT services domain have achieved internationally recognized certifications

**78 CMMI-appraised companies**
- With the support of the Ministry of Information and Communication Technologies, multiple companies have achieved different Capability Maturity Model Integration (CMMI) maturity levels
  - 45 companies at levels between Level 2 and Level 4
  - 10 companies at Level 5 (highest level)
- 66 companies are under preparation for future appraisal under the CMMI model

**50 IT Mark-certified companies**
- Over 50 companies have achieved ITmark certifications under the international IT model for MSMEs
- 63 new companies have taken up the same and are undergoing the certification process

**144 TSP/PSP-certified companies**
- 144 companies with Team Software Process/Personal Software Process certifications, and more than 100 will soon obtain theirs

**15 companies holding other certifications**
- Colombian IT companies are also certified according to other recognized quality standards such as MoProSoft and MPSBR

**465 professionals certified in TSP/PSP**
- Besides companies, individuals in the country hold certifications in IT and digital fields
  - 465 developers have personal certifications, with 149 of them being certified by the Software Engineering Institute (SEI), the international authority in this field

Source: ProColombia
**Value proposition of Colombia**

**Ease of collaboration and management with the U.S.**
- Strategically located in the heartland of North America – South America business corridors with good international connectivity through flights
- Time zone overlap and cultural affinity with the U.S.

**Strong government support with a developed infrastructure**
- Multiple government initiatives such as “Colombia Bring IT On” and “Talento” have facilitated the growth of IT and digital content industry
- Initiatives such as the “Vive Digital Plan” have led to a strong infrastructure

**Rapidly growing digital content industry**
- Established mobile app development industry with big data as one of the fastest emerging technologies
- Digital content services such as videogames, VR, and animation gaining increased traction in the global space

**Large availability of IT graduate talent**
- High availability of graduates in education streams related to engineering and IT
- Government initiatives aimed at increasing adoption of IT as a career
- Relevant talent available across multiple city options

**Fastest growing domestic and large regional IT industry**
- Continuous development in the field of technology, leading to an increased demand for IT services across oil & gas, healthcare, BFSI and telecom industries
- Multiple domestic players in the region providing for IT solutions across sectors

**Multiple internationally recognized and certified companies**
- Presence of a large number of companies with certifications such as CMMI, TSP/PSP, and ITMark
- Large number of professionals with PSP/TSP certifications

**One of the lowest cost of operation**
- Lowest compensation costs in Latin America and one of the lowest globally after India and the Philippines
- Both compensation costs as well as facilities cost are lower than peer countries in LATAM
Colombia’s value proposition for IT and digital services delivery

Colombia has the **second** highest smartphone penetration in Latin America and the **third** largest smartphone base.

Colombia has the **second** highest share of videogame industry revenue among the key locations in Latin America.

Colombia ranks second in readiness for business services in the cloud in Latin America.

Big data in Colombia is one of the fastest emerging technologies and already has multiple examples of public-private-academia partnerships leading the way.

Colombia has the **second** highest internet penetration in Latin America.

Big data & analytics

IT SERVICES

Mobile apps

Videogames

Virtual Reality and Augmented Reality

Majority of the Virtual Reality companies in Colombia are involved in app development, the **second** highest funded business model globally.

Animation and Film Industry

Colombia offers **highest** film production incentives in Latin America, up to 40% for film services and 20% for film logistics on the overall production spend.

Source: Everest Group (2017)
Multiple companies have expanded their operations in the country and have achieved success with global and regional clients (Page 1 of 2)

“The infrastructure is competitive with the government taking up multiple initiatives to strengthen the ecosystem for IT and digital companies. There is good availability of talent with competitive costs compared to the region.”

– Delivery Manager, TCS
(IT and business process services delivery)

“Not being a dollarized economy is a great advantage. Stability in the government policies and multiple initiatives from the government have helped Colombia develop itself into tech-hub.”

– General Manager, Softtek
(Software development and infrastructure support)

“Colombia has quality infrastructure such has well developed submarine cable connectivity and easy connectivity through air, which is not only concentrated in the capital of Bogota, but is spread across cities such as Medellin which has been awarded as the most innovative city of the year.”

– Vice President Commercial, Everis
(SAP&ES, Business Consulting and IT outsourcing)

“Colombia is competitive in terms of providing solutions for IT industry due to the presence of large and hardworking talent and its strategic geographic position.”

– Alliance Manager, Digitalware
(Software development)

“The country has good talent with competitive costs comparing with the region. Presence of multiple companies providing infrastructure services such as data centers and site to site links, add to the quality of IT infrastructure and ease of operation.”

– Communication Manager, INDRA (Software development, ITO and consulting services)

“Lower cost of operation along with significant availability of talent made centralize operations in Colombia. Presence of international experts in the region has helped the industry achieve greater maturity than the peer countries.”

– General Manager, Teravison games
(Videogame development)
Multiple companies have expanded their operations in the country and have achieved success with global and regional clients (Page 2 of 2)

“With good human development strategies Colombia can easily have an ongoing supply of excellent professionals.”

– Director Marketing and Sales, Koombea (Web and Mobile Development, Design and Front End Development)

“A well developed infrastructure makes operations easy in the country. Proximity to both coasts in the U.S. and a similar culture to U.S. makes it easier for teams to interact, adding to the country’s advantage.”

– Chief Operating Officer, Iam Studio (Mobile and web-app development)

“Our client, one of the largest global beverage companies, was impressed with the local delivery for Colombia business and extended the relations and contracts for delivery to Central America, the U.S., and Europe, all serviced from the centers in Colombia. We work on different projects including brand manuals, seasonality toolkit, TV commercials and animations and are now in charge of communication and advertising for the Latin Center business unit for the client.”

– Co-founder, Oruga (Animation and advertising solutions)

“Organizations such as National Service of Learning (SENA) help in finding quality and talented resources to work as apprentices. The apprentices (~interns) are dedicated and most of them end up being hired by the company.”

– Co-Founder, Ingeneo (Software development and computer services)

“The availability of high quality IT talent in Colombia enabled the development of an innovative VR animation for healthcare professionals which is being used in multiple countries for training in hospitals…with the success in Colombia, the company has now decide to manage all innovation projects out of the Colombia office and then distribute work across locations such as Mexico, Ecuador, Argentina, and Peru.”

