Mobile Experience Innovation Centre (MEIC)

2012

Mobile Innovation: Ontario's Growing Mobile Content, Services, and Applications Industry 2012 (2nd ed.)

Webb, Kathleen

Mobile Innovation: Ontario's Growing Mobile Content, Services, and Applications Industry 2012

edited by Kathleen Webb

Mobile Innovation: Ontario's Growing Mobile Content, Services, and Applications Industry 2012
2nd ed., October 2012

Published by
Mobile Experience Innovation Centre (MEIC)
OCAD University
100 McCaul Street
Toronto, Ontario Canada
M5T 1W1

ISBN 978-0-9917125-0-2

Sponsors
Funding for this study was provided in part by the OMDC. Any opinions, findings, conclusions or recommendations expressed in this material are those of the author and do not necessarily reflect the views of OMDC or the Government of Ontario. The Government of Ontario and its agencies are in no way bound by the recommendations contained in this document.

Editor, Project Lead
Kathleen Webb

Project Team
Andrew Light
PricewaterhouseCoopers
Sam Punnett

Designers
Ben McCammon
Linh Do

About MEIC
The Mobile Experience Innovation Center (MEIC) is a not-for-profit association that supports design leadership, experience innovation and applied research in Canada's mobile and wireless industries.

Since being founded in 2007 by OCAD University, MEIC has become Canada's only organization focusing on design leadership, sector growth and integration, and innovation in mobile content, services and computing. MEIC offers a membership program to serve clients and partners alike. Its wider membership includes all major mobile associations and a wide array of mobile industry partners.

MEIC focuses on supporting start-ups and early-stage entrepreneurs, research commercialization, and national and international advocacy on behalf of Canadian companies, creating a strong framework in a fragmented industry.

MEIC offers programs that work with SMEs, researchers and NGOs in Canada and abroad for the purposes of partnership, collaboration, research and business development. All programs are designed to encourage research commercialization and business growth to Canadian SMEs, corporations and academic institutions. MEIC also hosts conferences, workshops and partners with other organizations to deliver quality and relevant events.

Table of Contents

Executive Summary 6
Introduction 7
Methodology 7
Findings 7
- Profile of Ecosystem 7
- Financial Climate 8
- Market Outlook 8
- Access to Talent 8
- Economic Impact 8
- Key Changes 9
- Opportunities and Threats for Local Enterprises 9
- Opportunities and Threats for Competing Globally 10
- Recommended Strategies for Partnership and Growth 11

1 Introduction 12
1.1 Background 14
1.2 Scope 14
1.3 Report Outline 15

2 The Mobile Industry 16
2.1 Unprecedented Growth in Mobile 18
2.2 Value Chain of Mobile Industry 19

3 Profile of Ontario/GTA Mobile Producers 22
3.1 Methodology 24
3.2 Corporate Profile 24
3.3 Company Revenue 25
3.4 Products and Services 27
3.5 Business Methods 30
3.6 International Endeavours 31
3.7 Expenditures and Profit 33
3.8 Capital and Financing 33
3.9 Talent and Employment 38
3.10 Outsourcing 40
3.11 Growth and Challenges 41

4 Economic Insights 44
4.1 Mobile as a Component of Wider Company Activity 46
4.2 Reporting of Mobile Revenues 47

5 Trends, Opportunities and Gaps 48
5.1 Methodology 50
5.2 Trend 1: Ontario/GTA as a Centre of Activity for Mobile 53
5.2.1 Introduction 53
5.2.2 Key Findings 53
5.2.3 Conclusion 56
5.3 Trend 2: Increasing Talent Recruitment and Retention Challenges 57
5.3.1 Introduction 57
5.3.2 Key Findings 57
5.3.3 Conclusion 58
5.4 Trend 3: Start-up Mobile Companies Face Challenges Accessing Capital 59
5.4.1 Introduction 59
5.4.2 Key Findings 59
5.4.3 Conclusion 60
5.5 Trend 4: The Adoption of Mobile in Canada (and Ontario) Lags Behind Other Countries 61
5.5.1 Introduction 61
5.5.2 Key Findings 61
5.5.3 Conclusion 62
5.6 Trend 5: Ontario Mobile Companies Lack Business & Marketing Skills to Commercialize New Ideas 63
5.6.1 Introduction 63
5.6.2 Key Findings 63
5.6.3 Conclusion 64
5.7 Trend 6: Mobile Commerce is an Area of Opportunity, but Requires Cross-Industry Partnerships 65
5.7.1 Introduction 65
5.7.2 Key Findings 65
5.7.3 Conclusion 67
5.8 Trend 7a: The Indian Market Presents an Opportunity for Ontario Mobile Companies 68
5.8.1 Introduction 68
5.8.2 Key Findings 68
5.8.3 Conclusion 71
5.9 Trend 7b: The Brazilian Market Presents an Opportunity for Ontario Mobile Companies 72
5.9.1 Introduction 72
5.9.2 Key Findings 72
5.9.3 Conclusion 74
5.10 Trend 8: Additional Public Policies and Support Measures Can Enhance the Competitiveness of the Mobile Industry in Ontario 75
5.10.1 Introduction 75

5.10.2 Key Findings 75
5.10.3 Conclusion 76
5.11 Trend 9: Companies in the Ontario Mobile Industry are Increasingly Expanding Abroad 77
5.11.1 Introduction 77
5.11.2 Key Findings 77
5.11.3 Conclusion 78
5.12 Summary: An Analysis of the Implication of the Trends Facing Ontario's Mobile Industry 79

6 Collaborative Framework 82
6.1 International Collaboration 84
6.2 Collaboration around Government Services 85
6.3 Collaboration with Other Sectors of the Ontario Economy 86
6.4 Collaboration Around Labour Market Issues 86
6.5 Collaboration with Post-Secondary Institutions 86
6.6 Collaboration with the Financial Services Community 87
6.7 Collaboration Between Existing Regional Support Organizations 87

Appendix A: MEIC Web-based Survey Questions 88

Appendix B: PwC Interview Guides 97

Appendix C: Mobile Companies in GTA 106

Appendix D: MEIC Interview Guide 111

Bibliography 114

Index of Figures

Figure 1: The number of smartphones sold exceeded the number of PCs sold 19
Figure 2: Mobile Industry Value Chain 19
Figure 3: Type of Coporation 24
Figure 4: Type of Ownership 25
Figure 5: # of Years in Business 25
Figure 6: Operating Revenue 26
Figure 7: % Revenue from Mobile 26
Figure 8: % Revenue from Fee-for-Service 27
Figure 9: % Revenue from Creating IP 27
Figure 10: Primary Endeavour 27
Figure 11: Primary Type of Product or Service 29
Figure 12: Secondary Type of Product or Service 29
Figure 13: Applications Average # of Projects 30
Figure 14: Content Provider Average # of Projects 30
Figure 15: Type of Business Model 30
Figure 16: Primary Sales Channel 31
Figure 17: Type of End Users 31
Figure 18: Export Sales 31
Figure 19: Export Locations 32
Figure 20: International Sales Channels Used 32
Figure 21: Breakdown of Operating Expenses 33
Figure 22: Primary Financing Method 34
Figure 23: Secondary Financing Method 34
Figure 24: Access to Capital 34
Figure 25: Experience with Crowdfunding 36
Figure 26: % of Revenues Attributed to Tax Credits 37
Figure 27: % of Tax Credits Attributed to R&D 37
Figure 28: Number of Full Time Employees 38
Figure 29: Number of Part Time Employees 38
Figure 30: Full Time Subcontractors 38
Figure 31: Need for Assistance Connecting to Talent 39
Figure 32: Need for Assistance Connecting with Research Talent 39
Figure 33: Accessing Other Types of Talents 39
Figure 34: Technical Staff Deficiencies 40
Figure 35: Creative Talent Deficiency 40
Figure 36: Outsourcing 40
Figure 37: Market Outlook 41
Figure 38: Challenges 42
Figure 39: Stakeholder Groups 49

Figure 40: Recent Mobile Government Initiatives in India 69
Figure 41: Growth in Brazil's Mobile Subscribers 2010-2015 72
Figure 42: SWOT analysis 79
Figure 43: Mobile Media Ecosystem 89
Figure 44: Enablers/Producers Graphic 90
Figure 45: Mobile Companies in GTA 107

Executive Summary

Introduction

The purpose of this report is to address the explosive economic, technological, and cultural changes that have occurred in the North American smartphone market since 2007 by achieving the following five key objectives:

- Profile the current mobile content, services, and applications ecosystem
- Assess the economic impact of the industry and financial climate
- Identify key trends that will affect industry growth over the next three to five years
- Identify opportunities and gaps for industry growth
- Develop a collaborative framework for strategic partnerships and ecosystem support

Methodology

The approach to obtaining research information as part of this study was threefold and consisted of the following:

- Web-based survey of content producers and content enablers
- Telephone and in-person interviews with key stakeholders across the value chain, including mobile network operators (MNO's) and platform providers
- Secondary research using OCAD University's (OCAD U) and PricewaterhouseCooper's (PwC) thought leadership and research and publicly available information from other sources

This report focuses on Ontario and more specifically the Greater Toronto Area (GTA), where a large number of mobile companies are located. The Kitchener-Waterloo (KW) area is also a centre of activity for mobile and therefore the term "Ontario/GTA" in this report refers predominantly to the GTA and KW areas combined.

Findings

Profile of Ecosystem

- The majority of mobile content, services, and applications companies in Ontario are located in the GTA.
- Most enterprises are small- and medium-sized (with less than 12 full time employees).
- The primary path to profit for mobile innovation is through the direct sale of products and services provided to end customers, the vast majority of which are consumers.
- Games are the primary type of apps being sold followed by productivity apps.
- The primary path to profit for innovation is through direct products and services provided to end customers.

- In true global market fashion, almost 50% of companies export their products and services—but mostly within North America.
- The average operating margin in 2011 is estimated to have been 22%.

Financial Climate

- It has become more difficult in the last few years to access Canadian investment capital.
- The primary source of financing is through personal funds, friends, and family with the secondary source of financing being through company cash flow.
- Of primary concern to companies is establishing sales and achieving profitability followed by building a brand and the competitive climate.

Market Outlook

- Companies are bullish, with the average rate of projected growth at just over 100%.
- Content providers are expecting to produce less projects in 2012, but they are expecting to earn more revenue mostly due to increases in efficiencies.

Access to Talent

- Majority of companies are in need of assistance with connecting to talent with the greatest difficulty being finding and retaining technical and sales staff; however, most are interest in participating in student internships or co-op programs.
- The majority of respondents have outsourced work, with the majority of outsourced work staying in Ontario. Those that have outsourced work reported their greatest challenge with outsourcing user-interface and experience issues. Many found that the way in which developers produce their products does not coincide with the user-experience expected in North America.

Economic Impact

- The average length of market experience that mobile content creators have is just over four years. This newness to the industry makes measuring economic impact challenging for the following two reasons:
    - Large organizations do not break out revenues attributed to apps, nor is it measured in terms of other economic benefits—such as brand value.
    - Revenues reported by some respondents are evidently not collected or reported by industry observers, therefore, care needs to be taken when making judgments about either the revenues, value, or even total employment attributed to the mobile industry.

Key Changes

- Ontario/GTA is a centre of activity for mobile application development and it is expected to see continued growth over the next five years. Companies such as Google have significantly increased their presence in the area and companies interviewed and surveyed were positive about the future of the industry. One respondent stated that "we cannot see the end of the growth curve of mobile data and the applications and uses that people will find for them."
- There is a rare opportunity for Ontario/GTA to be a global leader by exploiting its strengths in the industry. Indeed, the region benefits from access to high quality potential hires, is particularly rich in terms of technical skills, an ideal location with access to major cities, has a proactive and supportive public sector and a large cluster in mobile that can drive synergies.
- The mobile content, services, and applications market will likely experience increased competition in the next few years. This is a result of the globalization of the industry, the entry of new players particularly from developing countries, and improvements in technology such as the advent of "HTML5" (new language that will save time and costs) that facilitate the development of applications and allows new entrants in the industry.

Opportunities and Threats for Local Enterprises

- Although Ontario/GTA provides access to a large talent pool, the expansion of the industry has led to intensified competition for talent. Talented individuals also often move to other jurisdictions (for instance in the United States) once they have acquired the necessary skills in mobile applications, which is likely why local companies are experiencing increasing difficulty in retaining talent.
- When it comes to access to financial and intellectual venture capital, there is reportedly less risk tolerance and mentorship on behalf of investors in Ontario/GTA, which can impact the ability for innovative start-ups to thrive. Comments were made about local companies increasingly adopting "one size fits all" approaches (for example in standardizing rather than customizing application development) in order to be competitive on price and are becoming less innovative.
- There is lower mobile adoption in Canada than in other developed countries on average, which limits the local market and can hinder the range of offerings. Although the market is a global one, most local companies reported that their predominant focus is North America. However, among mobile users, smartphone penetration is among the highest in Canada relative to other developed countries.
- There are opportunities for all levels of government to help further shape and support the mobile sector through increased investments in education, infrastructure, and changes in public policy. For example, local government could assist in the following areas. Firstly, companies in Ontario/GTA require additional support and advice in order to commercialize their ideas. Secondly, although challenging, the local infrastructure could be improved to allow easy access between cities in Ontario's "mobile triangle" (Ottawa, GTA and Kitchener/Waterloo). Finally, government

can play a role in stimulating independent content creation, securing data privacy, while allowing competition locally and globally.
- Mobile commerce is a growing opportunity in the short term and is expected to benefit a wide range of players. However, most players are cautious about this opportunity, given the challenges in determining the degree of collaboration, sorting out standards, and obtaining consumer buy-in.

Opportunities and Threats for Competing Globally

- To become more competitive, local companies must focus on acquiring and developing better marketing skills. Although MEIC, among others, encourage entrepreneurs to develop their business skills, these appear to be still lacking in the region.
- Companies should explore avenues to obtain additional data and information to inform their decision-making. Such data should include:
  - Consumer information to answer the questions related to who uses mobile, how they use it, why they use it, and what they expect from their mobile experience. This is particularly important for content providers who are considering new mobile offerings. Such information is also crucial in terms of the relevance of advertising and thus revenue-generation from advertising.
  - Benchmarking information that allows local companies to assess their strategic strengths and weaknesses on a global scale. This is necessary to determine what Ontario must do to remain competitive.
- Ontario/GTA mobile companies should focus on their competition on a global basis and collaborate with other local companies. Through collaboration, local companies can benefit from each other's experience as well as reach critical mass in terms of adopters of their technology. These factors would enable them to become self-sustaining, grow, and compete effectively.
- Companies in Ontario/GTA must learn to think globally and avoid a provincial view of its market. Successes such as Angry Birds are an example of a broad consumer application that has the ability to reach customers on a global basis on an unlimited distribution platform. The Sportsnet application, developed by a Canadian TV network, is one of the most popular applications on Android and has shown global appeal. Some targeted markets such as India and Brazil also provide a significant area of opportunity due to their exponential growth in mobile users and their focus on mobile services.
- Although global expansion is an area of opportunity, any expansion requires a substantial amount of research beforehand. For instance, the Canadian Trade Commissioner Service (a federal agency) provides on-the-ground intelligence and practical advice on more than 150 foreign markets and may be useful in providing insights into business practices in new markets. Also, penetrating developing markets often requires local connections within these countries. Language barriers must also be addressed and the UK is often the preferred first step in global expansion outside of North America.

Recommended Strategies for Partnership and Growth

- Foster international collaboration by establish “soft-landing” pads in key international markets as well as within Canada.
- Improve services to Ontarians by facilitating closer connections between the mobile industry and segments of the provincial government.
- Increase the productivity of non-mobile Ontario-based companies by helping them to embrace mobile through connections made with promising mobile content production companies.
- Address mobile industry labour market issues by facilitating dialogue between the mobile industry and government.
- Address mobile industry skill shortages by working with Post-Secondary Institutions to hone their program offerings and develop incubation/acceleration initiatives.
- Improve access to capital by working with Ontario’s financial services community to develop new, compelling investment vehicles to attract additional private capital to the mobile sector.
- Improve collaboration between existing regional support organizations to make it easier for mobile companies to gain access to support services (e.g. market intelligence, mentorship, infrastructure, etc.).

Introduction

1.1 Background

The Mobile Experience Innovation Centre (MEIC) is a non-profit organization founded by OCAD University (OCAD U) in 2007. One of the major outputs of the MEIC during its start-up years was a report titled: *Innovation and Insight: Mapping Ontario's Mobile Industry*, which captured the advent of the smartphone revolution. This report is a continuation of the research work MEIC conducts with partners, particularly its collaborative work with OCAD U and the *Taking Ontario Mobile* (TOM) project.

This new report: *Mobile Innovation: Ontario's Growing Mobile Content, Services, and Applications Industry* has been produced with the purpose of delivering the following:

- Profile the current mobile content, services, and applications ecosystem
- Assess the economic impact of the industry and financial climate
- Identify key trends that will affect industry growth over the next three to five years
- Identify opportunities and gaps for industry growth
- Develop a collaborative framework for strategic partnerships and ecosystem support

1.2 Scope of Study

The main objective of this study is to document the explosive economic, technological, and cultural changes that have occurred in the North American smartphone market since 2007, and to complement the research that was conducted in concert with OCAD U for the TOM report. More specifically, this report aims to focus on the mobile content, services, and applications ecosystem, the major trends and drivers, and the distinct strategies to sustain the ecosystem.

The approach to obtaining research information as part of this study consisted of the following:

- A web-based survey conducted by MEIC that resulting in 57 usable responses from producers (creators of mobile apps, content, messaging services, etc.), which indicated they built products and services for mobile devices
- Primary interviews conducted by PwC with 12 companies from five separate stakeholder groups identified as: content providers, content enablers, device enterprises, Canadian network operators, and international network operators
- Additional primary interviews conducted by MEIC of 15 companies that responded to the web-based survey for the purpose of assessing their economic impact
- Secondary research using OCAD U's TOM data to both help frame the questionnaires for the primary interviews, but to also bring a wide breadth of perspective to the subject matter
- Additional secondary research using PwC's existing thought leadership and research into mobile content, services, and applications from across the globe, and locally in Canada

This report focuses on Ontario and more specifically the Greater Toronto Area (GTA), where a large number of mobile companies are located. The Kitchener-Waterloo (KW) area is also a centre of activity for mobile and therefore the term "Ontario/GTA" in this report refers predominantly to the GTA and KW areas combined.

1.3 Report Outline

Beyond this introduction, this report consists of the following sections:

- The Mobile Industry
- Profile of Ontario/GTA Mobile Producers
- Economic Insights
- Trends, Opportunities, and Gaps
- Collaborative Framework: Strategies for Partnership and Growth


The Mobile
Industry

The mobile technology sector encompasses all types of cellular communication technology, and may refer for example to pagers, mobile/smart phones, GPS navigation devices, tablets, and handheld game consoles. Mobile technology is largely seen as the new disruptive media and is expected to have a revolutionary impact on human interaction, communications, and business by creating an interconnected network of mobile users. According to Eric Schmidt, chairman and CEO of Google[1], we are entering a "mobile revolution." This section discusses the growth in the mobile industry and the mobile sector value chain.

2.1 Unprecedented Growth in Mobile

The mobile technology sector is expected to grow significantly as technologies are refined and their applications expanded. The number of mobile connections is expected to increase from around 5 billion, representing a global mobile penetration rate of 74, to six billion in the first half of 2012.[2]

In 2011, the number of smartphones sold exceeded the number of personal computers sold globally.[3] This reflects an unprecedented shift towards mobile. In a few years, personal computer sales are expected to be less than half the sales of smartphones, according to Business Insider. Tablets alone are expected to surpass personal computer sales in the next two to three years.

International Data Corporation (IDC) Canada, a provider of market intelligence, predicts that some $6 billion will be spent on mobile devices in 2012 in Canada.[4] IDC also predicts that the install base of smartphones will be equal to that of portable PCs by the end of 2012.

Although mobile devices represent less than 15 per cent of spending in Canada, they account for a third of spending growth. 2012 is also expected to be the year that the mobile platform begins to eclipse the personal computer in terms of adoption and programming focus. According to the Canadian Wireless Technology Association (CWTA), the mobile content sector generated around $240 million in 2010, compared to $227 million in 2009.

[1] Harvard Business Review. Preparing for the Big Mobile Revolution. Accessed online June 20, 2012. http://hbr.org/web/extras/hbr-agenda-2011/eric-schmidt.

[2] The Mobile Business Research Portal, Latin America Becomes World's Second-Largest Mobile Region. October 13, 2010.

[3] Business Insider. The Future of Mobile. March 21, 2012. Accessed online April 3, 2012. http://www.businessinsider.com/the-future-of-mobile-deck-2012-3?utm_source=twbutton&utm_medium=social&utm_campaign=sai#-1.

[4] itWorldCanada. Mobile Still Vital to Canada's 2012 Growth: IDC. December 16, 2011. Accessed online April 3, 2012. http://www.itworldcanada.com/news/mobile-still-vital-to-canadas-2012-growth-idc/144505.

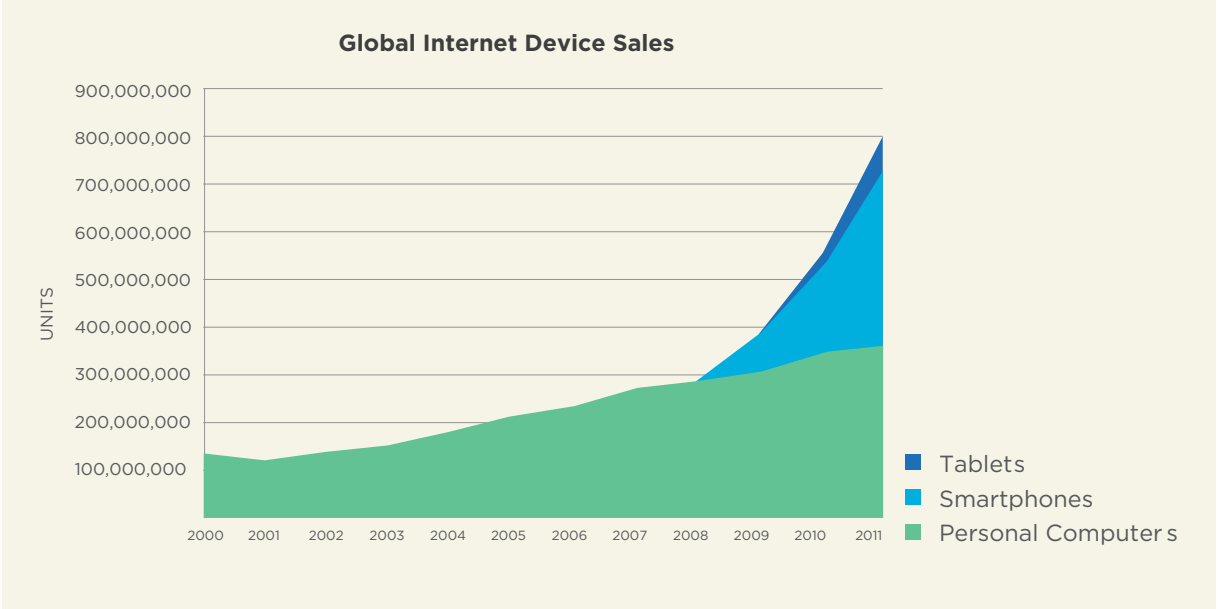


Figure 01: The number of smartphones sold exceeded the number of PCs sold

2.2 Value Chain of the Mobile Industry

The mobile industry involves many different and interrelated players. The following chart depicts the key players in the value chain:

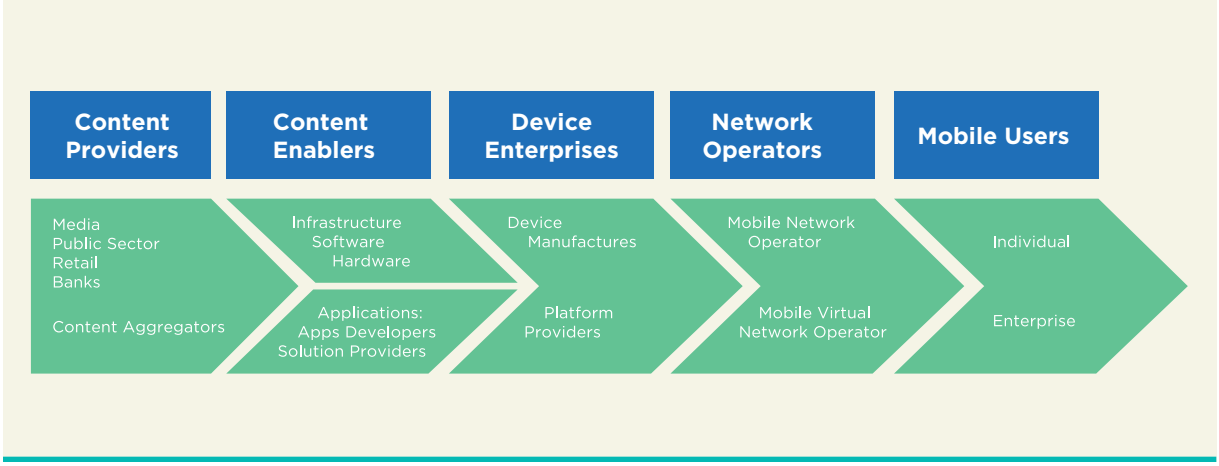


Figure 02: Mobile Industry Value Chain

At the front end, content providers create the content for mobile users. Media companies, health care services, utility companies, transit services, game publishers, and other companies in a vast array of industries are developing content for the mobile platform. Although content providers are increasingly providing mobile offerings, these offerings remain limited particularly in relation to the growth in smartphone usage. Recent research indicates that most retailers offer a much more limited selection of features on mobile than on their desktop websites. Also, a survey[5] suggested that only 20 per cent of US retailers have a mobile application and those applications were largely not intended specifically for in-store use. In Canada, Loblaw, Shoppers Drug Mart and Canadian Tire are investing heavily in mobile. Many banks in Canada offer mobile banking, such as performing balance checks, account transactions, payments, and credit applications on mobile. The next step is mobile payments, whereby consumers will be able to use their mobile phone to pay for a wide range of goods and services.

