



MOBILE APPS: GENERATING ECONOMIC GAINS FOR CREATIVE MEDIA INDUSTRIES IN ONTARIO

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HIGHLIGHTS

71%

OF ONTARIO'S MOBILE APPS ENTERPRISES FOCUS ON DEVELOPING MOBILE APPS THAT PROVIDE BUSINESS SOLUTIONS, A CLEAR INDICATION THAT MORE AND MORE ORGANIZATIONS ARE HAVING THEIR OWN BUSINESS SPECIFIC MOBILE APPS DEVELOPED

SHARE OF ONTARIO'S MOBILE APPS ENTERPRISES THAT DEVELOP APPS FOR THE CREATIVE INDUSTRY IS

47%

21,000

ONTARIANS ARE INVOLVED IN DEVELOPMENT AND DISTRIBUTION OF MOBILE APPS

ONTARIO'S MOBILE APPS DEVELOPMENT HUB IS TORONTO, WHERE THE SHARE OF ONTARIO'S MOBILE APPS JOBS IS

40%

32,000

IS THE PROJECTED TOTAL DIRECT MOBILE APPS-RELATED EMPLOYMENT IN ONTARIO BY 2018

ANNUALLY ONTARIO'S MOBILE APP ENTERPRISES CURRENTLY GENERATE

\$618 MILLION

\$3.3 BILLION

IS THE PROJECTED REVENUE BY ONTARIO'S MOBILE APPS INDUSTRY BY 2018

ONTARIO'S MOBILE APPS INDUSTRY'S REVENUES ARE DERIVED PRIMARILY FROM OTHER ONTARIO-BASED SOURCES AT

46%

27%

OF ONTARIO'S MOBILE APPS INDUSTRY REVENUE IS SOURCED FROM THE UNITED STATES

SHARE OF CREATIVE ENTERPRISES THAT HAVE ALREADY ADOPTED MOBILE APPS OR WILL DO SO IN THE NEAR FUTURE IS

81%

\$220 MILLION

IS THE ESTIMATED REVENUE FROM MOBILE APPS ADOPTION IN ONTARIO'S CREATIVE INDUSTRIES

SHARE OF CREATIVE ENTERPRISES THAT HAVE AN IN-HOUSE TEAM DEDICATED TO MOBILE APPS DEVELOPMENT IS

17%

9%

IS THE AVERAGE ESTIMATED OPERATIONAL COST REDUCTION IN CREATIVE ENTERPRISES AS A RESULT OF ADOPTION OF MOBILE APPS

LACK OF MONETIZATION OF ADOPTION BENEFITS IS THE BIGGEST HINDRANCE TO ADOPTION OF MOBILE APPS IN CREATIVE ENTERPRISES. SHARE OF CREATIVE ENTERPRISES THAT ARE AWARE OF THE FUNCTIONALITIES OF MOBILE APPS, BUT NOT YET CONVINCED OF THEIR VALUE IS

37%

The Information and Communications Technology Council (ICTC) is pleased to present its new study *Mobile Apps: Generating Economic Gains for Creative Media Industries in Ontario*. It demonstrates how the emergence and adoption of mobile applications (apps) have created incremental economic opportunities for Ontario's mobile apps industry and Ontario's creative media industries (referred to in this study as OCMI's). Book publishing, film and television, magazine publishing, music, and interactive digital media companies (including content and platforms such as software, video games, game consoles, and websites) are included among Ontario's creative media industries. Economic opportunities that have been created as a result of increased adoption of mobile apps include employment creation, efficiency gain, cost reduction, revenue generation, collaboration, and innovation.

Combining rigorous analysis and consultation with mobile apps industry and creative media industries of Ontario, this study is intended to share current industry trends and provide reference and guidance to help all creative media enterprises address the opportunities and challenges associated with adopting mobile apps. In addition, this study seeks to guide stakeholders in considering measures and taking action.

BACKGROUND AND CONTEXT

Mobile apps enable workers and businesses to upgrade existing business strategies, workplaces, and operational procedures. Combined with advances in [cloud services](#), computing, and processing power, an entirely new field of mobile computing has emerged. To address the growing market demand, mobile apps are being developed that work on all smartphone platforms using standardized open software development kits (SDKs), which are then sold through global, easy-to-use aggregation sites. These technologies are increasingly sophisticated, enhanced by the cloud, and reside on multiple interconnected devices that allow machine-to-machine (M2M) connectivity.

In the Canadian context, mobile apps represent a significant opportunity and a recent ICTC study highlighted the labour market and economic impact of mobile apps in Canada ([ICTC, 2012](#)). Building and expanding on this well-laid platform, the next crucial step was to create a previously lacking body of evidence that highlights the impact of mobile apps on various industrial segments of the national and provincial economies. With its focus on creative media industries in Ontario, this study bridges that gap and is a first notable step in that direction.

THE RESEARCH AGENDA

There are nearly three million mobile apps currently available in all platforms that are being used for entertainment, productivity, reference, communications, enterprise solutions, and countless other uses. As content distribution tools, marketing vehicles, one-off sales, or conduits to recurring revenue streams, mobile apps have become a significant contributor to Ontario's creative economy.

The mutual impacts of creative media and mobile apps industries in Ontario are challenging to measure and information on the subject has been largely unavailable to date. With that in mind, this study builds on ICTC's national study on Canada's mobile apps economy ([ICTC, 2012](#)) and explores:

- ➔ total employment created by the emergence and adoption of mobile apps, from both Ontario's creative media industries and mobile apps industry perspectives;
- ➔ the impact of mobile apps on revenues in Ontario's creative media industries;



- ➔ the economics of mobile apps in Ontario's creative media industries: development costs, funding mechanisms, and challenges to funding mobile apps initiatives;
- ➔ revenue generation by Ontario's mobile apps economy and projected growth;
- ➔ challenges to greater service provision and enterprise adoption;
- ➔ growth strategies required to ensure that Ontario's creative media and mobile apps industries flourish and consolidate their positions on the national and global stages; and
- ➔ follow-up actions with respect to adoption, service provision, talent, skills, and financing.

APPROACH AND METHODOLOGY

ICTC's research approach addresses several interrelated elements of the creative media industries and mobile apps industry. The evidence gathering methodology and framework for this study rely on a number of proven qualitative and quantitative research approaches to expertly mine and analyze both publicly-available and proprietary data related to the OCMI's and mobile apps industry. A mixed methods approach is employed, including a review of the existing literature, consultations and focus group discussions with 25 key informants and subject matter experts, and development of multiple data instruments to gather in-depth information through an [OCMI's survey](#) and a [mobile apps developers survey](#). This approach is valuable as it allows triangulation of various sources to cross-validate findings and patterns.

Two targeted surveys were conducted by ICTC between June and October of 2013. Questionnaires were sent via two email blasts and social media (e.g. LinkedIn, Twitter, and Facebook) to all mobile apps and creative media enterprises in Ontario, either directly through ICTC's and its research partners' networks or through respective industry associations (e.g. Entertainment Software Association of Canada, Interactive Ontario, Association of Canadian Publishers, Magazines Canada, Canadian Independent Music Association). In this regard, ICTC gratefully acknowledges the support of OMDC, CDMN, and Music Canada for connecting us with stakeholder bodies. Many of the companies were then followed up with by email and telephone to increase the response rate.

These surveys gathered 165 responses—37% of which were from companies with multiple creative media streams—from industry experts in leadership positions such as CEOs, CFOs, and presidents of companies. 144 of these responses were gleaned from the [OCMI's survey](#) and the remaining 21 responses from the [mobile apps developers survey](#). OCMI's survey respondents include 19 book publishing bodies, 28 film and television bodies, 20 magazine publishing bodies, 19 music bodies, and 42 interactive digital media bodies. The results provide a clear window into the benefits, opportunities, challenges, and strategies related to adoption of mobile apps by OCMI's, and in-depth consultation with stakeholders informs our analysis. The impact analysis aggregates the collected data with appropriate weights applied.

One of the underlying assumptions of the research findings is that survey respondents are representatives of their respective industry. Time and resource constraints eliminated the option of in-person interviews. This made closely examining and interacting on the survey responses difficult. As a result, this study limits itself to making general observations on certain issues. Nevertheless, the analysis and preliminary findings were circulated widely to bring the research findings back to the stakeholders and evaluate the findings with their valuable inputs and closing thoughts. This validation process confirmed that the data represents an accurate reflection of current industry realities.



RESULTS AND KEY FINDINGS

Mobile phone penetration continues to grow on a global basis. In 2013, there were 7.6 million smartphone owners in Ontario and 19.7 million in Canada, increasing from 9.1 million in 2011 and representing a large annual increase. Daily mobile content usage is growing at an incredible pace in several key content categories such as business, health & wellness, communications, games, books, and entertainment, as 85% of smartphone subscribers download mobile apps. Currently, there are over a million iOS mobile apps, of which 475,000 (48%) are native to iPad. There are 880,000 mobile apps on the Android platform and 140,000 on the Windows platform, both with a similar ratio to iOS of apps native to larger screen devices (e.g. tablet).

MOBILE APPS INDUSTRY FLOURISHING IN ONTARIO

Comparable to the global environment, mobile apps development in Ontario is an emerging industrial subsector that came into being with the advent of smartphones in 2007. Accordingly, 60% of Ontario's surveyed mobile apps enterprises have been in operation for less than five years and 50% for less than three. Companies that have been in existence prior to 2007 had other business streams and branched out to developing mobile apps after seeing the potential of this nascent subsector. Four out of five (80%) surveyed Ontario enterprises involved in mobile apps development started this stream in 2010 or later.

AN INDUSTRY WITH DEFINED PRIORITY AND FOCUS

Consultation with Ontario's mobile apps enterprises shows that 71% focus on developing mobile apps that provide business solutions, a clear indication that more and more organizations are having their own business specific mobile apps developed. 41% of Ontario's mobile apps enterprises develop health & wellness and medical solutions, 35% focus on communications and games, and a quarter focus on each of books & reference; digital media, video content, entertainment; news & magazines; social; and travel & transportation solutions.

As consumer appetite for new devices and apps grows, an increasing number of OCMI's are adopting mobile apps and they are becoming a growing client base for Ontario's mobile apps enterprises. The interactive digital media industry has been the most aggressive in adopting mobile apps: 47% of Ontario's surveyed mobile apps enterprises develop apps for this industry. A quarter (24%) of mobile apps enterprises develops apps for book and film & TV industries, and 18% for the magazine industry. Only 12% of mobile app enterprises develop mobile apps for the music industry. It is important, however, to note that ICTC's consultation with OCMI's shows that many of the creative enterprises develop mobile apps in-house. Nevertheless, the fact that one in two (47%) of Ontario's mobile apps enterprises develops mobile apps for Ontario's creative industry provides strong evidence that many members of OCMI's are laying solid foundations and adopting mobile apps and technologies to be in a strong position to enhance productivity and establish sustainable competitive advantage.

LOW COSTS FACILITATE ADOPTION AND ENTREPRENEURSHIP

The adoption of mobile apps is facilitated by their low cost. For any type of mobile app (including creative industry specific or otherwise) development cost can range from \$3,000 to \$200,000 and costs \$18,000 on average. ICTC's consultation with the mobile apps industry confirms that creative industry relevant mobile apps tend to cost more as they are content rich and more interactive. ICTC's survey found that the average cost of developing music apps is \$25,000, magazine apps are \$34,000, book apps are \$37,000, interactive apps are \$49,000, and unsurprisingly the most expensive at \$114,000 are film & TV apps.



On the development side, low capital requirement is one of the main reasons why many companies proceed with self-financing to initiate a mobile apps enterprise. ICTC's consultation with Ontario's mobile apps enterprises reveals that 40% of these enterprises rely primarily on personal/family/angel investors, 25% on funding from other business streams, 10% on public funding, 5% on venture capital, and a fifth of the enterprises (20%) rely primarily on other sources such as internal budget for product enhancement, private endowments, and innovation/incubation funding.

MANY MOBILE APPS DEVELOPMENT JOBS ARE BEING CREATED

Within the mobile apps development industry, technical positions range from software engineers to programmers to testers to user interface (UI) designers. The average salary for these positions ranges between \$48,000 and \$120,000 in Ontario, with the average annual gross salary being \$75,000 ([the Labour Force Survey, Statistics Canada](#)). There are many non-technical functions that are considered to be key contributors to the mobile apps economy as well. This is more so the case for companies that outgrew their initial take-off stage and embarked on a growth path. Non-technical functions range from marketing, sales, management, human resources, and administrative support.

An estimated 21,000 Ontarians are involved in development and distribution of mobile apps. Of them, 17,700 are employed in the mobile apps industry and a further 3,300 are employed in creative enterprises. In Ontario's mobile apps industry, 9,300 jobs are in technical positions inclusive of developers and technical support staff; 8,400 jobs are in non-technical roles. Analysis of data from sources such as Statistics Canada's Labour Force Survey, Service Canada, and [Working in Canada job portal](#) reveals that despite the jobs being spread out across the province, Toronto remains Ontario's mobile apps development hub, with 40% of the jobs located in the greater Toronto area (GTA), 30% in Ottawa, 15% in Kitchener-Waterloo (K-W), and the remaining 15% in rest of Ontario in such places as Hamilton, Oakville, and Cobourg.

8,100 (87%) of technical jobs are full-time positions and 1,200 (13%) are part-time positions. In contrast, 6,200 (74%) of the non-technical jobs are full-time positions and 2,200 (26%) are part-time positions. This study measures the direct labour market impact of mobile apps. Hence induced jobs have not been taken into account in this estimate.

Driven largely by strong growth in accessing and consuming digital products and services through mobile apps, between 9,000 and 11,000 new jobs are expected to be created in Ontario between now and 2018 as a result of creation of new and more sophisticated mobile apps and wider enterprise adoption. The total mobile apps related employment in Ontario is estimated to reach 32,000 (↑51%) by 2018 as a result.

GENERATE SIGNIFICANT REVENUES

ICTC estimates that Ontario's mobile apps enterprises currently generate approximately \$618 million annually in revenues. Various Ontario industries are the biggest source of this revenue, with 8% of their revenues coming from OCMI's and 38% from other Ontario-based industries. United States is a key market for Ontario's mobile apps enterprises, as over a quarter (27%) of the revenues is sourced from the U.S. Other Canadian provinces generate 16% of the revenues, while the remaining 11% comes from the rest of the world.

THE ONTARIO ADVANTAGE FOR THE MOBILE APPS INDUSTRY

Ontario is a major North American technology and media hub. In addition to being the biggest revenue source, the size, capabilities, capacity, and competitiveness of Ontario's economy and workforce are



major reasons for mobile apps enterprises to be based in Ontario. The pool of required skills and potential employees available in Ontario is the biggest draw among Ontario's mobile apps enterprises, as 67% of the surveyed enterprises maintain that this is of particular value to them. 44% of the surveyed enterprises cite various provincial government support programs as one of the reasons for choosing to set up operations in Ontario. 33% of the surveyed mobile apps enterprises value Ontario's big market size. The large number of academic institutions and potential investors, and an enabling business policy environment are also valuable to many.

The Government of Ontario's support to Ontario's mobile apps industry includes the Ontario Interactive Digital Media Tax Credit (the OIDMTC). Many of Ontario's mobile apps enterprises are recipients of the OIDMTC—a refundable tax credit based on eligible Ontario labour expenditures claimed by a qualifying corporation with respect to interactive digital media products. Eligible Ontario enterprises can also apply for the Interactive Digital Media (IDM) Fund, a funding stream administered by the Ontario Media Development Corporation which provides access to funding to move content projects into production.