– CEO, Allbreaker (Virtual and augmented reality solutions)
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- Detailed view of Colombia’s IT and digital content services export industry
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    - Talent availability
    - Emerging technologies
    - Business environment and government incentives

- Success stories

- Appendix
Cost of IT service delivery in Colombia is the lowest amongst Latin American nations, and one of the lowest globally after India and the Philippines (page 1 of 2)

Operating cost per FTE\(^1,2\)
2016; US$ ‘000s per annum per FTE

<table>
<thead>
<tr>
<th>Country</th>
<th>IT SERVICES(^3)</th>
<th>Salaries and benefits</th>
<th>Technology &amp; other operating expenses</th>
<th>Facilities</th>
<th>Indexed cost w.r.t Colombia (Bogota)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colombia (Bogota)</td>
<td>~1.06</td>
<td>~1.60</td>
<td>~0.55</td>
<td>~1.21</td>
<td>~3.38</td>
</tr>
<tr>
<td>Peru (Lima)</td>
<td>~1.39</td>
<td>~0.77</td>
<td>~1.21</td>
<td>~20-21</td>
<td>~100-105</td>
</tr>
<tr>
<td>Mexico (Mexico City)</td>
<td>1.60</td>
<td>~2.3</td>
<td>~3.4</td>
<td>~6-7</td>
<td>~74-76</td>
</tr>
<tr>
<td>Costa Rica (San Jose)</td>
<td>~1.58</td>
<td>~0.55</td>
<td>~1.39</td>
<td>~3.4</td>
<td>~35-40</td>
</tr>
<tr>
<td>Chile (Santiago)</td>
<td>~1.58</td>
<td>~0.77</td>
<td>~1.21</td>
<td>~2.2</td>
<td>~21-26</td>
</tr>
<tr>
<td>India (Bangalore)</td>
<td>~0.55</td>
<td>~0.77</td>
<td>~1.21</td>
<td>~3.4</td>
<td>~26-28</td>
</tr>
<tr>
<td>Philippines (Manila)</td>
<td>~1.21</td>
<td>~0.77</td>
<td>~1.21</td>
<td>~3.4</td>
<td>~21-26</td>
</tr>
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<td>Poland (Krakow)</td>
<td>~1.21</td>
<td>~0.77</td>
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<td>~3.4</td>
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</tr>
<tr>
<td>Ireland (Dublin)</td>
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<td>~3.38</td>
<td>~3.38</td>
<td>~3.38</td>
</tr>
</tbody>
</table>

- Compensation costs, which account for over 70% of the total operating costs, are lower in Colombia as compared to other countries. This is due to low cost of living in the country and also low competitive intensity for talent.
- Other cost components such as technology and facilities cost are also lower in Colombia as compared to other locations in Latin America.

1 Reflects steady-state, market-average, annual operating costs. Includes salaries, benefits, technology, and other operating costs. Excludes SG&A and corporate overheads.
2 Assessment assumes average exchange rate from January 1, 2016 to December 31, 2016.
3 Includes application development and maintenance e.g. Java, C, etc.

Source: Everest Group (2017)
Cost of IT service delivery in Colombia is the lowest amongst Latin American nations, and one of the lowest globally after India and the Philippines (page 2 of 2)

Operating cost per FTE\(^1,2\)

2016; US$ ‘000s per annum per FTE

### MOBILE APP DEVELOPMENT

<table>
<thead>
<tr>
<th></th>
<th>Salaries and benefits</th>
<th>Technology &amp; other operating expenses</th>
<th>Facilities</th>
<th>Indexed cost w.r.t Colombia (Bogota)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colombia (Bogota)</td>
<td>33-38</td>
<td>~1.08</td>
<td>~1.08</td>
<td>~1.08</td>
</tr>
<tr>
<td>Peru (Lima)</td>
<td>35-40</td>
<td>~1.39</td>
<td>~1.39</td>
<td>~1.39</td>
</tr>
<tr>
<td>Mexico City</td>
<td>47-52</td>
<td>~1.60</td>
<td>~1.60</td>
<td>~1.60</td>
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<tr>
<td>Costa Rica San Jose</td>
<td>54-59</td>
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<td>~1.58</td>
<td>~1.58</td>
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<td>Chile (Santiago)</td>
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<tr>
<td>India (Bangalore)</td>
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<td>~0.76</td>
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<tr>
<td>Philippines (Manila)</td>
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<td>~1.12</td>
<td>~1.12</td>
</tr>
<tr>
<td>Poland (Krakow)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ireland (Dublin)</td>
<td>110-115</td>
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<td></td>
</tr>
</tbody>
</table>

- Compensation costs, which account for over 70% of the total operating costs, are lower in Colombia as compared to other countries. This is due to low cost of living in the country and also low competitive intensity for talent.
- Other cost components such as technology and facilities cost are also lower in Colombia as compared to other locations in Latin America.

1 Reflects steady-state, market-average, annual operating costs. Includes salaries, benefits, technology, and other operating costs. Excludes SG&A and corporate overheads
2 Assessment assumes average exchange rate from January 1, 2016 to December 31, 2016

Source: Everest Group (2017)
Colombia offers high quality office infrastructure at a competitive rate as compared to peer Latin American locations

<table>
<thead>
<tr>
<th>Location</th>
<th>Market Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colombia (Bogota)</td>
<td>20-25</td>
</tr>
<tr>
<td>Peru (Lima)</td>
<td>20-25</td>
</tr>
<tr>
<td>Mexico (Mexico City)</td>
<td>24-29</td>
</tr>
<tr>
<td>Costa Rica (San Jose)</td>
<td>21-26</td>
</tr>
<tr>
<td>Chile (Santiago)</td>
<td>15-20</td>
</tr>
<tr>
<td>India (Bangalore)</td>
<td>7-10</td>
</tr>
<tr>
<td>Philippines (Manila)</td>
<td>15-18</td>
</tr>
<tr>
<td>Poland (Krakow)</td>
<td>14-18</td>
</tr>
<tr>
<td>Ireland (Dublin)</td>
<td>35-40</td>
</tr>
</tbody>
</table>

Note: Rents are indicative of Non-CBD, Grade A office space
Source: Everest Group (2017)

- The Colombian government has taken multiple initiatives to enhance the office infrastructure in city centers as well as the sub-urban areas.
- Last 2 years have witnessed a slight decline in the office rentals in Colombia, bringing down the cost of facilities. This was primarily due to increase in vacancy rates from an approximate 4% in 2014 to over 11% in 2016.
  - A further decline in rentals is anticipated in the next 2 years, driven by high creation of new office space but low absorption rates.
Colombia offers corporate tax rates relatively at par with most of the peer Latin America locations, with additional benefits on R&D and technology advancement

With the new tax reform, the government has combined the corporate tax and taxes on equity (CREE) to arrive to a combined corporate tax rate of 34% in 2017, which falls to 33% for years 2018 and beyond.