Content enablers provide the infrastructure and applications that enable content providers to offer their content on mobile devices. For instance, Canadian Tire has turned to Toronto-based Simply Good Technologies to develop some of their applications. Other leaders in Ontario include Polar Mobile and Impact Mobile. In the mobile games industry, companies are often both content providers and content enablers, as they provide both the content and the underlying application.

The **device enterprises**, led by RIM, Microsoft, Google, and Apple, who supply the platforms will be key players in future developments in the industry. Currently the leading platforms are Android (Google), iOS (Apple), RIM (Blackberry) and Windows Phone (Microsoft). Although RIM is the only Canadian platform developer, Google is significantly increasing its presence in Ontario and Canada.[6] Fragmentation across mobile platforms requires content providers to develop multiple applications, which can be costly, and is further complicated by the uncertainty around which platform(s) will dominate in the future. However, the fifth revision of the HTML standard (HTML5), still under development, is believed by many to be the future of mobile application development by allowing cross-platform mobile applications. Moreover, developing an HTML5 application takes approximately half the time compared to developing a native application, notwithstanding the additional time required to develop the application for more than one platform. Google's Eric Schmidt commented: "In the future a lot of applications will be running in HTML5."[7]

Mobile Network Operators (MNOs) play a significant role by investing in next generation networks that enable rich multimedia content to flow at high broadband speeds. However, their traditional sources of revenue are being commoditized. Innovation in information and communication technologies has allowed companies such as Internet players, high-tech and IT companies, device manu-

[5] eMarketer. Advanced Use of Mobile for Retail Remains on the Horizon. January 10, 2012.

[6] Huffington Post. February 3, 2012. Google: Canada 'One Of The Fastest Growing Markets' And 'One Of Our Big Bets'.

[7] The Guardian. Google's Eric Schmidt on Android's future, HTML5 and more. February 16, 2011.

facturers, application and service providers, and media companies to capture what could be revenue opportunities for telecom operators. Mobile network operation in Ontario is dominated by Rogers, Bell, and Telus, with new entrants such as Wind Mobile, Public Mobile, and Mobilicity controlling only a small customer share of mobile access.[8]

Mobile users are key players in the value chain and shape the trends and growth in the industry. Historically, growth in mobile penetration rates (percentage of active mobile phone numbers) has been the largest driver of overall sector growth.

[8] The Globe & Mail. Part 2: Media and Internet Concentration in Canada, 1984-2010. September 6, 2011.

Profile of Ontario/GTA Mobile Producers

This section of the report provides quantitative data on mobile content producers located in Ontario/GTA.

3.1 Methodology

Our methodology for collecting quantitative data consisted of two phases: conducting a web-based survey and conducting follow-up telephone interviews with select respondents.

The web-based survey was marketed primarily through MEIC's membership list and social media networks. In turn, members promoted the survey through their own distribution lists and social media connections.

Respondents chose one of three tracks to complete the survey. One track was for "enablers" (suppliers of the infrastructure and supporting services that enable the delivery of mobile media content and services), a second track was for "producers" (creators of mobile apps, content, messaging services, etc. that users interact with on their mobile devices), and a third track was for those that didn't fit in either category, which led them out of the survey. There were a total of 118 responses, of which 17 were enablers and 65 were producers.

Of the 65 responses from producers, 57 were designated as usable based on their location and eliminating multiple submissions from the same company. The remainder of responses from the enabler track were of insufficient number to analyze as there were only 14 usable Ontario-based completes. This section analyzes the responses from the self-identified producers track.

14 of the 57 producer respondents were systematically selected as a sample for an enhanced survey conducted over the phone. The following sections and subsections present the quantitative data acquired from the respondents.

3.2 Corporate Profile

The corporate profile describes the nature of the organizations operating in the mobile content production sector in Ontario/GTA.

As shown in the chart below, most (91%) organizations operating in the Ontario/GTA mobile content production sector are private entities. A small percentage (9%) is public—meaning that the public owns the entities either through the purchase of shares, typically through a stock exchange, or through ownership by the Canadian government.

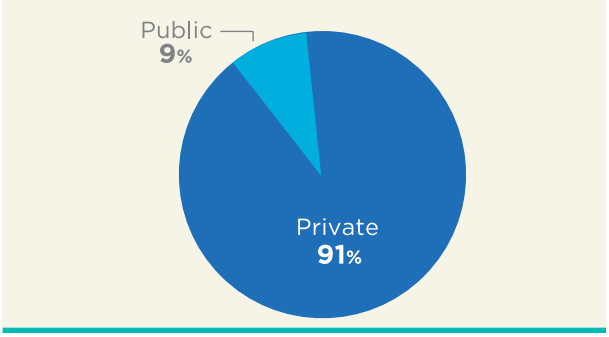


Figure 03: Type of Coporation

As the following chart indicates, the vast majority (89%) of mobile companies in Ontario are 100% Canadian-owned. While this situation is positive, in that the sector is homegrown, it does indicate an inability of Ontario-based mobile companies to access foreign sources of capital.

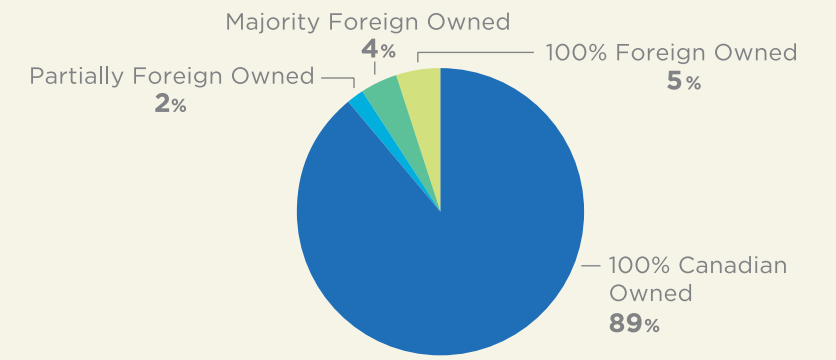


Figure 04: Type of Ownership

As the following table shows, almost all mobile companies contacted have been in operation for less than 10 years. If we excluded a large mobile communications organization, which has been in business for 40 years, the average number of years that organizations have been in business is 4.42 years.

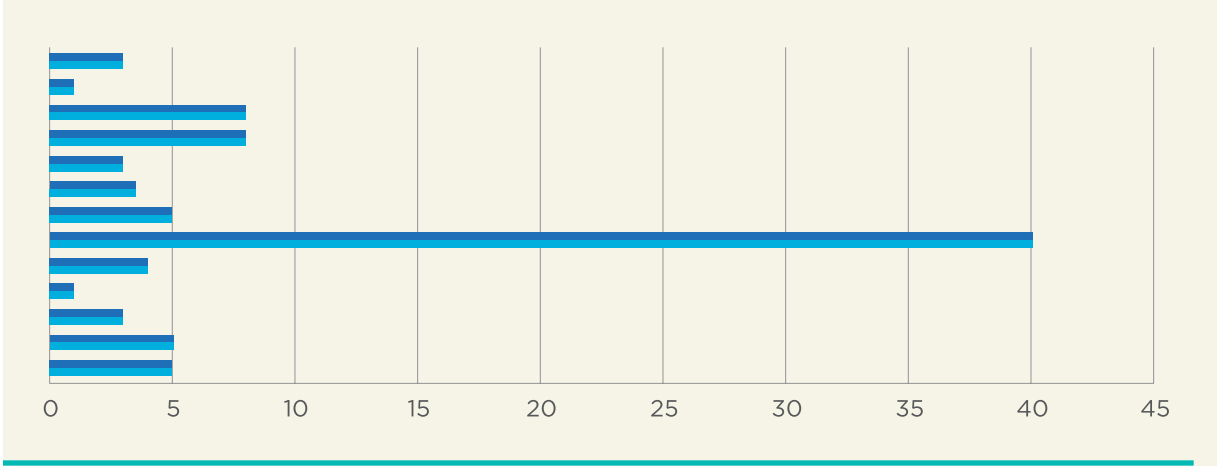


Figure 05: # of Years in Business

3.3 Company Revenue

In this sub-section, we outline the revenue that Ontario-based mobile companies generate—and how that revenue is generated. To that end, the following chart indicates how Ontario-based mobile companies breakdown in operating revenue categories.

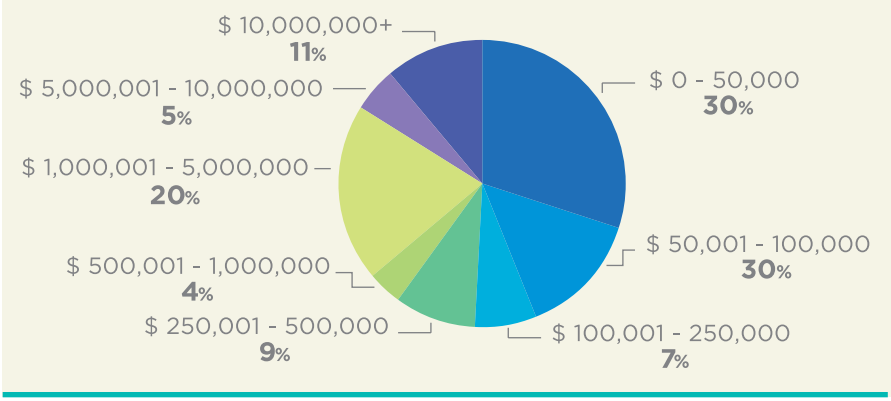


Figure 06: Operating Revenue

As we can see from the above chart, almost 30% of companies generate less than $50,000 per year in revenue, while roughly half make less than $500,000 per year. That being said, the total revenue attributable to mobile content and services varies widely depending on the type, age, and size of organization interviewed. Our analysis also suggests that even if we look at the average revenue per 'project' the revenue can vary substantially from one organization to another. Income can be highly profitable with limited expenses, or in some cases it can be very challenging to attribute revenues to individual projects directly.

As the following chart shows, companies typically make all of their revenue from the sale of mobile products and/or services, or they make less than 10%. On average, 56% of companies identifying themselves as producers make more than half of their revenue from producing mobile products and services.

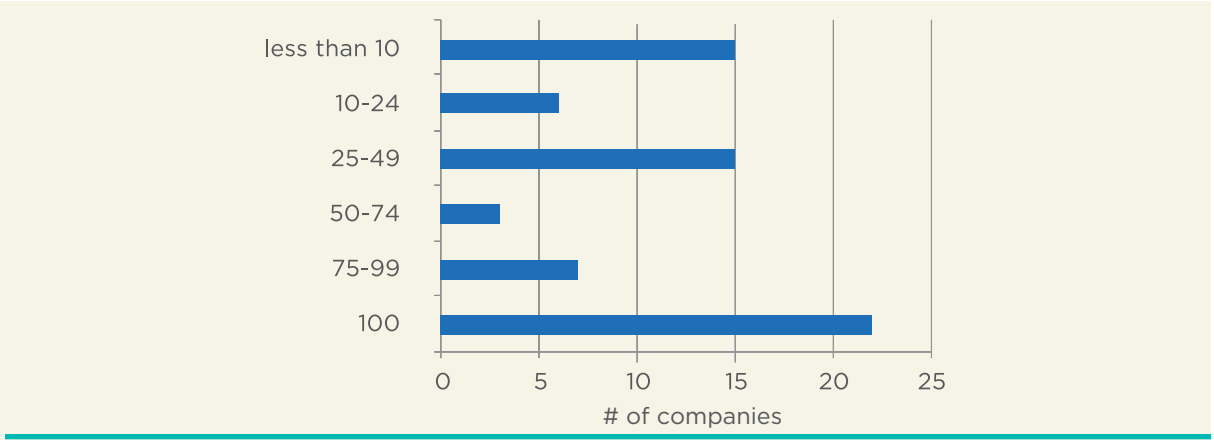


Figure 07: % Revenue from Mobile

As such, mobile development tends to represent the core focus of a company or a relatively minor profit centre.

Companies were asked to assign a percentage spit of their company's mobile revenue between fee-for-service work and work that involves the creation of intellectual property[9] for which their company retains rights. The following two charts show the results.

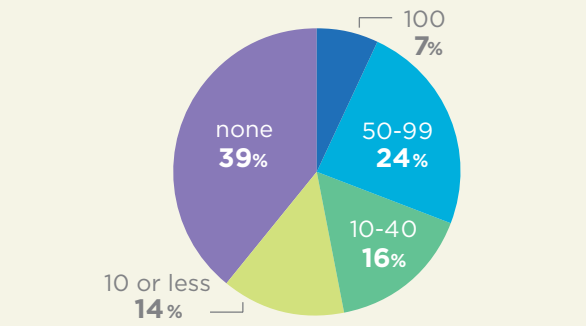


Figure 08: % Revenue from Fee-for-Service

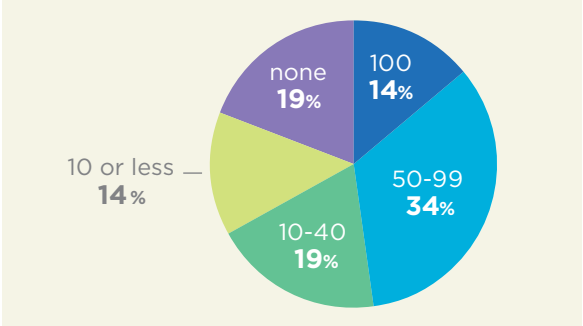


Figure 09: % Revenue from Creating IP

As we can see, 7% of companies make all of the revenue from fee-for-service work, while 14% work exclusively on owned IP. At the same time, the largest portion of companies (39%) produces no fee-for-service work, and 34% of firms make between 50% and 75% of their revenue from creating IP.

3.4 Products and Services

In this sub-section, we outline the product and services created and offered by Ontario's mobile producers.

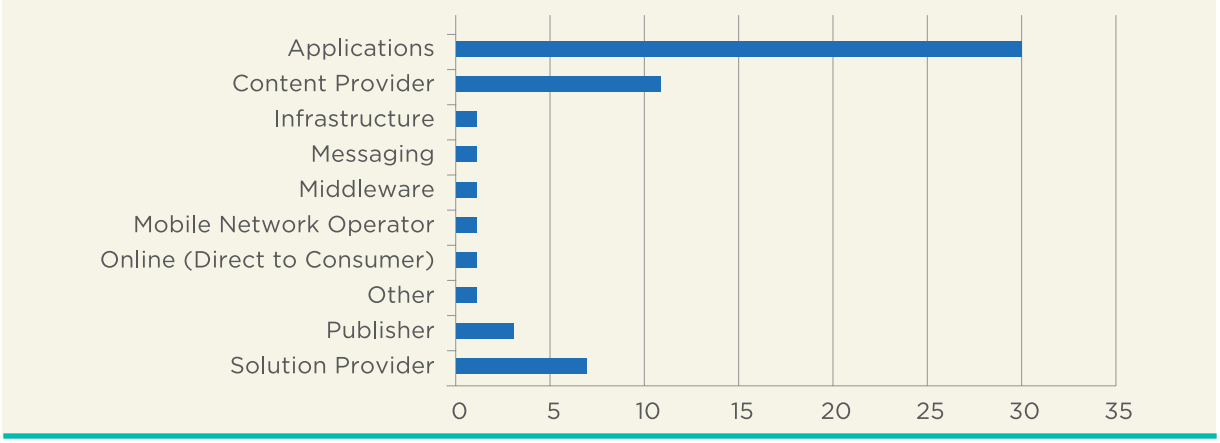


Figure 10: Primary Endeavour

[9] For the purposes of this survey we have defined Intellectual Property (IP) as work for which organizations retain the rights and get paid.

In terms of what the companies actually do, the chart indicates that application development is, by far, the most popular endeavour, followed by content provision.

On a more granular level, the types of products produced by Ontario include (but are not necessarily limited to) the following:

- Apps - Games (e.g. action, adventure, card, sports, educational, strategy)
- Apps - Healthcare (e.g. remote monitoring, diagnosis, reminders & alerts, healthy living)
- Apps - Multimedia (e.g. viewers, players)
- Apps - News (e.g. newspapers, radio, headlines, sports, entertainment)
- Apps - Productivity (e.g. calendar, calculator, notepad, directory services, audio recording)
- Apps - Social Media (e.g. collaboration, blogs, content communities, social networking)
- Apps - Travel (e.g. city guides, translators, maps, weather)
- Content - Education (e.g. K-12, corporate, life-long learning)
- Content - Entertainment (e.g. TV, film, books, magazines, music, games)
- Content - Information (e.g. news, sports, entertainment)
- Browsing (e.g. mobile Web and Internet browsers, search)
- Messaging (e.g. eMail, instant messaging, SMS)
- Middleware (e.g. software, systems, tools)
- Retail (e.g. bricks and mortar stores, direct-to-consumer services delivered in person)
- Solution Provider (e.g. design, programming, artist, transaction services, LBS, CRM)
- System Integrators (e.g. consulting services, technical expertise)

The following two charts indicate the degree to which Ontario-based mobile firms engage in the above activities. The first chart shows company's primary activity (where they generate the majority of revenue), while the second provides an indication of the company's secondary activities undertaken.

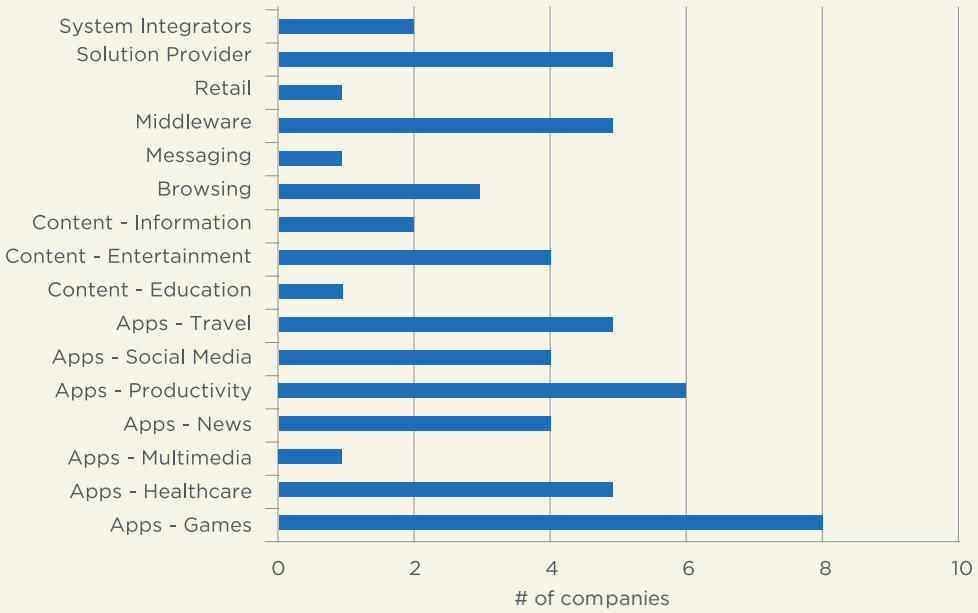


Figure 11: Primary Type of Product or Service

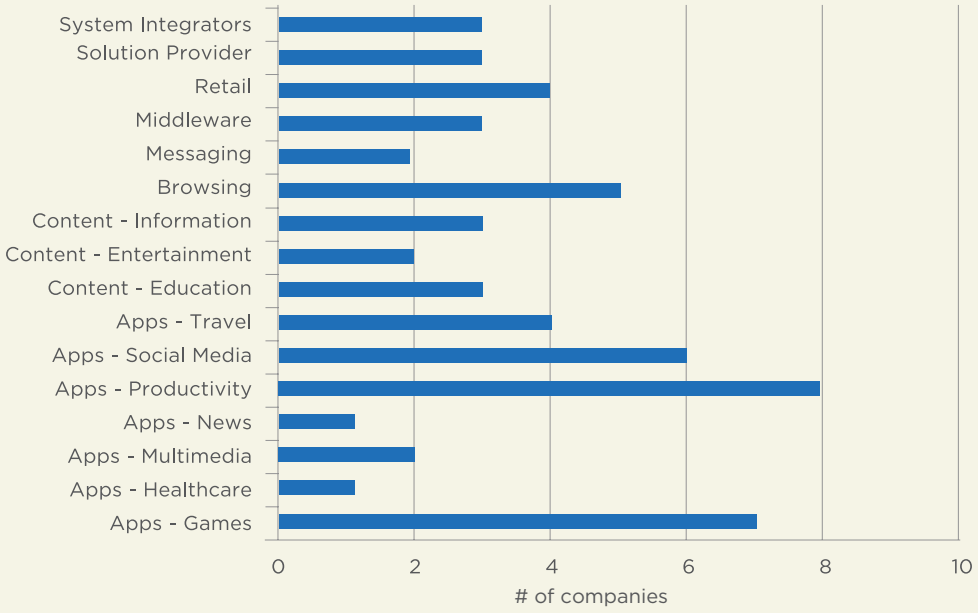


Figure 12: Secondary Type of Product or Service

In terms of the number of projects, the following two charts indicate the number of application and content provision projects completed by Ontario-based mobile companies in 2011, and their projections for 2012.

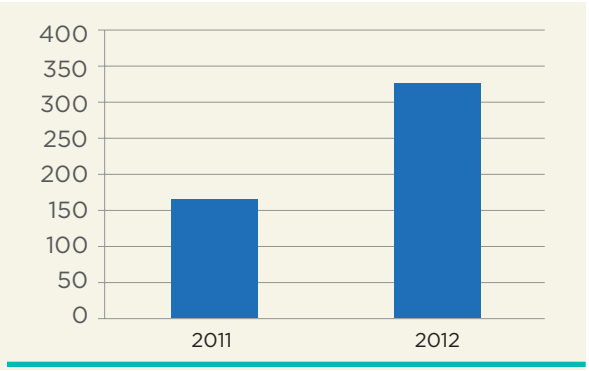


Figure 13: Applications Average # of Projects

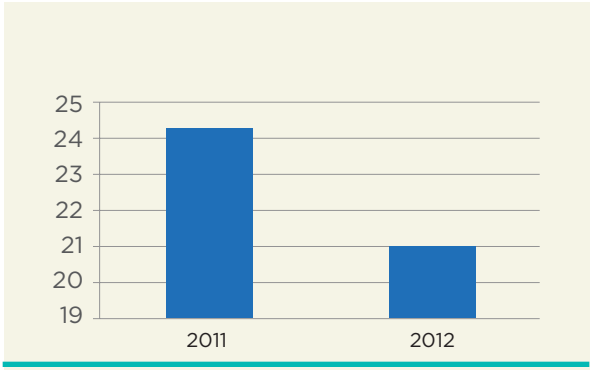


Figure 14: Content Provider Average # of Projects

As the above charts show, while the prospects for application development look good, content providers foresee a minor (14%) reduction in the number of projects they will produce by the end of 2012.

3.5 Business Methods

In this sub-section, we describe the business methods and models used by Ontario's mobile industry. To that end, the following table indicates the types of business models employed by respondent companies:

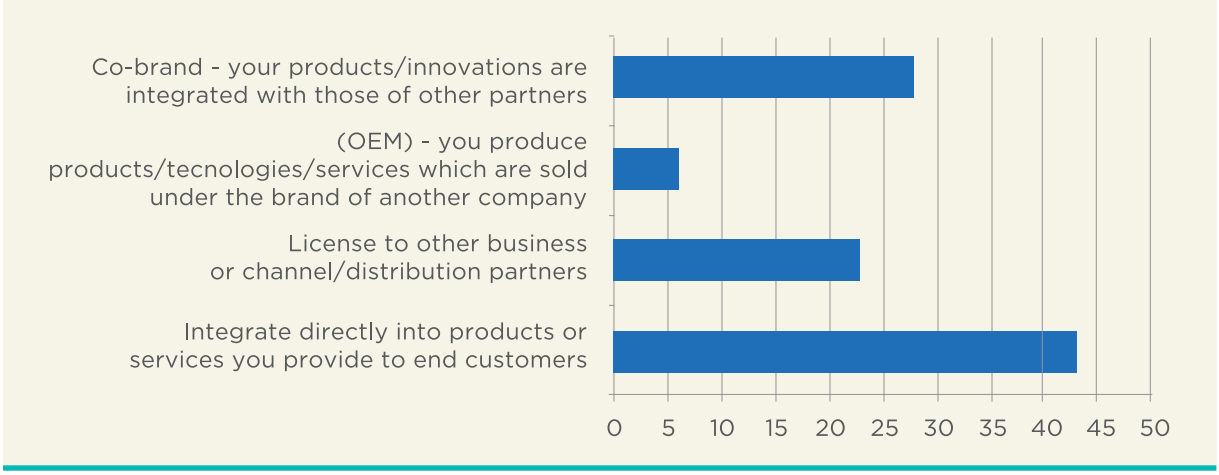


Figure 15: Type of Business Model

Given the above chart, it appears that the primary path to profit for innovation is through direct products and services provided to end customers. When it comes to how products and services get to market, the majority (74%) of mobile companies indicated that they sell their wares directly, as shown in the following chart.