CHALLENGES TO MOBILE APPS INDUSTRY

In spite of significant growth in recent years, Ontario's mobile apps enterprises face many challenges. A high 58% of enterprises report stiff competition in an open global industry to be their biggest challenge. Lack of awareness of their offerings (50%) and shortage of skilled workers (42%) also feature prominently among major challenges to business growth.

The evolving and expanding nature of mobile apps and related technologies dictates that a broad range of skills are needed to succeed in this domain. In the medium term, mobile apps enterprises will continue to look for workers with leading-edge skills across platforms. Consultation with Ontario's mobile apps enterprises indicates the following technical occupations to be in high demand and crucial for growth of this industry:

Mobile apps designer; mobile apps developer; mobile apps tester; programmer (C#); technical artist; software engineers; software developer; graphic designer (UI/UX); product manager; system designer; system developer; JavaScript, MYSQL, HTML5, and PHP developer; software designer with CSS3.

In light of the growth in their industry and the resulting increase in workload and demand for talent, 86% of Ontario's mobile apps enterprises have some concerns with respect to finding the right blend of skills in adequate quantity. Nearly half of them (43%) are more than slightly concerned, while 14% are extremely concerned about skills shortage and mismatch.

In spite of business growth in recent years, a quarter (26%) of Ontario's mobile apps enterprises are seeking funding to grow their operations and finding it challenging. The biggest obstacle to funding is to showcase credibility, as a majority of the enterprises have been in operation for only a few years to date and typically have small or no assets to pledge as collateral and thus are less likely to receive loans. Access-to-capital issues are pervasive across the industry and bridging the gap from angel investment or venture capital is a persistent challenge.

WHAT THE FUTURE HOLDS FOR ONTARIO'S MOBILE APPS INDUSTRY

Four out of five (77%) of Ontario's mobile apps enterprises have fewer than 10 employees. As the number of smartphone and mobile device users worldwide increase at staggering pace in the medium term, Ontario's mobile apps economy is also expected to continue growing over the next several years.



Consultation with Ontario's mobile apps enterprises shows that business and communications apps are in highest demand, and 83% of enterprises expect many work orders to develop these apps in the next five years. Two-thirds (67%) of the enterprises are also expecting significant growth in the development of games and health and wellness mobile apps. Personal convenience apps are also high on the list of in-demand mobile apps. A recent development has been creating mobile apps that can operate across various devices and platforms and 33% of Ontario's mobile apps enterprises are expecting large growth in the development of these apps.

While these are positive developments for Ontario's mobile apps enterprises, an important point all stakeholders need to heed is this: the same low barriers to entry that characterize the development of mobile apps in Ontario exist throughout the world. As a result, 83% of Ontario's mobile apps enterprises expect the stiffest business competition to come from mobile app developing enterprises outside Canada, while 17% consider their counterparts in Ontario to be their biggest competition. Although it is interesting that Ontario's mobile apps enterprises do not consider companies in other Canadian provinces as major competitors as yet, it may not be altogether surprising given the fact that only 16% of their revenues are generated from other Canadian provinces. It will be interesting to follow how this changes as the client base outside of Ontario increases.

Ontario's mobile apps economy is growing since its emergence in 2007. Despite a highly competitive market, consultation with Ontario's mobile apps enterprises indicates that in the short term (1 year), 83% of the enterprises are expecting their revenue to increase, while the remaining 17% are expecting revenues to at least remain the same. In the medium term (5 years), 92% of the enterprises are confident that their revenue level will increase.

Based on our analysis of Ontario's and the global mobile apps environment and consultation with stakeholders, this industry will continue to grow significantly. In the medium term—considering the increase in smartphone and mobile device users worldwide, the number of mobile apps available in various platforms, and increased usage of mobile apps as enterprise solutions and in daily lives—revenues generated by Ontario's mobile apps enterprises are estimated to reach \$1.9 billion in 2016 and \$3.3 billion in 2018. In addition to upcoming and predictable changes in the operating environment and technological opportunities mentioned above, trends and expected business growth in mobile apps enterprises, projected economic growth in Canada in the medium term, and historic trends are all considered in this estimation.

As smartphone and mobile device users increase worldwide, particularly in regions where smartphones have taken a while to penetrate, Ontario's mobile apps industry is on a growth path, an enviable position given the current uncertainty surrounding the global economic climate. A large part of this expected revenue growth is set to originate from international sources, as two thirds (67%) of Ontario's mobile apps enterprises are experiencing an increasing international client base.

ONTARIO'S CREATIVE MEDIA INDUSTRIES

OCMIs are a vibrant, diverse, innovative, and growing segment of Ontario's economy. Based on the latest Statistics Canada figures, ICTC estimates that OCMIs generate \$14.5 billion in revenues annually, and make a \$7.8 billion contribution to Ontario's GDP. With the emergence of new technology such as [digital platforms](#) and [mobile technologies](#), OCMIs have access to new distribution mechanisms and channels to reach wider audiences, and many are adopting these technologies in their business practices.



IMPACT ON ONTARIO'S CREATIVE MEDIA INDUSTRIES

Mobile apps are being used in a variety of ways for a multitude of purposes in Ontario's creative sectors. Usage of mobile apps for purposes such as communications and information gathering are common to all OCMI. In the survey instruments and during consultation with OCMI, mobile apps used for internal business purposes by OCMI and mobile apps used as part of product offerings were not differentiated. Nonetheless, unique features of each creative industry's adoption pattern emerge in our analysis.

Industry-wide, 50% of all OCMI already adopted and thus currently use mobile apps in their business practices, with another 31% planning to follow suit in the near future. Adoption of mobile apps, however, is not uniform across various creative media industries in Ontario. Among OCMI, adoption of mobile apps is currently the highest in Ontario's interactive digital media industry, where 64% of enterprises already adopted and thus currently use mobile apps in their business practices, with another 31% poised to do so in the near future. In Ontario, current mobile apps adoption rate in the magazine industry is 55%, in the book industry is 47%, in the film and TV industry is 39%, and—with the lowest adoption rate among OCMI—32% in the music industry.

To cater to the changing content consumption pattern among its clientele given the wide adoption of mobile devices, most OCMI enterprises that are using mobile apps to deliver content are bankrolling the development costs themselves. Three out of four (72%) of OCMI that have operational mobile apps primarily used self (company) funds to begin developing them, while other enterprises relied primarily on provincial funding sources such as the ODMTC (28%), federal funding sources such as Scientific Research and Experimental Development (SR&ED) Tax Incentive Program (16%), and angel investors (16%).

68% of surveyed OCMI enterprises recognize that mobile apps provide them with new and additional platforms for content distribution, while 54% of survey respondents report that these apps enable improved and responsive service delivery and thus improve customer satisfaction. Mobile apps allow a seamless pull of timely data directly from the enterprise system, and most importantly, they make various business solutions easy to use. The growth of cloud computing has also impacted positively on the use of mobile apps. 50% of OCMI enterprises value the provision of real-time information through mobile apps. Increases in sales and revenue are a welcome impact of mobile apps adoption and 43% of OCMI enterprises report to have already experienced these benefits.

Reduction in operating costs (36%), creation of a connected business environment (32%), boost in bottom line profits (32%), improvement in resource utilization (21%), and increase in productivity (14%) are some of the other desired benefits of adopting mobile apps in OCMI. Only 7% of the OCMI enterprises that have adopted mobile apps reports to yet experience any measurable benefits of adoption. This, however, may well be the result of difficulty in measuring the return on investment of mobile apps adoption in OCMI that instigated this study, as opposed to not getting any discernible benefits from adoption.

Given the costs of mobile apps development and additional costs of updating the content in the mobile apps, adoption of these technologies can increase the operating costs of OCMI enterprises, particularly at the initial stages. As costs are offset by savings in expenses related to such items as content release and distribution, a majority of OCMI enterprises report that their operating costs remain the same on balance (48%) at the very least, while many (35%) experience a decrease in operating costs (figure 25). ICTC's in-depth consultation with OCMI gives a good basis to quantify the effect of mobile apps adoption on their operational costs. OCMI enterprises have experienced an estimated 9% reduction in their operational costs on average as a result of adoption of mobile apps in their business practices.



Using [Statistics Canada's](#) latest available data, ICTC estimates that OCMI generate \$14.5 billion in revenues annually. ICTC estimates that \$220 million of that results from mobile apps adoption.

Now that the capability of mobile apps has reached a relatively mature status, mobile apps developing entities are able to help willing OCMI enterprises adopt these technologies. The benefits of such adoption become decidedly clear as a result of this research study. OCMI are also realizing the same and are accelerating their adoption of mobile apps. Among surveyed enterprises, 65% state that integration of mobile apps and adoption of other mobile technologies in these companies will increase in the medium term over the next five years. While 13% of the respondents expect integration and adoption to remain unchanged in this period, a low 2% foresee a decrease in adoption on account of these technologies being too expensive for them to adopt and/or maintain.

LABOUR MARKET IMPACT

Mobile apps facilitate automation of work flow in OCMI enterprises. This enabling technology has a notable effect on enterprises' content creation, production, marketing, and promotion processes. As more resources are allocated to developing and adopting mobile apps, curiosity remains regarding whether this technology replaces or displaces roles in other areas of an enterprise. In ICTC's in-depth consultation with OCMI, no job loss has been reported that can be associated with the emergence and adoption of mobile apps in their business practices.

Seeing the need for continuous development of mobile apps, 17% of OCMI enterprises decided to have an in-house team dedicated to mobile apps development. While nearly half (44%) of the enterprises currently contract out their mobile apps development needs, two out of five (39%) enterprises exercise both options, as they have a continuous and pressing need for mobile apps development and they develop some mobile apps in-house while contracting out others. With respect to the type of mobile apps that are being developed for OCMI, the share of (a) original IP mobile apps that are built to meet a particular client's needs (30%); (b) already available mobile apps that may or may not require some customization (37%); and (c) a combination of the two (33%) each comprise nearly a third of total mobile apps development, according to mobile app developers surveyed.

Internalization of mobile apps development has naturally added many technical positions within OCMI. These professionals are dedicated to developing mobile apps as and when needed. In addition, there is new demand for skills such as mobile content management, m-designers, managers, operations specialists, and digital and social media experts.

ICTC estimates that 3,300 new jobs have been created in OCMI as a result of the emergence and wide adoption of mobile apps. Of these, 55% (1,800) are full-time, 21% (700) are part-time, and 24% (800) are contractual positions. Consultation with OCMI enterprises, latest available Labour Force Survey data by Statistics Canada, and tracking of Ontario-based mobile apps development vacancies were all taken into consideration in these robust estimates, as triangulation of various sources helps cross-validate findings.

ADOPTION CHALLENGES

Although integration of mobile apps results in multiple benefits to OCMI enterprises, adoption of these technologies are not without their challenges. Currently, the biggest hindrance to adoption of mobile apps in OCMI appears to be lack of monetization of adoption benefits, with a third (37%) of the enterprises stating that they are aware of the functionalities of mobile apps, but not yet convinced of their value.

Investments in mobile apps and related technologies are driven by a need to enable better business practices, as OCMI enterprises can achieve a quick return on investment (ROI) if they offer mobility-



enabled solutions. Increasingly, OCMI offer their content and services via mobile technologies. Most products and services are available through mobile websites, and enterprises are developing mobile apps for all major platforms. Resources need to be allocated for this purpose and one in three (31%) enterprises is still wary of the costs of adoption and maintenance.

Other challenges related to adoption of mobile apps include lack of awareness of various options and their impact (15%), uncertainty over who to turn to for development and adoption of these technologies (9%), previous bad experience with respect to adoption of technologies (6%), and a gamut of other reasons (30%) including readiness of target clients to access content using mobile apps, lack of economies of scale, sustainability challenges of public funding, applicability of these technologies to particular enterprises, etc.

SKILLS CHALLENGES

In light of the growth in OCMI and the resulting increase in workload and demand for talent, 68% of surveyed OCMI enterprises have some concerns with respect to finding the right blend of skills in adequate quantity. Nearly a third of them (29%) are more than slightly concerned, while 12% are extremely concerned about skills shortage and mismatch.

WHAT THE FUTURE HOLDS FOR OCMI

While OCMI have been experiencing notable growth in recent times, the increasingly connected global marketplace will continue to pose various business challenges to OCMI. As a result, two-thirds (64%) of OCMI expect the stiffest business competition to come from enterprises outside Canada, while a quarter (24%) considers their provincial counterparts to be their biggest competitions.

OCMI enterprises continue to grow. Despite the environment being extremely competitive to establish a foothold in the market, consultation with OCMI indicates that in the short term (1 year), 68% of the surveyed enterprises are expecting their revenue level to increase, while 17% are expecting revenues to at least remain the same.

OCMI currently generate \$14.5 billion in revenues annually, projected to reach \$17.3 billion by 2018.

STRATEGIES FOR GROWTH

With world class talent involved in content generation in OCMI and the emergence and adoption of mobile apps in business practices, these Ontario industries have blossomed. During the field phase of this research, ICTC consulted with OCMI ranging from one that is a family affair of a few people to one that employs thousands of Ontarians. Based on the survey results, four out of five (80%) enterprises believe that the measure that would most help OCMI increase their innovation, productivity, and revenues is the provision of incentives to businesses for adopting enabling technologies. Other suggested growth strategies for OCMI include lowering telecommunications prices (45%), policy support for research, innovation, and outreach (42%), improved stakeholder collaboration and partnership models (29%), and revised skills policies to avoid labour shortage and skills mismatch (24%).

RECOMMENDED FOLLOW-UP ACTIONS

Based on survey findings and consultations undertaken throughout this study, ICTC believes that there is a key role to be played by OCMI's, the mobile apps industry, educators, and other stakeholders in ensuring that mobile technologies support Ontario's prosperity. This original research study proposes a series of actions to benefit all stakeholders.

These recommended follow-up actions include:

- ➔ integrate mobile apps in businesses processes and practices in all creative sectors.
- ➔ raise awareness of mobile app benefits to encourage wider adoption. For OCMI's, this will help optimize use of technological options and innovations for ease of use and reduction in costs.
- ➔ improve employee capacities to function in a mobile, connected, and digital workplace.
- ➔ understand the needs of all users and make mobile app offerings relevant and easy to use.
- ➔ recognize all available talent to address the skills shortage and improve understanding of the highly competitive global market.
- ➔ modify curricula to address industry needs and offer integrated, hybrid programs in a timely manner.
- ➔ develop new business partnership models.
- ➔ promote adoption of mobile apps among OCMI's and enhance the mobile app industry's ability to market itself.
- ➔ ensure SMEs and start-ups can adequately fund their activities and remain stable and viable.

All stakeholders need to act in concert and without delay for Ontario's economy to prosper. While we consider that this report offers much needed clarity regarding the impact of mobile apps on Ontario's creative media, further work remains, particularly to create a complete and updated profile of individual creative industries so that the impact of various new technologies and innovations can be better understood and measured.

ICTC's research initiatives continue to demonstrate their value as a lens for critical and constructive thinking about some of the most fundamental opportunities and challenges in the digital economy sphere. We are confident that this study, *Mobile Apps: Generating Economic Gains for Creative Media Industries in Ontario*, will add further significance to that. We invite readers to engage with us to strategize on concrete actions that will benefit all stakeholders to achieve new opportunities.



