

Mobile Commerce: Making it Work for Canadians

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EXECUTIVE SUMMARY

This report focuses on use of mobile phones for Internet commercial transactions and point of sale (POS) mobile payments or m-Commerce, as the fastest growing area of e-Commerce. It does not limit itself to the state of m-commerce in Canada exclusively. In order to obtain a close reliable picture of how Canadian consumers fare in the context of m-Commerce, intensive use of international available data has been made. Due to the inherently global nature of the mobile Internet, cross-reference with mobile telecommunications indicators in the context of the OECD, and even some emerging economies, were imperative to properly assess what Canadian mobile Internet consumers should expect in terms of affordability, availability and quality, and where do they stand with respect to the industry.

To facilitate an understanding of basic elements involved in m-Commerce, the first section briefly reviews relevant definitions and the legal framework of e-Commerce from the consumer perspective, to later add an overview of the radio technologies behind mobile telephony and the capability to handle Internet protocol IP-based data.

The following sections are dedicated to a review of the main concerns for consumers regarding the m-commerce services. In due course, it looks at the relationship between consumers and the mobile industry in Canada, and, according to the findings of the report, the Canadian wireless industry does not fare well. Two main factors that have almost chronically impaired the growth of m-Commerce are associated to the main factors why Canadian mobile telephony penetration rates have been stagnating for years: high and internationally uncompetitive pricing and a persistent lack of consumer confidence of in the industry and its commercial practices. Canadian users' opinions are consistent with a study conducted among U.S. consumers, confirming that pricing is the main barrier for consumer adoption of 3G (mobile Internet) services. This, despite the fact that more consumers than ever before have 3G phones in the country: Sixteen percent of mobile phone users have handsets with 3G technology, but only ten percent of those users make use of the 3G functionality.

Included in this report there is a survey commissioned by PIAC to the public opinion and market research firm Pollara, which inquires on important concerns posed by m-Commerce such as affordability, availability, privacy and security as well as net neutrality. The survey's was conducted among mobile Internet users across Canada, and its findings point at the fact that Canadian mobile users are apprehensive about the implications of storing their personal financial data in chips inserted in their handsets as well as about their handsets being used as m-payment mechanisms. When asked about what would be the best mechanism to protect their rights as consumers under the above scenario, more than half of them responded that a combination of industry codes and government rules would be the best mechanism. On the issue of net neutrality, when asked if wireless companies should be able to control consumer access to websites, 69% disagreed with the proposition and only 26% agreed.

The current low demand for packet-based content delivered through mobiles in Canada may be related with the fact that consumers expect an Internet experience that is real, in addition unlimited access to the open network of the world wide web; instead of a service that prioritizes, privileges or restricts access to certain networks.

The fact that the mobile telecommunications industry generates the vast majority of consumer complaints of the whole of the economy is an indication of a major failure in the information exchange mechanisms between customers and carriers, undermining their relationship and the overall credibility of the industry. As mobile communications are an essential service in the information society, consumers find themselves in the necessity to subscribe to terms of service that are uniform across the industry but they do not necessarily agree to. In addition, this report shows that as mobile pricing is comparatively high, consumers' alternative of renouncing to have a mobile phone put them at an economic disadvantage. As for the consumers that can afford to be subscribers, their satisfaction with the service progressively erodes when large numbers of them have negative experiences with operators. Slow penetration of mobile communications in Canada is due in part by consumer wariness. Likewise, the limited demand for the few m-commerce services currently in the Canadian market may be further hampered by the number of negative experiences of early users. Pollara's survey seems to point in that direction.

The report concludes the current state of m-commerce in Canada could be interpreted as a sign that market forces when left alone, may operate only to consolidate the presence of the strongest actors, to the detriment of penetration rates and affordability to technological innovation and efficiency gains. Evidence of marketing rivalrous strategies among competitors in mobile markets dominated by duopolies or oligopolies, should not be confused with a true competitive marketplace. Presence of only two or, at best, three mobile competitors in a mobile market, may not be sufficient to create the incentive to make essential telecommunications services affordable to all members of society.

It is the Canadian consumers and the Canadian economy as a whole that end assuming the cost of the inefficiency of the industry, translated in overall productivity losses and detriment in its information and communications technologies (ICT) indicators' performance. ICT indicators are associated with increased productivity and tangible benefits to competitiveness and quality of life, and the number of subscribers to mobile telephony and broadband Internet services are among the top ICT indicators.

Finally, finally, the report formulates recommendations to the effect that Canada must, as other advanced countries do, consider the mobile economy as more than a matter confined exclusively to the profitability of a few dominant operators. Pricing barriers imposed through price discrimination (bundling) to consumers and enterprises alike by mobile and backbone operators is tantamount to establishing an economic censorship over the free circulation of information and expression. Price-fixing of an essential communications services, such as mobile telephony should not be entirely left at the discretion of dominant market players.

INTRODUCTION

Globally widespread use of mobile phones is causing significant cultural and economic change. Mobile telecommunication devices like phones, personal digital assistants (PDAs) and smartphones have now the capability to transmit and receive higher amounts of data and therefore access the Internet. Mobiles have become essential telecommunication devices highly valued by their users, and in many countries are widely used as an effective and convenient means to access the Internet, buy, sell, make and receive payments.¹ More recently, they have become highly personalized items that are a reflection of users' lifestyles as well as ubiquitous entertainment and multimedia devices. Penetration rates continue to grow steadily in countries with low penetration while technical capabilities to enhance their use for electronic transactions are rolled out in more mature markets.