When considering the end-users of the products and services created by the mobile industry in Ontario, the following chart indicates that the vast majority of companies cater to a consumer audience.

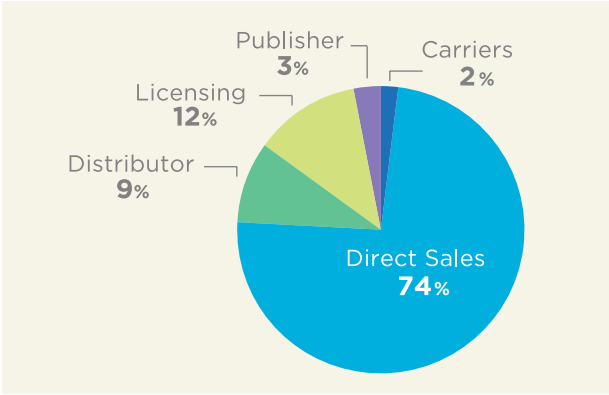


Figure 16: Primary Sales Channel

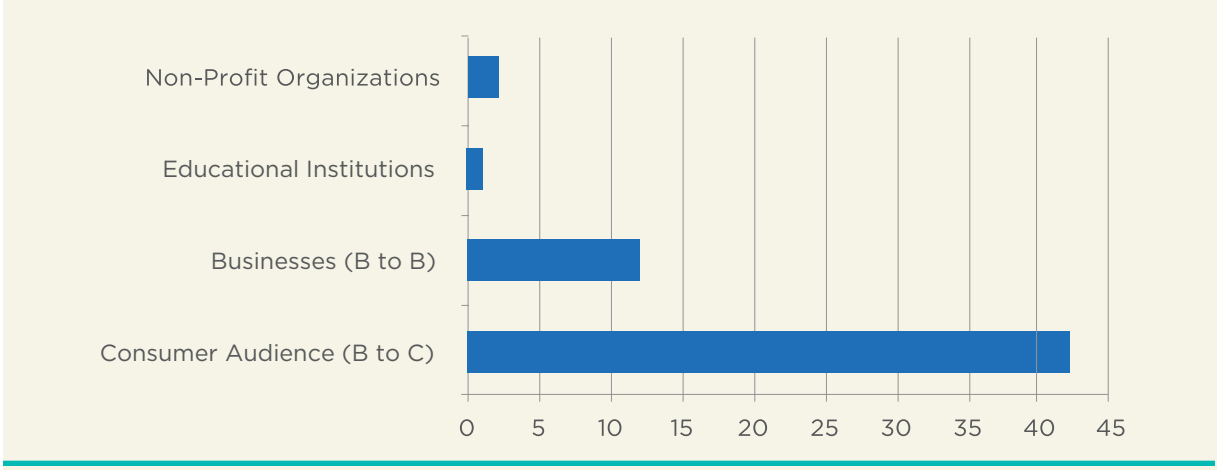


Figure 17: Type of End Users

3.6 International Endeavours

In this sub-section we examine how the mobile industry in Ontario sells to international audiences. As we established in section 2, mobile is a global industry—making its international (i.e. export) sales and sales channels of particular importance.

As the above chart indicates, more than half of the companies in the mobile industry in Ontario engage in export activities. As the fol-

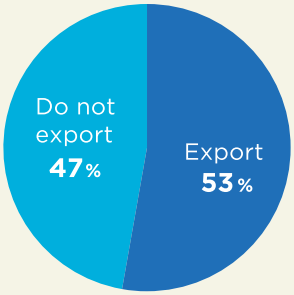


Figure 18: Export Sales

lowing chart shows, the most common export location is the United States, followed by Europe and Australia/New Zealand.

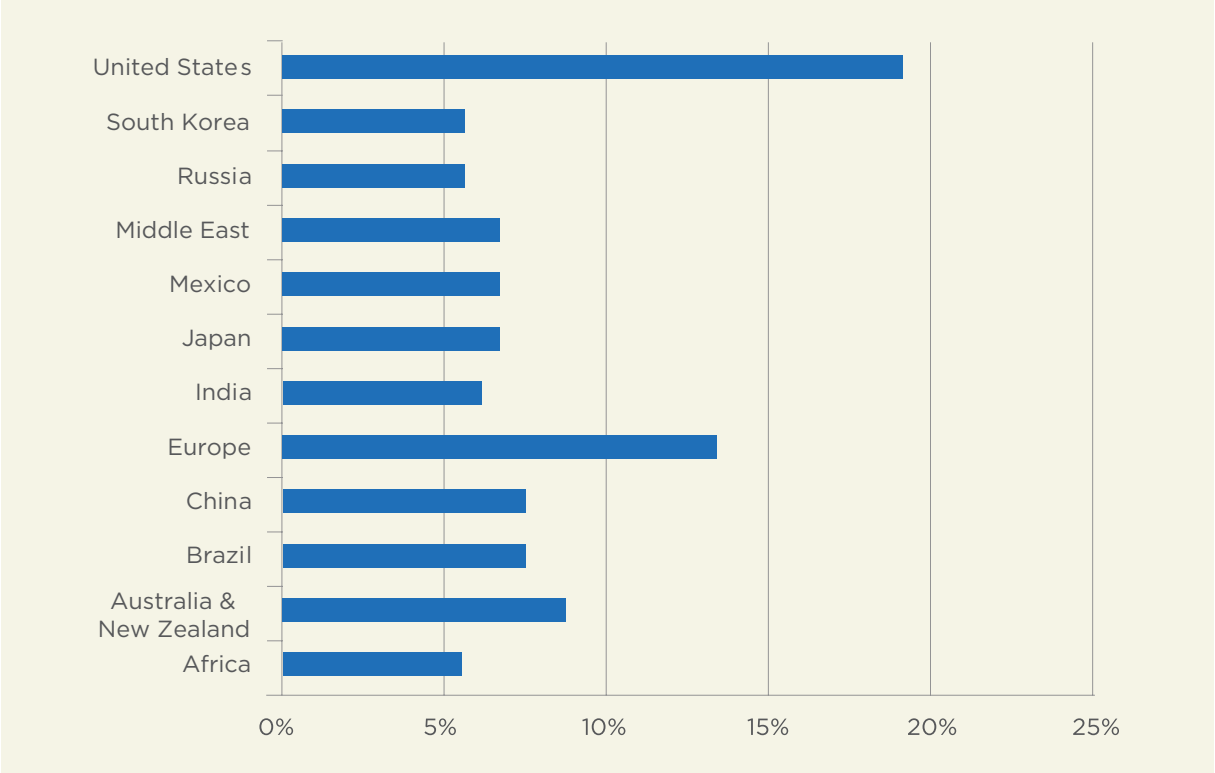


Figure 19: Export Locations

To reach these audiences, companies use a range of sales channels. As the following chart illustrates, the most common such channel is direct sales.

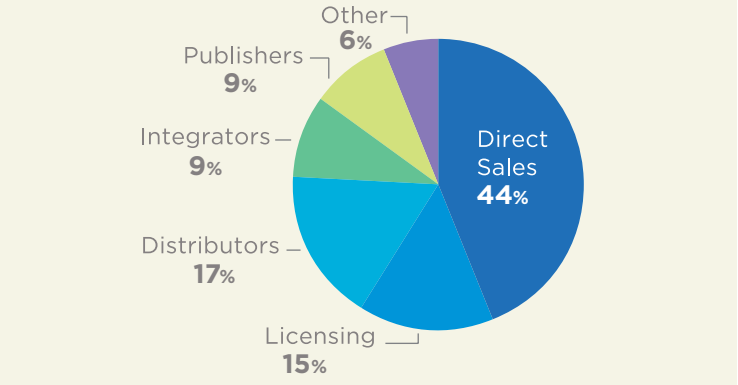


Figure 20: International Sales Channels Used

3.7 Expenditures and Profit

In this sub-section, we briefly outline how the mobile industry spends its money, and the resulting operating profit. To that end, the following figure provides a breakdown of the various types of expenditures made by the mobile industry in Ontario (in 2011).

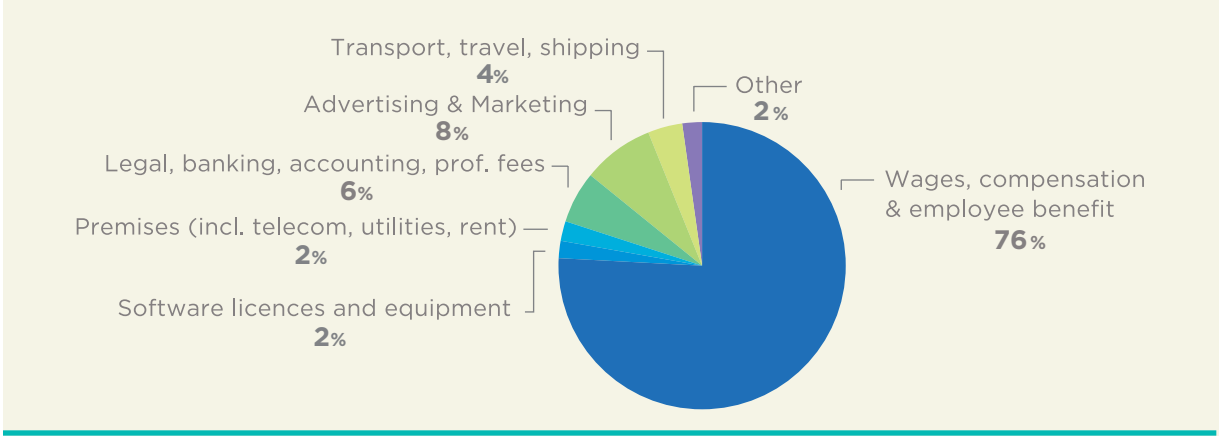


Figure 21: Breakdown of Operating Expenses

These results may under-reflect the typical majority reponse of wages being between 75% and 80% of the total expenses of the organizations. The average when taken across all respondents reflects the nature of a couple of early stage enterprises that have not taken salaries to get underway, and at an opposite end of the spectrum in large organizations that do not have a charge-back or cost allocation for the true amount of time and effort.

Based upon the top-line expenditure and revenue data provided by respondents, we were able to estimate the average operating margin to have been roughly 22% in 2011.

3.8 Capital and Financing

In this sub-section, we outline how the mobile industry accesses financing to fuel projects and companies. To that end, the following two charts indicate the primary and secondary sources of financing used by Ontario-based mobile companies.

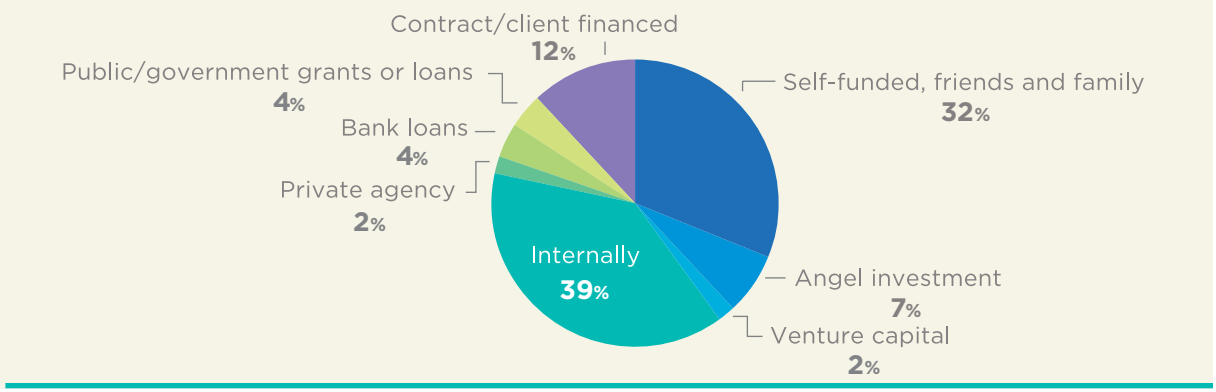


Figure 22: Primary Financing Method

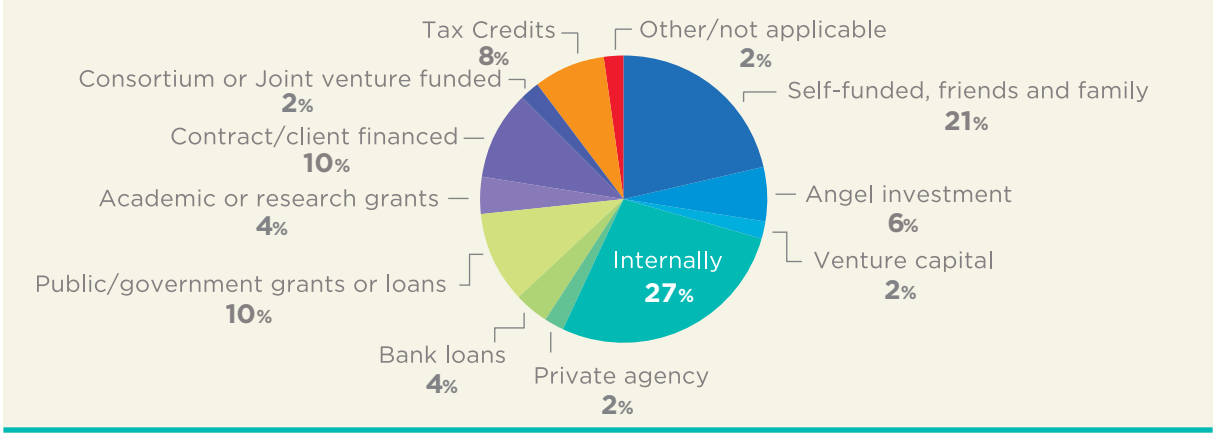


Figure 23: Secondary Financing Method

Notably, no firm indicated that they used academic or research grants, consortium or joint venture fund, or tax credits as their primary funding source.

When we interviewed mobile content development companies regarding their access to capital, we learned that there is a wide range of perspectives from industry practitioners on how easy or hard it is to access capital in the current financial climate—as shown in the following chart.

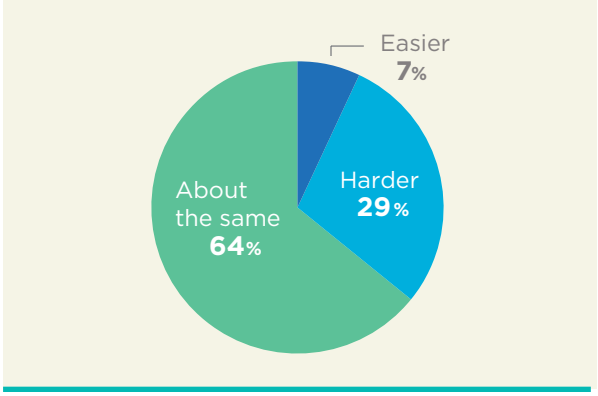


Figure 24: Access to Capital

While every situation is bound to be somewhat unique for each company, based largely on their service offering and the maturity of their offering, some key themes are evident:

- **US vs. Canadian Funds:** A number of respondents have reported that it has become significantly more difficult in the last two to three years to access Canadian capital for investment in mobile related projects. At the same time, the perception is that it has become slightly easier to access US funds. This may be a case of turning attention to US funding sources once the Canadian elements had turned them down, hence it could be simply that US funding has not changed, but the approaches have increased on learning that Canadian funding is not forthcoming. One respondent who has taken US funding stated "...we are now successful and the profits are flowing to the US..." Similarly areas such as Boston have a dedicated angel and VC investor community and arrange regular social functions where prospective investors and fledgling businesses meet. This kind of thriving community was not reported to be happening to anywhere near the same degree as in the US.
- **Management Commitment to Accessing Capital:** A common theme from many of the smaller organizations is around the amount of time and effort that management needs to dedicate to raising funds if they choose to go to the markets for capital. This is somewhat agnostic of the source of the funds, be they from angel investors, venture capitalists, or even traditional bank financing. All of them require a substantial amount of management time commitment—often cited as a full time job—when the key proprietor is often also the lead product evangelist and operational manager. To do both jobs on a full time basis was often cited as very challenging, and often the main reason behind many respondents suggesting that they had not attempted to access external capital.
- **Government Funding:** Organizations who are in the public sector all agreed that access to funds for investment in more projects is getting harder in the current financial climate. The need for justification of the investments needed, especially when there are no specific revenue or tangible fiscal measures that can apply to the projects, makes it harder to access capital (or investment budgets).
- **ROI Metrics (Return on Investment):** On a much brighter note there were respondents who felt that access to capital, from all sources, is becoming easier once they have established a solid track record in delivering on the original promises of their products or projects. As the mobile content market matures, and successful initiatives are seen to be delivering the revenues and margins promised, access to future capital required naturally becomes easier. From the respondents who had at least a three or four year track record of successful operations this was a common theme, irrespective of the source or other external observations on the current financial climate.
- Organizations did have varying opinions on their ability to access capital. Some had examples of being given unsolicited offers of funding in/around 2008 before the financial climate worsened, but others had only been existence since then so had little comment or experience to be able to report on what it might have been like in earlier days. Some suggested that VC and angel funding was still possible, but had had challenges with the traditional banks not really understanding the mobile sector and/or the importance or availability of things like tax credits that are crucial to the success or otherwise of the project(s).

Overall the relative immaturity of the market and the number of players and offerings with a lack of defined success formulas make it still very hit-and-miss as to whether projects can get the funding they desire. As an alternative route to funding, some have explored the use of crowdfunding platforms, such as US-based Kickstarter, as shown in the following chart:

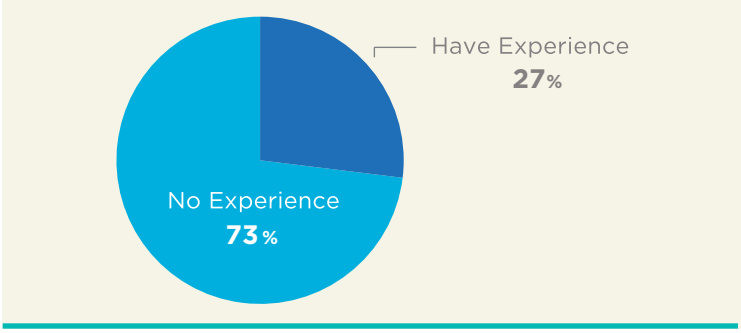


Figure 25: Experience with Crowdfunding

There was a universal understanding of crowdfunding and how it works, but less consistency in terms of whether it would be something that the respective organizations would look at to help fund their initiatives.

If this were to be considered in Canada, the consensus among those that had experience with crowdfunding were to encourage careful consideration around three crucial areas:

1. **Governance:** The need for very tight regulation was felt to be paramount as a basic essential before any crowdfunding being proposed for the mobile sector. In particular was the desire for mechanisms to be in place that acknowledge and work in favor of the speed-to-market often needed for any mobile project (such as an app) to get to market. It was suggested that in order to be successful, apps need to be very opportunistic in order to succeed (such as taking advantage of a sudden news item or market change) and having to 'strike while the iron is hot' in order to garner the necessary enthusiasm or investment potential.
2. **Granularity:** As the nature of crowdfunding appeals to those who wish to see projects come to life that might otherwise not see funding, it is felt that any crowdfunding administration created should allow for very specific activities to be nominated and ring-fenced for funding. While this was felt to potentially pose a number of challenges in terms of how you divide costs in small firms where many resources are shared, it would also be important to not expose the whole firm to the risks or rewards of the ventures chosen for funding. Similarly crowd funding was felt to be highly relevant for 'niche' services and could act as a good barometer before initiating an expensive project (such as an app), and would inherently have the funders act as evangelists with small communities of interest if they had helped bring a niche service to life.
3. **Gains:** It is crucial to be very directive about where and how any gains are returned to the funders, and all of the private sector respondents felt it was crucial to be able to separate rewards from equity in the business. The most vocal reasoning is that the anonymity or volume of potential voices that crowdfunding could give rise to could make the management of any project impossible. If there are too many or 'democratic' systems in place to make business decisions without a full picture of the environment in which it is operating, the business becomes unmanageable.

The concept of crowdfunding was felt to be applicable to certain aspects of the mobile industry only. There is a natural affinity with consumer apps in that anything that goes to production with a recognition or confidence in consumer appeal has a much greater chance of success, and can naturally allow for incremental funding. For example, and angel investor could be infinitely more interested in a project that has the assurance of fan base that has already invested its own funds into a project.

By the same token crowdfunding may well not appeal to niche applications that do not have a consumer focus, as the 'crowd' is not a decisive factor in the success or failure of the project. Hence if there is a consideration of using crowdfunding to support the sector, similar thought also needs to be given to other funding that could be more relevant to other potentially lucrative areas (such as B2B niche applications).

A critical component of many financing plans are tax credits. As the following chart indicates, tax credits appear to account for 22% of operating revenue for those companies that claim them.

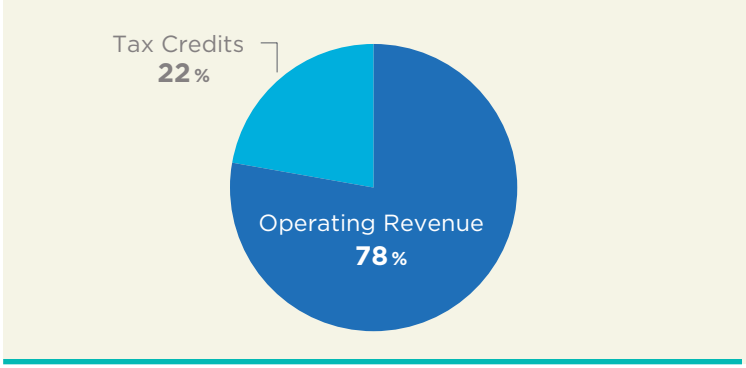


Figure 26: % of Revenues Attributed to Tax Credits

However, (as shown in the following chart) the majority (64%) of tax credits claimed by mobile companies are Scientific Research and Experimental Development (SR&ED) credits.

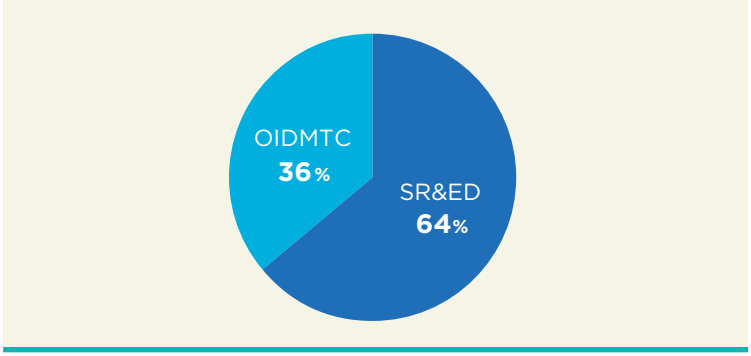


Figure 27: % of Tax Credits Attributed to R&D

This level of use of the SR&ED tax credit indicates that the mobile industry is investing heavily in research and development activities, which are often held to have positive effects on the wider economy. Indeed, these tax credits represent $1.5 million out of a reported $15.25 million expenses from these organizations, of which 72% were wages-based expenses ($11.0 million). Hence from the total for these organizations, less than 15% of the wages expenses are being returned in tax credits. When asked as to why, the main reason cited was through qualification reasons (i.e. they had applied but been rejected), and/or through the amount of time and delay inherent in qualifying and receiving the tax credits.

3.9 Talent and Employment

In this sub-section, we outline the talent and employment aspects of the mobile industry in Ontario. As with most digital media industries in Ontario—and elsewhere—the distribution of company size, shown in the following three charts, presents a clear majority (77%) of firms employing less than 12 people on a full-time basis (with 80% employing less than five part-time employees, and less than eight contract employees).