ACRONYMS

CDMN	Canadian Digital Media Network
ICT	Information and Communications Technology
ICTC	The Information and Communications Technology Council
IT	Information Technology
NFB	National Film Board
OCMIs	Ontario's Creative Media Industries
OMDC	Ontario Media Development Corporation
STEM	Science, Technology, Engineering, and Mathematics
SME	Small and medium enterprises

1. INTRODUCTION

Book publishing, film and television, magazine publishing, music, and interactive digital media companies (including content and platforms such as software, video games, game consoles, and websites) are included among Ontario's creative media industries (referred to in this study as OCMI). OCMI are a vibrant, diverse, innovative, and growing segment of Ontario's economy. Using [Statistics Canada's](#) latest available data, ICTC estimates that OCMI generate \$14.5 billion in revenues annually, and make a \$7.8 billion contribution to Ontario's GDP. With the emergence of new technology such as [digital platforms](#) and [mobile technologies](#), a wide range of industries including OCMI have access to new distribution mechanisms and channels to reach wider audiences, and many are adopting these technologies in their business practices.

Mobile apps (applications) are lightweight programs developed and designed to run on mobile platforms (e.g. Android, iPhone) for small handheld devices such as smartphones and tablets. Mobile apps can come pre-loaded on the handheld device or can be downloaded by users from online stores. These apps enable workers and businesses to upgrade existing business strategies, workplaces, and operational procedures ([ICTC, 2012](#)). Combined with advances in [cloud services](#), computing, and processing power, an entirely new field of mobile computing has emerged. To address the growing market demand, apps are being developed that work on all smartphone platforms using standardized open software development kits (SDKs), and made available on global aggregation sites. These technologies are increasingly sophisticated, are being enhanced by the cloud and reside on multiple interconnected devices that allow machine-to-machine (M2M) connectivity.

The last few years have seen tremendous growth in consumer and business adoption of mobile apps, and there is more significant evolution to come ([ICTC, 2013](#)). Mobile apps are creating immense opportunities in every sphere of economic activity, including in creative media industries. Consumers are expected to use mobile apps as the foremost means of accessing digital and creative content before long.

THE RESEARCH AGENDA

There are nearly three million mobile apps currently available in all platforms that are being used for entertainment, productivity, reference, communications, enterprise solutions, and countless other uses. As distribution channels, marketing vehicles, one-off sales, or conduits to recurring revenue streams, mobile apps have become a significant contributor to Ontario's creative economy. The mutual impacts of creative media and mobile apps industries in Ontario are challenging to measure and information on the subject has been largely unavailable to date. With that in mind, this study builds on ICTC's national study on Canada's mobile apps economy ([ICTC, 2012](#)) and explores:

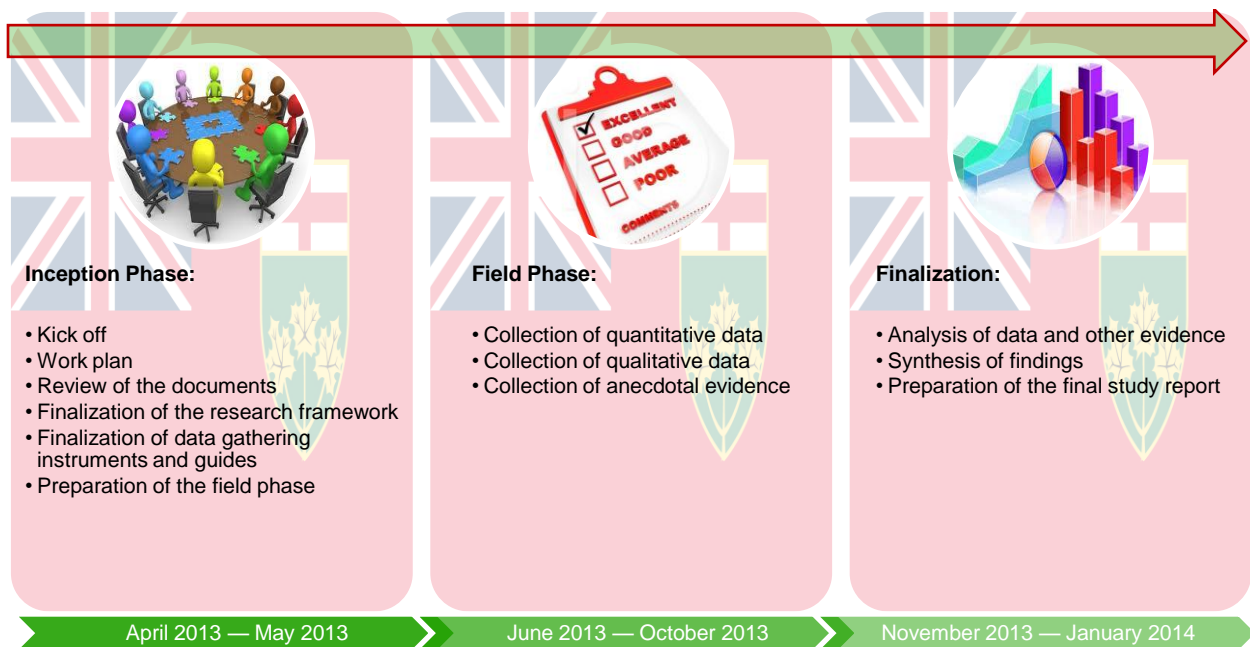
- ➔ total employment created by the emergence and adoption of mobile apps, from both Ontario's creative media industries and mobile apps industry perspectives;
- ➔ the impact of mobile apps on revenues in Ontario's creative media industries;
- ➔ the economics of mobile apps in Ontario's creative media industries: development costs, funding mechanisms, and challenges to funding mobile apps initiatives;
- ➔ revenue generation by Ontario's mobile apps economy and projected growth;
- ➔ challenges to greater service provision and enterprise adoption;



- ➔ growth strategies required to ensure that Ontario's creative media and mobile apps industries flourish and consolidate their positions on the national and global stages; and
- ➔ follow-up actions with respect to adoption, service provision, talent, skills, and financing.

2. APPROACH AND METHODOLOGY

ICTC's research approach addresses several interrelated elements of the creative media industries and mobile apps subsector. The evidence gathering methodology and framework of this study rely on a number of proven qualitative and quantitative research approaches to expertly mine and analyze both publicly-available and proprietary data related to the OCMI's and mobile apps subsector. A mixed methods approach is employed including a review of the existing literature; consultations and focus group discussions with 25 key informants and subject matter experts; and development of multiple data instruments to gather in-depth information through an [OCMI's survey](#) and a [mobile apps developers survey](#). The value of this approach emerges in an analytic process based on triangulation whereby various sources are used to cross-validate findings and patterns involving the following phases:



Two targeted surveys were conducted by ICTC between June and October of 2013. Questionnaires were sent via two email blasts and social media (e.g. LinkedIn, Twitter, and Facebook) to all mobile apps and creative media enterprises in Ontario, either directly through ICTC's and its research partners' networks or through respective industry associations (e.g. Entertainment Software Association of Canada, Interactive Ontario, Association of Canadian Publishers, Magazines Canada, Canadian Independent Music Association). In this regard, ICTC gratefully acknowledges the support of OMDC, CDMN, and Music Canada for connecting us with stakeholder bodies. Many of the companies were then followed up with by email and telephone to increase the response rate.

These surveys gathered 165 responses—37% of which were from companies with multiple creative media streams—from industry experts in leadership positions such as CEOs, CFOs, and presidents of companies. 144 of these responses were gleaned from the [OCMI's survey](#) and the remaining 21 responses from the [mobile apps developers survey](#). OCMI's survey respondents include 19 book publishing bodies, 28 film and television bodies, 20 magazine publishing bodies, 19 music bodies, and 42 interactive digital media bodies. Companies with multiple business streams—one or more of which are outside the creative media streams—are included in the 'other' category. The following graph exhibits the industry composition of the survey participants (figure 1):

Figure 1 — Survey participants by industry



Source: Ontario's creative media and mobile apps industries surveys, ICTC 2013

The results provide a clear window into the benefits, opportunities, challenges, and strategies related to adoption of mobile apps by OCMI, and in-depth consultation with stakeholders informs our analysis. The impact analysis aggregates the collected data with appropriate weights applied.

The approach and methodology detailed above forms the core analytical framework to address the key research questions:

Table 1 — Research framework

Research questions	Targeted surveys	Key informant / SME interviews	Secondary data	Literature review
Total employment created by the emergence and adoption of mobile apps, from both Ontario's creative media industries and mobile apps industry perspectives.	✓	✓	✓	
The impact of mobile apps on revenues in Ontario's creative media industries.	✓	✓	✓	
The economics of mobile apps in Ontario's creative media industries: development costs, funding mechanisms, and challenges to funding mobile apps initiatives.	✓	✓		
Revenue generation by Ontario's mobile apps economy and projected employment and revenue growth.	✓	✓	✓	✓
Challenges to greater service provision and enterprise adoption.	✓	✓		✓
Growth strategies required to ensure that Ontario's creative media industries and mobile apps industry flourish and consolidate their position on the national and global stages.	✓	✓		✓
Various recommended follow up actions with respect to adoption, service provision, talent, skills, and financing.	✓	✓		



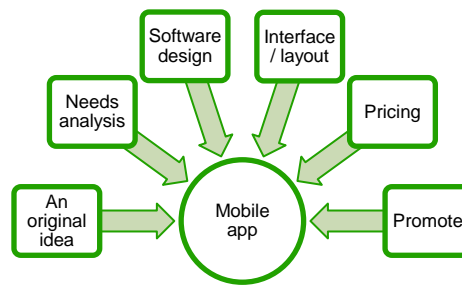
One of the underlying assumptions of the research findings is that survey respondents are representatives of their respective industry. Time and resource constraints eliminated the option of in-person interviews. This made closely examining and interacting on the survey responses difficult. As a result, this study limits itself to making general observations on certain issues. Nevertheless, the analysis and preliminary findings were circulated widely to bring the research findings back to the stakeholders and evaluate the findings with their valuable inputs and closing thoughts. This validation process confirmed that the data represents an accurate reflection of current industry realities.

3. ONTARIO'S MOBILE APPS ECONOMY

Applications such as calculators, stopwatches, or currency converters have been running on mobile devices since their introduction. Combined with advances in computing and processing power, mobile apps are increasingly resident on multiple, interconnected platforms and have reached a new sophistication with deep analytics of data performed using cloud services. The intersection of creative media with hardware and software technologies creates a rich opportunity for enterprises of all sizes to participate, from large vendors to freelance developers.

The development of mobile apps—whether commissioned by an enterprise to fit its needs (a service mobile app) or originating from an idea that solves a unique problem—shares the same process regardless of the order in which the various phases are applied (figure 2).

Figure 2 — Mobile apps development process



Source: ICTC 2013

THE GLOBAL MOBILE APPS ENVIRONMENT

Despite the economic downturn, mobile phone services have continued to grow on a global basis. The convenience and ease of mobile broadband allows users to use the internet wherever they please. As a result, an array of new applications, services, and devices has been developed and this trend is expected to continue in the long term.

The penetration of smartphones reached 19.7 million in Canada in 2013, increasing from 9.1 million in 2011 (ComScore, 2013; Google Canada, 2013; CWTA, 2013). That represents a very large annual increase. Daily mobile content usage is growing at an incredible pace in several key content categories such as business, health & wellness, communications, games, books, and entertainment. 85% of smartphone subscribers download mobile apps (mobithinking.com).

The ease of business integration provided by mobile apps has given birth to a new field of economic activity that focuses solely on application development. Low barriers to entry have provided many entrepreneurs with an opportunity to enter this market. Excluding mobile apps that are developed for other organizations as commissioned work, revenues for mobile apps enterprises stem from four main sources: mobile app downloads; in-app purchases; advertisements; and subscriptions.

The seemingly insatiable appetite for downloading and using mobile apps is giving sensational rise to their development. Data on some of the major platforms reveals the tremendous growth in mobile apps development. Currently, there are over a million iOS mobile apps, of which 475,000 (48%) are native to

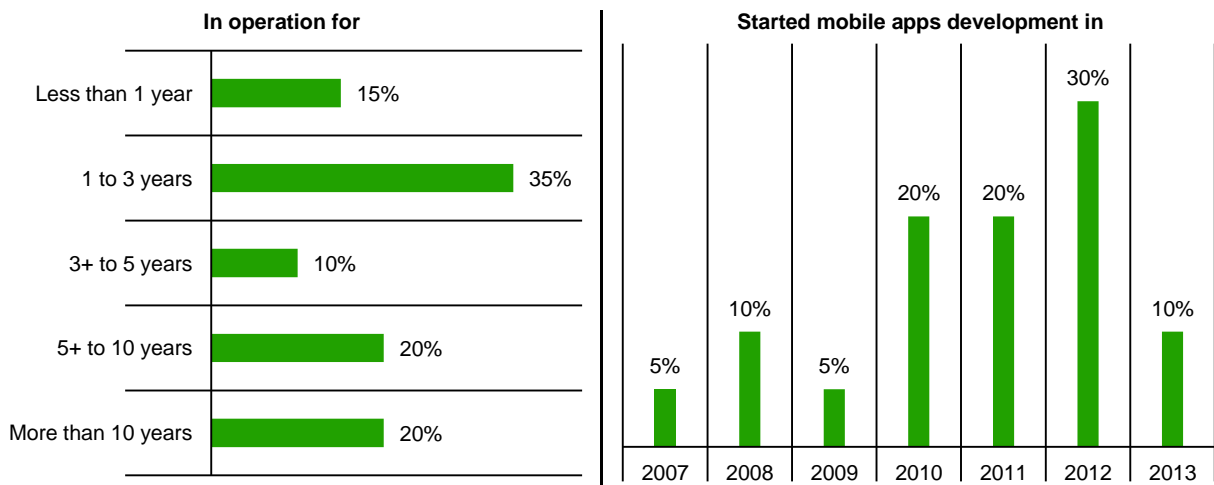


iPad. The current number of mobile apps is 880,000 on the Android platform and 140,000 on the Windows platform, both with similar ratio to iOS that are native to larger screen devices (e.g. tablet).

ONTARIO'S MOBILE APPS ENVIRONMENT

Comparable to the global environment, mobile apps development in Ontario is an emerging subsector that came into being with the advent of smartphones in 2007. Accordingly, 60% of Ontario's mobile apps enterprises have been in operation for less than five years and 50% for less than 3 (figure 3).

Figure 3 — History of Ontario's mobile apps enterprises



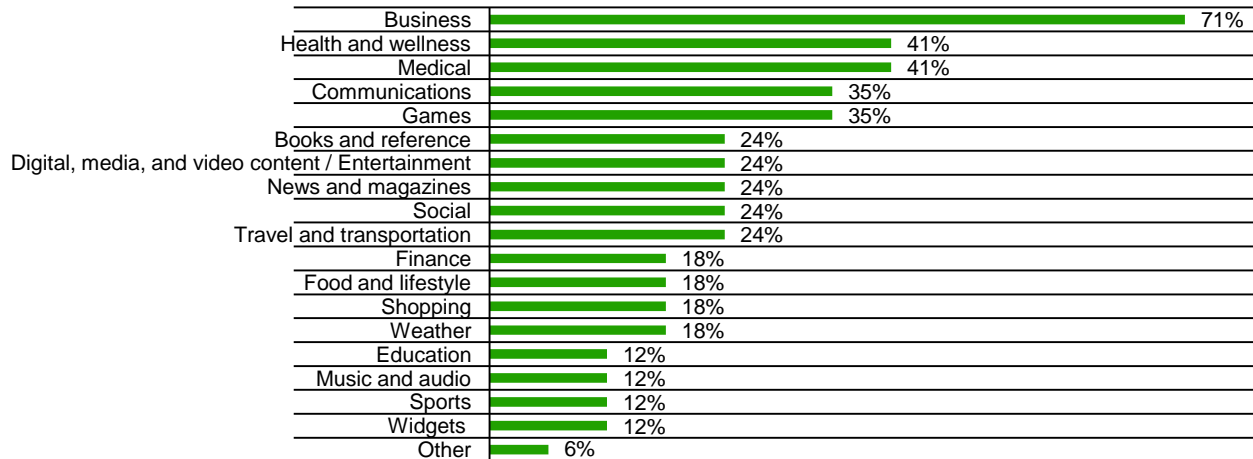
Source: Ontario's mobile apps industry survey, ICTC 2013

Companies that were in existence prior to 2007 had other business streams and branched out to developing mobile apps seeing the potential of this nascent subsector. Four out of five (80%) Ontario enterprises involved in mobile apps development started this stream in 2010 or later.