- The additional tax of 8% for 2017 and 9% for 2018 levied on companies with income of 800 million pesos and above, has also been reduced to 6% for 2017 and 4% for 2018
- The total tax rate from 2019 hence sums up to 33% which is 1% lower than the existing aggregate of 34%

- There are additional tax benefits offered to IT companies such as deduction equivalent to 100% for the amount invested in development of software and research in technology from taxable income along with 25% of the investment amount eligible for deduction from the income tax in the same year
- There are Free Zones in Colombia that offer exemptions from custom duty and VAT on purchasing equipment or materials from abroad

<table>
<thead>
<tr>
<th>Corporate tax rate</th>
<th>2016; Percentage</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colombia (Bogota)</td>
<td>33%</td>
<td>- With the new tax reform, the government has combined the corporate tax and taxes on equity (CREE) to arrive to a combined corporate tax rate of 34% in 2017, which falls to 33% for years 2018 and beyond.</td>
</tr>
<tr>
<td>Peru (Lima)</td>
<td>30%</td>
<td>- The additional tax of 8% for 2017 and 9% for 2018 levied on companies with income of 800 million pesos and above, has also been reduced to 6% for 2017 and 4% for 2018</td>
</tr>
<tr>
<td>Mexico (Mexico City)</td>
<td>30%</td>
<td>- The total tax rate from 2019 hence sums up to 33% which is 1% lower than the existing aggregate of 34%</td>
</tr>
<tr>
<td>Costa Rica (San Jose)</td>
<td>30%</td>
<td>- There are additional tax benefits offered to IT companies such as deduction equivalent to 100% for the amount invested in development of software and research in technology from taxable income along with 25% of the investment amount eligible for deduction from the income tax in the same year</td>
</tr>
<tr>
<td>Chile (Santiago)</td>
<td>22.5%</td>
<td>- There are Free Zones in Colombia that offer exemptions from custom duty and VAT on purchasing equipment or materials from abroad</td>
</tr>
<tr>
<td>India (Bangalore)</td>
<td>34.5%</td>
<td></td>
</tr>
<tr>
<td>Philippines (Manila)</td>
<td>30%</td>
<td></td>
</tr>
<tr>
<td>Poland (Krakow)</td>
<td>19%</td>
<td></td>
</tr>
<tr>
<td>Ireland (Dublin)</td>
<td>12.5%</td>
<td></td>
</tr>
</tbody>
</table>

MARKET AVERAGE

<table>
<thead>
<tr>
<th>Corporate tax rate</th>
<th>2016; Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colombia (Bogota)</td>
<td>33%</td>
</tr>
<tr>
<td>Peru (Lima)</td>
<td>30%</td>
</tr>
<tr>
<td>Mexico (Mexico City)</td>
<td>30%</td>
</tr>
<tr>
<td>Costa Rica (San Jose)</td>
<td>30%</td>
</tr>
<tr>
<td>Chile (Santiago)</td>
<td>22.5%</td>
</tr>
<tr>
<td>India (Bangalore)</td>
<td>34.5%</td>
</tr>
<tr>
<td>Philippines (Manila)</td>
<td>30%</td>
</tr>
<tr>
<td>Poland (Krakow)</td>
<td>19%</td>
</tr>
<tr>
<td>Ireland (Dublin)</td>
<td>12.5%</td>
</tr>
</tbody>
</table>

Source: Everest Group (2017)
Colombian Peso has depreciated by 39% over a period of 5 years, making the cost of operations even more attractive

<table>
<thead>
<tr>
<th>Country</th>
<th>2011</th>
<th>2016</th>
<th>% depreciation</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colombia</td>
<td>0.0005</td>
<td>0.0004</td>
<td>-39%</td>
<td>Highest depreciation in 5 years</td>
</tr>
<tr>
<td>Peru</td>
<td>0.3630</td>
<td>0.2965</td>
<td>-18%</td>
<td></td>
</tr>
<tr>
<td>Mexico</td>
<td>0.0804</td>
<td>0.0535</td>
<td>-33%</td>
<td></td>
</tr>
<tr>
<td>Costa Rica</td>
<td>0.0020</td>
<td>0.0018</td>
<td>-8%</td>
<td></td>
</tr>
<tr>
<td>Chile</td>
<td>0.0021</td>
<td>0.0015</td>
<td>-28%</td>
<td></td>
</tr>
<tr>
<td>India</td>
<td>0.0214</td>
<td>0.0149</td>
<td>-31%</td>
<td></td>
</tr>
<tr>
<td>Philippines</td>
<td>0.0231</td>
<td>0.0211</td>
<td>-9%</td>
<td></td>
</tr>
<tr>
<td>Poland</td>
<td>0.3371</td>
<td>0.2535</td>
<td>-25%</td>
<td></td>
</tr>
<tr>
<td>Ireland</td>
<td>1.7654</td>
<td>1.4047</td>
<td>-20%</td>
<td></td>
</tr>
</tbody>
</table>

1 Average of exchange rates for January 1 to December 31 of specific years
Source: Everest Group (2017); World Bank

- Currency depreciation over the past few years has made the cost of operations in Colombia even more attractive
- This has resulted in an increase in the overall market activity and correspondingly in foreign investment in the Colombian IT and BP services industry
- With oil prices recovering after the 2014 crash, the Colombian Peso is expected to stabilize in the near future
Appreciation of currency is unlikely, with Colombian peso remaining low at 3,000-3,300 peso per US$

<table>
<thead>
<tr>
<th>Year</th>
<th>Currency Exchange Rate (Peso per US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>1,848</td>
</tr>
<tr>
<td>2012</td>
<td>1,798</td>
</tr>
<tr>
<td>2013</td>
<td>1,870</td>
</tr>
<tr>
<td>2014</td>
<td>2,000</td>
</tr>
<tr>
<td>2015</td>
<td>2,748</td>
</tr>
<tr>
<td>2016</td>
<td>3,051</td>
</tr>
</tbody>
</table>

The Colombian peso has witnessed substantial depreciation over the last five years, lowering the cost of IT service operations in dollar terms and making the country an attractive destination for foreign investment in the IT BPM industry.