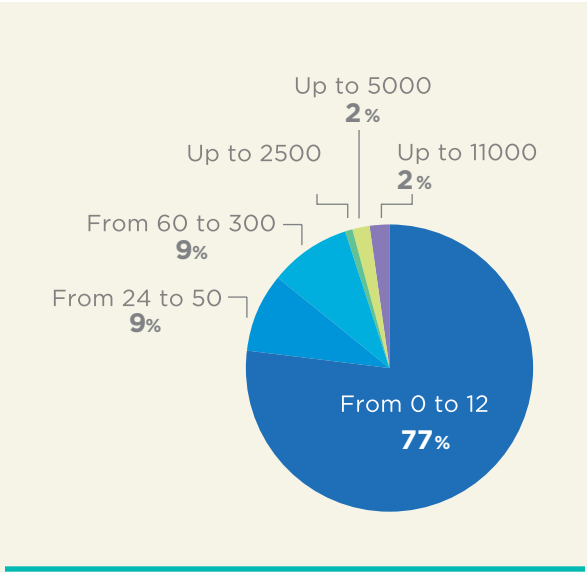


Figure 28: Number of Full Time Employees

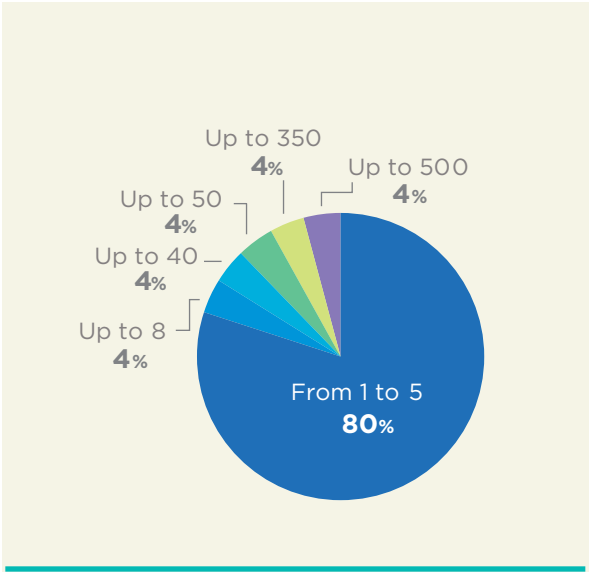


Figure 29: Number of Part Time Employees

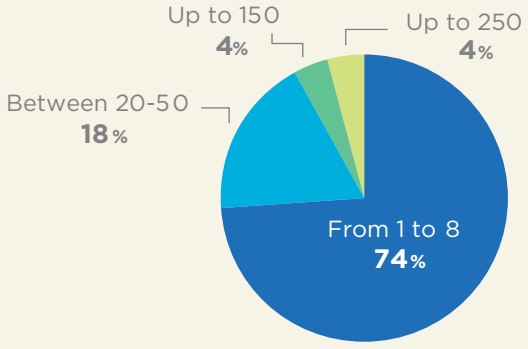


Figure 30: Full Time Subcontractors

While companies may be small, most respondents (74%) indicated that they have some trouble locating talent and to a lesser degree (60%) have particular challenges locating research talent.

Most (60%) of respondents indicated that they have particular challenges locating research talent.

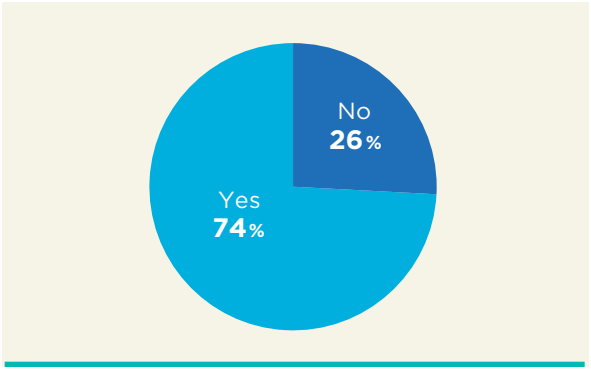


Figure 31: Need for Assistance Connecting to Talent

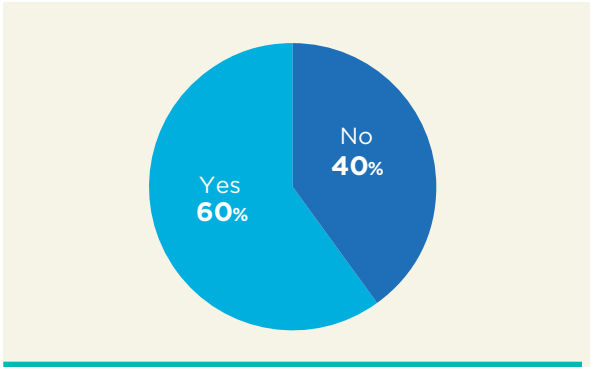


Figure 32: Need for Assistance Connecting with Research Talent

In terms of accessing other types of talent, the following heat map shows that experienced technical staff appears to be the most challenging to locate.

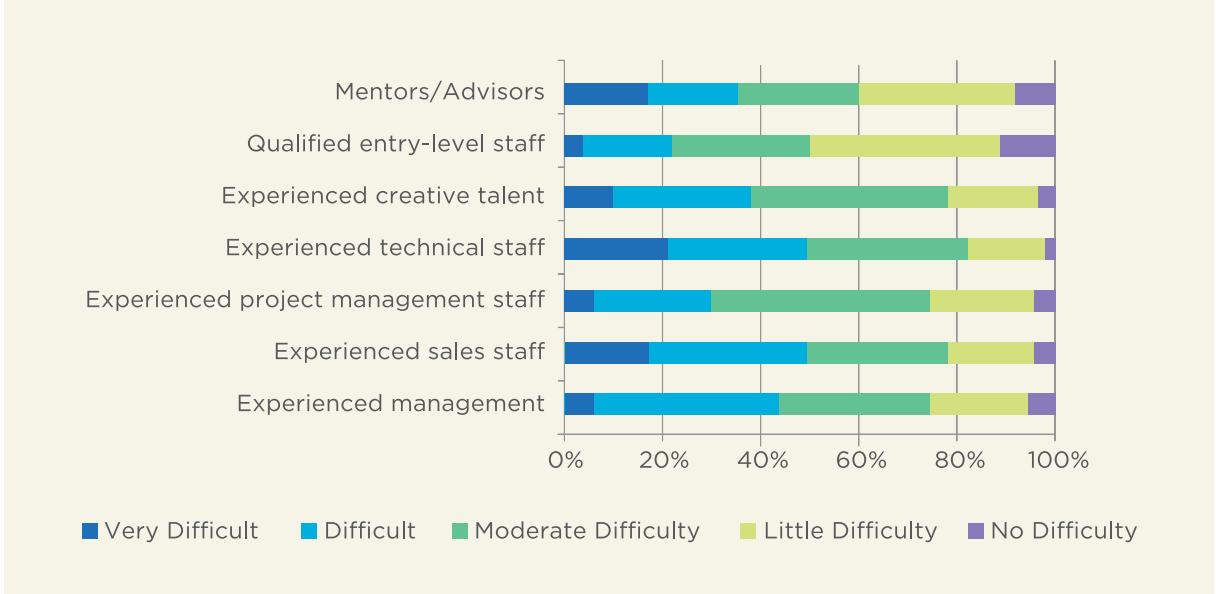


Figure 33: Accessing Other Types of Talents

Once hired, mobile firms are not always completely satisfied with the skills and aptitudes of their new staff. As the following chart illustrates, technical proficiency (26%) and familiarity with current tools (22%) are the two most common complaints regarding technical staff.

In terms of creative talent, design skills (28%) and flexibility (21%) appear to be the most pressing skills deficiency.

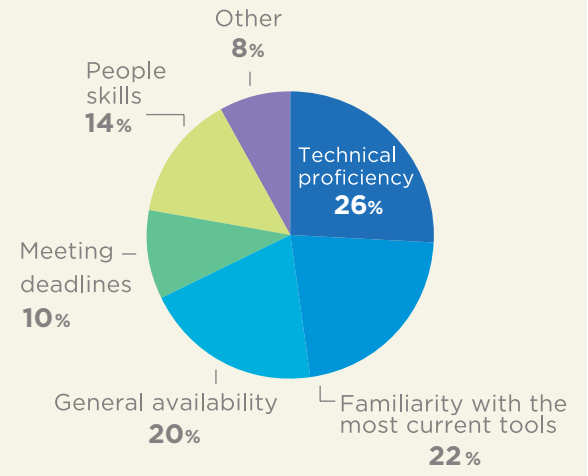


Figure 34: Technical Staff Deficiencies

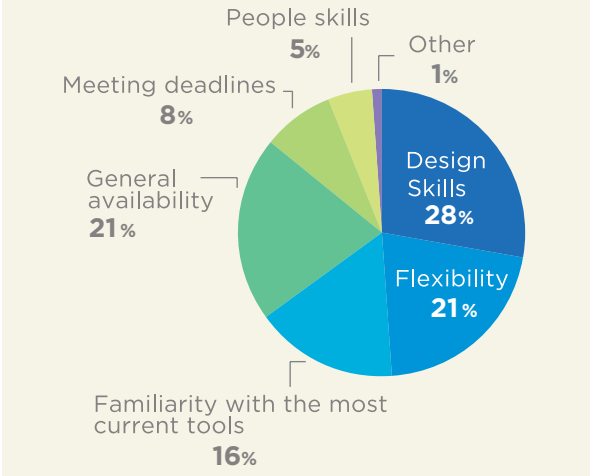


Figure 35: Creative Talent Deficiency

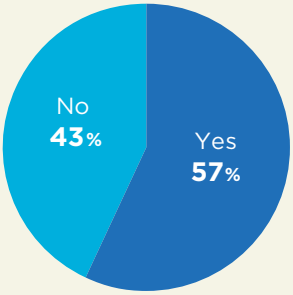
3.10 Outsourcing

In order to meet talent needs, many firms (57%) look to outsource (as illustrated below). Among content providers, 83% of firms outsource.

Of the firms that outsources, 63% outsourced to local companies (i.e. in Ontario/GTA), while 37% outsourced internationally.

The main reasons for outsourcing elements of their work were reported as follows:

Figure 36: Outsourcing



- **Lack of expertise:** This was typically the reason for outsourcing where an enterprise was dealing with a new platform or offering for which they were unsure of their long-term commitment or success of the potential offering. An example being the introduction of a Blackberry tablet version of an existing iPad application, hence the

enterprise outsourced the work as it would not have been cost effective to acquire the necessary skills in-house if there was to be no success with their Blackberry Playbook offering. The majority of this type of outsourcing was to local companies in Ontario, or if internationally then the US.

- **Time to market:** Companies reported that even where the expertise does exist internally but there is a need to get to market in a timely manner, they have had to outsource work. In some instances this was outsourced to local freelance consultants, but in more than one instance this need had arisen as a result of other outsourced work not being completed on time. Typically this was a case of outsourcing overseas and then not being able to achieve the deadlines or quality standards needed to launch a successful product. Naturally this impacts on the original cost savings expected out of outsourcing overseas. The majority of outsourcing for timeliness was to local Ontario companies.
- **Cost effectiveness:** Outsourcing on the basis of cost effectiveness was to places like India, Brazil, and various Asian countries such as Vietnam. All of those who had tried these outsourcing arrangements reported that they had challenges with the operational effectiveness of the outsourcing for a variety of reasons. Cost savings were often compromised by the extensive communications and lack of compliance to the required output, meaning extra time needed to get to the end result, or often the need to have the work completed locally (in Ontario) to get the product finished to the required standard.
- **Opportunity/Growth:** Some have used outsourcing in other locations, such as Brazil, to try to establish themselves as global organizations from the outset. This has not been without challenges as it appears to introduce too many other factors (communications, meeting deadlines, user interface) that are not compromised when sitting directly in a room with a developer.

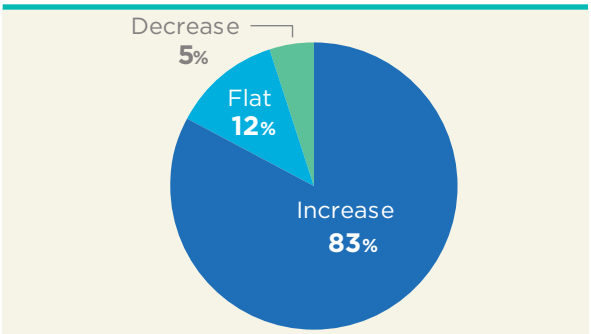
It is also interesting to note that one of the main challenges reported by a number of respondents who used outsourcing was user-interface and experience issues. When outsourcing to other jurisdictions, especially outside North America, many have found that the way in which developers produce their products does not coincide with the user-experience expected in North America. This includes products produced in places like France.

3.11 Growth and Challenges

In this final sub-section, we outline the growth projections of the mobile industry in Ontario—and the barriers that stand in the way of that growth. As the following chart indicates, 83% of companies polled indicated that they expect their firms to grow in the next one to two years.

Interviews suggested that some mobile companies would be concentrating on a more focused business model where they could foresee a higher potential to hone or match their skills to par-

Figure 37: Market Outlook



ticular market opportunities. But even if the total number of projects they would be addressing were smaller, they would be projecting an overall growth (in revenues and/or activity) for their business. In the public owned organizations we heard that budget constraints and the need for economic prudence have curtailed the original ambitions that they had for new projects. In some cases this is made more difficult through the lack of empirical evidence to date on the returns that can be directly attributed to applications that have non-direct revenue objectives (such as brand building, service information, and audience building).

As the following charts illustrates, the two issues that are principally standing in the way of that growth are achieving profitability and establishing sales.

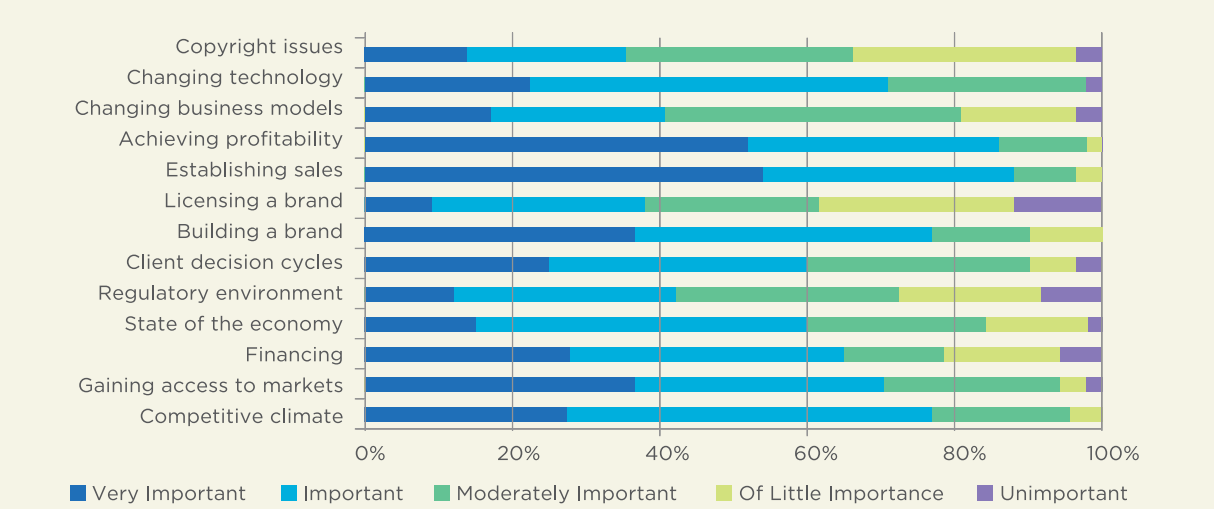


Figure 38: Challenges


Economic
Insights

The primary research indicated that ascertaining the economic impact of the 'mobile' sector in Ontario/GTA may not currently be possible to definitively measure. There are two major considerations that contribute to this conclusion:

1. **Mobile is only a part of a company's activity:** In the course of our interviews we found that critical elements such as revenue attributable to mobile applications or games is not necessarily broken out within large organizations, nor is it as yet measured in terms of the other economic benefits (such as brand value) and therefore the nascent stage of the market makes any statistics subject to wide interpretation or limited accuracy.
2. **Data on mobile companies is not consistently reported:** We also found revenues that were reported by some interviewees are evidently not collected or reported by industry observers. For instance, one interviewee stated: "IAB reported 'total ad revenues' in Canada for mobile apps, but we do not report anything into IAB. [Our] downloads are 4.5m+, and revenues are several times greater than the total IAB reported for the whole of Canada." Hence significant care needs to be taken in making judgments about either the revenues, value, or even total employment attributed to the mobile industry.

With these two realities in mind, the remainder of this section will expand upon these two economic insights.

4.1 Mobile as a Component of Wider Company Activity

One tangible example of significant mobile activity that is subsumed within wider company activity is the so-called "TV Everywhere" offerings.

Ontario/GTA is home to Canada's largest media companies; i.e., English-language broadcasters, which do not breakout revenues and expenses attributed to mobile. An economic analysis that does not include the biggest companies would be significantly understated.

Mobile is the driver for TV Everywhere, a term used to describe authenticated online video services, which is widely expected in the US to become more the norm than the exception by next year. The most recent and prevalent example of TV Everywhere is NBC's coverage of the London 2012 Olympic games. The multi-platform coverage of the games delivered over 100 million video streams in the first 10 days of the games to almost 10 million US pay-TV subscribers who authenticated their laptops, desktops, iPads, and iPhones.

The National Inflation Association (NIA) conducted a survey of NBC's Olympic TV Everywhere coverage.[10] An interesting finding is that 49% stated that what motivated them to use the service was the desire to watch the events live before they aired on TV. In addition, 74% of respondents indicated that if TV Everywhere coverage of events like the Olympics became available for free, they would be more likely to keep their current pay-TV package. Furthermore, 42.2% were willing to pay at least US$15 more for the service, and 13.5% were willing to pay US$60 more.

Since mobile is becoming more engrained as a broadcast medium, it will likely become harder, not easier, to measure the economic impact of mobile in the entertainment sector. This is also true of the use of mobile in other sectors such as newspaper (e.g. in-house app development), health (e.g. m-health applications) and consumer goods (e.g. automotive applications).

Additionally, our survey indicates many mobile companies generate only a small portion of their revenue from mobile activities (see section 3.3). As such, it proved quite difficult for those companies to isolate the expenditures associated with mobile development.

4.2 Reporting of Mobile Revenues

Reflecting the multifaceted nature of the mobile industry, various aspects of the mobile industry are measured to arrive at revenue estimates. From a paid marketing perspective, emarketer estimates that mobile ad spending in Canada will rise to $137.4 million in 2012 from $82 million forecasted by IAB Canada for 2011.[11] Whereas the Information and Communications Technology Council (ICTC) states that the Canadian app ecosystem (app downloads, in-app purchases, advertisements, and subscriptions) generates $775 million per year in revenue, with future estimates of $1.9 billion in 2014 and $2.2 billion in 2016.[12]

With integrated advertising offers such as YellowPages selling "360° Solutions" (combining web, mobile, and print advertising) and Rogers Communication selling across all five Sportsnet platforms (combining web, television, radio, magazine, and mobile), it may be increasingly more difficult to reasonably, accurately measure mobile ad revenues.

[10] See http://inflation.us.

[11] Ernst & Young. 2010 Actual + 2011 Estimated Canadian Mobile Advertising Revenue Detailed Report.

[12] Information and Communications Technology Council. Employment, Investment, and Revenue in the Canadian App Economy. October 2012.


Trends,
Opportunities
and Gaps

As part of this study, MEIC asked PricewaterhouseCoopers (PwC) to ascertain the trends, opportunities and gaps that are facing Ontario's mobile industry. This section represents the output of PwC's research efforts. In conducting their analysis, PwC sought to address the following issues:

- Key changes in mobile content, services, and applications market in Ontario/GTA over next 3-5 years
- Opportunities and threats for local enterprises in the industry
- Opportunities that local enterprises should consider to compete more effectively globally

5.1 Methodology

To document these issues, PwC conducted as series of interviews with key stakeholders, both locally and internationally complemented by secondary research to both help frame the questionnaires for the primary interviews, but to also bring a wide breadth of perspective to the subject matter. Secondary research was conducted from three main sources, namely:

- PwC's existing thought leadership and research into mobile content, services and applications from across the globe, and locally in Canada;
- MEIC's existing research and available work to date including responses from the web-based survey and findings from the TOM project; and
- From external sources of publicly available information on directly relevant subject matters. The output of the secondary research was to inform interview guides for each of the primary research targets.

Accordingly, PwC relied upon the completeness, accuracy, and fair presentation of all the information, data, advice, opinions or representations obtained from various sources, which were not audited or otherwise verified. These sources (collectively, the "Information"), include:

- Information and/or data provided by internal and external sources;
- Information and/or data obtained through external surveys and reports.; and
- Other various public sources (e.g. Juniper Research).

In terms of the interviews, five separate stakeholder groups were identified as targets for primary research sources: content providers, content enablers, platform providers, Canadian MNOs and international MNOs. The number of participants in each stakeholder group was determined at the onset of the project. Specific companies interviewed are listed in the table below. These were determined according to the criteria stated below and the selection was validated by the MEIC.

Figure 39: Stakeholder Groups

Stakeholder Group	Number of Companies	Names of Companies
Content providers	3	Cottage Life CBC Canadian Tire
Content enablers	3	Polar Mobile Fuse macXmum
Platform providers	2	Google Research in Motion (RIM)
MNOs (Canada)	2	Rogers Bell
MNOs (international)	2	Vodafone Telefonica

The following is an explanation of the five above-mentioned stakeholder groups:

- **Content Providers:** Three local (GTA) mobile content providers who are involved in the provision of content directly to the market were interviewed in order to understand their issues and opportunities or gaps that they are seeing. CBC and Canadian Tire were chosen as participants due to their current offerings in media and retail, respectively, and their strategic focus on mobile and Canadian content. Cottage Life was selected in order to provide a traditional media perspective. The objective was to hear their challenges and the opportunities they see for strategic partnerships, inward investment, and the need for things like talent, funding, and infrastructure to support their growth plans. These interviews were conducted face-to-face.
- **Content Enables:** Three interviews were conducted with GTA organizations who are focused on the development and support of content, services, or applications for other businesses. The objective was to understand how they are competing locally and internationally, the opportunities they see for strategic partnerships, and the growth and changes in the market. Polar Mobile and Fuse were chosen as participants due to their current revenue generation and international presence. MacXmum was selected as a start-up mobile company. These interviews were conducted face-to-face.
- **Platform Providers:** Two platform providers were interviewed to provide a current and complementary understanding of market needs, and bring a more operational perspective to the study. Indeed, platform providers are focused on understanding consumer needs and the trends that

they are trying to meet, and to understand the types of mobile content and applications that are needed to meet consumer needs. Google and Research in Motion were chosen as participants due to their importance in the GTA/Ontario. These interviews were conducted face-to-face.

- **Mobile Network Operators (Canada):** Two telecom carriers operating in the GTA were approached in order to understand from their perspective where they see the opportunities for growth in mobile content, services, and applications. The objective was to understand where they feel they could be assisted, where there are gaps (perhaps talent, infrastructure, regulation, etc), and their perspectives on how they intend to compete at a local Ontario/GTA level. The two largest telecom carriers in Ontario were chosen as participants, i.e. Rogers and Bell. These interviews were conducted face-to-face.
- **Mobile Network Operators (International):** Two international telecom operators were interviewed, including one operator in each of India and Brazil. PwC partner firms in India and Brazil were contacted to conduct interviews with representatives from these jurisdictions to help understand how they are tackling opportunities in mobile content, services, and applications. The objective was to understand how they are approaching their markets, and to investigate opportunities or gaps that may exist in their resources to be able to compete effectively. Particular consideration was given to any opportunities and gaps that could potentially be filled by the competencies of Ontario and the GTA.

Interview questions were categorized into five broad themes: the company's position in the value chain, the Ontario/GTA environment, the relationship with other stakeholders, global competitiveness, and general questions around policy and legislation.

The remainder of this section outlines the nine key trends observed by PwC. For each, we present an introduction, key findings and a conclusion.

5.2 Trend 1: Ontario/GTA as a Centre of Activity for Mobile

Ontario/GTA is a centre of activity for mobile applications/ cluster of independent businesses.

5.2.1 Introduction

In this section, we discuss the hypothesis that Ontario/GTA benefits from a cluster of businesses in the mobile sector, particularly in mobile applications development. This hypothesis was addressed through secondary research, interviews with stakeholders, and MEIC's web-based survey.

5.2.2 Key Findings

Ontario is known as a home to three clusters in the information and communications technology sector—in Ottawa, the Greater Toronto Area, and Kitchener/Waterloo ("KW"), which lends it the name of "Canada's Technology Triangle." A hypothesis is that there exist similar clusters for mobile.

The size of this cluster is uncertain, given the number of small firms and the lack of common classification in terms of defining a "mobile" company. The Wall Street Journal cited Toronto as one of the world's biggest clusters of mobile-application companies other than Silicon Valley, with an estimated 200 mobile-application developers and over 750 companies with mobile-content offerings.[13] Extreme Venture Partners, a Toronto-based venture capital firm, is reported to have invested in over 15 applications companies predominantly in the Toronto region.[14]

The GTA also benefits from a number of associations that demonstrate the focus of the region on mobile. For instance, Toronto's Mobile Monday series unites investors, entrepreneurs, programmers, and professional service providers who meet to discuss the future of mobile. Toronto's Mobile Institute aims to empower organizations to capture their share of the global mobile marketplace while the MEIC supports design leadership, innovation and applied research in Canada's mobile and wireless industries.