SERVICE PROVISION FOCUS

Consultation with Ontario's mobile apps enterprises shows that 71% focus on developing mobile apps that provide business solutions, a clear indication that more and more organizations are having their own business specific mobile apps developed. 41% of Ontario's mobile apps enterprises develop health & wellness and medical solutions, 35% focus on communications and games, and a quarter (24%) focus on books & reference, digital media, video content, entertainment, news & magazines, social, and travel & transportation solutions (figure 4).

Figure 4 — Focus of Ontario's mobile apps enterprises

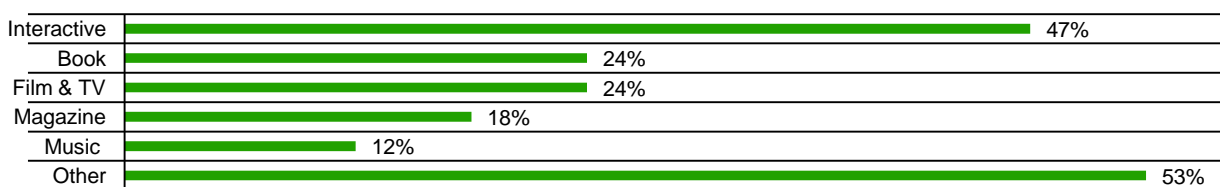


Source: Ontario's mobile apps industry survey, ICTC 2013

The basic requirements to develop a mobile app for any platform are having programming skills and access to a computer. Given these resources, one can develop and launch a mobile app for any platform. The development costs are not generally exorbitant and developers can sell their products directly to (and through) platforms. These are two of the main reasons for many, including amateurs, to engage in mobile apps development.

Observing the wide adoption of mobile devices among consumers, an increasing number of OCMI's are adopting mobile apps and in turn, are becoming a growing client base for Ontario's mobile apps enterprises. Among OCMI's, the interactive digital media industry has adopted mobile apps most aggressively. Given the fact that the content created by this industry is more dynamic and interactive than that of other creative sectors, this is not surprising. 47% of Ontario's mobile apps enterprises develop apps for this industry (figure 5). A quarter (24%) of mobile apps enterprises develops apps for book and film & TV industries, and 18% for the magazine industry. Among OCMI's, the adoption of mobile apps appears to be lowest in Ontario's music industry, with only 12% of mobile app enterprises developing apps for the music industry. It is important, however, to note that ICTC's consultation with OCMI's shows that many of the creative enterprises develop mobile apps in-house. More insights on the differences in adoption among the various creative sectors are detailed in section 4. Nevertheless, the fact that one in two (47%) of Ontario's mobile apps enterprises develops mobile apps for Ontario's creative industry provides strong evidence that many members of OCMI's are laying solid foundations and adopting mobile apps and technologies to be in a strong position to enhance productivity and establish sustainable competitive advantage.

Figure 5 — Clientele of Ontario's mobile apps enterprises

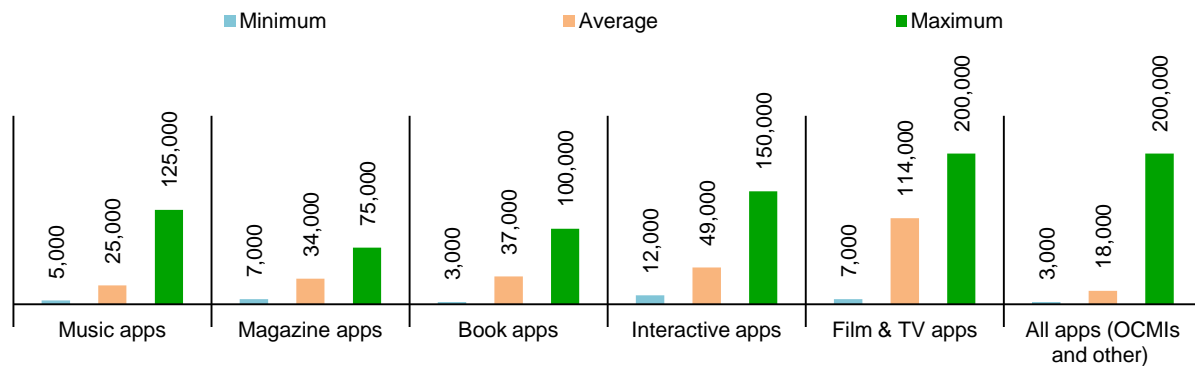


Source: Ontario's mobile apps industry survey, ICTC 2013



The adoption of mobile apps is facilitated by their low cost. For any type of mobile app (including creative industry specific or otherwise) development cost can range from \$3,000 to \$200,000 and costs \$18,000 on average. ICTC's consultation with the mobile apps industry confirms that creative industry relevant mobile apps cost more as they are content rich and more interactive. The average cost of app development is \$25,000 for music apps, \$34,000 for magazine apps, \$37,000 for book apps, \$49,000 for interactive apps, and unsurprisingly the most expensive at \$114,000 are film & TV apps (figure 6).

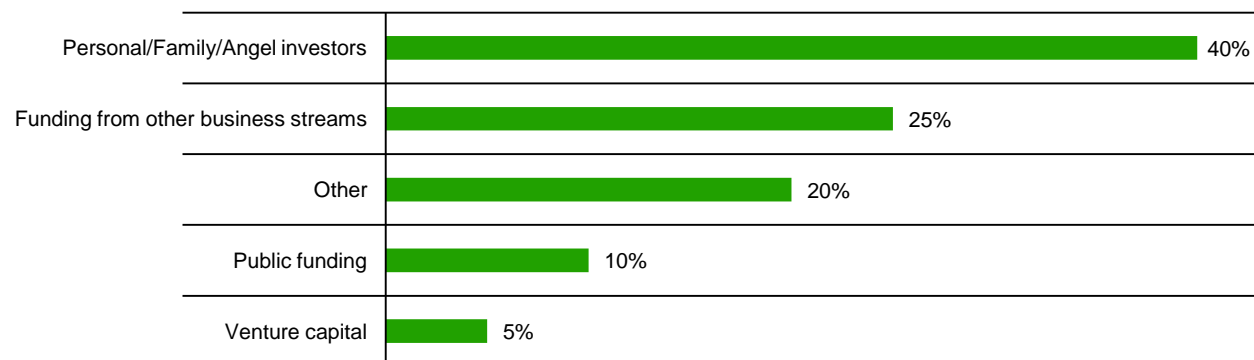
Figure 6 — Cost of industry specific mobile apps



Source: Ontario's creative media and mobile apps industry survey, ICTC 2013

Low capital requirement is one of the main reasons why many companies proceed with self-financing to initiate a mobile apps enterprise. ICTC's consultation with Ontario's mobile apps enterprises reveals that 40% of these enterprises rely primarily on personal/family/angel investors, 25% on funding from other business streams, 10% on public funding, 5% on venture capital, and a fifth of the enterprises (20%) rely on other sources such as internal budget for product enhancement, private endowments, and innovation/incubation funding (figure 7). It appears that even though financing is still one of the major challenges the mobile apps industry is faced with and discussed in more details below, the situation is improving with availability of additional support. One of the findings of ICTC's recent study on Canada's mobile apps economy (ICTC, 2012) was that four out of five surveyed companies commenced with personal/family/angel investors financing.

Figure 7 — Primary source of capital in Ontario's mobile apps enterprises



Source: Ontario's mobile apps industry survey, ICTC 2013

Smartphone users reached 7.6 million in Ontario in 2013, representing an annual increase of nearly 60% in the previous two-year period. The vast majority of these users download mobile apps—both free and paid—to their mobile devices and a significant number of jobs are being created in the mobile apps economy as a result. The mobile apps labour market includes positions in small start-up companies, in growing small and medium enterprises (SMEs), and in large corporations.

Technical positions range from software engineers to programmers to testers to user interface (UI) designers. The average salary in these positions ranges between \$48,000 and \$120,000 in Ontario, with the average annual gross salary being \$75,000. Some of the more prevalent industry job titles are:

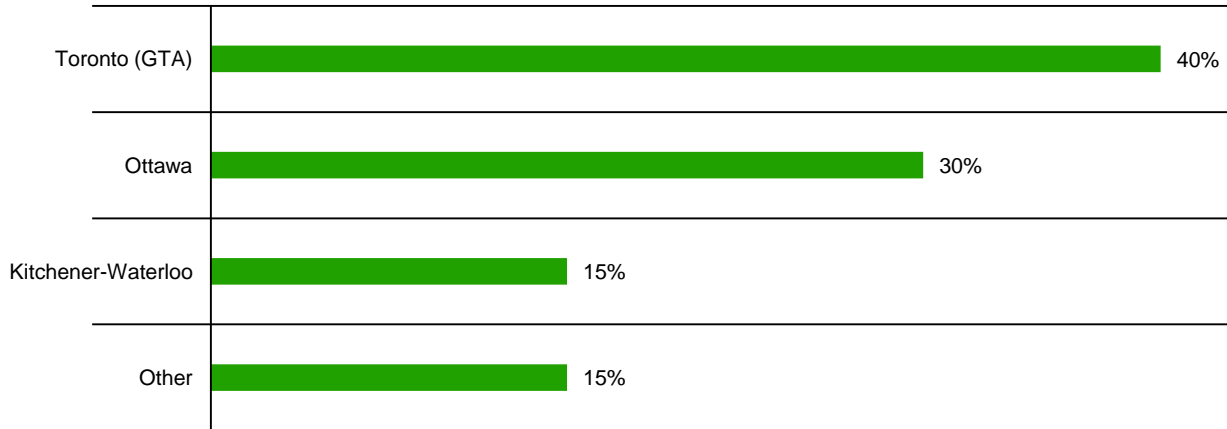
- ➔ Programmers: application programmer; software developer; multimedia programmer; operating systems programmer; software programmer
- ➔ Interactive media designers and developers: graphical user interface (GUI) designer; graphical user interface (GUI) developer; interactive media developer
- ➔ Software engineers: technical architect—software; telecommunications software engineer; telecommunications software specialist; applications engineer
- ➔ Systems testing technicians: application tester; technician, software testing
- ➔ User support technicians: software installation technician; software technical support analyst

The mobile apps labour market, however, is not limited to technical professionals only. There are multiple non-technical functions that are considered to be key contributors to the mobile apps economy. This is more so the case for companies that outgrew their initial take-off stage and embarked on a growth path. Non-technical functions range from marketing, sales, management, human resources, and administrative support.

ICTC's consultation with Ontario's mobile apps developers suggests that for every technical position on the payroll of a mobile apps enterprise, there exists a non-technical position responsible for promoting the mobile apps through marketing or sales or engaged in another related non-technical role.

An estimated 21,000 Ontarians are involved in the development and distribution of mobile apps currently. Of them, 17,700 are employed in the mobile apps industry and a further 3,300 are employed in creative enterprises. In Ontario's mobile apps industry, 9,300 of the jobs are in technical positions inclusive of developers and technical support staff, while the other 8,400 jobs are in non-technical roles. Analysis of data from sources such as Statistics Canada's Labour Force Survey, Service Canada, and [Working in Canada job portal](#) reveals that despite the jobs being spread out across the province, Toronto remains Ontario's mobile apps development hub, with 40% of the jobs located in the greater Toronto area (GTA). Ottawa is another significant hub, with an estimated 30% of the labour market, followed by 15% of the market in Kitchener-Waterloo (K-W), and the remaining 15% in the rest of Ontario in such places as Hamilton, Oakville, and Cobourg (figure 8).

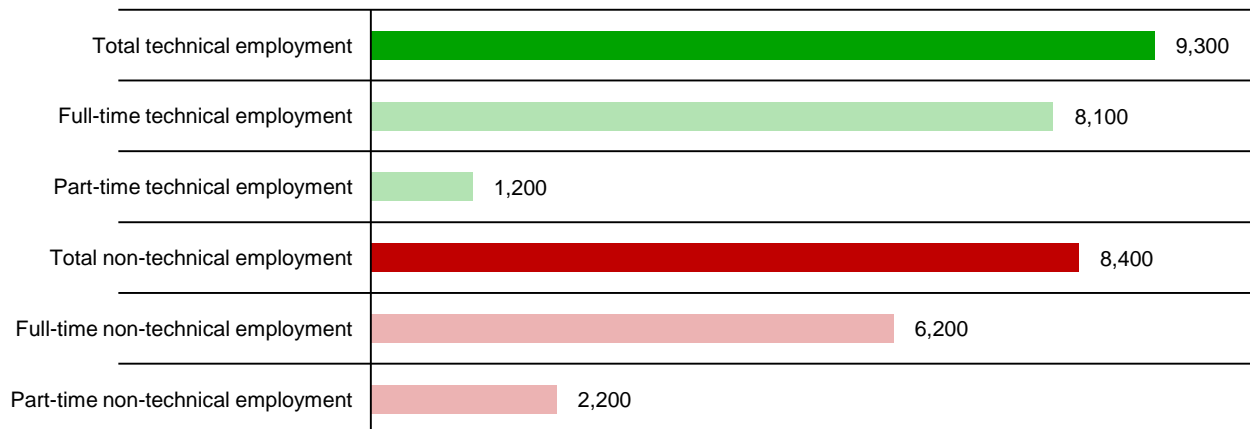
Figure 8 — Ontario's mobile apps employment by region



Source: ICTC 2013

8,100 (87%) of the technical jobs are full-time positions and 1,200 (13%) are part-time positions. In contrast, 6,200 (74%) of the non-technical jobs are full-time positions and 2,200 (26%) are part-time positions (figure 9). This study measures the direct labour market impact of mobile apps. Hence induced jobs have not been taken into account in this estimate.

Figure 9 — Ontario's mobile apps employment by job focus and status



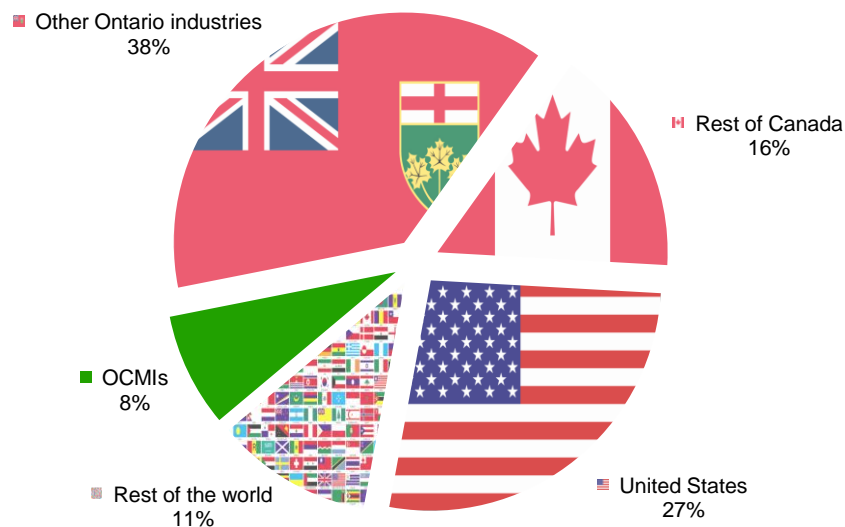
Source: ICTC 2013

In the mobile apps labour market, some occupations are more critical than others and demand for such skills as software engineers, graphical user interface (GUI) developers, and software testers will continue to rise in the medium term. Driven largely by strong growth in accessing and consuming digital products and services through mobile apps, between 9,000 and 11,000 new jobs are expected to be created in Ontario between now and 2018 as a result of creation of new and more sophisticated mobile apps and wider enterprise adoption. The total mobile apps related employment in Ontario is estimated to reach up to (21,000+11,000=) 32,000 (▲51%) by 2018 as a result.