- The 2014 oil price crash caused the currency to dip by over 27% in a single year.

With no major revision expected in oil prices (key driver for economy), the Colombian peso is not expected to appreciate much in the near future, and is projected to remain stable at 3,000-3,300 peso per US$.

Note: Average of exchange rates for January 1 to December 31 of specific years
Source: Everest Group (2017); World Bank
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- Highlights of Colombia’s proposition for export of IT and digital content services

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The large graduate talent in Colombia provides the ability to set-up high scale operations for traditional IT as well as digital services

Entry-level graduate talent availability
2016; ‘000 per annum

- Colombia has the largest graduate population compared to other Latin America locations including graduates from specialized technology courses such as systems engineering and telecommunications. This gives Colombia an edge to deliver both, scaled as well as high-end technology IT requirements

- While majority of Latin America countries have talent concentrated in one or two cities, Colombia offers multiple attractive location options. Apart from Bogota, there is substantial availability of talent in tier-2 cities such as Medellin, Cali, Barranquilla, and Cartagena

1 Analysis includes tertiary graduates with degrees in engineering / information technology, who are typically employed for IT services delivery in the city. Includes talent migrating from adjacent cities. Refer to page 51 for assessment framework

Source: Government statistical organizations & education ministries, inputs from market players, recruitment firms, investment agencies, and Everest Group (2017)
Low competitive intensity in the region leads to low attrition rates

<table>
<thead>
<tr>
<th>Attraction rate in IT services</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016; Percentage</td>
<td></td>
</tr>
<tr>
<td>Colombia (Bogota)</td>
<td>13-15%</td>
</tr>
<tr>
<td>Peru (Lima)</td>
<td>11-13%</td>
</tr>
<tr>
<td>Mexico (Mexico City)</td>
<td>12-14%</td>
</tr>
<tr>
<td>Costa Rica (San Jose)</td>
<td>16-18%</td>
</tr>
<tr>
<td>Chile (Santiago)</td>
<td>12-14%</td>
</tr>
<tr>
<td>India (Bangalore)</td>
<td>20-22%</td>
</tr>
<tr>
<td>Philippines (Manila)</td>
<td>16-18%</td>
</tr>
<tr>
<td>Poland (Krakow)</td>
<td>15-17%</td>
</tr>
<tr>
<td>Ireland (Dublin)</td>
<td>10-12%</td>
</tr>
</tbody>
</table>

Note: Reflects market-average attrition on steady state basis for multinational companies and may be higher for domestic companies
Source: Interviews with recruiters and global companies; Everest Group (2017)
### Bogota has a sizable offshore IT industry with presence of many leading global service providers and GICs

<table>
<thead>
<tr>
<th>Location</th>
<th>Number of leading players 2016; Number</th>
<th>Typical scale achieved 2016; FTEs</th>
<th>Key service providers</th>
<th>Key Global In-house Centers (GICs)</th>
<th>Comments</th>
</tr>
</thead>
</table>
| Bogota       | 12-15                                  | 300-500                          | Accenture, HP, IBM, TCS | Oracle, Globant                   | • Relatively untapped location for global IT services  
• Evidence of companies delivering digital content along with application development for international clients |
| Santiago     | 24-27                                  | 300-500                          | Accenture, Atos, IBM, HP, TCS | Oracle, Banco Santander, Citigroup, JPMC, Experian | • Delivers application development and maintenance, primarily to meet domestic and regional demand |
| Lima         | 5-7                                    | 50-100                           | IBM, TCS                | Citi, Cignium                     | • Nascent location with low availability of talent; primarily leveraged by global firms for IT infrastructure and data center operation |
| San Jose     | 20-30                                  | 500-700                          | Accenture, HP, IBM      | Intel, Fiserv                     | • Significant evidence of large scale operations (800+ FTEs) of companies primarily delivering ADM and IT helpdesk services, with move towards more complex digital services |
| Mexico City  | 25-30                                  | 600-800                          | Accenture, IBM, Softtek, Infosys, HCL | HSBC, Ericsson, MetLife, Ford, Walmart, Citi | • One of the largest providers of IT services from LATAM after Brazil  
• Evidence of players delivering digital services |
| Bangalore    | 100+                                   | 3000-4000                        | Accenture, Dell, IBM, Tech Mahindra, HCL, Cognizant, Infosys, L&T Infotech | Goldman Sachs, RBS, Intel, SAP, Microsoft, HSBC, Samsung | • Mature location delivering both transactional and complex IT work  
• R&D hub for multiple global firms |
| Manila       | 20-25                                  | 500-700                          | Accenture, Syntel, Tech Mahindra, Cognizant, Infosys | Wells Fargo, Chevron, AIG, Citigroup | • Presence of large multinational IT firms  
• Primarily leveraged to deliver transactional application development & maintenance work |
| Krakow       | 18-20                                  | 500-700                          | Capgemini, Fujitsu, HCL, Luxoft, Xerox, IBM, Tieto | Amway, Cisco, Google, Electrolux, Faber, Sabre | • Mature location for software development  
• Player landscape dominated by service providers primarily delivering services to CEE¹ |
| Dublin       | 16-18                                  | 300-500                          | Accenture, Atos, Fujitsu, HP, HCL | Microsoft, Google, Oracle, SAP, Siemens | • Leveraged to deliver complex IT work for the U.K. and some parts of Eastern Europe  
• CoE and R&D hubs for global firms |

¹ Central and Eastern Europe

Source: Everest Group (2017)
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Colombia ranks second in the ‘readiness for business services in the cloud’ in Latin America

Index of readiness for business services in the cloud1
2013; Range, 0 is lowest and 7 is highest

Mexico 3.64
Colombia 3.31
Costa Rica 2.74
Chile 2.61
Peru 1.59

Enterprise cloud service revenue in Latin America is expected to expand from US$6.5 billion in 2014 to US$21.5 billion in 2019

Colombia, Argentina, Chile, and Peru have a share of ~24% in the overall cloud service revenue in Latin America

Infrastructure as a service (IaaS) and Software as a Service (SaaS) account for more than 90% of the cloud computing market in Colombia

Private cloud is the most preferred cloud computing model as enterprises prioritize privacy and security