Recent foreign direct investment in the mobile industry in Ontario is evidence that the region is a centre of activity for mobile. A few of the most substantial acquisitions in the past two years are as follows:

- The acquisition of Five Mobile—now Zynga Toronto—by Zynga in July 2011.
- The acquisition of mobile-gaming start-up SocialDeck by Google for $10-20 million in August 2010.

[13] The Wall Street Journal. Toronto Becoming A Hub For Mobile-Applications Companies. July 23, 2010.

[14] The City of Toronto. Canada's High-Tech Hub: Toronto. 2011.

- The acquisition of Toronto's Adenyo by Motricity for over $100 million in January 2011.
- The acquisition of PushLife by Google for a reported $25 million in April 2011.

Google has shown increasing interest in the region by nearly doubling the size of its staff in Canada in 2011, its 10th year anniversary in the country.[15] It is expected that Google will again double its Canadian staff in 2012 from 300 employees. Out of its four Canadian offices, three of them are located in Ontario (Toronto, Waterloo, and Ottawa). Mobile applications for Google have seen a large contribution from Canadian-based staff. For instance, the mobile component of the Google wallet was built in KW. Other than PushLife, Google has acquired four other developers in Ontario, notably BumpTop, Zetawire, SocialDeck and PostRank.

Based on the secondary research conducted for this study, a list of major companies in the mobile industry was developed and is included in this report as Appendix C.

This snapshot of the industry suggests skills in the areas of mobile games and mobile marketing. There also appears to be an opportunity to leverage a strong e-learning industry. As indicated in the TOM[16] report, Ontario has a thriving e-learning industry that builds learning materials for K-12, higher education, corporate training, and the general public. Indeed, out of 388 companies building e-learning in Canada, 136 (or 35%) are located in Ontario.

One company has already seized this opportunity. Desire2Learn, a Kitchener-based provider of e-learning programs and software recently acquired Metranome Inc., a Waterloo mobile application start-up, allowing it to expand its mobile offerings by giving it additional technology and expertise.

The Mobile Media section of the TOM report suggests that traditional media such as film companies and broadcasters, publishers, and the music industry, with their large presence in Ontario, have been slow to embrace mobile.[17] Traditional media has a large presence in Ontario and represents a large segment of the economy that could benefit from the use of mobile.

Companies interviewed across the value chain agreed that Ontario/GTA is a "hotbed" for mobile. One content-enabler described the industry as large with a number of big players growing rapidly and contributing significantly to job growth and job quality (through higher salaries) in the region. High participation at mobile events, such as the Android Toronto conference and Google I/O (second largest attendance outside of California) is evidence of the interest in mobile. Interviewees also indicated a significant focus on mobile in universities in the region, particularly in the Kitchener/Waterloo area as companies like Research In Motion have given a huge boost to the local economy. The industry is successful in attracting young tech-savvy people who consider it fashionable. One content-provider stated that there are many mobile development vendors to choose from in the GTA.

[15] Huffington Post. February 3, 2012. Google: Canada 'One Of The Fastest Growing Markets' And 'One Of Our Big Bets'.

[16] Anticipated report by OCAD University titled: *Taking Ontario Mobile.*

[17] See OCAD U's *Taking Ontario Mobile* Report for more.

At present, although the region is widely considered as a "hotbed" for mobile, the size of the industry and its offerings are still unclear. Further research is needed in order to capture a more comprehensive and complete image of the mobile sector in the GTA/Ontario.

One content provider, however, acknowledged that Toronto was generally not perceived as a leader by the mobile industry globally, despite the fact that it has a number of companies that produce leading edge technology in mobile. Perceptions are changing slowly and companies such as Google are increasingly recognizing the potential and talent in the region.

Throughout our interviews, Toronto was highlighted as a key component in attracting talent in the industry. Toronto was qualified as a great place to live and work, and ideal for this demographic to enjoy a quality lifestyle when not at work. In PricewaterhouseCoopers' Cities of Opportunity report, Toronto ranked second overall among 26 cities. It also ranked twelfth in terms of "technology readiness," including internet access in schools, broadband quality, digital economy, and software and multimedia development, and design.

Proximity to an international airport is also a key factor and was decisive in a large mobile technology provider opening Mississauga offices in order to limit travel time for big clients. The GTA is only a one-hour flight from New York, Chicago, Boston, and Detroit and provides relatively easy access to the West Coast.

The Waterloo area was also highlighted as a region that provides access to high quality potential hires, both from the surrounding universities and from staff in other local companies. One platform provider approximated that a third of their hires have a doctorate.

The strength of the industry is based on a combination of coordinated efforts, according to one platform developer. For instance, the smart cities initiatives encourage many WiFi locations, which encourage users to buy tablet devices, which then encourages local authorities to provide services in specific locations via mobile applications. Carriers then try to use this infrastructure to help manage their bandwidth issues. A proactive and supportive public sector was cited as crucial.

Local government has played a pivotal role. Respective local mayors of major cities (Kitchener, Waterloo, Cambridge, Mississauga) have actively encouraged high tech industry development and contributed to its growth.

All interviewed respondents were positive about the future of the industry and the large potential for growth in mobile. One respondent stated that "we cannot see the end of the growth curve of mobile data and the applications and uses that people will find for them," and the pace of growth will not slow down in the next five years.

One content-enabler stated that the GTA/Ontario has a rare opportunity to be a leader in mobile, but that growth will necessitate support for those who want to join. Local companies must collaborate in order to compete internationally for products and services that add value, and cease to compete against each other for a few resources (such as talent and capital), which limits their growth potential. A collaborative approach that encourages growth should involve both the public sector and the private sector and cover a number of areas such as education, access to funds, and infrastructure.

5.2.3 Conclusion

There is evidence that Ontario/GTA is indeed a centre of activity for the mobile industry and boasts a cluster of companies in applications development. Ontario/GTA is both a leader at the national level as well as globally. Evidence includes the large presence of associations and initiatives focused on mobile, the recent acquisition of local Toronto enterprises by global firms, and statements during our interviews. Ontario/GTA is expected to see continued growth over the next five years and companies interviewed and surveyed were positive about the future of the industry in the region.

5.3 Trend 2: Increasing Talent Recruitment and Retention Challenges

Ontario/GTA faces a number of challenges in the near future in terms of recruiting and retaining talent in mobile.

5.3.1 Introduction

In this section we discuss the hypothesis that companies in Ontario/GTA are increasingly facing challenges in terms of recruiting and retaining talent in the mobile industry. This hypothesis was addressed through interviews with stakeholders and MEIC's web-based survey.

5.3.2 Key Findings

The MEIC survey questioned respondents about their primary challenge, and one of the primary areas of need that companies expressed was in the field of talent and human resources. 44 companies identified at least one deficiency in their technical staff. Once technical staff was hired, there were challenges in their technical proficiency, maintaining skills in a changing environment, availability and soft skills. For those responding with "other" deficiencies, the stated issues almost all revolved around cost or affordability of talent. A series of issues with creative talent were also identified, with 38 companies indicating that they had problems with creative talent deficiencies. Companies also discussed their challenges in finding entry-level staff; with 35 companies responding to the questions related to entry-level staff deficiencies. Proportionately there were more deficiencies identified with Technical and Entry Level staff than there were with Creative talent.

Through our interviews, attracting and retaining talent was also identified as a major issue in the GTA/Ontario. Although the region has provided invaluable access to talent due to the presence of a number of universities, it has becoming increasingly difficult as other competitors in the area are also recruiting at the same pace. There is high turnover in the industry and it is common for each application developer to have ex-members of each other's companies within their staff. One application developer is planning to hire another 20-30 people this year but was concerned that "the pie isn't growing fast enough" for all companies to acquire the talent they require. In other words, this year will see a shortage in availability of the talent they need.

The greatest difficulty is recruiting talent with three to five years of experience (the age of the mobile app industry) in software development, who understand today's technology, open source and web/mobile components. Recruitment firms often call under false pretences to poach staff. Competition for staff is also becoming fiercer as large international firms are entering the market and some have raised large cash reserves through public offerings, which enable them to offer large salaries and attract talent. Small local companies are increasingly looking to offer benefits other than salaries such as generous healthcare plans, a central location, and training in order to compete for talent.

Some companies interviewed located in the Kitchener/Waterloo area noted a major challenge in retaining some of their staff due to location and poor transportation infrastructure. For many of these companies, a large proportion of their staff lives in Toronto and commutes daily to Kitchener/Water-

loo. However, the transportation infrastructure (notably the train) is inadequate and some of these companies must organize their own methods of transport for their staff. Therefore, attrition from staff relocating in Toronto is a significant issue.

Throughout the interviews with application developers, accessing the right people was highlighted as a challenge in the next five years.

Content providers also highlighted the challenge of hiring developers. One particular provider had a number of developers in-house, responsible for strategic applications and applications for the iOS platform. Any other applications were subcontracted to external mobile development vendors. One content provider stated that the skills they required were fairly new and specific, that they were selective about the developers they hired and their capabilities, and therefore that finding talent locally was virtually impossible.

For non web-savvy businesses, the move from web to mobile is a significant challenge. One content provider stated that they lacked a strategy to move into mobile, arising both from a lack of talent in mobile within the company as well as a lack of information and knowledge around the needs for mobile (Who uses mobile? How? Why? What do users expect from their mobile experience?). For these companies, there is a real threat of becoming irrelevant as the industry goes digital.

Some content providers suggested a preference for subcontracting to local developers while others reported going through a competitive process to select developers. One content provider issued a Request for Proposals and was "thrilled" when this resulted in the selection of a Toronto-based company. One content provider felt that GTA/Ontario based companies are not as innovative as they were a couple of years ago and that they have switched to a one-size-fits-all approach rather than developing completely customized applications.

5.3.3 Conclusion

Companies in Ontario/GTA are indeed experiencing pressures in terms of hiring and retaining talent in the mobile industry, particularly individuals with a few years of experience in software development. Although Ontario/GTA provides access to a large talent pool due to surrounding universities and the cluster in mobile, the expansion of the industry locally has led to intensified competition for talent. The Ontario/GTA area has also suffered from "brain drain" to the US.

5.4 Trend 3: Start-up Mobile Companies Face Challenges Accessing Capital

The lack of access to capital in Ontario threatens mobile innovation.

5.4.1 Introduction

In this section we discuss the hypothesis that start-up mobile companies in Ontario/GTA face challenges in accessing both financial and intellectual venture capital and that this stifles innovation in mobile in the region. This hypothesis was addressed through secondary research, interviews with stakeholders and MEIC's web-based survey.

5.4.2 Key Findings

It is often suggested that there is a lack of access to capital in Ontario outside of traditional and resource sectors, however this is still open to debate based on the findings from this study.

In 2010, venture capital investment in Canada totalled $1.1 billion, representing the financing of 354 companies.[18] Ontario led all provinces with $424 million invested in 2010, or 37% of the national total. Nevertheless, Canadian innovative firms raised only 39% of the dollars collected by their American counterparts. The communications and other IT sectors attracted the majority of venture capital invested in Canada. A total of $484 million was invested in 126 IT companies last year. Software, telecom, and internet-focused firms received the most venture capital, garnering $141 million, $135 million, and $130 million each.

Venture capital investment in Canada in 2010 was greater than that in 2009 but lower than the $1.4 billion invested in 2008. Also, Ontario improved its position from 2009 when it trailed Quebec with a total investment of $296 million (compared to $429 million invested in Quebec). Investment in IT companies decreased by 3% from 2009 to 2010.

Therefore, access to capital in Canada in general, and Ontario specifically improved in 2010. Also, companies in software, telecommunications, and internet-based companies were the most likely to receive investment.

Early-stage (seed or start-up) businesses received approximately 40% of all venture capital investments, with the rest distributed to firms in the later-stages of development (expansion, acquisition and turnaround).

One application developer suggested that funding had not been a problem for them and reportedly not an issue for their peers either. The developer reported having started off with angel money and

[18] Reuters. Canada's Venture Capital Market in 2010.

then obtained venture capital money in intervals in line with growth.

One platform provider however suggested that access to capital was a significant issue in Ontario. The provider pointed out that angel investors and venture capitalists in the region are less risk tolerant. For example, unlike investors in Silicon Valley, investors in Ontario do not believe that trying and failing is a mark of success. It was also mentioned that mentorship for entrepreneurs, both in terms of technical aid and help in developing business plans, is lacking. It is believed that government should not be relied on to provide this service and that is has to develop organically, for instance through existing companies and through the network of VC's and angel investors. It is unclear why this has not happened in Ontario, but it was suggested that perhaps the number of companies having succeeded and willing to provide mentorship is not large enough.

5.4.3 Conclusion

Findings were mixed in terms of access to capital, some companies reporting having accessed capital with relative ease with others having experienced challenges. Survey findings indicate that self-financing and internal company financing may be the predominant sources for start-up capital. Based on comments during interviews, the overarching issue appears to be the low tolerance for risk. Also, interview respondents highlighted the lack of access to intellectual venture capital, such as supporting mentorship.

5.5 Trend 4: The Adoption of Mobile in Canada (and Ontario) Lags Behind Other Countries

A number of factors have slowed down the adoption of mobile in Ontario and thus limit the market for mobile technology.

5.5.1 Introduction

In this section we discuss the fourth hypothesis, that the adoption of mobile in Canada (and Ontario) is lagging behind other countries which might hamper the market for innovative mobile offerings. This hypothesis was addressed through secondary research and interviews with stakeholders.

5.5.2 Key Findings

Canada has been lagging behind other jurisdictions in terms of the number of mobile units per capita and the use of mobile data plans despite being a large consumer of online data. According to Statistics Canada's residential telephone household survey, Canada had a mobile penetration rate of 78%[19] in 2010 and eMarketer projects this number will reach 84.7% in 2014.[20] This compares to an average among developed countries of 117.8%[21] and an average of 78.8% among developing countries in 2011.[22]

The main barriers to the expansion of wireless use in Canada are:

- **Low-cost landline alternative:** The low cost of wired telephone access due to price controls has led to a high landline penetration rate.
- **Cost of wireless:** Historically there have been many studies comparing Canada to other jurisdictions in terms of wireless costs and prices. Opinions vary about the accuracy of the comparisons, especially in terms of comparing the quality and breadth of cellular service. Nevertheless, some recent studies still suggest that Canada has some of the highest cellular prices to consumers, [23] but the GTA and Ontario has significantly increased competition in the past couple of years.
- **Spectrum allocation:** The auction approach to spectrum allocation used in Canada contributes to the overall cost of wireless service, which although has raised significant capital for the pub-

[19] Ontario is the province with the fourth highest penetration rate at 81%, trailing Alberta (87%), Saskatchewan (83%) and British Columbia (82%).

[20] Canadian Radio-television and Telecommunications Commission (CRTC). Navigating Convergence II: Charting Canadian Communications Change and Regulatory Implications. Convergence Policy, Policy Development and Research. August 2011.

[21] Mobile penetration exceeds 100% if the number of mobile phone numbers exceeds the population.

[22] mobiThinking. Key Global Telecom Indicators for the World Telecommunication Service Sector in 2011.

[23] CBC.ca, 2011.

lic purse, also has to result in effective return on investment for the investors that has to come through revenue.

- **Security concerns:** Consumer confidence over security is a particular challenge in Canada, as described by various stakeholders interviewed.

The Canadian mobile network operators have made significant investment across wide areas of global leading wireless infrastructure. This includes access to high-speed data networks that are essential for the applications and services to work properly in an advanced economy. The operators interviewed pointed to the significant spend needed to install and run these networks to global leading standards.

The recent entry of new competitors such as Mobilicity, Public Mobile and Wind Mobile are as yet too new to have made profound inroads to the market share of the incumbents. The upcoming 700MHz auction will give access to spectrum that is ideal for mobile networks as it can travel large distances, pass through buildings, and needs less infrastructure such as mobile towers. The details of the auction timing and process are yet to be finalized, but this should also boost speed and quality of service. As yet, it is unknown what effect it will have on competition.

A number of interview respondents perceived that a lack of competition among Canadian operators, relative to the US and UK for example, limited a number of creative service offerings. However, there are now six wireless networks in Ontario compared to four in the UK. One platform provider stated that the lack of competition between MNO's is a consumer issue, not an innovation block. For instance, California also lacks competition amongst MNO's.

Inspite of the current lower adoption rates of mobile, Canadian mobile users are more likely to own a smartphone than many developed countries. As of March 2011, there were 6.6 million smartphone owners in Canada, representing a third of mobile users.[24] This places Canada ahead of other developed nations such as the US, and the growth in services such as mobile marketing is expected to be double that of the US.

5.5.3 Conclusion

Mobile penetration lags in Canada compared to other developed countries, although smartphone penetration within mobile users is high. Nevertheless, interview respondents had mixed opinions as to whether this was an innovation block, particularly given the global nature of the market for applications, services, and content.

[24] eMarketer, 2011.

5.6 Trend 5: Ontario Mobile Companies Lack Business & Marketing Skills to Commercialize New Ideas

Ontario can become a leader in mobile innovation by focusing on marketing and business skills that lead to commercialization.

5.6.1 Introduction

In this section we discuss the hypothesis that Ontario/GTA possesses the technical skills in mobile but lacks the business and marketing skills required to commercialize new ideas. This hypothesis was addressed through interviews with stakeholders.

5.6.2 Key Findings

A number of interview respondents stated that the paucity of business and commercial skills in the GTA/Ontario would be a challenge in the next five years. Although technology is key, it is crucial to grow the business in balance with the necessary sales and marketing skills and the business development knowledge alongside all of the rapidly advancing technology. It is believed that there is a lack of sufficient focus on marketing in the business and a general belief that a strong product alone will be sufficient. As businesses grow they should be cautious not to be trumped by competitors offering lower priced inferior services but with a slicker sales pitch and marketing story.

It was recommended that additional support be provided to GTA/Ontario companies in order to improve their ability to commercialize their technology. One developer interviewed obtained $75,000 worth of market research from MaRS's Market Intelligence team, which had been helpful in launching the business. Increased collaboration with the education system was cited as a means to remain relevant and develop appropriate business skills. It was mentioned that there is a disconnect between the school programs offered, with a focus on programming, and the skills required to run a mobile business, such as knowledge of marketability, monetization, and data analysis. OCAD University and MEIC were considered to effectively encourage entrepreneurs to take relevant courses, and these initiatives should be expanded. However, many of the skills needed to commercialize are experiential by nature, and therefore suggest a need for collaboration between formal education establishments and industry at large.

The importance of collecting and analyzing data was highlighted in order to understand the audience and provide them with the best experience as well as ensuring the relevance of advertising. Mobile game developers are beginning to collect real time information in order to more fully understand the behaviours of their players (for example why they stop playing at a particular stage). However, data does not equal information and it was noted that human interpretation of the data was essential. In terms of advertising for mobile games, it was suggested that the relevance of advertisements is still missing and that data analytics are further required to improve on this key aspect of the business.

Another common issue stated in terms of mobile innovation was the fragmentation of platforms, which hinders the development of products and services that can be accessible by all. One content

provider stated that they develop iOS products in-house but outsource the development for other platforms. There is also increasing interest in various technologies that allow to port over different platforms, such as PhoneGap, Sencha Touch and Titanium. One content-provider believed that the future is expected in mobile web (use of browser-based Internet services from a mobile device) rather than platform-specific native applications. This is an area of debate as others believe that applications will remain unchallenged, although there will be a shift in the way of developing applications (through HTML5 for instance) without necessarily a shift towards the browser. One content provider interviewed stated a preference for native applications, even if they come at a higher cost, in order to arrive at the best customer experience.

Content providers also noted the challenge in the coming years associated with the very rapid changes in mobile. One content provider stated that they tried not to lock themselves into vendor or platform deals for more than a year for that reason.

5.6.3 Conclusion

There appears to be a lack of focus on the value of high quality business development and marketing skills in the mobile industry in Ontario. While technical skills are developing and there are marketing support programs available, the programs need to be accessible and easily administrated in short timescales (weeks vs. months) to reflect the needs of the market (i.e. clients) and the Toronto-based suppliers who want to serve those markets.

5.7 Trend 6: Mobile Commerce is an Area of Opportunity, but Requires Cross-Industry Partnerships

Mobile commerce is an opportunity for Ontario but will require cross-industry partnership.

5.7.1 Introduction

In this section we discuss the hypothesis that mobile commerce is an area of opportunity for Ontario/GTA but that cross-industry partnership is required in order to maximize returns, address security and revenue-sharing issues, and agree on standards. This hypothesis was addressed through secondary research and interviews with stakeholders.

5.7.2 Key Findings

Ontario is believed to be well positioned to adopt mobile commerce given three factors:

- Its strengths in mobile technology: As described in Section 5.2.2.
- Its large financial centre: Toronto is the third largest North American financial services centre after New York and Chicago and is Canada's financial and business capital. Toronto's financial services sector employs a workforce of approximately 232,000.[25]
- Toronto's large retail market: With annual retail sales nearing $50 billion, the Toronto region is Canada's largest retail market. The GTA retail market is largely concentrated in the Toronto downtown, to a greater extent than most large North American cities.

Based on secondary research and articles from the press, it appears that Near Field Communication (NFC)-based proximity mobile payments are likely to be adopted. NFC enables mobile devices to communicate with each other by touching them together or bringing them into close proximity with a 'reader'. This technology will require collaboration among banks, mobile operators, merchants, handset manufacturers and other service providers to make a valuable service to consumers.

However, the business model could vary substantially based on the players involved and which players take a leading role. Four potential business models for mobile payments have been suggested:[26]

- **An Operator-Centric Model:** The mobile operator independently deploys mobile payment applications to NFC-enabled mobile devices. The applications may be charged directly to the customer's wireless bill or may be based on a prepaid system.

[25] City of Toronto website. http://www.toronto.ca/invest-in-toronto/finance.htm.

[26] Smart Card Alliance. Proximity Mobile Payments Business Scenarios: Research Report on Stakeholder Perspectives. July 2008.

- **Bank-Centric Model:** The bank deploys mobile payment applications or devices to customers and ensures merchants have the required capability to accept payment at the point of sale. Payments would be processed over existing financial networks with credits and debits to the appropriate accounts.
- **Peer-to-Peer Model:** An independent service provider provides secure mobile payments between customers or between customers and merchants. One example of this is the service provided by PayPal Mobile.
- **Collaboration Model:** This model involves collaboration among banks, mobile operators and other stakeholders such as a trusted third party that manages the deployment of mobile applications. Payments would be processed over the existing financial networks with credits and debits to the appropriate accounts.

The main challenge for stakeholders in choosing their business model is to weigh the cost of lower margins against the opportunity for larger and greater amounts of transactions that can be achieved through collaboration, while still allowing for competition among stakeholders in some areas.

Mobile operators interviewed believe mobile commerce to be a significant opportunity for them, but one operator also stated it as a "disruptive opportunity." For instance, if consumers start using their handsets as mobile wallets, this will raise a number of operational issues for operators. The operators will need to manage the process to activate credit and/or debit cards issued by the banks, as well as needing to be mindful of the ability of their product suppliers (such as Apple, Android-enabled smartphones, and Blackberry) to be able to offer an embedded wallet in their products. Also, external digital-wallet devices such as 'Square' can be attached to the smartphone's audio socket and thereby gets around the need for collaboration with the device manufacturers and the operators.

Other questions that need to be answered by all stakeholders are the following:

- Who will be responsible for managing credentials?
- What happens if a transaction fails?
- Who will bear the responsibility for fraud?
- What will be the revenue-sharing arrangement?

One network operator highlighted that their key strength, the ownership of large amounts of consumer data, was also their key concern due to security issues.

Change is happening globally in the field of mobile commerce, as stated by one network operator, and Canadian operators must not limit their perspective to the GTA/Ontario. Companies outside of Canada are forming alliances and partnerships in order to develop and deliver the technology. In the UK, O2 UK, Vodafone, and Everything Everywhere (formerly T-Mobile and Orange) announced in 2011 that they were to form a joint venture company that would "deliver the technology required for the speedy adoption of mobile wallet and payments."[27]

In Kenya and India, mobile network operators have bypassed the banks in order to provide payment options to the general public. In parts of Europe and Asia, banks are partnering with mobile network operators to deliver matching standards. In order to capitalize faster on the opportunity and obtain

a larger share, some banks are setting up wireless networks and some network providers are buying banks. In Canada, Rogers Communications Inc. has already applied to regulators for a bank license.

Online services also stand to gain from mobile commerce, as illustrated by the large success of PayPal and Google Checkout. Large credit card companies, application developers, and companies like Apple and Research in Motion may also become important players in mobile payments. For instance, RIM's most recent BlackBerry devices (which run the Blackberry 7 operating system) are near-field communications enabled for tap-and-go payments. One area of opportunity is believed to reside in NFC Applications and Services. NFC-enabled applications will soon represent an entirely new class of services and companies like Google, Apple, and RIM are working on NFC developments.