Mobile device users spend money on mobile apps and related products and services through four avenues. Besides purchasing mobile apps, they also spend on in-app purchases. In-app purchases comprise consumers purchasing virtual goods as an added (paid) feature to unlock a level or proceed to the next stage. Revenue is also generated when users spend on shopping for goods and services that are advertised through mobile apps, as these apps accommodate enhanced advertising features. In-app advertising focuses on placing related advertisements in applications that are generally offered at no cost. And finally, revenue is also generated when consumers subscribe to a regular service in exchange for recurring payments. Excluding mobile apps that are developed for other organizations as commissioned work, each revenue source—mobile apps downloads, in-app purchases, advertisements, and subscriptions—constitute nearly a quarter of the total revenues of mobile apps enterprises globally and is estimated to be the same for Ontario-based enterprises.

ICTC estimates that Ontario's mobile apps enterprises currently generate approximately \$618 million annually in revenues. Various Ontario industries are the biggest source of this revenue, with 8% of their revenues coming from OCMI's and 38% from other Ontario-based industries. United States is a key market for Ontario's mobile apps enterprises, as over a quarter (27%) of the revenues is sourced from the U.S. Other Canadian provinces generate 16% of the revenues, while the remaining 11% comes from the rest of the world (figure 10).

Figure 10 — Revenue sources for Ontario's mobile apps enterprises

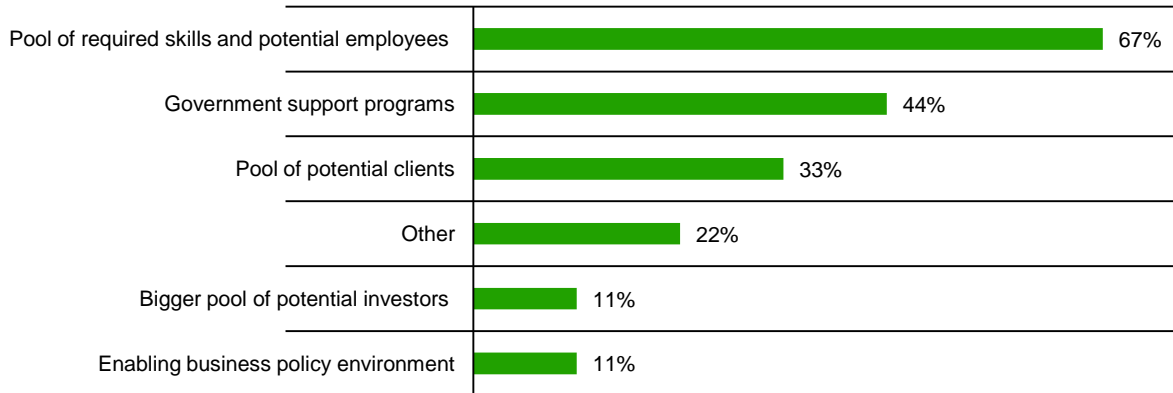


Source: Ontario's mobile apps industry survey, ICTC 2013

In addition to being the biggest revenue source, the size, capabilities, capacity, and competitiveness of Ontario's economy and workforce are major reasons for mobile apps enterprises to be based in Ontario. The pool of required skills and potential employees available in Ontario is the biggest draw among Ontario's mobile apps enterprises, as 67% of the surveyed enterprises maintain that this is of particular value to them. 44% of the surveyed enterprises cite various provincial government support programs as one of the reasons for choosing to set up operations in Ontario. 33% of the surveyed mobile apps enterprises value Ontario's big market size. The large number of academic institutions and potential investors, and an enabling business policy environment are also valuable to many (figure 11).



Figure 11 — The Ontario advantage

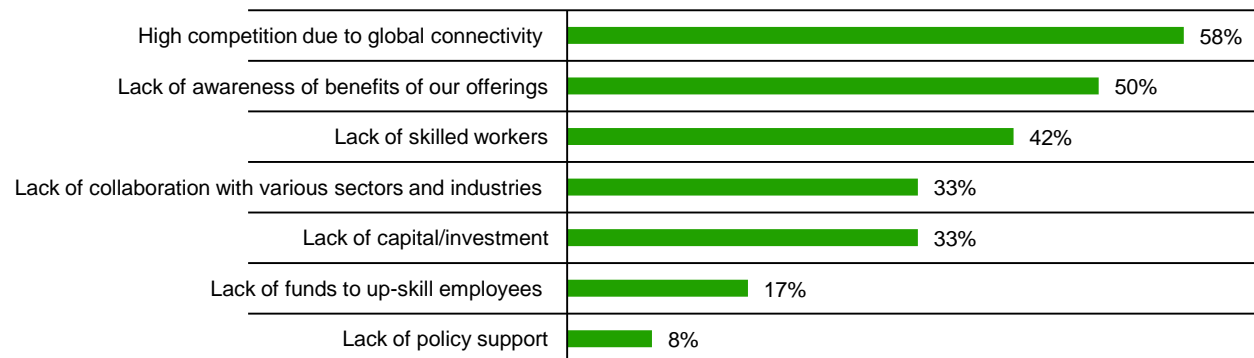


Source: Ontario's mobile apps industry survey, ICTC 2013

CHALLENGES

In spite of growth in recent years, Ontario's mobile apps enterprises face many challenges. A high 58% of enterprises report stiff competition in an open global industry to be their biggest challenge, while lack of awareness of their offerings (50%) and shortage of skilled workers (42%) also feature prominently among major challenges to business growth (figure 12).

Figure 12 — Challenges to business growth



Source: Ontario's mobile apps industry survey, ICTC 2013

SKILLS

The evolving and expanding nature of mobile apps and related technologies dictates that a wide range of skills are needed to succeed in this domain. At the epicentre of creating and generating revenue from a mobile app are programmers and software engineers who program and design the app, while UI designers make it user-friendly.

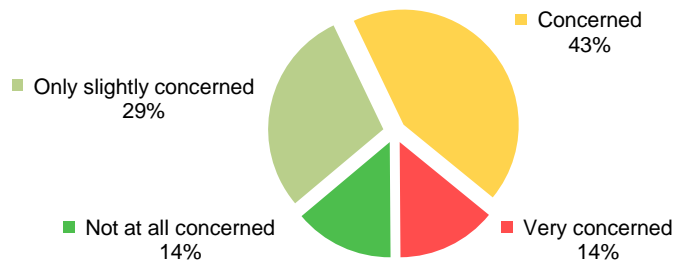


In the medium term, mobile apps enterprises will continue to look for workers with leading-edge skills across platforms. Consultation with Ontario's mobile apps enterprises indicates the following technical occupations to be in high demand and crucial for growth of this industry:

Mobile apps designer; mobile apps developer; mobile apps tester; programmer (C#); technical artist; software engineers; software developer; graphic designer (UI/UX); product manager; system designer; system developer; JavaScript, MySQL, HTML5, and PHP developer; software designer with CSS3; cloud architect; data analytics; coding; user support analyst.

In light of the growth in their industry and the resulting increase in workload and demand for talent, 86% of Ontario's mobile apps enterprises have some concerns with respect to finding the right blend of skills in adequate quantity (figure 13). Nearly half of them (43%) are more than slightly concerned, while 14% are extremely concerned about skills shortage and mismatch.

Figure 13 — Skills shortage concern among Ontario's mobile apps enterprises



Source: Ontario's mobile apps industry survey, ICTC 2013

FINANCIAL

In spite of business growth in recent years, a quarter (26%) of Ontario's mobile apps enterprises are seeking funding to grow their operations and finding it challenging. The biggest obstacle to funding is to showcase credibility, as a majority of the enterprises have been in operation for only a few years to date and typically have small or no assets to pledge as collateral and thus are less likely to receive loans. Access-to-capital issues are pervasive across the industry. Bridging the gap from angel investment or venture capital is a persistent challenge.

WHAT THE FUTURE HOLDS

As the fastest growing consumer technology, mobile devices, particularly smartphones and tablets, are expected to play a major role in our daily lives in the coming years. The phenomenal rate at which mobile apps are being developed to help us with every facet of our lives suggests that the mobile apps economy is positioning itself for a bright future.

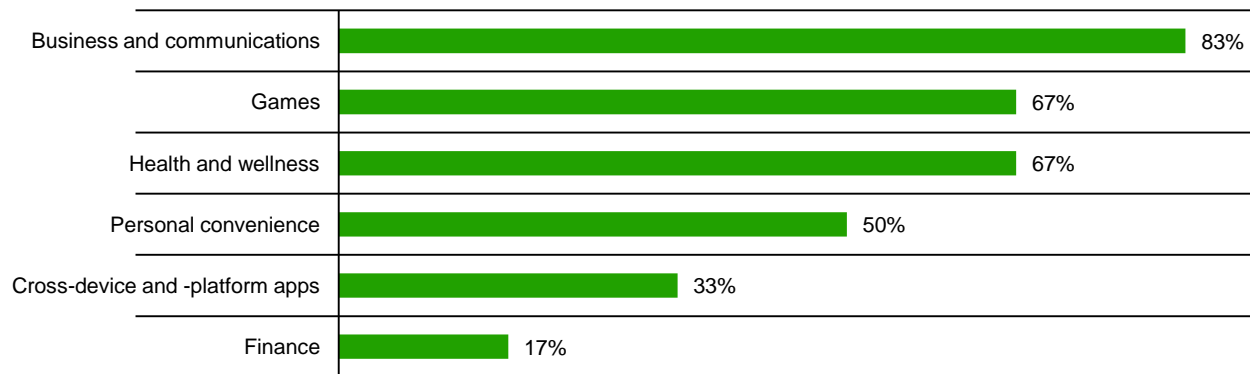
The smartphone penetration rate in Ontario and Canada is estimated to be 70% at the end of 2013, more than doubling since 2011, when this rate was 33% (the Canadian Wireless Telecommunications Association, 2013). Many more will swap their cell phones for smartphones in the near future. At this rate and given the fast pace of adoption and new entrants into the smartphone and mobile device ecosystem, all mobile phone users are expected to be using smartphones by 2015.



Four out of five (77%) of Ontario's mobile apps enterprises have fewer than 10 employees. As the number of smartphone and mobile device users worldwide increase at staggering pace in the medium term, Ontario's mobile apps economy is expected to continue experiencing growth over the next several years.

Consultation with Ontario's mobile apps enterprises shows that business and communications apps are in highest demand, as 83% enterprises expect many work orders to develop these apps in the next five years (figure 14). This is further evidence of the growing trend of organizations commissioning their own business specific mobile apps for business expansion purposes and to achieve wider reach. Two-thirds (67%) of enterprises expect significant growth in the development of games and health & wellness mobile apps, while personal convenience apps are also high on the list of in-demand mobile apps. A recent development has been creating mobile apps that can operate across various devices and platforms and 33% of Ontario's mobile apps enterprises are expecting large growth in the development of these apps.

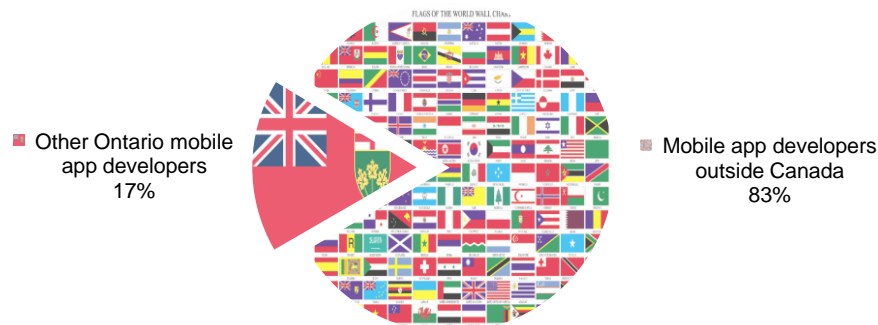
Figure 14 — Mobile apps in high demand



Source: Ontario's mobile apps industry survey, ICTC 2013

While these are positive developments for Ontario's mobile apps enterprises, an important point all stakeholders need to heed is this: the same low barriers to entry that characterize the development of mobile apps in Ontario exist throughout the world. As a result, 83% of the surveyed Ontario's mobile apps enterprises expect the stiffest business competition to come from mobile apps developing enterprises outside Canada, while 17% consider their counterparts in Ontario to be their biggest competition (figure 15). Although it is interesting that Ontario's mobile apps enterprises do not consider companies in other Canadian provinces as major competitors as yet, it may not be altogether surprising given the fact that only 16% of their revenues are generated from other Canadian provinces. It will be interesting to follow how this changes as the client base outside of Ontario increases.

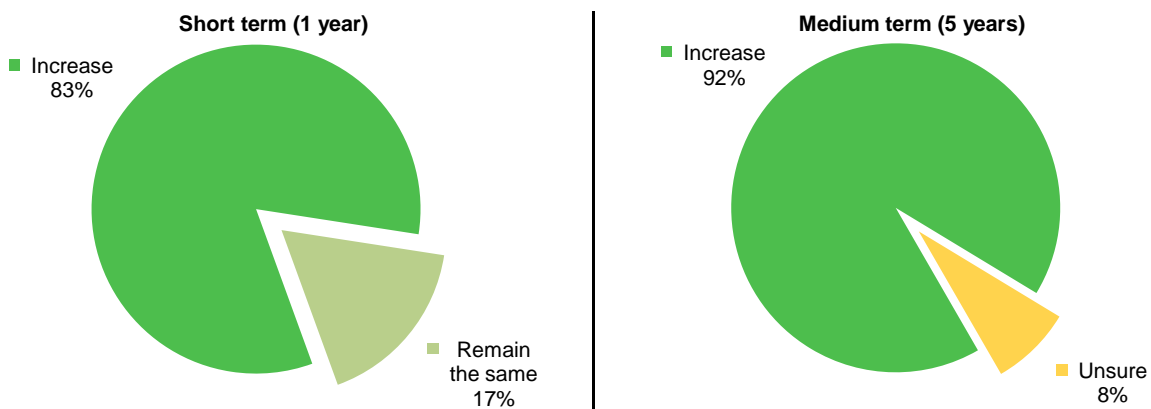
Figure 15 — Key perceived sources of business competition



Source: Ontario's mobile apps industry survey, ICTC 2013

Ontario's mobile apps economy continues to tread the growth path it has been on since its emergence in 2007. Despite the environment being extremely competitive to establish a foothold in the market, consultation with Ontario's mobile apps enterprises indicates that in the short term (1 year), 83% of enterprises expect their revenue level to increase while the remaining 17% are expecting revenues to at least remain the same (figure 16). In the medium term (5 years), 92% of the enterprises are confident that their revenue level would increase.