- IBM has invested more than US$35 million for relocation and expansion of data centers across Colombia
- There are three data centers in Bogota and one in Medellin
- Rackspace operates in Colombia to serve its growing 200+ customer base in the country
- Level 3 Communications has opened two data centers in Bogota and one in Cali
- The centers help provide multi-tier security to its global network

1 The index of readiness for business services in the cloud is provided by Pyramid Research
Source: Everest Group (2017)
Big data in Colombia is one of the fastest emerging technologies and already has multiple examples of public-private-academia partnerships for talent development

- CAOBA alliance is a partnership between private sector, government and academic institutes to develop an ecosystem of analytical capabilities in Colombia
- CAOBA alliance has facilitated multiple projects to enable big data analytics in the country
  - Organized Hackathons to develop big data solutions and share knowledge on tools and techniques used in the development
  - Formulated a Masters course on Business Intelligence Analytics with the Pontificia Universidad Javeriana
- Some of the companies include Bancolombia, Nutresa, IBM, SAS, EMC Information Systems, Cluster CREATIC
- Universities include ICESI Universities, EAFIT, and the Pontificia Universidad Javeriana

SUCCESS STORY:
US-based Big Data specialist TIBCO has partnered with Colombia-based Heinsohn Business Technology to introduce its big data and software integration solutions in Colombia and Latin America region

There are more than 100 Heinsohn engineers supporting TIBCO to optimize the internal development of its BI application in Latin America

TIBCO partnered with Heinsohn for its experience in data analytics projects. Example - project with Colombia’s department of Motor Vehicles to manage and analyze data regarding vehicles, drivers, traffic etc.

Colombia’s business-friendly climate, price-competitiveness and the time-zone alignment with the United States have satisfied TIBCO’s need for agile driven development process

Source: Everest Group (2017)
Colombia has the second highest penetration of internet in Latin America and has a dedicated alliance for IoT, involving universities and companies

- The Ministry of Information Technologies and Communications (MinTIC) has formed the **Center of Excellence and Appropriation of Internet of Things (CEA-IoT)**, a partnership between universities, global technology leaders and companies.

- The alliance aims for the economic development of Colombia through the Internet of Things to meet the needs of different sectors of the country.

- Some of the global companies supporting the initiative include Microsoft, Intel and HP along with 8 national companies.

- The universities under this partnership include Pontificia Universidad Javeriana (Bogotá and Cali), Autónoma de Bucaramanga, Tecnológica de Bolívar and Santo Tomás.
  - The Pontificia Universidad Javeriana in Bogotá has partnered with Intel to launch an advanced IoT course.

- Currently, the association has received ~$5,000 million pesos of investment.

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**By 2018, the Colombian government aims to provide 63% of the population with broadband internet connectivity under phase 2 of Vive Digital plan.**

**The Colombian government offers subsidies to low income group to facilitate the purchase of computers and internet services.**

---

1. The internet users statistics are provided by eMarketer.
   Source: Everest Group (2017)
The mobile app economy in Colombia is expected to thrive given the second highest penetration of smartphone users in Latin America

![Smartphones Users and Penetration](image)

- By 2019, the smartphones users are expected to rise to ~24 million, with a penetration of up to ~70%
- Colombia ranks second in smartphone users penetration trailing only Chile in the region
- Colombia is ahead of Argentina, and ranks third after Mexico and Brazil in total smartphone users in the region
- ~80% of the smartphone internet traffic is driven by Android
- Colombia has 10% to the total smartphone users in Latin America
- The smartphone users in Colombia are expected to increase by ~12% in 2016 compared to previous year

- The strong penetration of wireless internet in Colombia and low cost mobile data packages has enabled consumers to purchase smartphones
- Colombia has over 40% of the total spectrum allocated for 4G spectrum with 4G/LTE services being already provided in six major cities
- The Colombian smartphone market is currently dominated by Samsung (~35%) followed by Huawei (~13%)
- The key mobile network operators in Colombia are Avantel, Claro, Movistar, and Tigo - UNE

1 The internet users statistics are provided by eMarketer
Source: Everest Group (2017)
Colombia has the second highest share in the videogame industry revenue amongst the key locations in Latin America

Videogame revenue split by countries¹
2016E; US$ billion

<table>
<thead>
<tr>
<th>Country</th>
<th>Revenue Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mexico</td>
<td>71%</td>
</tr>
<tr>
<td>Colombia</td>
<td>13%</td>
</tr>
<tr>
<td>Costa Rica</td>
<td>6%</td>
</tr>
<tr>
<td>Chile</td>
<td>5%</td>
</tr>
<tr>
<td>Peru</td>
<td>1%</td>
</tr>
</tbody>
</table>

1 The videogame revenue statistics are provided by Newzoo

Source: Everest Group (2017)

• Colombian game market is increasingly gaining international recognition
  – Brainz (a videogame development studio) got into a partnership with Germany’s Flaregames to create a mobile Role-Playing Game (RPG), Ark: Survival Evolved
  – Finnish developer Silvermile got into a partnership with Colombian studio Teravision for its Oculus Rift game ‘Flushy Fish’

• Many institutions have created special interest groups and courses dedicated to video game history, video game design, and video game development
  – SENA, the government professional training institution offers programs in video game development, computer animation, modeling and art which has helped many videogame companies in Colombia recruit talent

Success story: Efecto studios

• Leveraging the skilled talent and strong government support in Colombia, Efecto studios, together with Studio Wildcard, Instinct Games and Virtual Basement, developed “Ark: Survival Evolved”, an action-adventure survival video game. The game is now one of the most popular online videogame in the U.S.