The key factor for mobile payments to reach critical mass is retailer adoption. To this date, global retailers appear to have adopted a wait-and-see approach. This hesitation is largely driven by uncertainty around the cost to retailers of offering mobile payments options. Our interviews confirmed that retailers do not believe that the industry is mature enough for mobile payments, in terms of having common standards, and that consumers are not yet ready for adoption.

5.7.3 Conclusion

Due to its strengths in mobile technology, its large financial centre and a large retail market, Ontario/GTA appears to be well positioned to take advantage of mobile commerce. However, most players are still cautious about this opportunity. Mobile operators raised concerns around security, while retailers voiced doubts as to the readiness of the industry and the consumer base, and all players raise concerns around revenue-sharing arrangements.

[27] The Telegraph. Vodafone, Telefónica and Everything Everywhere to launch mobile payments joint venture. June 16, 2011.

5.8 Trend 7a: The Indian Market Presents an Opportunity for Ontario Mobile Companies

The Indian market could present opportunity for Ontario application developers in light of the government push on mobile service delivery.

5.8.1 Introduction

In this section we discuss the hypothesis, that the Indian market is a burgeoning market and an area of opportunity for companies in Ontario/GTA. This hypothesis was addressed through secondary research and interviews with stakeholders.

5.8.2 Key Findings

India is also experiencing an increase in mobile usage, sparked by low broadband penetration. The Indian government has seized this opportunity to become one of the frontrunners in terms of mobile government. Indeed, it has developed a mobile government strategy that seeks to enable its one billion citizens to access thousands of government services over their mobile phones[28].

India is well positioned to become a world leader in the development and deployment of mobile applications for public services due to three main factors:

- **High and Growing Mobile Phone Penetration:** It is estimated that India had over 771 million mobile phone subscribers in January 2011 and this figure is expected to reach one billion in 2012.[29] The subscriber base is also large in rural areas, with over 258 million subscribers, which can allow the government to provide to that population.
- **Low Cost Handsets:** A range of low cost handsets are available in India. Although a majority feature only SMS (text messaging) capability, there is an increasing availability of low cost handsets with GPRS and 3G. [30]
- **Low Internet and Broadband Penetration:** Due to low internet and broadband penetration in India, mobile provides the most effective medium to reach users of government services.

---

[28] Ministry of Communications and Information Technology, Government of India. Draft Consultation Paper on Mobile Governance Policy Framework. March 2011.

[29] Ibid.

[30] General packet radio service (GPRS) is a packet oriented mobile data service for 2G and 3G cellular communications. 2G and 3G, or 2nd and 3rd generation mobile telecommunications respectively, represent the generation of standards for mobile phones, with latest generations being the most advanced.

Currently, mobile government is still at its nascent stage in India with most of the types of government services primarily restricted to information sharing through SMS based query services. The following provides a list of recent government initiatives relating to mobile.

Figure 40: Recent Mobile Government Initiatives in India

Initiative	Description
Mobile based public services in Kerala	Agriculture, health, district administration, tourism, fisheries, motor vehicles, police, elections. *e.g. "Dr SMS": SMS based m-health information system for providing information on health resources and the medical facilities available in the locality of the resident*
SMS based services in Goa	SMS alerts for receipt of applications, shortcomings in the applications, and status tracking by various government departments
Passport Application Status on Mobiles by Ministry of External Affairs	SMS based status tracking service for passport applications
Mobile Based Intelligent Garbage Monitoring System in Hyderabad	Enables sanitary supervisors to report the status of cleaning of garbage bins through their GPS enabled mobile phones
Mobile banking	State Bank of India offers Mobile Banking services such as funds transfer, interbank mobile payment services, enquiry services, cheque book request, bill payment, m-commerce

India is one of the only countries to formally introduce a policy framework for mobile governance. Its framework recommends the development of a Mobile Service Delivery Gateway (MSDG), which will provide the infrastructure for the development, testing, deployment, provisioning, and maintenance of m-Governance applications. The framework emphasizes the availability of low cost handsets and suitable applications for these devices for delivering government services, through a collaborative process. This is something that Canada could also consider, perhaps as part of the wider digital strategy for Canada. As part of his speech to Canada 3.0 conference in April 2012, Industry Minister Christian Paradis said: "we need to develop digital literacy and access among low-income Canadians. Nearly half of the households in the lowest income quintile have no computer at home, let alone a

broadband connection, which is more than a million households with no computer." Considering this in the context of the Indian approach to mobile, perhaps it is a good opportunity for Canada (or even Ontario/GTA) to embrace and idea such as the Mobile Service Delivery Gateway.

The first mobile services, approximately 25, were rolled out in September 2011 supported by a national payments gateway.[31] A mobile applications store is expected in March 2012 to facilitate the process of development of suitable applications, using the MSDG infrastructure. Also, the framework announced a Mobile Governance Innovation Fund to be created by March 2012 to support the development of suitable applications by Government departments and agencies and third party developers.

India boasts a number of mobile applications developers, although the definite number can only be estimated. The Association of Unified Telecom Service Providers of India (AUSPI) counts over 170 value-added mobile applications developers registered but many more may not be registered. The focus in India though is reportedly limited to the gaming, entertainment, and business applications rather than on developing applications for public services and thus there may be opportunity for foreign players.

India may also present opportunities outside of the mobile provision of government services. Possible opportunities may include:

- **Games, Media, health, and Commerce:** Indeed, a major boost in the smartphone application market is expected after the launch of 3G services.
- **Social Networking:** The number of smartphone users accessing social networking is expected to exceed 70 million by 2014.
- **Location Based Service (LBS):** The LBS application market is expected to have grown by 86.6% from 2007 to 2012 and is expected to continue to grow substantially.

Interview respondents all agreed that India provided significant opportunity particularly in light of the exponential growth in the number of mobile users. However, caution was expressed in terms of language barriers, the applicability of business models in serving clients, and the necessity of having a local contact. One developer noted the importance of networks and establishing relationships in order to partner with Indian companies. The developer also noted that the opportunities at trade shows were limited and that local companies should work with trusted partners to build connections in India in order to access smaller growing enterprises in the suburbs. Indeed, it was pointed out that a large potential exists with smaller innovative enterprises that may be less visible. It was also noted that the Indian market is very price-sensitive and that customers may not be willing to pay the cost for novel or more sophisticated offerings.

India was also cited as an opportunity in terms of subcontracting the development of hardware and

[31] Telecomasia.net. India's ambitious m-government plans. October 14, 2011.

software at a lower cost in light of the shortage of talent in Ontario/GTA. However, it was mentioned that developers would be less likely to adequately test and debug the software once developed and some interviewees had previously been disappointed in terms of the quality of the work delivered.

5.8.3 Conclusion

The Indian market presents an opportunity for companies in Ontario/GTA due to the large and increasing mobile phone penetration as well as the Indian government's strategy to become a leader in mobile government. However, penetrating the Indian market requires connections and relationships on the ground and a lack of connections may impede the ability to compete with local Indian developers. India also provides an opportunity in terms of providing skilled labour in the mobile sector. There is also an opportunity to look at the Mobile Services Delivery Gateway to see if it could be applied to the Canadian mobile industry landscape.

5.9 Trend 7b: The Brazilian Market Presents an Opportunity for Ontario Mobile Companies

The Brazilian market could present opportunity for Ontario due to expected surge in demand.

5.9.1 Introduction

In this section we discuss the hypothesis that the Brazilian market is an area of opportunity for companies in Ontario/GTA due to a recent surge in mobile usage. This hypothesis was addressed through secondary research and interviews with stakeholders.

5.9.2 Key Findings

The Latin American economy is widely regarded as the economy with the most potential for mobile industry growth over the next decade, with Brazil presenting the continent's most significant opportunity. Indeed, the growth in mobile phone subscribers will be unprecedented, based on data from BMI and Brazilian telecoms regulator Anatel. Anatel predicted that mobile connections would reach one billion by 2022, or four times the current amount. It is also estimated that the number of 3G subscribers will near double from approximately 63 million in 2012 (forecast) to nearly 114 million in 2015.[32]

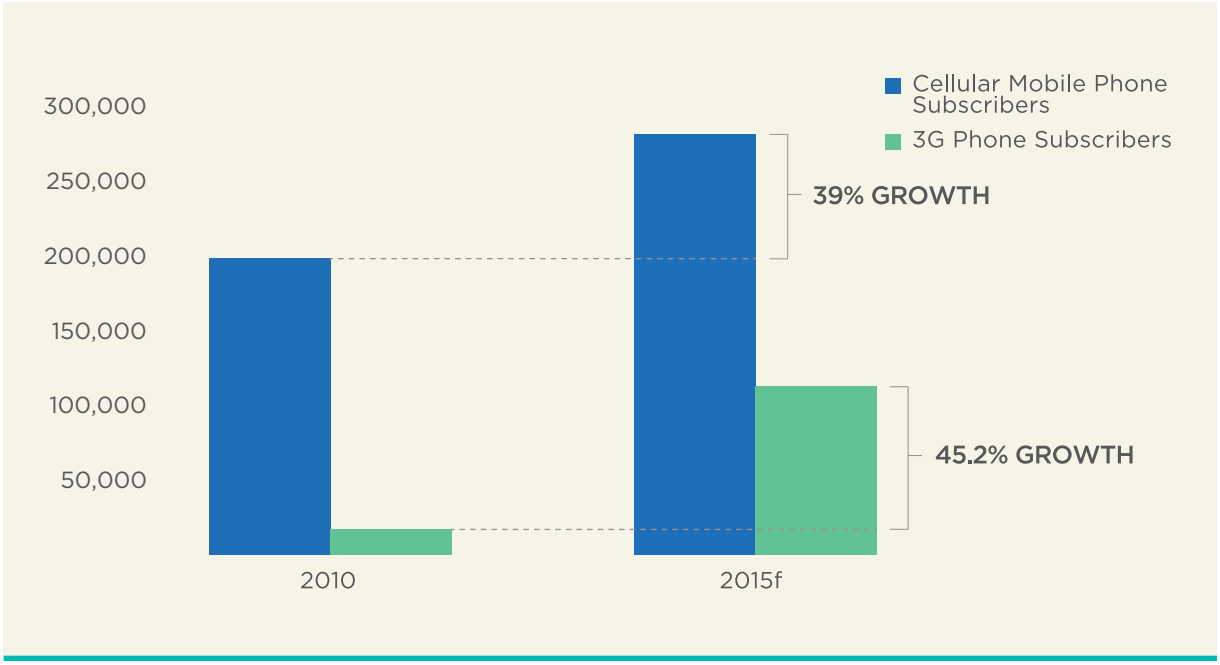


Figure 41: Growth in Brazil's Mobile Subscribers 2010-2015 (SOURCE: BMI, ANATEL)

Brazil benefits from a competitive mobile market, with four main operators with each less than 30% market share: Vivo, TIM, Claro, and Oi.[33] Moreover, Anatel has published mobile virtual network operator (MVNO) rules to further increase market competition.

The 2014 World Cup and 2016 Summer Olympic Games may provide multiple opportunities, compounded by the exponential growth in the mobile subscriber base. Firstly, these events will generate an influx of tourists who will be spending significant amounts and boosting the Brazilian economy. This will further increase demand for mobile products and services. The second factor that comes into play will be the strong infrastructure requirements to support these two events. Indeed, these events will require significant infrastructure to provide efficient and reliable telecommunications to a large number of users.

Secondary research suggests that Canadian opportunities may relate to consulting opportunities around infrastructure and to the development of applications supporting the games.

In terms of infrastructure, Brazil will likely be seeking partnerships with bodies such as the organizing committees of upcoming events, such as Toronto 2015 Pan American Games, or of previous events such as the Vancouver 2010 Winter Olympic Games.

Consulting opportunities may relate to:

- **Planning and Execution:** Telecommunications service providers that covered the Olympics or that are planning the Pan Am Games can provide valuable benchmarks and other parameters such as case studies and forecasts for planning and execution purposes.
- **Crotical Infrastructure Protection:** Telecommunications service providers can contribute to the joint planning between the government, local providers and the organizing committees to ensure that mobile services perform flawlessly during the events.
- Deployment of mobile services to regions with no current mobile infrastructure.

The World Cup and Olympic Games will require many new services and applications. By 2014, mobile devices are forecast to be the most widely used means of communication in Brazil, as mobile data and voice will exceed landline usage. With the expansion of 3G technology, new data services are expected predominantly in mobile advertising, mobile TV—transmission of full HD and 3D multimedia in real time—and mobile social networking—highly popular in Brazil.[34]

Ontario/GTA application developers may be able to leverage applications from the 2010 Winter Games and 2015 Pan Am Games as well as benefit from expertise in time zone and languages.

[32] Investment U Research. The Biggest Tech Trend in Brazil. October 6, 2011.

[33] Ibid.

[34] Centro de Pesquisa e Desenvolvimento em Telecomunicações (CPQD). Mobile Telecommunications Networks for the 2014 World Cup. 2010.

5.9.3 Conclusion

Brazil is anticipated to see unprecedented growth in mobile usage, with the number of 3G subscribers doubling from 2012 to 2015, which provides significant opportunity for Ontario/GTA companies. With the approaching World Cup and Olympic games, Ontario/GTA companies are well positioned to provide novel applications as well as support around network speed upgrades, telecommunications planning and execution, infrastructure protection, and deployment to remote regions.

5.10 Trend 8: Additional Public Policies and Support Measures Can Enhance the Competitiveness of the Mobile Industry in Ontario

The Ontario and federal governments can implement additional policies and support to enhance the Ontario/GTA mobile industry.

5.10.1 Introduction

In this section we discuss the hypothesis that additional policies and government support can enhance the competitiveness of the Ontario/GTA mobile industry. This hypothesis was addressed through interviews with stakeholders.

5.10.2 Key Findings

Support from the government and changes in public policy were often mentioned during interviews as ways to enhance the competitiveness of mobile companies in the GTA/Ontario. One area of support would be in providing benchmarking information, so that local companies are informed as to how well they are performing in comparison to others mobile hubs such as the West Coast and the Boston area. This is necessary in order to determine what Southern Ontario, as a region, must do to remain competitive.

Interview respondents also highlighted that Canada is optimal for companies starting up but less so for maturing companies, mostly due to the fact that the market is not big enough to be relevant on a world stage. Therefore, while it was recognized that dedicated programs to encourage global expansion from local firms do exist, there was a frustration expressed with the time and administration needed to successfully benefit from them.

Office space was cited as a challenge in Toronto and a focus on real estate by the city was recommended. As shown by the start-up heatmap,[35] start-up companies in the IT space are heavily concentrated in Toronto's downtown core. This provides multiple benefits to staff, including proximity to transit for commuters and proximity to infrastructure such as the internet exchange at 151 Front Street that provides fast access to greater capacity. The lack of adequate transportation infrastructure was a recurring problem among respondents and needs to be addressed by local government.

Companies interviewed highlighted the importance of maintaining a system for grants, which is timely, efficient, and relevant to the pace of technology. Subsidies for content and creation were cited as advantages of the GTA/Ontario in stimulating independent content creation. One content provider emphasized the need for more flexibility in the definition of government programs and a more open set of rules as to who qualifies for credits, in order to include a wider range of companies that contribute to the success of the industry.

[35] http://startupnorth.ca/2012/02/22/toronto-startup-heatmap. Accessed online on March 30, 2012.

It was also recommended that public policy be changed to address the lack of competitiveness with mobile carriers which hinders data consumption and limits the trends that can be picked up by mobile users. The government can also play a significant role in coordinating policies in the public space as it has done with smart cities. It will save a lot of investment and redundant spend, but requires a collaboration between public and private sectors.

Another point of concern related to public policy was the issue of data privacy and the necessity for private information to be secure. Care is required in addressing data privacy and governments should ensure that this is properly addressed with private industry input. Governance is a big issue, as are the rules around where data sits and who controls it.

There were also a number of potential changes in policies at a federal level that raised concerns among respondents. One interviewee in charge of public policy lobbying stated that the open internet is a successful platform because there is a lack of government intervention, and intervention could harm innovation. One example is the risk for policies to hinder Canada's growth in cloud computing, for instance by limiting cross-border data flow due to a fear of using data services outside of Canada. However, the Canadian market is not large enough for a self-contained data information centre and economies of scale for cloud computing cannot exist for Canada alone.

Concern was also expressed with regards to the extension of "Canadian content" regulations, even from the demand-side (quotas) or the supply side (subsidies). The point was also raised that Canada's anti-spam laws and regulations may limit the launch of new products and services in jurisdictions such as Ontario if compliance costs are too onerous.

5.10.3 Conclusion

There appears to be an opportunity for government to shape the mobile sector through increased investments in education, infrastructure, and changes in public policy. Companies in Ontario/GTA expressed that they required additional support and advice in order to commercialize their ideas, and/or in access to funds to help international expansion. Also, the local infrastructure was frequently criticized and improvements of public transit within Toronto as well as improved access between cities in Ontario's "mobile triangle" (Ottawa, GTA and Kitchener/Waterloo) were highlighted. Some respondents felt that government had a large role to play in securing data privacy while others felt that government intervention should be minimized in order to enhance cross-border data flow.

5.11 Trend 9: Companies in the Ontario Mobile Industry are Increasingly Expanding Abroad

The focus remains on North America but expansion into international markets is increasing.

5.11.1 Introduction

In this section we discuss the hypothesis that companies in the Ontario/GTA mobile industry are increasingly expanding abroad with a focus on the North American market. This hypothesis was addressed through interviews with stakeholders and MEIC's web-based survey.

5.11.2 Key Findings

The companies interviewed reported North America as their biggest market and primary area of focus, although many of them operated in a number of countries. There has been a significant growth in both local and global markets and opportunities abroad have increased according to respondents. The primary international target (outside of North America) was largely the UK, as it is a logical step into the EU market given it is a large and English-speaking market with an increasing appetite for Canadian services.

Application developers agreed that there is an opportunity in developing markets but that they need to be strategic and careful about how they approach such an expansion. One limitation is that companies, which are cost effective in North America, will likely be expensive in developing economies. For instance, labour costs are greater and standards (for example quality review processes) may differ from those followed by Indian developers, leading to higher costs. Another limiting factor is the lack of back-office support in languages other than English. Although these limitations can be addressed, many aspects of international development need to be planned and managed. Also, although the number of users is growing in the developing world, the average revenue per user is substantially lower.

One application developer found that the Canadian Trade Commissioner Service in developing countries had been helpful in providing insights into business practices as they entered into new markets. The Trade Commissioner Service is a federal agency present in more than 150 cities worldwide and 18 offices across Canada, that gains market intelligence, insight, and uncovers opportunities for Canadian companies as well as helps companies prepare for international markets.

It was noted that as "mobile" becomes more prominent and as barriers to entry subside (for instance through HTML5), competition will increase, clients will have greater choice, and being globally competitive will become increasingly difficult.

Companies in Ontario/GTA appear to be increasingly viewing their competition in terms of their global competitors and increasingly recognizing the need to collaborate with other local firms in mobile. Particularly in the mobile games sector, companies are beginning to cross-promote their traffic with other local game developers. Given the diversity in the nature of games offered, mobile game companies can redirect users to others' websites without hindering their customer base while expand-

ing their potential base. The term "mobile alliance" was used, referring to the collaboration between local companies in order to benefit from each other's experience and compete effectively.

One platform developer commented that the real area of opportunity resides in broad consumer applications, such as the hugely popular mobile game Angry Birds developed by Rovio. The opportunity is to reach customers on a global basis on an unlimited distribution platform. The interviewee pointed out that the main barriers for Canada are psychological, and that the country suffers from a narrow/provincial view of markets. There are nevertheless Canadian companies playing on a global scale. For example, the Sportsnet application is one of the most popular on Android. However, few users outside of Canada know that it is a Canadian TV network. This highlights the ubiquitous nature of mobile and the ability to reach consumers on a broad scale regardless of geographic location.

According to one content-provider, the opportunity lies in the smooth transition from one mobile device to another. For instance, a user could be watching a show on television and then continue watching the show on his or her mobile device as he or she commutes and then switch to a tablet to interact with the show.

5.11.3 Conclusion

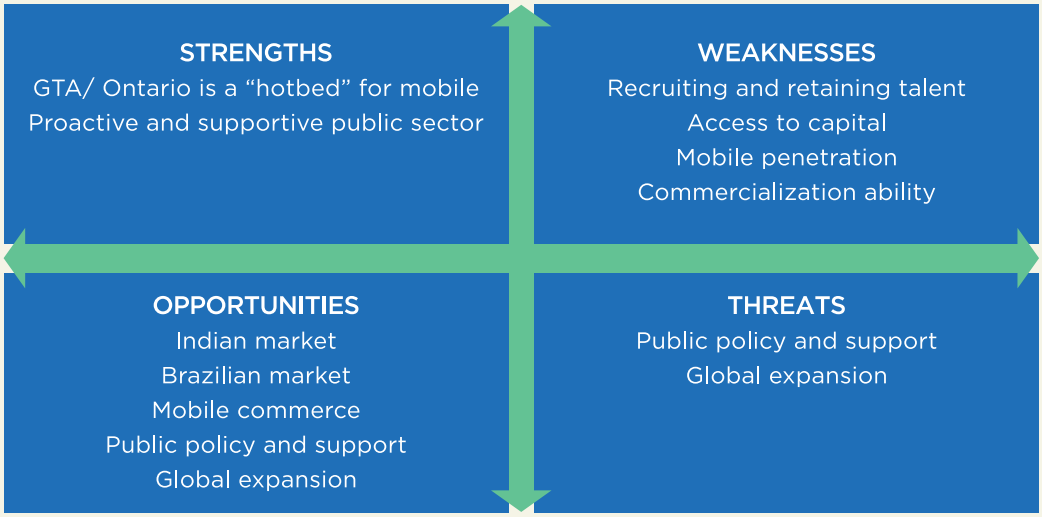
A number of companies in Ontario/GTA are exporting to international markets and some are opening offices abroad. Companies are still prioritizing North America and the UK due to the similarity between markets and the common language, however companies are showing increased interest in the potential of developing markets.

5.12 Summary: An Analysis of the Implication of the Trends Facing Ontario's Mobile Industry

Network operators must develop new service propositions in order to stay relevant.

Based on the preceding nine trends, PwC performed an analysis of the content, services, and applications market in Ontario, identifying the Strengths, Weaknesses, Opportunities and Threats (SWOT). The following graphic provides a summary of the preceding trends, broken down into the respective parts of the SWOT analysis.

Figure 42: SWOT Analysis



As the graphic illustrates, there are a number of weaknesses present in Ontario's mobile industry; however there are also significant areas of opportunity. Public policy and support and global expansion were categorized as both an Opportunity and a Threat given the scope for each to either bring the GTA/Ontario to the forefront of the mobile industry or to hold it back.

This SWOT analysis helped address the three issues outlined below:

1. KEY CHANGES IN MOBILE CONTENT, SERVICES, AND APPLICATIONS MARKET IN ONTARIO/GTA OVER NEXT 3-5 YEARS.

Ontario/GTA is a centre of activity for mobile application development and it is expected to see con-

tinued growth over the next five years. Companies such as Google have significantly increased their presence in the area and companies interviewed and surveyed were positive about the future of the industry. One respondent stated: "we cannot see the end of the growth curve of mobile data and the applications and uses that people will find for them."

There is a rare opportunity for Ontario/GTA to be a leader globally by exploiting its strengths in the industry. Indeed, the region benefits from access to high quality potential hires particularly in terms of technical skills, an ideal location with access to major cities, a proactive and supportive public sector, and a large cluster in mobile that can drive synergies.

The mobile content, services, and applications market will likely experience increased competition in the next few years. This is a result of the globalization of the industry, the entry of new players particularly from developing countries, and improvements in technology such as the advent of "HTML5" (new language that may save time and production costs) that facilitate the development of applications and allows new entrants in the industry.

2. OPPORTUNITIES AND THREATS FOR LOCAL ENTERPRISES

Although Ontario/GTA provides access to a large talent pool, the expansion of the industry has led to intensified competition for talent. Talented individuals also often move to other jurisdictions (for instance in the US) once they have acquired the necessary skills in mobile applications. Therefore, local companies are experiencing increasing difficulty in retaining talent.

When it comes to access to financial and intellectual venture capital, there is reportedly less risk tolerance and mentorship on behalf of investors in Ontario/GTA, which can impact the ability for innovative start-ups to thrive. It was also mentioned that local companies are increasingly adopting "one size fits all" approaches in order to be competitive on price and are becoming less innovative.

There is lower mobile adoption in Canada than in other developed countries on average, which limits the local market and can hinder the range of offerings. Although the market is a global one, most local companies reported that their predominant focus is North America and therefore companies seem to be constrained by the number of adopters available locally. However, among mobile users, smartphone penetration is among the highest in Canada relative to other developed countries.

There are opportunities for all levels of government to help further shape and support the mobile sector through increased investments in education, infrastructure, and changes in public policy. For example, local government could assist in the following areas. Firstly, companies in Ontario/GTA require additional support and advice in order to commercialize their ideas. Secondly, the local infrastructure needs to be improved to allow easy access between cities in Ontario's "mobile triangle" (Ottawa, GTA and Kitchener/Waterloo). Finally, government can play a role in stimulating independent content creation, securing data privacy, while allowing competition locally and globally.