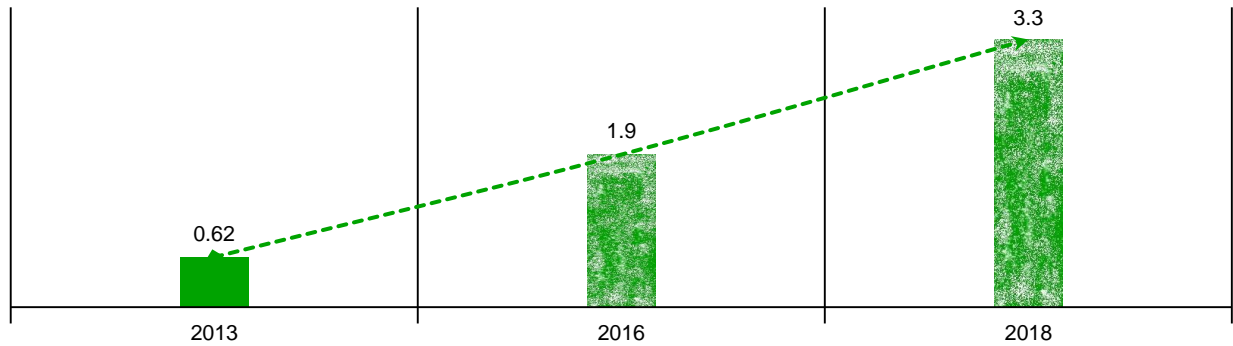
Figure 16 — Short- and medium-term growth outlook



Source: Ontario's mobile apps industry survey, ICTC 2013

Based on our analysis of Ontario's and the global mobile apps environment and consultation with stakeholders, we believe that this industry will continue to grow significantly. In the medium term—considering the increase in smartphone and mobile device users worldwide, number of mobile apps available in various platforms, and increased usage of mobile apps as enterprise solutions and in daily lives—revenues generated by Ontario's mobile apps enterprises are estimated to reach \$1.9 billion in 2016 and \$3.3 billion in 2018 (figure 17). To arrive at this estimate, we considered the above-mentioned anticipated changes in the operating environment and technological opportunities, along with trends and expected business growth in mobile apps enterprises, projected economic growth in Canada in the medium term, and historic trends.

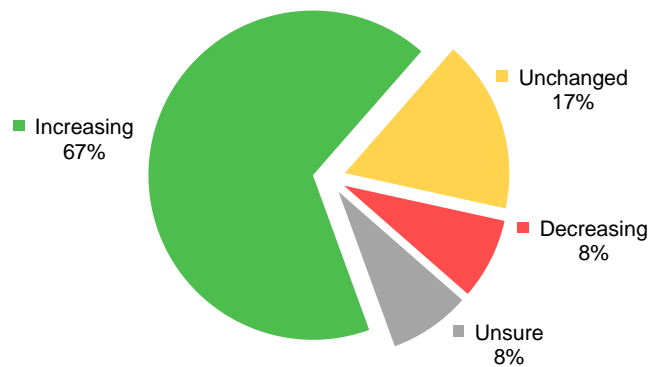
Figure 17 — Current and projected revenues generated by Ontario's mobile apps enterprises (in billion dollars)



Source: ICTC 2013

As smartphone and mobile device users increase worldwide, particularly in regions where smartphones have taken a while to penetrate, Ontario's mobile apps industry is on a growth path, an enviable position given the current uncertainty surrounding the global economic climate. A large part of this expected revenue growth is set to originate from international sources, as two thirds (67%) of Ontario's mobile apps enterprises are experiencing an increasing international client base (figure 18).

Figure 18 — Trend with respect to international clientele



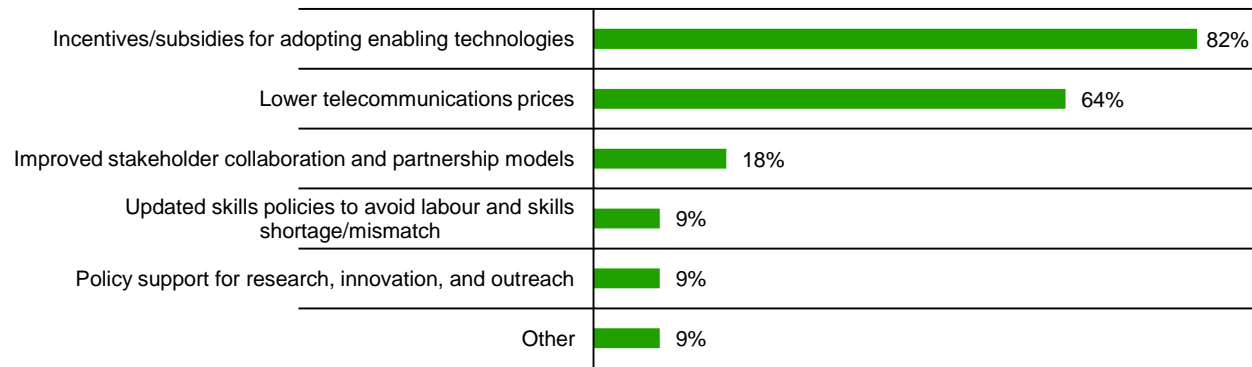
Source: Ontario's mobile apps industry survey, ICTC 2013

STRATEGIES FOR GROWTH

In spite of being in its formative years, with a majority of the enterprises having started operations with their own risk capital, the mobile apps industry in Ontario has blossomed. The constantly increasing demand for smartphones and mobile devices has assisted in growing the industry.

During the field phase of this research, ICTC consulted with mobile apps enterprises ranging from one that just released its first app to one that creates over 100 apps a year. Measures that the enterprises say would help this industry increase its innovation, productivity, and revenues the most include providing incentives to businesses for adopting enabling technologies (82%) and lowering telecommunications prices (64%) (figure 19).

Figure 19 — Measures to increase revenues, innovation, and productivity



Source: Ontario's mobile apps industry survey, ICTC 2013

There are many incentives already in place to ensure that Ontario's enterprises and multinational ones with operations in Ontario have access to capital, and continue to attract foreign investments. This includes access to strong federal and provincial government support and funding for research and development; robust telecommunications infrastructure; narrowing the definition of taxable Canadian property to eliminate costs related to compliance regulation for a non-resident investor or firm; and tax incentives in regards to innovation (scientific research and experimental development or SR&ED). For instance, when tax credits are factored in, a \$100 R&D expenditure can be reduced to an after-tax cost of less than \$44 for a large enterprise and less than \$38 for a small enterprise (Invest Ontario, 2010).

Accordingly, Ontario's ICT enterprises—a majority of which are high-growth micro, small, and medium enterprises (MSMEs) that contribute to job creation and economic growth immensely—have been on foreign venture capitalists' radars for some time. Federal and provincial governments pledged large [funds to help increase private sector investments](#) in early-stage risk capital and to support the creation of large-scale venture capital funds led by the private sector. This will help foreign entities partner with strong local investors, a move that will encourage investment in Ontario's mobile apps economy.

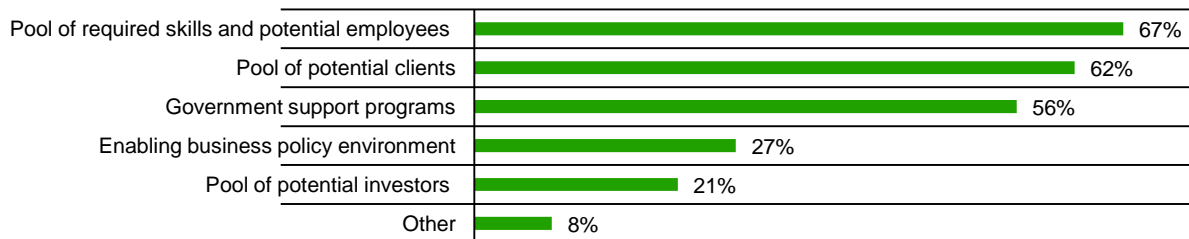
Ontario's mobile apps economy continues to tread the growth path it has been on since its emergence in 2007. Various success stories are driving many new entrants into this industry, creating further competition and encouraging innovation. The development of mobile apps has the potential to contribute significantly to employment creation and GDP in Ontario.

4. IMPACT ON ONTARIO'S CREATIVE MEDIA INDUSTRIES

Ontario's creative media industries are a vibrant, diverse, innovative, and growing segment of Ontario's economy. ICTC estimates that OCMI's generate \$14.5 billion in revenues annually, and make a \$7.8 billion contribution to Ontario's GDP (see Appendix A for further detail on this calculation). With the emergence of new technology such as [digital platforms](#) and [mobile technologies](#), OCMI's have access to new distribution mechanisms and channels to reach wider audiences, and many are adopting these technologies in their business practices.

The size, capabilities, capacity, and competitiveness of Ontario's economy and workforce are major reasons for OCMI's to be based in Ontario. Similar to Ontario's mobile apps enterprises, the pool of required skills and potential employees available in Ontario is the biggest draw among OCMI's, as 67% of the surveyed enterprises maintain that this is of particular value to them. 62% of the surveyed enterprises cite the significant pool of potential clients a major advantage of being located in Ontario, while 56% value various provincial government support programs as a major attraction. An enabling business policy environment (27%) and potential investors (21%) are also valuable to many of the surveyed enterprises (figure 20).

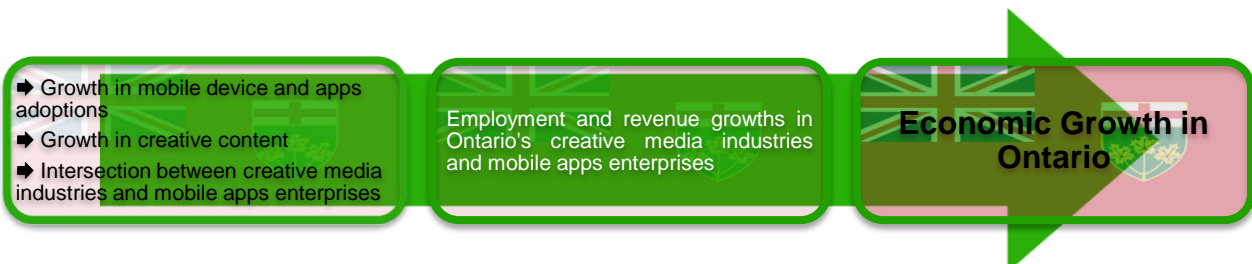
Figure 20 —The Ontario advantage



Source: Ontario's creative media industries survey, ICTC 2013

ADOPTION OF MOBILE APPS

In Ontario, enterprises involved in mobile technologies are working closely with the creative media industries to design and develop innovative solutions for expanding their businesses. Mobile apps enable OCMI's to deliver their products and services through new channels to new clients. As a result, these new technologies have created incremental economic opportunities for both OCMI's and Ontario's mobile apps enterprises. This includes employment creation, efficiency gain, cost reduction, revenue generation, collaboration, and innovation.





Mobile apps are being used in a variety of ways for a multitude of purposes in Ontario's creative sectors. Usage of mobile apps for purposes such as communications and information gathering are common to all OCMI's. In the survey instruments and during consultation with OCMI's, mobile apps used for internal business purposes by OCMI's and mobile apps used as part of product offerings were not differentiated. Nonetheless, unique features of each creative industry's adoption pattern emerge in our analysis:

INTERACTIVE DIGITAL MEDIA INDUSTRY

Enterprises in this industry include companies that focus on developing content and platforms such as software, video games, game consoles, and websites. Developing mobile apps is well within the purview of this industry and as this area emerges as one of sizable growth potential, many companies in this industry now include mobile apps development as part of their offerings. Interactive digital media enterprises are revising their marketing plans. The interactive nature of mobile apps is allowing businesses to share information and get immediate feedback from clients on products and services. This accessibility is reducing time required for market research and leading to faster research and development for companies, enabling them to stay competitive. Enterprises are forced to move product upgrades at a faster rate to hang on to the client base, as they play more direct roles in product development. Many enterprises are utilizing artificial intelligence based mobile apps to improve efficiencies, products and services, while providing entertaining and practical products.

Many enterprises are using mobile apps to get closer to their target clients and connect directly with their audiences. These technologies allow them to reach target audiences without going through broadcasters. This was initially made possible through the advent of the internet, and now mobile technologies have taken it to the next level. As a result, digital marketing is no longer a small segment of total marketing efforts, rather it is the majority.

With reduced reliance on legacy platforms, these enterprises are creating content for popular and emerging platforms. Integration of mobile apps helps them with *self-publishing* and distributing content globally. This way, they are able to control the consumer experience in each territory.

MUSIC INDUSTRY

Mobile devices and technologies have completely changed how customers consume music. A vast number of people listen to music on streaming mobile apps such as RDIO. Music companies have developed mobile apps that allow music downloads. Some apps allow accessing a searchable database for licensing, as well as an on-line payment system. Some music labels have developed separate mobile apps available for individual artists.

Publicity of new albums through new technologies, platforms, and mediums are now the norm. Mobile apps allow real time analytics and some music enterprises are using the insights to strategize more effectively.

With the advent of new technologies and platforms, smaller labels can now access the same things as the larger labels. Notwithstanding the fact that resourcing challenges remain, smaller labels have become more competitive.

BOOK INDUSTRY

Many book enterprises have automated their work flow using mobile apps and are using digital marketing materials and strategies for promotion and distribution. There are book enterprises where all new books



are processed and tagged through mobile apps. It allows them to create files that are suitable for print in the current e-book standards (e-PUB and PDF).

E-book sales have significantly increased to the extent that a majority of the book industry now must integrate the production of e-books into their workflow. In addition, many of the new titles are also being considered as a digital-only product, to be distributed through dedicated mobile apps.

Some enterprises report that an increasing share of their sales are made online, with a large share of that being e-books. It has had a notable effect not only on their production, marketing, and promotion processes, but also content and design of books. In response, many have put extensive resources into digitizing their titles to both e-pub and PDF formats, and an e-book is always produced with every new hard copy title.

Many of the enterprises are also upgrading their company websites to support growing direct to consumer (D2C) sales. This includes optimization for mobile devices and various popular platforms. Some enterprises are developing title-specific mobile apps, while others are in the process of developing large-scale mobile apps for a portion of their titles.

For most, however, producing e-books does not yet mean fewer hard copies are published and thus have added to the workload significantly. The new environment has made the business model more complex. Some sub-segments, however, has experienced a slower transformation than others, for instance illustrated children's books.

MAGAZINE INDUSTRY

Magazine enterprises are expanding to new distribution channels and platforms. Many of the magazine industry experts identify digital revolution—of which mobile technologies are increasingly larger parts—as a major driver for growth in this industry. Mobile technologies have enabled production automation and are thus reducing delivery and distribution costs, facilitating access to the global market, and improving return on investments (ROI).

Although enterprises have continued to pursue traditional print magazine business development, the magazine industry is gradually moving towards a digital model. Substantial shift towards digital publishing and sales have already taken place. PDF versions of many of the magazines are distributed through Zinio, while the industry is increasingly exploring options and strategies for mobile apps-based distribution going forward. In addition to providing digital editions of magazines through mobile apps, these technologies are also being used for processing payments. In addition, mobile apps also facilitate generation of subscription and advertising revenues.

Digital platforms and mobile applications have revolutionized the marketing process for the entire economy. Although print ads continue alongside digital ads, the magazine industry is having to change its business model to incorporate digital advertising, or risk being supplanted by other more interactive and digital mediums. Businesses across all sectors of the economy are spending less to place ads in magazines, and more to create digital commercials or content to place on their websites. This has a redistribution effect from the magazine industry to the interactive digital media industry, although the total redistribution may not be a zero-sum affair.