• The company also won 3 international awards for “Grabbity”, a videogame developed in collaboration with Televisa
Majority of the Virtual Reality companies in Colombia are involved in app development, the second highest funded business model globally

<table>
<thead>
<tr>
<th>Business model</th>
<th>Total funding amount (global)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardware</td>
<td>~1000</td>
<td>Manufacturers of VR hardware which help in capturing as well as viewing content</td>
</tr>
<tr>
<td>Application</td>
<td>550-600</td>
<td>Includes players applying VR technology in various fields like entertainment, health, real estate, retail, tourism, etc.</td>
</tr>
<tr>
<td>Post-Production</td>
<td>200-250</td>
<td>Tools to process content (picture/video) after capture through camera</td>
</tr>
<tr>
<td>Developer Tools</td>
<td>50-100</td>
<td>Software to help developers create VR content artificially through computer</td>
</tr>
<tr>
<td>Input/ Output S/W</td>
<td>30-80</td>
<td>Software which helps input / output devices such as motion controllers in gesture recognition, motion tracking, simulation, etc.</td>
</tr>
</tbody>
</table>

The Virtual Reality Center (VRC) of Nueva Granada Military University, is an academic and industrial R&D center with focus on 3D graphics and computer simulation

**Success story: Allbreaker, a Colombia based, VR / AR development studio** has executed multiple projects in architecture, entertainment and games. Allbreaker has worked with multiple U.S. based companies on VR/AR projects

- Worked on a VR application for virtual tours in real estate. This was used as a sales tool to provide a 360 degree video tour for Latino community in the U.S.
- Worked on an AR application in entertainment industry to generate contextual information by proximity

---

1 The global funding statistics are provided by Tracxn
Source: Everest Group (2017)
Colombia offers the highest incentives for animation and film production in Latin America

- Foreign productions are entitled to claim back the VAT (Value Added Tax) at the end of the film shooting
- PROAV is an incentive program for high-impact film and audiovisual industries. This includes VAT refund and financial reimbursements of up to 7.5% of the budget spent in Mexico
- Cash rebate for films partially or totally produced in Colombia
  - 40% for film services of the production spend (services related to audio-visual pre production, production or post-production including artistic and technical services), and
  - 20% for film logistics services of the production spend (those that are provided for hotel, catering, and transportation) of the amount spent in the country
- Medellin offers rebates in addition to the above incentives; one can receive up to 15% of production spend in the city
- Peru: No tax incentives for feature films or commercials shooting in Peru. Foreign crews are exempt from hotel accommodation tax
- Chile: There are no tax incentives for international productions in Chile. However, productions that hire local production services are entitled to a return of the VAT
- Costa Rica: At present there are no tax incentives for foreign feature films or commercials shooting in Costa Rica

Note: The cash rebate applies to services provided by the specific entities or persons that are domiciled or residing in the country mentioned
Note: There are differences in the minimum project expenditure required to claim the benefits across the countries
Source: Everest Group (2017)
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The IT industry is provided multiple incentives in Colombia

<table>
<thead>
<tr>
<th>Key Incentives</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exemption on taxes for technological research and</td>
<td>● Colombian government offers additional tax benefits to IT companies such as deduction equivalent to 100% for the amount invested in development of software and research in technology from taxable income along with 25% of the investment amount eligible for deduction from the income tax in the same taxable year</td>
</tr>
<tr>
<td>development of new software</td>
<td></td>
</tr>
<tr>
<td>Free Trade Zones</td>
<td>● The government has established free trade zones across the country, wherein companies enjoy advantages of tax waivers (tax rates as low as 20% as compared to standard corporate tax rate of 33%), incentives on imports and exports, and other benefits under the Free Trade Zone regime</td>
</tr>
<tr>
<td>Incentives on hiring</td>
<td>● To encourage the hiring of people under 28 years of age and women older than 40 years of age, as well as displaced, reintegrated and disabled people, companies are offered discounts and waivers in income tax and in complementary parafiscal and payroll contribution taxes for up to 3 years</td>
</tr>
<tr>
<td>Trade agreements</td>
<td>● To eliminate double taxation, ease transactions across states, and promote smooth trade between countries, Colombia has signed 10 Double Taxation Agreements (DTAs) with countries such as Spain, Canada, India, and Mexico</td>
</tr>
<tr>
<td></td>
<td>● With the aim to reduce non-commercial risk for foreign investors, Colombia has entered into International Investment Agreements (IIAs) with 11 countries such as China, Spain, India, United States, and Canada. The agreements ensure protection of foreign investment in these countries</td>
</tr>
</tbody>
</table>
The government has taken multiple initiatives to facilitate growth in the IT industry, and make Colombia the destination of choice for IT services in Latin America.

**Plan Vive Digital para la Gente**

- Vive Digital campaign is aimed at promoting development of the digital ecosystem in Colombia, through establishment of a robust infrastructure, especially in fields to digital and IT services. With over 99.8% businesses in the region going digital, the move has increased the domestic demand for IT services.
- ViveLab National Network comprising 17 digital technology focused laboratories, aims to train more than 15,000 people by 2018.
- Finishing schools is a public-private partnership to promote the outsourcing industry with scholarships worth up to USD $2.500 granted to industry workers, particularly in fields like software and IT services.

**Apps.co**

- Apps.co is an initiative designed by the Ministry of Information and Communication Technologies (MinTIC) and its Vive Digital plan.
- The objective is to promote creation of ICT companies base, whose main product is the creation of mobile applications, web portals, specialized software and digital content. The initiative is implemented in three phases:

1. **Bootcamps**
   - These are workshops and programs to help people create their own digital venture.
   - This includes providing trainings and support to startups to help understand market potential, prepare business model etc.
   - More than 50,000 people have accessed these bootcamps.

2. **Business Discovery**
   - Post completion of bootcamps, entrepreneurs whose ideas are similar are grouped together and a project is converted into an ICT business.
   - This is followed by an 8 week program in which the business is evaluated on the grounds of social impact, market potential, and business model.
   - Since 2012, 896 new ICT solutions have been generated, with sales exceeding $250,000.
   - The entrepreneurs include ICT experts, students, housewives and pensioners.

3. **Growth and Consolidation**
   - The last phase involves 20 weeks of intensive training, mentoring and consultancy, in which projects are launched into the digital market to expand business.
   - MinTIC has consolidated 85 teams whose average income is ~US$ 2 million in the last two years.
   - Currently there are 73 teams in the growth and consolidation stage.