Mobile commerce is a growing opportunity in the short term and is expected to benefit a wide range of players. However, most players are cautious about this opportunity, given the challenges in determining the degree of collaboration, sorting out standards, and obtaining consumer buy-in.

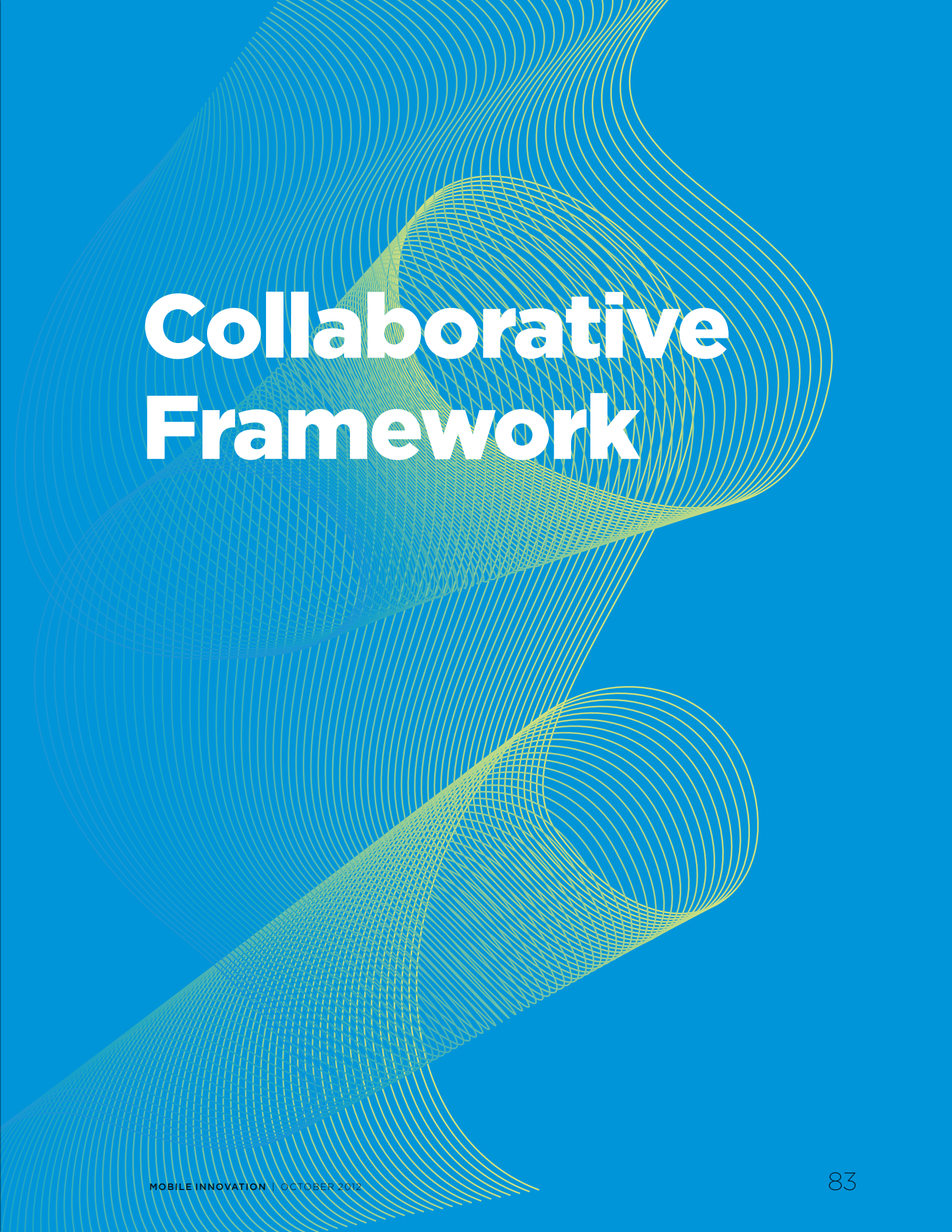
3. OPPORTUNITIES THAT LOCAL ENTERPRISES SHOULD CONSIDER TO COMPETE MORE EFFECTIVELY GLOBALLY

To become more competitive, local companies must focus on acquiring and developing marketing skills. Although MEIC, among others, encourage entrepreneurs to develop their business skills, these appear to be still lacking in the region.

Companies should explore avenues to obtain additional data and information to inform their decision-making. Such data should include:

- Consumer information to answer the questions related to who uses mobile: how do they use it? Why do they use it? What do they expect from their mobile experience? This is particularly important for content providers who are considering new mobile offerings. Such information is also crucial in terms of the relevance of advertising and thus revenue-generation from advertising.
- Benchmarking information that allows local companies to assess their strategic strengths and weaknesses on a global scale. This is necessary to determine what Southern Ontario as a region must do to remain competitive.
- Ontario/GTA mobile companies should focus on their competition on a global basis and collaborate with other local companies in order to benefit from each others' experience, create a critical mass in their audience, and compete effectively.
- Companies in Ontario/GTA must learn to think globally and avoid a narrow view of its market. Successes such as Angry Birds are an example of a broad consumer application that has the ability to reach customers on a global basis on an unlimited distribution platform. The Sportsnet application, although developed by a Canadian TV network, is one of the most popular applications on Android and has shown global appeal. Some targeted markets such as India and Brazil also provide a significant area of opportunity due to their exponential growth in mobile users and their focus on mobile services.
- Although global expansion is an area of opportunity, any expansion requires a substantial amount of research beforehand. For instance, the Trade Commissioner Service may be useful in providing insights into business practices in new markets. Also, penetrating developing markets often requires local connections within these countries. Language barriers must also be addressed and the UK is often the preferred first step in global expansion.

Ontario/GTA has an opportunity to become a leader in the mobile content, services, and applications industry by building on its current cluster of companies and talent in mobile. However, the industry is rapidly changing and evolving and local enterprises appear to need additional support in order to compete globally, for instance through increased collaboration locally, greater mentorship, access to financial and intellectual venture capital, additional government support, and an increased focus on the business skills required to be successful in commercializing ideas.


Collaborative
Framework

In this section, we bring the data presented in the preceding sections together into a series of strategic actions to be taken by the mobile industry and its stakeholders in Ontario. This framework will help to enable Ontario's mobile industry to seize the opportunities and overcome the threats (i.e. public policy and support as well as global expansion) and weaknesses (i.e. recruiting and retaining talent, access to capital, mobile penetration, and commercialization ability). Based on the key issues identified, seven areas were identified for increased collaboration that would most effectively benefit the mobile industry in Ontario:

- International Collaboration
- Collaboration around Government Services
- Collaboration with Other Sectors of the Ontario Economy
- Collaboration around Labour Market Issues
- Collaboration with Academic Institutions
- Collaboration with the Financial Community
- Collaboration between Regional Support Organizations

The remainder of this section will expand upon these notions.

6.1 International Collaboration

As has been mentioned several times, the market for mobile products and services is a global one. Accordingly, Ontario-based mobile companies must gain access to key and growing markets internationally. Several initiatives may help companies gain this access:

- **Reciprocal "soft-landing" pads:** The mobile industry could work with the Department of Foreign Affairs and International Trade (DFAIT) to establish a series of business incubation facilities in Canada—and in key international jurisdictions. These facilities would provide Canadian and international companies with a trusted location in which to establish new companies and/or branch-plant operations.
- **Identify and collaborate with "receptor" companies:** As many international jurisdictions (e.g. India, Brazil) can be difficult markets to enter, and may have particular local sensibilities, the mobile industry (and its representatives) should seek to identify and vet a number of companies in key jurisdictions with which Ontario-based firms could work with confidence. Such companies might, for example, be in a position to offer localization for Ontario-developed/designed mobile products.
- **Export Assistance Programs:** As with many creative and media industries, the mobile industry is largely comprised of small firms, while the costs of export (e.g. travel to meet with partners) can be quite high. The Ontario Media Development Corporation (OMDC) offers an export assistance program aimed at supporting Ontario Interactive Digital Media companies. Mobile game app developers may be eligible for assistance to attend international events for a business purpose.

Furthermore, dealing with international partners always carried with it the risk on non-payment. As such, the mobile industry should work with organizations like Export Development Canada to develop and expand upon programs to mitigate these costs and risks.

- **Information on Key Markets:** As PwC asserts, for Ontario-based mobile companies to make sound economic decisions on their international sales efforts, they require access to timely information on trends affecting key markets. As such, the mobile industry should work with industry associations (e.g. MEIC), government agencies (e.g. OMDC), and regional support organizations (e.g. MaRS) to acquire and disseminate information on key markets.

6.2 Collaboration around Government Services

One of the key conclusions of the TOM report is that Ontario's mobile industry (as a whole) would benefit from closer integration with the segments of the provincial government that provide services to residents. The key assumption here is that governments can help to enable growth in an industry through its procurement habits. There are three key areas where such collaboration would likely be most effective:

- **Healthcare Provision:** Ontario could work closely with the private sector and public health care providers to integrate mobility and m-health as a fundamental strategy in the next phase of systems reform. By working with Ontario-based mobile companies to create and integrate the applications and platforms necessary to add mobile technologies to Ontario's healthcare system, government would be both increasing the ability of Ontario-based mobile companies to compete for global healthcare-related opportunities and improving the provision of healthcare for Ontarians.
- **Education:** Ontario could work with the mobile industry to facilitate the creation of more flexible learning options in the K-12 educational environment. To facilitate this initiative the mobile industry could look to build a consortium of mobile application, educational publishing, and e-learning sector companies to enable development of Ontario-specific content that takes advantage of the strengths of multiple learning technology devices. In order to meet resource needs for Ontario educators, mobile and e-learning industry associations can make connections between traditional resource developers, mobile-application developers, and school boards in order to facilitate the creation of applications with content specific to the Ontario curriculum.
- **Government Services:** Given the adoption of mobile technologies by Ontario residents, it is likely that the Province would seek to extend some of its service offerings to mobile platforms. For example, Service Ontario could transfer important elements of its transactions to mobile platforms and combining these with mobile commerce solutions to enhance its information delivery and allow routine transactions to occur through the mobile Internet.

6.3 Collaboration with Other Sectors of the Ontario Economy

As mobile applications are not exclusively geared for entertainment and/or creative uses, the mobile industry in Ontario could seek to collaborate to greater degree with the broader provincial economy.

In order to facilitate this collaboration, effort should be made to help bring Ontario-based companies with the need to develop mobile applications (e.g. to communicate to their customer bases or to exploit underutilized intellectual property) via mobile applications together with capable, promising Ontario-based mobile content production companies. In this way, Ontario's mobile industry would grow, while the use of mobile application would render the client companies more productive.

6.4 Collaboration Around Labour Market Issues

As this report has shown, there are a number of talent and labour market issues that are facing the mobile industry in Ontario. To begin to resolve these challenges, the mobile industry (likely through its association representatives) could seek to improve its level of collaboration with governments. In doing so, the industry would form a standing open line of communication with government, providing public policy makers with up-to-date information on labour/talent shortages, retention issues, skills needs, and similar data. This data could then be made available to Post-Secondary Institutions (PSIs), to better shape their programs to feed into the industry's needs.

Additionally, the industry should work with government to ensure that Canadian (and Provincial) immigration policies (e.g. the Provincial Nominee Program) are best honed for the mobile industry (e.g. by ensuring that mobile engineers can be recognized as skilled workers). In this way, industry and government would be working together to ensure that Ontario's mobile industry has the talent to fuel its growth.

6.5 Collaboration with Post-Secondary Institutions

In addition to providing PSIs with labour market information to hone their program offerings, the mobile industry could work with such institutions in three additional ways:

- **Commercialization Support:** As PwC's research indicated, the mobile industry in Ontario lacks a sophisticated ability to commercialize the great ideas and concepts developed by its stakeholders. As such, PSIs could further engage with the industry through the expansion of incubation/acceleration initiatives.
- **Marketing and Business Skills:** As a component of the commercialization support, the research conducted for this study revealed that Ontario's mobile industry requires additional marketing and business skills to achieve its (global) potential. Accordingly, PSIs, particularly their business schools, could work to a greater degree with mobile firms to provide access to professional development training in key marketing and/or business skills (e.g. courses on marketing in South Asia, or on attracting capital). Such programs could be included as part of the commercialization support program(s).

- **Design Skills:** As the survey research for this study revealed, mobile companies need greater access to workers with advanced design skills (e.g. user interface design). Much like marketing and business skills, PSI could facilitate the connection of mobile developers to design professionals as part of a wider commercialization support program.

6.6 Collaboration with Post-Secondary Institutions

As with many industries, the mobile industry would benefit from greater access to affordable capital. Accordingly, the mobile industry could work more closely with Ontario's financial services community to develop new, compelling investment vehicles to attract additional private capital to the sector.

As PwC has shown, there is a relative dearth of such capital in Canada, so the new vehicles would have to be structured in a way so as to reduce the relative risks to investment, while maintaining a high potential for investor return. One example of such a vehicle could be a co-investment fund where private capital is matched by public (or quasi-public)[36] investments. Alternatively, financial institutions could form a diversified 'slate' of mobile companies and offer shares of that slate to investors.

6.7 Collaboration Between Existing Regional Support Organizations

While the mobile industry in Canada may be relatively young, it is relatively well supported by regional support organization. From Invest Ottawa (formerly OCRI) to Communitech in Waterloo, to MEIC in Toronto, there are a number of organizations looking to provide support to mobile companies in Ontario. In order to facilitate the most efficient and effective allocation of resources to the mobile industry, these organizations could collaborate to create a common point of entry for mobile companies looking for support.

[36] Such as the proceeds from wireless spectrum auctions or broadcasting tangible benefits packages.

Appendix A: MEIC Web-based Survey Questions

Introduction

Thank you for taking the time to complete the 2011 Mobile Innovation Survey presented by the Mobile Experience Innovation Centre (MEIC). This survey is intended to be completed by company principals in a position to comment on overall operations of their company. The MEIC is seeking a single completion of this questionnaire from each company contacted. The purpose of the information collected is to assist the MEIC in their efforts to increase business opportunities and improve the business climate for mobile media businesses.

The amount of time estimated to complete the survey is 10 minutes.

Entry responses will remain anonymous but company participation will be noted.

Please note that uniquely identifying information will be removed when survey data is processed and before it goes for analysis. The purpose of providing it initially is to allow the analysts conducting the research to identify duplicate responses from the same company. All identifying information, including company name, will be removed from response records once a single company response has been validated. The analysts that conduct the data analysis will not see any identifying data and they are not a part of the same group collecting and validating the survey responses.

2011 Mobile Innovation Survey

The 2011 Mobile Innovation Survey is intended to be filled out by representatives of companies that are either producing products and services for mobile devices or that are providing enabling technology and services to companies that are building mobile products and services. The graphic below illustrates our view of the mobile media ecosystem.

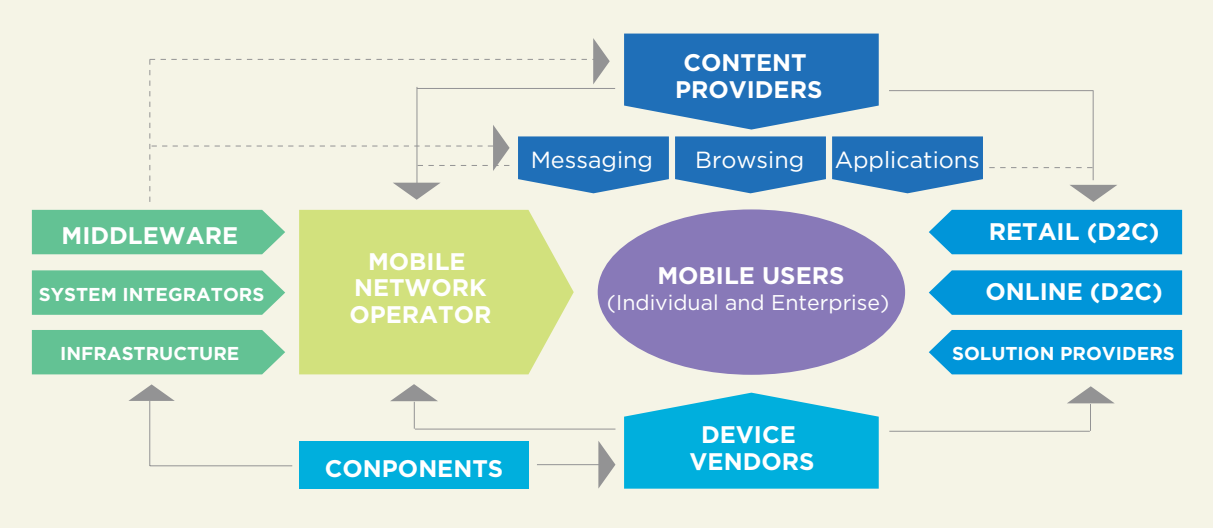


Figure 43: Mobile Media Ecosystem

Thank you for participating in our survey. Please answer the question below to determine if you fit the profile for our study.

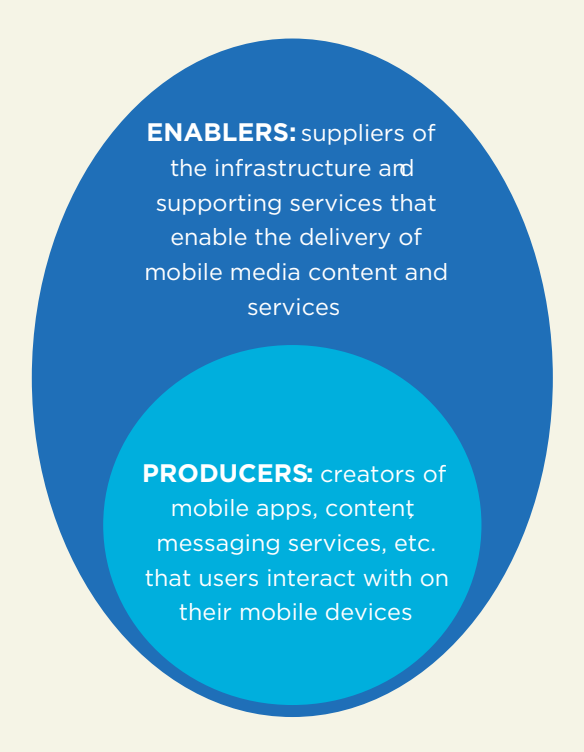


Figure 44: Enablers/Producers Graphic

Question 1 – Filter Question

This survey has two tracks: one for producers and one for enablers. Please refer to the graphic below to help determine which track is most applicable to your company.

A. Our company/organization builds products and services for mobile devices

B. Our company/organization supplies services to companies who build products and services for mobile devices

C. Our company does not fit either description.

Question 2 – Company Location

Where is your company/organization located?

Question 3 – Full Time Employees

Full time employees are those that work for your company/organization more than 30 hours each week.

Please estimate, how many full-time employees do you currently have?

Note: A sole proprietorship has "0" employees.

Question 4 – Part Time Employees

Part time employees are those that work in-house for your company/organization less than 30 hours per week.

Please estimate, how many part-time employees do you currently have?

Question 5 - Subcontractors and Freelancers

Subcontractors/freelancers are workers that work for your company/organization on a contract basis and offsite from your company/organization.

Please estimate, how many full-time subcontractors/freelancers do you currently employ?

Full time (>30 hours a week) _____

Part time (<30 hours a week) _____

Please estimate, how many part-time subcontractors/freelancers do you currently employ?

Question 6 - Revenue

Your company's/organization's (including subsidiaries) gross annual revenue for the most recent reporting period was _____?
(Choose one)

- 0 – 50,000
- 50,001-100,000
- 100,001-250,000
- 250,001-500,000
- 500,001-1,000,000
- 1,000,001-5,000,000
- 5,000,001-10,000,000
- 10,000,001+ (please specify)_____

Would rather not indicate

Question 7 - Area of Primary Endeavour

Please indicate your company's/organization's primary area of endeavour:
(Choose one)

- Content Provider
- Messaging
- Browsing
- Applications
- Middleware
- System Integrator
- Infrastructure
- Mobile Network Operator
- Components
- Device Vendor
- Retail (Direct to Consumer)
- Online (Direct to Consumer)
- Solution Provider
- Other:

Question 8 - Ownership

What percentage of your company is Canadian owned? ____

Question 9 – Percentage of Revenue from Mobile Products and Services

What percentage of your company's/organizations revenue comes from either producing mobile products and services or your sales to companies that are making mobile products and services? _____
(please enter a number)

Question 10 – Percentage of Revenue from Fee-for-Service Work

If you were to assign a percentage split for your company's mobile revenue between fee-for-service work and work that involves the creation of intellectual property* for which your company retains rights, what would it be?

*For the purposes of this survey we are defining Intellectual Property (IP) as work for which your company retains the rights and gets paid.

A) Performing fee-for-service work ____%
B) Creating intellectual property _____%
(Total should equal 100%)

Question 11 – Activity Validation

In reference to the mobile media ecosystem graphic below, what is the primary type of product or service your company sells:

Selections:

Apps - Games (e.g. action, adventure, card, sports, educational, strategy)
Apps - Productivity (e.g. calendar, calculator, notepad, directory services, audio recording)
Apps - Healthcare (e.g. remote monitoring, diagnosis, reminders & alerts, healthy living)
Apps - Multimedia (e.g. viewers, players)
Apps - Travel (e.g. city guides, translators, maps, weather)
Apps - Social Media (e.g. collaboration, blogs, content communities, social networking)
Apps - News (e.g. newspapers, radio, headlines, sports, entertainment)
Apps - Banking (e.g. account management, transfer funds, payments)
Content - Information (e.g. news, sports, entertainment)
Content - Entertainment (e.g. TV, film, books, magazines, music, games)
Content - Education (e.g. K-12, corporate, life-long learning)
Browsing (e.g. mobile Web and Internet browsers, search)
Messaging (e.g. eMail, instant messaging, SMS)
Middleware (e.g. software, systems, tools)
System Integrators (e.g. consulting services, technical expertise)
Retail (e.g. bricks and mortar stores, direct-to-consumer services delivered in person)
Online (e.g. online stores, direct-to-consumer services delivered online)
Solution Provider (e.g. design, programming, artist, transaction services, LBS, CRM)
Other:

Question 12 – Business Method

Which of the following methods does your business use to profit from any novel wireless innovations, design or intellectual property that you create? (Choose all that apply.)

Integrate directly into products or services you provide to end customers
License to other business or channel/distribution partners

Original Equipment Manufacturer (OEM) - you produce products/technologies/services which are sold under the brand of another company
Co-brand - your products/innovations are integrated with those of other partners
Not applicable
Other

Question 13 – Primary Sales Channel

Your primary sales for your mobile products and services occur primarily through: (choose one)
Direct sales
Licensing
Distributor
Carriers
Publisher
Other

Question 14 – End Users

How would you characterize the majority of the end users of your mobile products or services? They are...
Mobile Networks
Consumer Audience (B-to-C)
Businesses (B-to-B)
Educational Institutions
Government Institutions
Non-profit organizations
Other

Question 15 – Export Sales

Does your company engage in export sales?
Yes __ No __

Question 16 – Export Location

Which locations do you export products or services to? (Check all that apply)

Question 17 –International Sales Channels

Your company achieves international sales through: (check all that apply)
Direct sales
Licensing
Distributors
Integrators
Publishers
Other

Question 18 – Financing Sources

Financing - What is your primary source for funding for your wireless projects? (Choose one)

- Self-funded, friends and family
- Angel investment
- Venture capital
- Internally (company/organization)
- Private agency (Bell New Media Fund, Telus innovation Fund, etc.)
- Bank loans
- Public/government grants or loans
- Academic or research grants
- Contract/client financed
- Consortium or joint venture funded
- Tax Credits
- Other/not-applicable

Question 19 - Financing Sources (Secondary)

Financing - What is your secondary source for funding for your wireless projects? (Choose one)

- Self-funded, friends and family
- Angel investment
- Venture capital
- Internally (company/organization)
- Private agency (Bell New Media Fund, Telus innovation Fund, etc.)
- Bank loans
- Public/government grants or loans
- Academic or research grants
- Contract/client financed
- Consortium or joint venture funded
- Tax Credits
- Other/not-applicable

Question 20 - Challenges

Please rate the importance of the following issues to your company:
(Ratings on a 5 point scale – Very Important, Important, Moderately Important, Of Little Importance, Unimportant)

- Competitive climate
- Gaining access to markets
- Financing
- State of the economy
- Regulatory environment
- Client decision cycles

Building a brand
Licencing a brand
Establishing sales
Achieving profitability
Changing business models
Changing technology
Copyright issues

Question 21 - The Most Pressing Challenge

What is the top challenge effecting (sic) the growth of your company?

Question 22 – Market Outlook

Compared to last year (2010), what type of growth do you expect to see in sales this year (2011)?

Increase
Flat (no change)
Decrease

Question 23 – Internships

Is your company in need of assistance to connect with new talent through student internships or co-op programs?