FILM AND TV INDUSTRY

Video content production and distribution have always been a highly technology driven process. Integration of mobile apps in this process, however, occurs currently mainly on the front end for content

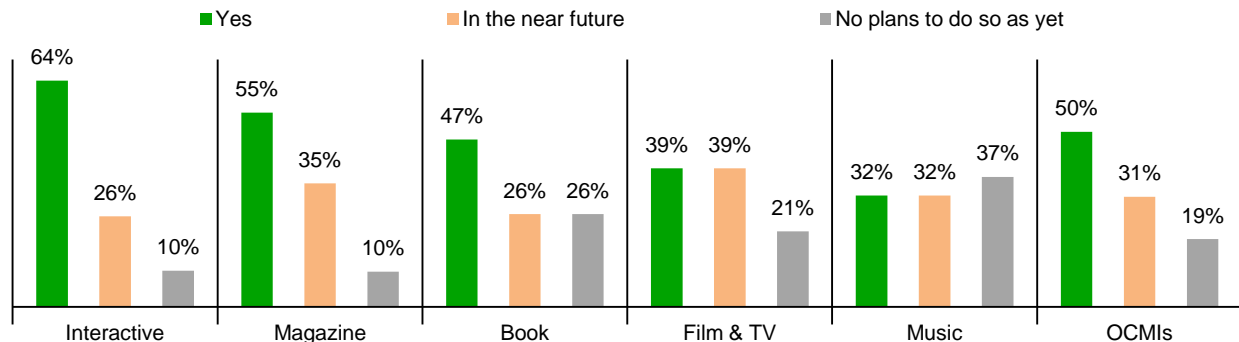


delivery to deploy content to new audiences. Nevertheless, mobile technologies and digital processes have allowed enterprises to be more efficient and creative.

Advertising is going through structural changes. The impact is not solely felt by the film and TV industry, as a broad range of cultural media industries are having to change their business models to adjust to changes in the operating environment. For instance, nearly 4 million Canadians access Facebook everyday. Digital platforms such as this are increasingly being used by all businesses, and traditional platforms are struggling to compete as a result. New products are increasingly accessed via mobile enabled websites and mobile apps. Enterprises have had to become more active in developing mobile content to stay competitive and help raise the profile of and promote specific projects.

Industry-wide, 50% of all OCMI have already adopted and thus currently use mobile apps in their business practices, with another 31% planning to follow suit in the near future (figure 21). This adoption rate compares favourably with Canadian enterprises in all sectors, as a recent ICTC study finds that 46% of all Canadian businesses use mobile technologies to input data for faster information flow (ICTC, 2013). Adoption of mobile apps, however, is not uniform across various creative media industries in Ontario. Among OCMI, adoption of mobile apps is currently the highest in Ontario's interactive digital media industry, where 64% of enterprises already adopted and thus currently use mobile apps in their business practices, with another 31% poised to do so in the near future. In Ontario, the current rate of mobile app adoption is 55% in the magazine industry, 47% in the book industry, 39% in the film and TV industry, and—with the lowest adoption rate among OCMI—32% in the music industry.

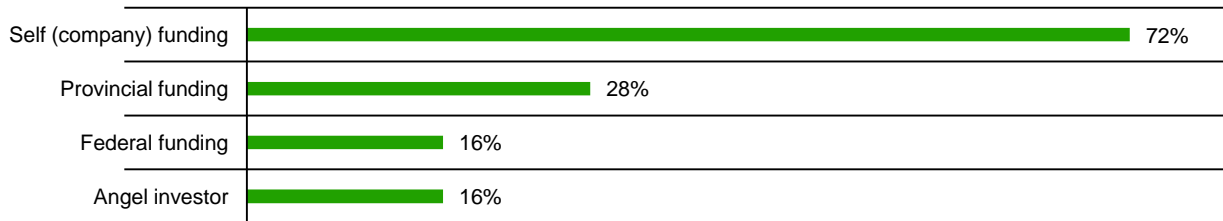
Figure 21 — Adoption of mobile apps in OCMI



Source: Ontario's creative media industries survey, ICTC 2013

To cater to the changing content consumption pattern among its clientele given the wide adoption of mobile devices, most OCMI enterprises that are using mobile apps to deliver content are bankrolling the development costs themselves. Three out of four (72%) OCMI that have operational mobile apps used self (company) funds to develop them, while other enterprises relied on provincial funding sources and tax credits such as the ODMTC (28%), federal funding sources such as [Scientific Research and Experimental Development \(SR&ED\) Tax Incentive Program](#) (16%), and angel investors (16%) (figure 22).

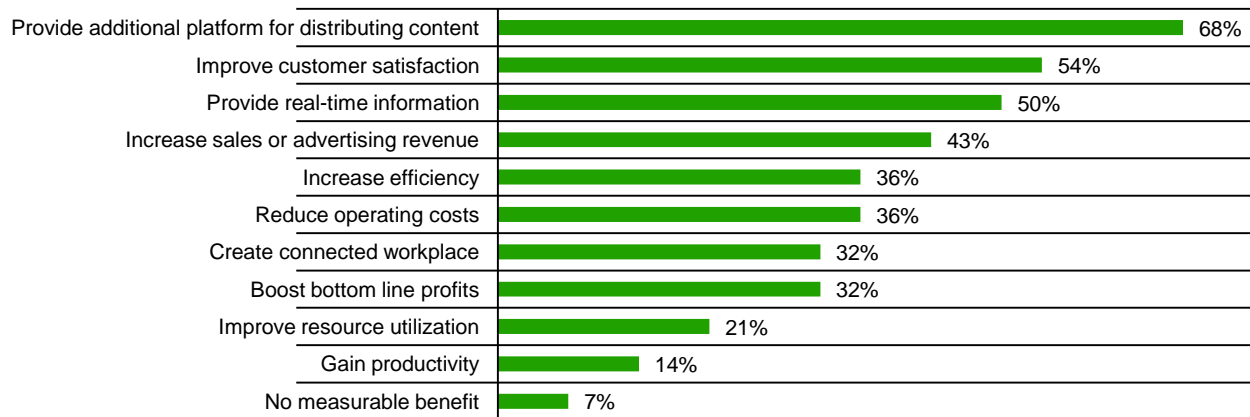
Figure 22 — Source of mobile apps development funds in OCMI



Source: Ontario's creative media industries survey, ICTC 2013

Mobile apps and related technologies are changing the way OCMI do business. Real-time and location-based processes result in quick and easily accessible content and communications, information consistency, responsive case management and seamless information exchanges. Information and actions are being coordinated in any location and with business partners and clients, improving collaboration among stakeholders. In addition, business needs and situations are better managed as they occur. Real-time information improves responsiveness and knowledge-based decision making.

Figure 23 — Impact of mobile apps in OCMI



Source: Ontario's creative media industries survey, ICTC 2013

Two-thirds (68%) of OCMI enterprises recognize that mobile apps provide them with new and additional platforms for content distribution, while 54% experience that these apps allow improved and responsive service delivery and thus improve customer satisfaction (figure 23). Mobile apps enable a seamless pull of current data directly from the enterprise system, and most importantly, they are making various business solutions easy to use. The growth of cloud computing has also impacted positively on the use of mobile apps. 50% of OCMI enterprises value the provision of real-time information through mobile apps. The increase in sales and revenue is a welcome impact of mobile apps adoption and 43% of OCMI enterprises report to have already experienced this.

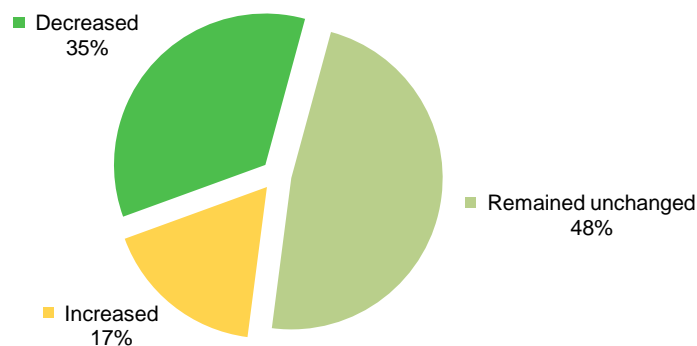
Mobile apps and related technologies enable OCMI enterprises to become more efficient, more creative and, thus, more valuable to clients. These technologies are being used to support more efficient business processes through real-time communications, quick data access, notifications and business updates. OCMI enterprises are turning to mobile apps for improved and responsive service delivery, operational

efficiencies, and active client engagement. A third (36%) of the OCMI enterprises reports achieving increased efficiencies from mobile apps adoption.

Reduction in operating costs (36%), creation of a connected business environment (32%), boost in bottom line profits (32%), improvement in resource utilization (21%), and increase in productivity (14%) are some of the other desired benefits of adopting mobile apps in OCMI. Only 7% of the OCMI enterprises that have adopted mobile apps report not having yet experienced any measurable benefits of adoption. This, however, may well be the result of difficulty in measuring the return on investment of mobile apps adoption in OCMI that instigated this study, as opposed to not getting any discernible benefits from adoption.

Given the costs of mobile app development and additional costs of updating the content in mobile apps, adoption of these technologies can increase the operating costs of OCMI enterprises, particularly at the initial stages. As costs are offset by savings in expenses related to such items as content release and distribution, a majority of OCMI enterprises report their operating costs to remain the same on the balance (48%) at the very least, while many (35%) experience a decrease in operating costs (figure 24). ICTC's in-depth consultation with OCMI gives a good basis to quantify the effect of mobile app adoption on their operational costs. OCMI enterprises have experienced an estimated 9% reduction in their operational costs on average as a result of adoption of mobile apps in their business practices.

Figure 24 — Effect on operational costs

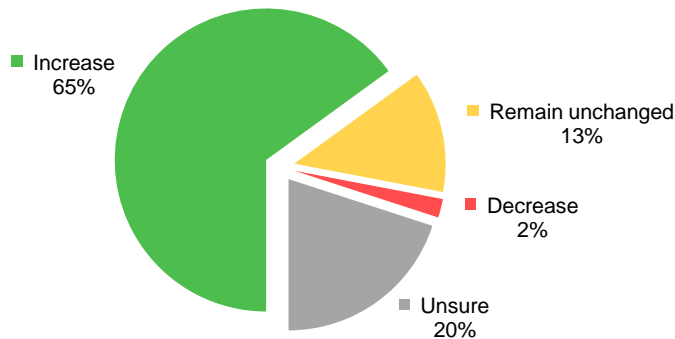


Source: Ontario's creative media industries survey, ICTC 2013

Using [Statistics Canada's](#) latest available data, ICTC estimates that OCMI generate \$14.5 billion in revenues annually. ICTC estimates that \$220 million of that results from mobile apps adoption.

Now that the capability of mobile apps has reached a relatively mature status, mobile app developing entities are able to help willing OCMI enterprises adopt these technologies. The benefits of such adoption become decidedly clear as a result of this research study. OCMI are also realizing this and are accelerating their adoption of mobile apps. Among surveyed enterprises, 65% state that integration of mobile apps and adoption of other mobile technologies in these companies will increase in the medium term over the next five years (figure 25). While 13% of respondents expect integration and adoption to remain unchanged in this period, a low 2% foresee a decrease in adoption on account of these technologies being too expensive for the company to adopt and/or maintain.

Figure 25 — Mobile technologies adoption outlook



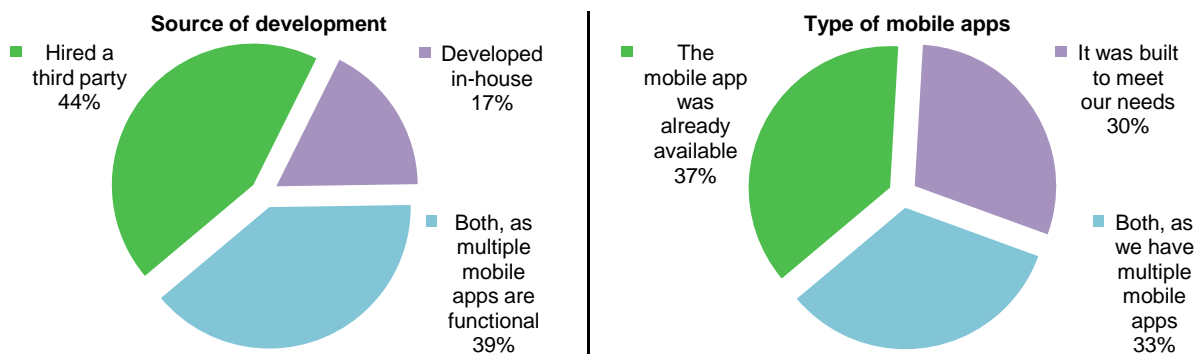
Source: Ontario's creative media industries survey, ICTC 2013

IMPACT ON LABOUR MARKET

Mobile apps facilitate automation of work flow in OCMI enterprises. This enabling technology has a notable effect on enterprises' content creation, production, marketing, and promotion processes. As more resources are allocated to developing and adopting mobile apps, curiosity remains if this technology replaces or displaces roles in other areas of an enterprise. In ICTC's in-depth consultation with OCMI, no job loss has been reported that can be associated with the emergence and adoption of mobile apps in their business practices.

Seeing the need for continuous development of mobile apps, 17% of OCMI enterprises decided to have an in-house team dedicated to mobile apps development. While nearly half (44%) of the enterprises currently contract out their mobile apps development needs, two out of five (39%) enterprises exercise both options, as they have a continuous and pressing need for mobile apps development and they develop some mobile apps in-house while contracting out others. With respect to the type of mobile apps that are being developed for OCMI, the share of (a) original IP mobile apps that are built to meet a particular client's needs (30%); (b) already available mobile apps that may or may not require some customization (37%); and (c) a combination of the two (33%) each comprise nearly a third of total mobile apps development, according to mobile app developers surveyed.

Figure 26 — Source and type of mobile apps in OCMI



Source: Ontario's creative media industries survey, ICTC 2013



Internalization of mobile apps development has naturally created many technical positions in OCMI. These professionals are dedicated to developing mobile apps as and when needed. In addition, there is additional demand for skills such as mobile content management, m-designers, managers, operations specialists, and digital and social media experts.

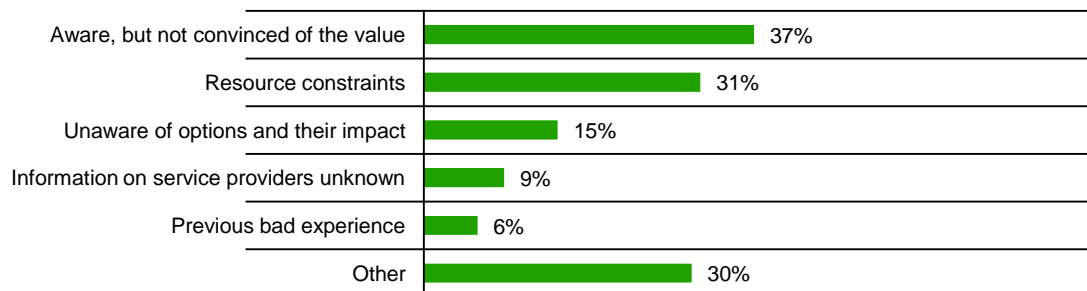
ICTC estimates that 3,300 new jobs have been created in OCMI as a result of the emergence and wide adoption of mobile apps. Of these, 55% (1,800) are full-time, 21% (700) are part-time, and 24% (800) are contractual positions. Consultation with OCMI enterprises, latest available Labour Force Survey data by Statistics Canada, and tracking of Ontario-based mobile apps development vacancies were all taken into consideration in these robust estimates, as triangulation of various sources helps cross-validate findings.