Source: Interviews with market participants; Everest Group (2017)
The government has taken multiple initiatives to facilitate growth in the IT industry, and make Colombia the destination of choice for IT services in Latin America (Page 2 of 3)

**Colombia Bring IT On**

- Launched in 2014, Colombia’s “Bring IT on” is a technology focused, government initiated campaign, aims at making Colombia one of the most attractive supplier for IT and digital services
- It provides buyers a platform to identify and connect with Colombian companies providing technology solutions such as mobile application development, video games, virtual and augmented reality, and other digital content creation services
- The campaign has helped local companies offer their products across 60 different international markets

**Talento**

- In its recent bid to improve technology talent in the country, Colombian government has launched the call IT talent initiative, which seeks to encourage students to pursue careers in Information and Technology related fields
- Selected students are offered loans subject to waiver covering 90-100% of the expense on studies
- The program aims to benefit more than 8,000 students to further their studies in Information Technology
- More than 185 billion pesos has been allocated to extend the coverage of beneficiaries of the initiative

Source: Interviews with market participants; Everest Group (2017)
The government has taken multiple initiatives to facilitate growth in the IT industry, and make Colombia the destination of choice for IT services in Latin America (Page 3 of 3)

Colombia 4.0

- Colombia 4.0 is one of the largest digital content summits of Latin America, boosting digital content ecosystem in the country and region
- The digital summit focuses on areas such as animation, video games, web, mobile development, music, entrepreneurship, digital advertising and monetization
- The event included lectures, panel discussions and workshops to share the latest trends in the industry involving 190+ national and international speakers
- Over 25 countries including the United States, Japan, Germany, Spain, France, China, Argentina, and Costa Rica, participated in the summit with more than 900 entrepreneurs leveraging the event to establish industry connects

Crea Digital 2016

- Crea digital is a collaborative initiative by the Ministry of Information and Communication Technologies and the Ministry of Culture towards strengthening the local IT and digital services industry
- The programme offers small and medium sized companies, universities, and institutes of higher education in Colombia an opportunity for co-creation with the ministries, digital content in technology categories such as video games, animation, and e-books,
- A total of 21 projects received an investment of over US$ 630,000 for creation of digital content in areas of animation, videogames, culture of peace, and e-books

Source: Interviews with market participants; Everest Group (2017)
Initiatives to strengthen English language skills and capitalize human talent are also adding to the country’s attractiveness.

- Colombian government has adopted multiple initiatives to strengthen English language proficiency to stay competitive and generate better employment opportunities. It aims to make the country bilingual by the end of 2025.

- **Foreign Languages Competencies Development Programme (PFDCLE), National English Programme**, and specialized training programmes implemented by the **National Training Service (SENA)** address the needs of both students and teachers through improved methodologies and high-quality education material.

### National English Program – “Colombia, very well”, 2015 – 2025

- A comprehensive, long-term programme, aimed at addressing the rising demand for English language driven by globalization, and remaining competitive in the world market.

- The investment of USD 1.3 billion over the next 10 years focuses on coordination with the industry for training and development programmes along with support and funding for higher education, to make Colombian talent employment ready.

### Foreign Languages Competencies Development Programme (PFDCLE), 2014 - 2019

- Formerly named as the National Bilingual Programme (NBP), PFDCLE is a long-term programme with the objective of making Colombia bilingual over a period of 15 years.

- The programme has made English language mandatory in schools and has set thresholds for fluency for different graduate levels – B1 (intermediate) for secondary school graduates and B2 (upper intermediate) for university graduates.

### Initiatives by National Training Service (SENA)

- In a bid to raise the standards of English education in Colombia, SENA is partnering with volunteers across different English-speaking countries.

- The volunteers are typically professionals and graduates expected to train more than 5000 students pursuing programs in fields such as financial services, information technology, and business process outsourcing, relevant to the outsourcing / offshoring industry.

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1. Defined by the Common European Framework for Reference (CEFR)

Source: Everest Group (2017)
Colombia provides an easy access to global markets through good international air connectivity

Note: Representative of major global cities to indicate approximate air-travel time from international airports in Bogota, Medellin, Cali, and Barranquilla

Source: Everest Group (2017); Routes and tariffs – Tools for the Colombian exporter
Contents

- Highlights of Colombia’s proposition for export of IT and digital content services
- Detailed view of Colombia’s IT and digital content services export industry
- Success stories
- Appendix
Various government initiatives have helped export oriented companies establish international connects and achieve global presence

Teravision Games

Company Overview

- Company HQ: Venezuela
- Scale and location: 28 collaborators with 16 based out of Bogota
- Functional area: Videogame development with focus on the U.S. market
- Key clients: Disney, Nickelodeon

- Lower cost of operation along with significant availability of talent pushed the company to move and centralize operations in Colombia
- Time zone similarity and cultural proximity with the U.S. helped them achieve high rates of customer satisfaction
- Government support and special programmes played a major role in establishing connects with clients
  - Bogota Audiovisual Market (BAM) event organized by ProColombia provided a platform to showcase strengths and led to one of the biggest wins – the development of Booyakasha Blitz game in Ninja Turtles for Nickelodeon

“A well developed infrastructure makes operations easy in the country. Proximity to both coasts in the U.S. and a similar culture makes it easier for teams to interact, adding to the country’s advantage.”

– Chief Operating Officer

Source: Interviews with market participants; Everest Group (2017)

IamStudio

Company Overview

- Company HQ: Colombia
- Scale and location: 25 employees based out of Bogota
- Functional area: Service provider for mobile & web apps, advertising and other traditional technologies with International focus
- Key clients: AXA Colpatria, Global Now

- A highly favorable business environment for exports has facilitated the company in its growth from 10 employees in 2014 to 25 employees in 2016
- Cost advantages over other Latin American locations make operations in the country profitable as compared to other offshore / nearshore locations
- Committed government initiatives such as “Colombia Bring IT On” have helped in establishing international connects and staying competitive in the market
- The country’s infrastructure is highly favorable for IT and digital companies’ operations

“Presence of international experts in the region has helped the industry achieve greater maturity than the peer countries”

– General Manager
Competitive costs of operation along with high domestic demand has enabled global companies to achieve high-scale of operations in the country

**Ingeneo**

**Company Overview**
- Company HQ: Colombia
- Scale and location: 150 employees across Medellin, Bogota, Armenia, and San Salvador
- Functional area: Software development, computer services and product licensing focusing on Africa and Latin America
- Key clients: Orange, Millicom in Africa

- Government regulations that benefit export companies in aspects such as hiring, legalizing invoices reporting foreign revenue, and facilitating international operations have enabled the company grow in scale and revenue
- Competitive costs and a talented resource pool make delivery of services smooth and profitable
- Programmes from industry bodies such as ProColombia have supported the company in increasing its export business

> “Organizations such as National Service of Learning (SENA) help in finding quality and talented resources. The apprentices are dedicated and most of them end up being hired by the company”
> — Chief Business Development Officer & Co-Founder

**TCS**

**Company Overview**
- Company HQ: India
- Scale and location: 1100+ employees with headquarter in Bogota and the key delivery center in Medellin
- Functional area: Leading service provider of ITO, BPO, software development and application maintenance
- Key clients: Focus on local delivery