Question 24 – Academic Co-operation

Is your company in need of assistance to connect with research talent (faculty/grad students) at academic institutions?

Question 25 – Talent and Human Resources

Please rate the difficulty your company has finding and retaining the following kinds of talent: (Using a 5 point scale from Very Difficult to No Difficulty)

Experienced management
Experienced sales staff
Experienced project management staff
Experienced technical staff
Experienced creative talent
Qualified entry-level staff
Mentors/Advisors

Question 26 - Technical Staff Deficiencies

If you have indicated that finding experienced technical staff is a problem, please indicate in which area(s) they are lacking (check all that apply):

Technical proficiency
Familiarity with the most current tools

General availability
Meeting deadlines
People skills (a.k.a. “soft skills”)
Other

Question 27 – Creative Staff Deficiencies

If you are having difficulty finding experienced creative talent, please indicate in which area(s) they are lacking:

Design Skills
Flexibility
Familiarity with the most current tools
General availability
Meeting deadlines
People skills (a.k.a. “soft skills”)
Other

Question 28 – Entry Level Staff Deficiencies

If you are having difficulty finding qualified entry-level talent, please indicate in which area(s) they are lacking:

Basic literacy
Technical skills
Business skills
General availability
Time management
Work ethic
People skills (a.k.a. “soft skills”)
Other

Appendix B: PwC Interview Guides

Based on the value chain outlined in Section 2, five separate stakeholder groups were identified as targets for primary research sources: content providers, content enablers, device enterprises, Canadian network operators and international network operators. A total of 12 interviews were conducted.

Interview questions were categorized into five broad themes: the company's position in the value chain, the Ontario/GTA environment, the relationship with other stakeholders, global competitiveness, and general questions around policy and legislation. The full questionnaire for each stakeholder interviewed, including a brief introduction to the purpose and scope of the project, is provided below.

Introduction

We are conducting this study for MEIC (associated with OCAD) to profile the mobile content, services, and applications ecosystem and evaluate the opportunities for the local (GTA/Ontario) economy. As part of this study we are specifically looking to: (1) identify trends that will affect industry growth over the next 3 years, (2) identify major opportunities and gaps for industry growth, and (3) help suggest a collaborative framework for strategic partnerships and ecosystem support. This study is focused on the needs of businesses rather than consumers, that is being addressed by a separate study.

The objective is to aid in the development of programs, guidelines, and collaborative frameworks to support this whole 'mobile' sector. We are looking for your insights into developments in the market that a public body such as MEIC should be aware of, and include in its report to its sponsors at the end of March 2012. This is naturally a key opportunity for you to add to that report from your perspective.

Interview

Anticipated duration: 1 hour

Questions for Content Providers

Company information

- Please can you start by telling us your role within your organization, and how it relates to mobile services, content, and applications?
- What is the structure of your organization as it relates to mobile? (number, size, role of departments)
- What is your differentiator in providing mobile content?

Objectives _____

- *Position company in value chain*
- *Identify success factors in adopting mobile strategy*

- How has being in the GTA/Ontario impacted your ability to provide mobile content?
  - Improved your ability (e.g. government funding, universities/incubators...)
  - Limited your ability (e.g. talent pool, demand...)

- How do you find talent for your company? Is the supply adequate? What could be done to improve the supply of talent?
- Do you consider Ontario/GTA to be a hot bed for mobile? (& why? If not, why not?)
- What do you see as the areas of strength in mobile in Ontario/GTA?
- What are the opportunities in the next 5 years (commerce, health, government, entertainment)? Where are the opportunities (geography, value chain, sectors..)
- What are the challenges in the next 5 years?
- Do you have a strategy to ensure that your content is accessible according to the Association for Ontarians with Disabilities Act (AODA)?

Objectives _____

- *Obtain evidence that Ontario/GTA benefits from clusters in mobile technology*
- *Obtain insights on the key changes expected in mobile content market over next 3-5 years*
- *Identify SWOT for content providers*
- *Confirm Toronto as a "city of opportunity"*

Value Chain

- Who are your main customers and suppliers?
- How do you interact with content enablers?
- How do you interact with platform providers?
- How do you interact with network operators?
- What is the current revenue-sharing model? How do you expect this to change?

Objectives _____

- *Profile the Ontario/GTA mobile content, services and applications industry*
- *Identify changes in the ecosystem over the next 3-5 years*

Global competitiveness

- What do you expect will be the main changes in your mobile strategy in the next 5 years? (number and nature of offerings, for eg. location-based)
- What is your degree of collaboration with foreign players?
- Do you see opportunity in certain developing markets? If so, which ones?
- What is your experience with Brazil and India?
- How will you remain globally competitive?

Objectives _____

- *Identify opportunities that local enterprises should consider to compete more effectively globally*
- *Confirm India and Brazil as areas of opportunity and identify specific opportunities*
- *Identify opportunities for foreign direct investment in Ontario*

General

- Are there any elements of public policy that you feel need to change to make you more competitive (taxation policy and , digital strategy, regulation, grants, etc)What should stay the same?
- Does your company have a research agenda? If so what is it?
- What would help you to advance that agenda?
- Are there any other insights you would like to provide?

Questions for Content Enablers

Company information

- Please can you start by telling us your role within your organization, and how it relates to mobile services, content, and applications?
- What is the role of your organization in the mobile ecosystem?
- What is your company differentiator, and what has made your company successful?

Objectives _____

- *Position company in value chain*
- *Identify strengths in Ontario/GTA*

Ontario/GTA environment

- How has being in the GTA/Ontario impacted your business?
  - Benefits (e.g. government funding, universities/incubators, proximity to others in the value chain...)
  - Challenges? (e.g. raising capital, talent pool...)
- How do you find talent for your company? Is the supply adequate? What could be done to improve the supply of talent?
- Do you consider Ontario/GTA to be a hot bed for mobile? (& why? If not, why not?)
- What do you see as the areas of strength in mobile in Ontario/GTA?
- What are the opportunities in mobile in the next 5 years (commerce, health, government, entertainment)?
- Where do you see the most potential growth (geographically, in the value chain, & which sectors)
- What are the challenges in the next 5 years? What is needed to overcome them? How do you hope to overcome them?

Objectives _____

- *Obtain evidence that Ontario/GTA benefits from clusters in mobile technology*
- *Obtain insights on the key changes expected in mobile content, services and applications market over next 3-5 years*
- *Identify SWOT for local enterprises*
- *Confirm Toronto as a "city of opportunity"*

Relationship with other stakeholders

- Who are your biggest clients and suppliers?
- How do you interact with content providers?
- How do you interact with platform providers?
- What are the advantages/disadvantages of multiple platforms?
- How do you interact with network operators?
- How do you interact with regulators?
- What changes do you foresee in these relationships in the next few years?
- What are your current business models?
- What is the current revenue-sharing model? How do you expect this to change?

Objectives _____

- *Profile the Ontario/GTA mobile content, services and applications industry*
- *Identify changes in the ecosystem over the next 3-5 year*

Global competitiveness

- What is your degree of collaboration with foreign players?
- How will you remain globally competitive?
- Do you see opportunity in certain developing markets? If so, which ones?
- What is your experience with Brazil and India?
- What do you hope to achieve over the next 5 years?
- What support if any might you need to be successful in the global market?

Objectives _____

- *Identify opportunities that local enterprises should consider to compete more effectively globally*
- *Confirm India and Brazil as areas of opportunity and identify specific opportunities*
- *Identify opportunities for foreign direct investment in Ontario*

General

- Are there any elements of public policy that you feel need to change to make you more competi-

tive (taxation policy and programs, digital strategy, regulation, grants. etc)What should stay the same?
- In your opinion, how well does current security and privacy legislation protect consumers?
- Does your company have a research agenda? If so what is it?
- What would help you to advance that agenda?
- Do you have a strategy to ensure that your content is accessible according to the Association for Ontarians with Disabilities Act (AODA)?Are there any other insights you would like to provide?

Questions for Platform Providers

Company information

- Please can you start by telling us your role within your organization, and how it relates to mobile services, content, and applications?
- What do you see as the role of your organization in the mobile ecosystem?
- What is the main differentiator of your platform?

Objectives _____

- *Position company in value chain*
- *Identify strengths in Ontario/GTA and opportunity for collaboration with platform providers*

Ontario/GTA environment

- How has being in the GTA/Ontario impacted your business?
  - Benefits *(e.g. government funding, universities/incubators, proximity to others in the value chain...)*
  - *Challenges*? (e.g. raising capital, talent pool...)
- How do you find talent for your company? Is the supply adequate? What could be done to improve the supply of talent?
- Do you consider Ontario/GTA to be a hot bed for mobile? (& why? If not, why not?)
- What do you see as the areas of strength in mobile in Ontario/GTA?
- What are the opportunities in mobile in the next 5 years (commerce, health, government, entertainment)?
- Where do you see the most potential growth (geographically, in the value chain, & which sectors)
- What are the challenges in the next 5 years? What is needed to overcome them? How do you hope to overcome them?

Objectives _____

- *Obtain evidence that Ontario/GTA benefits from clusters in mobile technology*
- *Obtain insights on the key changes expected in mobile content, services and applications market over next 3-5 years*

- ❯ *Identify SWOT for platform providers*
- ❯ *Confirm Toronto as a "city of opportunity"*

Relationship with other stakeholders

- Who are your biggest customers and suppliers?
- How do you interact with content providers? (business model, selection)
- How do you interact with network operators? (business model, use of abilities such as billing/location/security for application stores, Blackberry operator partnership)
- What will be the balance of power between platform providers and carriers in the future?
- What is the current revenue-sharing model? How do you expect this to change?
- How are you expecting market shares to change in the next few years? (across the value chain and between platform providers)
- How do you think the platform ecosystem will look in 5 years? Which platforms do you expect will dominate?

Objectives

- ❯ *Profile the Ontario/GTA mobile content, services and applications industry*
- ❯ *Identify changes in the ecosystem over the next 3-5 year*

Global competitiveness

- How will you remain globally competitive?
- How can firms in Ontario/GTA remain competitive?
- Do you see opportunity in certain developing markets? If so, which ones?
- What is your experience with Brazil and India?
- What do you hope to achieve over the next 5 years?
- What support if any might you need to be successful in the global market?

Objectives

- ❯ *Identify opportunities that local enterprises should consider to compete more effectively globally*
- ❯ *Confirm India and Brazil as areas of opportunity and identify specific opportunities*

General

- Are there any elements of public policy that you feel need to change to make you more competitive (taxation policy and programs, digital strategy, regulation, grants. etc)What should stay the same?
- In your opinion, how well does current security and privacy legislation protect consumers?
- Does your company have a research agenda? If so what is it?

- What would help you to advance that agenda?
- Are there any other insights you would like to provide?

Questions for Network Operators

Company information

- Please can you start by telling us your role within your organization, and how it relates to mobile services, content, and applications?
- What is the structure of your organization as it relates to mobile? (number, size, role of departments)
- What do you see as the role of your organization in the mobile ecosystem?

Objectives _____

- ❯ *Position company in value chain*
- ❯ *Identify importance of mobile for network operators*

Value Chain

- What is your business model with content providers? (retail, banks, media)
- What is your business model with content enablers?
- What is your business model with platform providers? (provide abilities such as billing/location/security for application stores, Blackberry operator partnership)
- How do you deal with the licensing challenges of content and applications?
- What will be the balance of power between platform providers and carriers in the future?
- What is the current revenue-sharing model? How do you expect this to change?
- How do you see the role of network operators changing in the next 5 years?
- What percentage of your business do you think comes from mobile content, services, and applications? Now,.. and how will that probably change in the next 5 years

Objectives _____

- ❯ *Profile the Ontario/GTA mobile content, services and applications industry*
- ❯ *Identify changes in the ecosystem over the next 3-5 years*

Ontario/GTA environment

- What factors in Ontario/Canada provide opportunities for the uptake of mobile?
- What are, in your opinion, the opportunities most likely to materialize in the short term (commerce, health, government, entertainment)?
- What are the limitations to the adoption of mobile in Ontario/Canada?
- What challenges if any exist in achieving 100% mobile coverage in Ontario?

- What if any challenges do you see in managing mobile broadband provision?
- Where would you position Ontario/GTA in terms of mobile innovation (leading, lagging, in step)?What do you see as the areas of strength/ weakness in mobile in Ontario/GTA?
- How do you find talent for your company? Is the supply adequate? What could be done to improve the supply of talent?

Objectives

- ❯ *Identify SWOT in Ontario/GTA in the demand and supply for mobile*
- ❯ *Obtain insights on the key changes expected in mobile content, services and applications market over next 3-5 years*

Opportunities/ Challenges for MNOs

- How do you foresee the changes in services required by your consumers over the next 3-5 years? (data usage, viewing habits, new devices)
- How well do you feel your organization is placed to meet the future opportunities in the mobile market place?
- Who will be your main competitors? (current MNOs, emerging MNOs, platform providers)
- What do you foresee as the main challenges? (falling ARPU, commoditization)
- How much of a challenge do you foresee in being able to monetize the content required by customers?
- How do you plan on working with the advertising industry to monetize content? What do you believe to be the potential for mobile marketing (& location based marketing?)
- How are you looking to offer applications to your customers? (e.g. applications store)
- What are your current perspectives on the M-Commerce market, and how do you foresee it changing in the 3-5 timeframe?
- Do you see opportunity (or threats) from certain developing markets? If so, which ones?
- What is your experience with Brazil and India?

Objectives

- ❯ *Identify opportunities and threats faced by network operators*
- ❯ *Confirm India and Brazil as areas of opportunity and identify specific opportunities*

General

- Are there any elements of public policy that you feel need to change to make you more competitive (taxation policy and programs, digital strategy, regulation, grants, etc). What should stay the same?
- Does your company have a research agenda? If so what is it?
- What would help you to advance that agenda?
- Are there any other insights you would like to provide?

Appendix C: Mobile Companies in GTA

This table provides a snapshot of the companies in Ontario operating in the mobile content, services, and applications market.

Figure 45: Mobile Companies in GTA

Company	Location	Services
Big Blue Bubble **http://bigbluebubble.com/**	London	Content Provider Applications - Games
Clip Mobile **http://getclip.ca/**	Toronto	Location-based mobile coupons
Dexterity Mobile **http://dexteritymobile.com/desktop**	Toronto	Solution Provider - Mobile Marketing Services System Integration (mobile strategy development)
Discover Anywhere Mobile **http://www.discoveranywheremobile.com**	Toronto	Applications - Travel
Diversinet **http://www.diversinet.com/**	Toronto	Secure mobile applications that securely and easily connect healthcare organizations and users with vital healthcare information, anytime, anywhere
Endloop Mobile **http://www.endloop.ca/**	Toronto	Applications - Productivity (directory services, conferences etc) Applications - Games
Eventmobi **http://www.eventmobi.com/home/**	Toronto	Applications - Productivity (conferences)
Evolution Health Systems Inc. **http://www.evolutionhs.com/default.aspx**	Toronto	Solution Provider. Applications – Healthcare (Integrated health applications with online community and content)
Get Set Games **http://getsetgames.com/**	Toronto	Applications - Games Applications - Social Media

Company	Location	Services
GlassBOX Media **http://glassbox.tv/**	Toronto	Digital publishing Content - Entertainment
Impact Mobile **http://www.impactmobile.com/**	Toronto	End-to-end mobile marketing solutions Messaging
LifeWIRE Corp **http://www.lifewire.ca/default.aspx**	Toronto	Messaging Applications - Healthcare (wireless solution for case management, disease management, compliance and wellness services) Applications - Social Media
Mobile Fringe **http://www.mobilefringe.com/**	Toronto	Mobile Enterprise Platforms including software, hardware, and infrastructure that ensures successful mobile applications – Mobile marketing
Motricity Toronto **http://www.motricity.com/**	Toronto	Mobile merchandising, marketing, and advertising solutions
MyThum **http://mythum.com/gateway-services**	Toronto	SMS/MMS connectivity, premium SMS and financial settlement, binary content billing, mobile giving
MyVoice **http://myvoiceaac.com/**	Toronto	Applications - Healthcare (communication aid) Content - Education
New Toronto Group **http://www.newyyz.com/ntgsite/**	Mississauga	Solution Provider- provider of development, consulting, training and other application development services for mobile
Play Dynamics Inc **http://www.playdynamics.com/**	Markham	Applications - Social Media (share photos etc)

Company	Location	Services
Polar Mobile **http://www.polarmobile.com/**	Toronto	Mobile applications Platform services (deployment, ongoing support)
Postmedia Network **http://www.postmedia.com/**	Toronto	Applications - News Content - Information
QuickPlay **http://www.quickplay.com/**	Toronto	End-to-end managed video solutions enable multi-service, video service and mobile service providers to cost-effectively and efficiently deliver premium video services to their customers.
Red Piston **http://www.redpiston.com/index.php**	Windsor	Applications - Games (educational, musitc etc) Applications - Productivity (time management etc)
Seregon **http://www.seregon.com/**	Ottawa	Enterprise Applications (facilities management, healthcare, public safety, CRM, retail, manufacturing)
Simply Good Technologies **http://www.simplygood.com/**	Toronto	Solution Provider Middleware Applications - Productivity
Sonic Boom Creative Media **http://www.sonicboom.com/**	Toronto	Solution Provider
Spreed Inc **http://www.spreedinc.com/**	Toronto	Applications - News (media) Middleware (applications platform)
Sprouter **http://sprouter.com/**	Toronto	Content provider Applications - Social Media (advice for start ups)

Company	Location	Services
Telepin Software **http://www.telepin.com/index.shtml**	Ottawa	Mobile transaction infrastructure software, providing mobile operators the most efficient and cost-effective way to control their distribution network, maximize revenues from mobile financial services, and deliver innovative mobile financial applications.
Tenet Computer Group Inc **http://www.tenetmobile.com/**	Toronto	Applications – Productivity (document updating etc) Solution Provider
Tenzing Interactive **http://www.tenzing-im.com/**	Toronto	Content - Entertainment Solution Provider - marketing
XMG Studio **http://www.xmg.com/**	Toronto	Applications - Games
ZeroWire Group **http://www.zerowirelabs.com/index.html**	Markham	Solution Provider - value-added marketing services and mobile networking solutions that improve productivity and efficiency through enhanced communications Content - Entertainment (educational/entertaining consumer-targeted applications)
Zynga Toronto **http://company.zynga.com/**	Toronto	Applications – Games

Appendix D: MEIC Interview Guide

Based on the value chain outlined in Section 2, five separate stakeholder groups were identified as targets for primary research sources: content providers, content enablers, device enterprises, Canadian network operators and international network operators. A total of 12 interviews were conducted.

Introduction

Thank you for agreeing to take the time to participate in this research. This research is a follow up to a survey conducted by MEIC last year to gain insights into the mobile industry sector in Ontario/GTA. We are now looking to add to that research with some more detailed financial and economic data. We would therefore like to ask some specific questions about your organization, but be assured that we will not be attributing anything you say back to you or enable anyone to elicit confidential information about your company. All of our data will be extrapolated and reported at an overall aggregate industry level.

Q1: Is your company public or private?

Q2: How many years has your company been in operation?

Q3: In your fiscal year ending in 2011, how many projects (e.g. games and/or applications) did your company complete?

Q4: What is your forecast for the number of completed projects in 2012?

Q5: In your fiscal year ending in 2011, what was your company's operating revenue, expenses, and margin?

Q6: In your fiscal year ending in 2011, what was the approximate breakdown of your company's operating expenses?

- Wages, compensation and employee benefits
- Software licences and equipment
- Premises (incl. utilities, telecoms, rent)
- Legal, banking, accounting and other professional services
- Advertising/marketing
- Transportation, travel, shipping
- Other

Q7: In your fiscal year ending in 2011, did your company outsource any element of your business to other companies (e.g. other than to individual freelancers)?

Q8: Why did your company outsource any element of your business to other companies (e.g. other than to individual freelancers)?

Q9: To which jurisdiction did your company outsource? (Please check all that apply.)

Q10: Please indicate the percentage of the projects produced by your company in the fiscal year ending 2011 that accessed the following tax credits:

- Scientific Research & Experimental Development (SR&ED)
- Ontario Interactive Digital Media

Q11: Is the current financial climate making is easier or harder for your company to access capital?

Q12: Do you have any experience of crowdfunding?

(Definition of Crowdfunding: The collective effort of individuals who network and pool their resources usually via the internet, to support efforts initiated by other people or organizations.

Q13: Do you have any comments on how you could see a crowdfunding model evolve to help your company achieve its aims?

Q14: What are the challenges you could foresee with a crowdfunding model?

Bibliography

PwC Research

PricewaterhouseCoopers. 2010 North American wireless industry survey – A range of possibilities in a changing wireless landscape. 2010.

PricewaterhouseCoopers. Are your priorities fit for the future? Communications Review, 16 (1). 2011.

PricewaterhouseCoopers. Be careful what you wish for - A look at the future of mobile data. 2010.

PricewaterhouseCoopers. Cities of opportunity. 2011.

PricewaterhouseCoopers. Digital mobility drives you – you drive digital mobility. 2011.

PricewaterhouseCoopers. Exploring telecom markets in Latin America. Communications Review, 16 (2). 2011.

PricewaterhouseCoopers. Growing telecom revenues – what's next? Communications Review, 16 (3). 2011.

PricewaterhouseCoopers. Hot sectors/ hot market forecast – Global research study: FDI opportunities for the Greater Toronto Area. April 2011.

PricewaterhouseCoopers. Indian Mobile Services Sector - Struggling to maintain sustainable growth. August 2011.

PricewaterhouseCoopers. Value: Getting it. Giving it. Growing it. Communications Review, 15 (3). 2010.

OCAD University Research

Diamond S, Roberts V. Taking Ontario Mobile, September 2012.

Other Research

Booz & Company. Mobile Application Stores for Telecom Operators – The Next Battlefield. 2010.

Booz & Company. The Future of Telecom Operators – Capabilities for Rapid Change. 2010.

Business Insider. The Future of Mobile. March 21, 2012. Accessed online April 3, 2012. http://

www.businessinsider.com/the-future-of-mobile-deck-2012-3?utm_source=twbutton&utm_medium=social&utm_campaign=sai#-1.

Canadian Radio-television and Telecommunications Commission (CRTC). Navigating Convergence II: Charting Canadian Communications Change and Regulatory Implications. Convergence Policy, Policy Development and Research. August 2011

CBC.ca. Mobile Roaming Fees Highest in Canada: OECD. June 8, 2011.

Centro de Pesquisa e Desenvolvimento em Telecomunicações (CPQD). Mobile Telecommunications Networks for the 2014 World Cup. 2010.

The City of Toronto. Canada's High-Tech Hub: Toronto. 2011.

Deloitte. Dialing in: The future of mobile payments in Canada.

Ernst & Young. 2010 Actual + 2011 Estimated Canadian Mobile Advertising Revenue Detailed Report.

eMarketer. Brands Continue Limited Mobile Site Offerings. January 30, 2012.

eMarketer. Canada Edges Out US in Smartphone Penetration. June 16, 2011.

The Globe & Mail. Part 2: Media and Internet Concentration in Canada, 1984-2010. September 6, 2011.

The Guardian. Google's Eric Schmidt on Android's future, HTML5 and more. February 16, 2011.

Huffington Post. February 3, 2012. Google: Canada 'One Of The Fastest Growing Markets' And 'One Of Our Big Bets'.

Industry Canada. Consultation on a Policy and Technical Framework for the 700 MHz Band and Aspects Related to Commercial Mobile Spectrum. November 30, 2010.

Information and Communications Technology Council. Employment, Investment, and Revenue in the Canadian App Economy. October 2012.

Investment U Research. The Biggest Tech Trend in Brazil. October 6, 2011.

itWorldCanada. Mobile Still Vital to Canada's 2012 Growth: IDC. December 16, 2011. Accessed online April 3, 2012. http://www.itworldcanada.com/news/mobile-still-vital-to-canadas-2012-growth-idc/144505.

Juniper Research. Juniper Research's Top 10 Mobile Trends for 2012. 2011.

KPMG. 2011 KPMG Mobile Payments Outlook. 2011.

Ministry of Communications and Information Technology, Government of India. Draft Consultation Paper on Mobile Governance Policy Framework. March 2011.

The Mobile Business Research Portal. Latin America Becomes World's Second-Largest Mobile Region. October 13, 2010.

mobiThinking. Key Global Telecom Indicators for the World Telecommunication Service Sector in 2011.

Oxford Economics. The New Digital Economy: How it will transform business. June 2011.

Reuters. Canada's Venture Capital Market in 2010.

Smart Card Alliance. Proximity Mobile Payments Business Scenarios: Research Report on Stakeholder Perspectives. July 2008.

Statistics Canada. Residential Telephone Service Survey. December 2010.

Telecomasia.net. India's ambitious m-government plans. October 14, 2011.

The Telegraph. Vodafone, Telefónica and Everything Everywhere to launch mobile payments joint venture. June 16, 2011.

Total Telecom. Brazil aims for 1bn mobile connections by 2022. September 29, 2011.

The Wall Street Journal. Toronto Becoming A Hub For Mobile-Applications Companies. July 23, 2010.