ADOPTION CHALLENGES

Although integration of mobile apps results in multiple benefits to OCMI enterprises, adoption of these technologies are not without their challenges. Currently, the biggest hindrance to adoption of mobile apps in OCMI appears to be lack of monetization of adoption benefits, with a third (37%) of the enterprises stating that they are aware of the functionalities of mobile apps, but not yet convinced of their value (figure 27).

Investments in mobile apps and related technologies are driven by a need to enable better business practices, as OCMI enterprises can achieve a quick return on investment (ROI) if they offer mobility-enabled solutions. Increasingly, OCMI offer their content and services via mobile technologies. Most products and services are available through mobile websites, and enterprises are developing mobile apps for all major platforms. Resources need to be allocated for this purpose and one in three (31%) enterprises is still wary of the costs of adoption and maintenance. To maximize the benefits and minimize the costs of adoption, enterprises first need to evaluate adoption and deployment options. A clear and accurate knowledge of the businesses processes and the technologies needed to enable and support those processes is a vital starting point. That knowledge is a critical foundation for subsequent informed decision-making.

Figure 27 — Adoption challenges



Source: Ontario's creative media industries survey, ICTC 2013

Other challenges related to adoption of mobile apps include lack of awareness of various options and their impact (15%), uncertainty over who to turn to for development and adoption of these technologies (9%), previous bad experience with respect to adoption of technologies (6%), and a gamut of other reasons (30%) including readiness of target clients to access content using mobile apps, lack of economies of scale, sustainability challenges of public funding, applicability of these technologies to particular enterprises, etc.

The expanding nature of emerging and enabling technologies is dictating that a large range of skills are needed to succeed in the creative media domain. In the medium term over the next five years, OCMI will continue to look for workers with leading-edge technical skills with the right blend of interpersonal skills. Consultation with OCMI enterprises highlights the in-demand jobs within each industry in general. Many of these occupations are technical roles—in mobile app development or otherwise—while some are also non-technical positions. To give a general sense of the in-demand jobs, occupations are not grouped and presented below as revealed by the OCMI.

INTERACTIVE DIGITAL MEDIA INDUSTRY

Front-end developers with cross-platform expertise; back end developers with databases expertise; user interface (UI) designers; product analysts; texture artists; modellers; programmers; business development/sales role; content development support; marketing manager; product manager; programmer, digital trend analyst; integrated media sales; editor; content creator; product development lead; content marketing specialist; video production director; digital and social media coordinator; web developer; mobile apps developer; mobile game designer; native apps developer.

MAGAZINE INDUSTRY

Digital audience manager; audience database analyst; new media marketing consultant; programmer; digital trend analyst; integrated media sales professional; editor; content creator; web developer; mobile marketing specialist; designer; digital data analytics role; designer (UX/interface/social media).

BOOK INDUSTRY

Editor; electronic publisher; social networks marketing specialist; e-book developer; multi-platform specialist in editorial and design.

FILM AND TV INDUSTRY

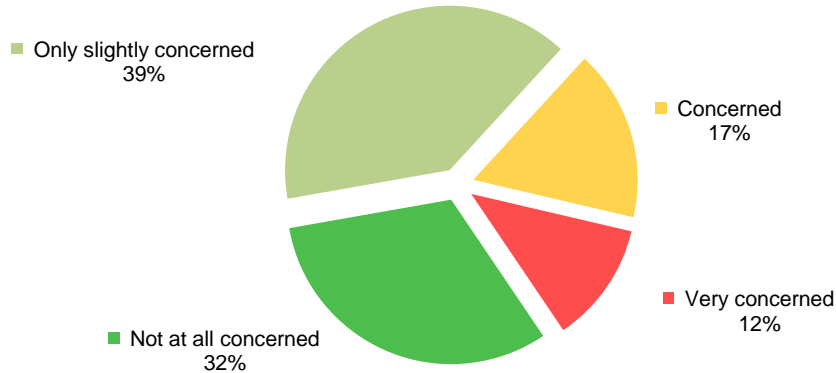
Artist; animator; 3D content creator; producer; marketing writer; studio manager; social media strategist, branded content and advertising expert; mobile apps programmer; sound and picture specialist; technical developer; content designer; video content editor.

MUSIC INDUSTRY

Artistic choreographer; marketing role; booking agent; publicist; music licensing expert.

In light of the growth in OCMI and the resulting increase in workload and demand for talent, 68% of OCMI enterprises have some concerns with respect to finding the right blend of skills in adequate quantity (figure 28). Nearly a third of them (29%) are more than slightly concerned, while 12% are extremely concerned about skills shortage and mismatch.

Figure 28 — Skills shortage concern among Ontario's creative media industries



Source: Ontario's creative media industries survey, ICTC 2013

WHAT THE FUTURE HOLDS

While OCMI have been experiencing notable growth in recent times, the increasingly connected global marketplace will continue to pose various business challenges to OCMI. As a result, two-thirds (64%) of OCMI expect the stiffest business competition to come from enterprises outside Canada, while a quarter (24%) considers their provincial counterparts to be their biggest competitions (figure 29).

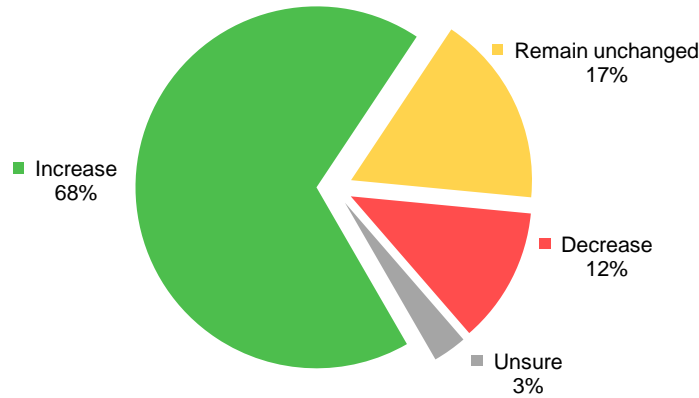
Figure 29 — Source of business competition



Source: Ontario's creative media industries survey, ICTC 2013

OCMI enterprises continue to tread the growth path they have been on for quite some time now. Despite the environment being extremely competitive to establish a foothold in the market, consultation with OCMI indicates that in the short term (1 year), 68% of the enterprises are expecting their revenue level to increase, while 17% are expecting revenues to at least remain the same (figure 30).

Figure 30 — Short-term growth outlook



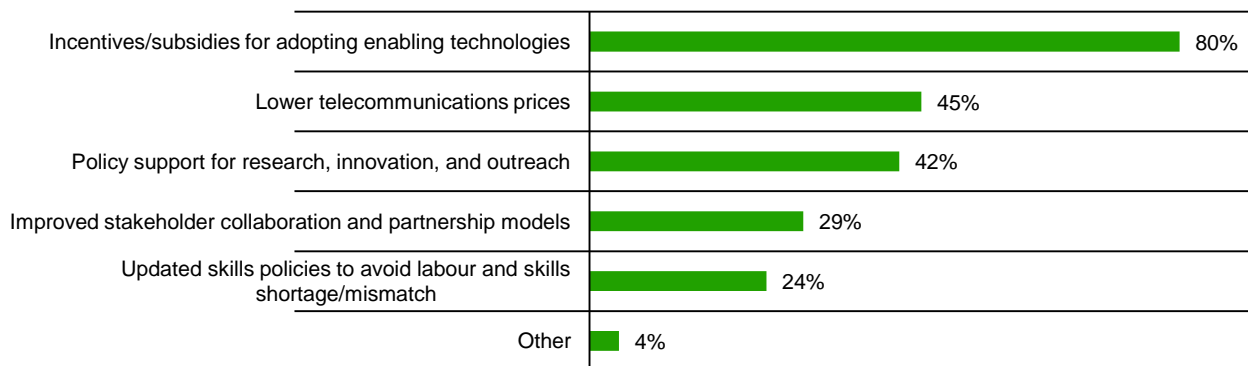
Source: Ontario's creative media industries survey, ICTC 2013

OCMIs currently generate \$14.5 billion in revenues annually, estimated to reach \$17.3 billion by 2018.

STRATEGIES FOR GROWTH

With world class talent involved in content generation in OCMIs and the emergence and adoption of mobile apps in business practices, these Ontario industries have blossomed. During the field phase of this research, ICTC consulted with OCMIs ranging from one that is a family affair of a few people to one that employs thousands of Ontarians. Four out of five (80%) enterprises believe that the measure that would help OCMIs increase their innovation, productivity, and revenues is the provision of incentives to businesses for adopting enabling technologies (figure 31). Other suggested growth strategies for OCMIs include lowering telecommunications prices (45%), policy support for research, innovation, and outreach (42%), improved stakeholder collaboration and partnership models (29%), and revised skills policies to avoid labour shortage and skills mismatch (24%).

Figure 31 — Measures to increase revenues, innovation, and productivity



Source: Ontario's creative media industries survey, ICTC 2013



There are many incentives already in place to ensure that OCMI's have access to capital, and continue to attract foreign investments. This includes access to strong federal and provincial government support and funding for research and development; robust telecommunications infrastructure; narrowing the definition of taxable Canadian property to eliminate costs related to compliance regulation for a non-resident investor or firm; and tax incentives in regards to innovation (scientific research and experimental development or SR&ED).

Based on our consultation with OCMI's, there is, however, a prevailing notion among some enterprises that some industrial segments or sub-segments are better looked after than others by the policymakers. For instance, the costs of doing film and TV 'post' (editing) work are substantial and few are willing to invest. There are good incentives for producers to create video content, but a perception that support is not available for enterprises that do the post to finish the work. In reality, post-production is rebated under certain tax credits such as [Ontario Film & Television Tax Credit \(OFTTC\)](#) and Ontario Production Services Tax Credit ([OPSTC](#)). This highlights that many OCMI enterprises may not be well aware of all the incentives and supports available to them.



5. CONCLUSIONS AND THE WAY FORWARD

Combining rigorous analysis and consultation with Ontario's creative media industries and mobile apps industry, this study is intended to share current industry trends and provide reference and guidance to help all creative media enterprises address the opportunities and challenges associated with adopting mobile apps. These technologies are enabling OCMI's lower costs, improve efficiency and customer relationships, increase productivity, sales, and profits, improve mobility, research market and develop quality products faster, gather real-time information, and collaborate to create stronger innovation capacity. Mobile apps have a positive and significant impact on overall economic growth by creating new creative content delivery mechanisms.

In addition to providing a solid understanding of the context shaping mobile apps development and the adoption environment, ICTC seeks to guide stakeholders in considering measures and taking action. The strategies outlined are the result of our analysis of insights shared by industry experts and thought leaders about the trends and challenges they face in trying to achieve a balanced level of mobile apps integration in their business practices. Which strategies any given enterprise will adopt and implement will be specific to their business scope.

ADOPTION IS IMPORTANT FOR ALL CREATIVE INDUSTRIES

All enterprises are looking for smart and agile solutions. No industry can ignore mobile apps, as these are proving to be an essential tool to offer content and services. Improving technological infrastructure is facilitating this and business entities are enjoying many of the benefits of adopting these technologies. More enterprises want to integrate mobile apps into their business process, creating additional market and sub-market opportunities for mobile apps service providers. It is important that the mobile apps industry increase ties with all industrial sectors and sub-sectors to maximize reach and benefit from synergies. Industry-specific trade fairs will be beneficial where mobile app enterprises come to present their offerings for respective industry verticals.

RAISING AWARENESS OF ADOPTION BENEFITS IS CRITICAL

From the mobile apps industry perspective, there is a strong need to create awareness of the benefits and advantages of adopting these technologies among creative and all other enterprises. Networking is vital to spread the word. To address the diverse needs of various industrial sectors, establishing standardized information for sector-specific users about how to adopt and best utilize mobile apps will encourage many to adopt and thus create growth opportunities for Ontario's the mobile apps industry.

AWARENESS OF SUPPORT PROGRAMS IS VITAL

The economic benefit of programs such as the suite of Ontario's cultural media tax credits administered by OMDC, the IDM Fund, [IRAP](#), [SRE&D](#), and [CareerConnect](#) for enterprises has been demonstrated. To get the best value out of these programs and stimulate the growth of this high-contributing sector it is critical that more small to medium sized companies are:

- aware of the programs available to them, and
- that the application process and administration is as simple as possible.



LABOUR SHORTAGES CAN HOLD ONTARIO BACK

Strengthening all employees' capacities to function in a connected and digital workplace is crucial. Not all employees may embrace mobile apps adoption due to lack of understanding or skills. Some may see new technologies, enterprise solutions, or business processes as a threat to their jobs. Sensitizing employees in this regard and providing them with the right tools to be successful in this new environment is very important for business success. As the adoption rate increases and new genres of mobile apps emerge, the availability of talent and the right blend of skills among Ontario's ICT workforce is going to be more vital than ever before, as Ontario's competitiveness is at stake. Meeting the continuing strong demand for appropriately-skilled workers is a big challenge.

Workers with the right technical skills are rare; workers with the right combination of multidisciplinary skills are rarer still. Remedying this state of affairs can only be achieved through a collaborative process that involves all stakeholder groups including workers, employers, educators, policymakers, technology advisors, and researchers. In addition, programs are needed that target youth at a younger age when they are still making decisions about their courses and career options, when they are being influenced by peers, teachers, and parents away from STEM due to misinformation about the opportunities. Furthermore, foreign talent needs to be recognized and welcomed to address the skills shortage. They also have a detailed understanding of the global market, thus facilitating Ontario service providers to establish a strong foothold in a highly competitive, borderless environment.

UP-SKILLING NEEDED AND SHOULD BE ACCOMMODATED

Ontario's digital economy is experiencing a high level of skill shortages. Enterprises need to look good and hard at what their skill requirements in the short and medium term are, and plan accordingly. Up skilling of their existing workforce for growth areas, strategic hiring of recent "nearly" qualified graduates with effective on-boarding plans, and tapping into available skilled labour pools such as Internationally Educated Professionals (IEPs) are all required if companies want to remain competitive in such tight labour market conditions.

SIGNIFICANT GLOBAL OPPORTUNITIES EXIST

Most Ontario mobile apps enterprises are domestically-focused. But, an excellent blend of advanced technological, research, and corporate infrastructure means that Ontario offers unique opportunities and the Ontario/Canada brand needs to be built and promoted around this theme. Ontario has the essentials to be a key developer and enabler of mobile apps, and stakeholders need to promote Ontario as a place that platform developers should consider to enhance growth. The Canadian mobile app industry can be proactive and direct in promoting their work. Products and services should be showcased internationally. Promotional activities need to go beyond highlighting available technology and promote the amazing skills and talent available in Ontario. Local knowledge is just as important as domain knowledge to be able to deliver a cutting edge platform solution, particularly in the global market.

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APPENDIX A – ECONOMIC IMPACT ANALYSIS

ICTC's estimate of \$14.5 billion generated annually in revenues and \$7.8 billion generated annually in GDP by OCMI is based on a multi-step calculation. We take the latest available GDP and revenue data produced by Statistics Canada into account to measure the outputs. We then use our original research findings to estimate the current levels of revenue and GDP contribution from OCMI.

We use historic trends and equations from our forecasting models to estimate future levels of revenue generation, under the assumption that measures and strategies suggested in this study to stimulate OCMI will be implemented without much delay. Anticipated inflation rates—based on historic trends—are also taken into consideration in this projection. These estimates constitute a realistic approximation of revenues that will be generated by OCMI in the medium term.

The final estimates, both current and projected, are reported in 2013 dollars.



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ABOUT ICTC

The Information and Communications Technology Council (ICTC) is a leading not-for-profit national centre of expertise conducting research, policy development, and creating talent solutions for the digital economy.

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