- Favorable business environment and high availability of talent in the country enabled the company to scale to 1100+ employees in just over 10 years
- Government regulatory policies such as the policy which mandates maintaining a fixed intern to employee ratio, create an additional qualified resource pool with low costs to the company
- Presence of multiple customers adopting advanced technologies such as Big Data and SaaS has led to increased opportunities for IT service providers. Serving such clients has helped TCS Colombia develop specialized capabilities in the field and become one of the key providers in SAP technology

> “The infrastructure is competitive with the government taking up multiple initiatives to strengthen the ecosystem for IT and digital companies. There is good talent with competitive costs compared to the region”
> — Delivery Manager

Source: Interviews with market participants; Everest Group (2017)
Multiple companies have achieved success in emerging technologies such as virtual reality, animation, and videogames

“The availability of high quality IT talent in Colombia enabled the development of an innovative VR animation for healthcare professionals which is being used in multiple countries for training in hospitals...with the success in Colombia, the company has now decide to manage all innovation projects out of the Colombia office and then distribute work across locations such as Mexico, Ecuador, Argentina, and Peru.”

– CEO, Allbreaker (virtual and augmented reality solutions)

“Colombia has been outstanding in terms of availability of talent. We, like most other international companies were really surprised to see skill and creativity of Colombian talent. Also, the government has been really supportive in terms of developing the IT services market, and has provided plenty of support to bring foreign experts to assess our projects and the selling opportunities, as well as to travel abroad and validate our offer.”

– CEO, Area Visual

“Our client, one of the largest global beverage companies, was impressed with the local delivery for Colombia business and extended the relations and contracts for delivery to Central America, the U.S., and Europe, all serviced from the centers in Colombia. We work on different projects including brand manuals, seasonality toolkit, TV commercials and animations and are now in charge of communication and advertising for the Latin Center business unit for the client.”

– Co-founder, Oruga (animation and advertising solutions)

“ Awarded the best solution distinction in a contest organized by the Ministry of Information Technologies and Communications (MinTIC) for a client management solution developed for a Chilean client.”

– CEO, Open International

Source: Interviews with market participants; Everest Group (2017)
Contents

- Highlights of Colombia’s proposition for export of IT and digital content services
- Detailed view of Colombia’s IT and digital content services export industry
- Success stories

- Appendix
Colombia offers large availability of talent across multiple cities

Entry-level graduate talent availability
2016; ‘000 per annum

<table>
<thead>
<tr>
<th>City</th>
<th>Talent Availability (‘000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bogota</td>
<td>6.0-8.0</td>
</tr>
<tr>
<td>Medellin</td>
<td>2.5-3.5</td>
</tr>
<tr>
<td>Cali</td>
<td>1.0-2.0</td>
</tr>
<tr>
<td>Barranquilla</td>
<td>0.5-1.0</td>
</tr>
<tr>
<td>Cartagena</td>
<td>0.2-0.5</td>
</tr>
</tbody>
</table>

- Colombia has the largest graduate population compared to other Latin America locations including graduates from specialized technology courses such as systems engineering and telecommunications. This gives Colombia an edge to deliver both, scaled as well as high-end technology IT requirements.

- While majority of Latin America countries have talent concentrated in one or two cities, Colombia offers multiple attractive location options. Apart from Bogota, there is substantial availability of talent in tier-2 cities such as Medellin, Cali, Barranquilla, and Cartagena.

1 Analysis includes tertiary graduates with degrees in engineering / information technology, who are typically employed for IT services delivery in the city. Includes talent migrating from adjacent cities. Refer to page 54 for assessment framework.

Source: Government statistical organizations & education ministries, inputs from market players, recruitment firms, investment agencies, and Everest Group (2017)
## Approach to assess annual operating cost per FTE

### Total operating cost per FTE
2016; US$ in ’000s per annum per FTE

<table>
<thead>
<tr>
<th>Component</th>
<th>Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salaries and benefits</td>
<td>115-120</td>
</tr>
<tr>
<td>Facilities</td>
<td>7-9</td>
</tr>
<tr>
<td>Technology (equipment and telecom)</td>
<td>~1</td>
</tr>
<tr>
<td>Other operating expenses</td>
<td>9-11</td>
</tr>
<tr>
<td><strong>Total operating cost per FTE</strong></td>
<td><strong>132-141</strong></td>
</tr>
</tbody>
</table>

**Key Inclusions**
- Salaries for delivery team personnel
- Support staff (e.g., IT and HR) salaries
- Statutory/mandatory benefits
- Real estate rentals
- Facilities management charges
- Utilities charges
- Amortized cost of equipment (servers, desktops, and networking)
- Ongoing bandwidth costs
- Miscellaneous costs such as employee transport, training, and consumables

**Key Exclusions**
- Salaries for senior management (e.g., center leadership)
- Non-statutory benefits and incentives
- Excludes licensing costs for business-specific software (e.g., database and testing software)
- Cost of sales, setup, transition, governance, margins, and corporate travel
- Other expenses (e.g., branding, advertisement, and allocation of corporate overheads)

1 Analysis reflective of market average costs (across shared service centers and service providers) for steady state of operations; does not include impact of incentives

Source: Everest Group (2017)
Approach to estimate entry-level employable talent

Annual entry-level employable talent¹
2016; Number in ‘000s

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual entry-level from city and adjoining regions</td>
<td>Total annual talent for the function available in the city (includes talent migrated from adjoining areas)</td>
</tr>
<tr>
<td></td>
<td>Includes bachelors and masters in relevant educational qualifications</td>
</tr>
<tr>
<td>Talent not relevant for roles under assessment</td>
<td>Graduates from streams such as medical, law specialized engineering fields, and others</td>
</tr>
<tr>
<td>Annual relevant entry-level talent from city and adjoining regions</td>
<td>Total relevant annual talent for the function available in the city (includes talent migrated from adjoining areas)</td>
</tr>
</tbody>
</table>

¹ Does not include talent already employed

Source: Inputs from market players, recruitment firms, investment agencies; Everest Group (2017)
Dallas (Headquarters)
info@everestgrp.com
+1-214-451-3000

Bangalore
india@everestgrp.com
+91-804-276-4533

Delhi
india@everestgrp.com
+91-124-496-1000

London
unitedkingdom@everestgrp.com
+44-207-129-1318

New York
info@everestgrp.com
+1-646-805-4000

Toronto
canada@everestgrp.com
+1-647-557-3475

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