The number of mobile telephony users has grown at such an accelerated rate that nearly half of the world's population use mobile phones today.² By 2010, the majority of all handsets will be Internet-enabled mobile devices and a substantial part of all Internet users will access the web via mobile.³ As new technologies make possible faster wireless data transmission rates and mobiles' processing capabilities, mobile commerce (M-commerce) will become an essential part of electronic commerce (E-commerce). Mobiles have the potential to challenge the personal computer as the main user-end terminal for web access, electronic commerce and plastic as mode of payment.

One of the most important barriers for M-commerce to become relevant for consumers consists on how to make mobile access widely affordable. Another pressing issue has to do with the kind of web access mobile users will be offered by carriers or mobile network operators (MNOs) and how safe it will be to navigate the Internet through handsets. It also remains to be seen whether deregulation will continue to be the appropriate policy approach to assure access to citizens in a market characterized by very few carriers owning transmission facilities, (as is the case of MNOs), and a number of mobile virtual network operators MVNOs who lease access to MNOs' networks and therefore depend on MNOs infrastructures.

The telecom, media, finance and technology sectors are main industry stakeholders in M-commerce, each of them expecting to maximize its participation in the value chain. Failure among industry players to reconcile different interests may represent a significant obstacle for

¹ Hans Geser, *Pre-teen Cell phone Adoption*, University of Zurich Institute of Sociology, online: <http://socio.ch/mobile/t_geser2.pdf>. See also: Roman Friedrich *et al.*, *Making Mobile Payment Work for Everyone*, Strategy+Business Resilience Report, online: Strategy+Business <<http://www.strategy-business.com/resiliencereport/resilience/rr00023>>.

² Research firm Informa Telecoms and Media reports 2,7 billion mobile users by the end of 2006. See: Jonathan Fildes, *Mobiles Still Ringing In New Year*, BBC News, 23 December 2006, online: BBC News <<http://news.bbc.co.uk/2/hi/technology/6199293.stm>>

³ Internet users are expected to reach 1,8 billion by 2010, and a substantial number of them will be mobile-based. See: International Telecommunication Union (ITU), *Digital.Life, Internet Report 2006*, Geneva, 2005, online: ITU <<http://www.itu.int/osg/spu/publications/digitalife/docs/digital-life-web.pdf>>. (Digital. Life). See also: Financial Times, *Verisign Braces for DNS Onslaught*, February 11, 2007, online: Financial Times <http://blogs.ft.com/techblog/2007/02/verisign_braces.html>.

the expansion of m-commerce in Canada.⁴ Canadian MNOs currently are vying to become controllers of the data transmitted as well as mobile web content providers to captive users, but given today's inherently horizontal nature of networks, based on interaction and decentralized production, it is unlikely that this mobile web model will remain unchallenged, as it curtails consumers' freedom of choice and access to information. While centralized control of data traffic on the mobile Internet may be successful in monetizing access in the short term, it may preclude its long-term growth as mobile pricing and particularly mobile Internet pricing imposes a barrier to widespread consumer adoption. This scenario does certainly translate in productivity losses for the overall Canadian economy due to the net decrease in connectivity.

This report starts by setting out a working definition and the legal framework that applies to M-commerce as an extension of E-commerce. It proceeds to present an overview of the long-range radio transmission technologies involved in mobile telephony and the short-range radio technologies most commonly used to enable mobile payments (M-payments). A brief look to the state of M-commerce and mobile content distribution in prominent regions of the world, including Canada will serve as transition to the rest of the report, which focuses on the importance of M-commerce to the Canadian economy and barriers from the consumers' point of view that stand in the way to put the country at the global fore in this area. Such barriers as pricing, security and privacy risks are exposed as well as the implications for M-commerce derived from the global discussion over net neutrality.

Although the *Telecommunications Policy Review Panel* (TPR) established by the Ministry of Industry to review Canada's telecommunications framework states in its 2006 Final Report that "Canada has one of the most competitive telecommunications markets in the world",⁵ the very same report dedicates six pages to document the shortcomings of the Canadian wireless sector compared to its peers in the industrialized world and particularly the United States.⁶ This report draws on some of the concerns raised by the TPR to the extent that wireless telephony sector's shortcomings negatively impact consumers' interests and subsequently, Canada's productivity and competitiveness in today's information and knowledge economy.

⁴ In Europe, the carrier-dominated mobile payments system Simpay, a venture formed by Orange, Telefónica, T-Mobile and Vodafone, failed to create a pan-European mobile payments system. Created in 2003 and dissolved in 2005, is reported to have ended, among other reasons, due to failure of rival carriers to reconcile their economic interests and work together; as well as due to differences of view as to how the mobile Internet will develop. *See*: Eric Sylvers, *Mobile Payment Venture Collapses*, International Herald Tribune, 28 June 2005, online: IHT <<http://www.ihrt.com/articles/2005/06/27/business/simpay.php>>.

⁵ Telecommunications Policy Review Panel, *Final Report 2006*, online: TPRP <<http://www.telecomreview.ca/epic/site/tprp-gecrt.nsf/en/Home>> at para. 1-22.

⁶ *Ibid*, paras. 1-16 to 1-21.

M-COMMERCE: THE GROWING MOBILE NATURE OF E-COMMERCE

M-Commerce represents the extension of E-commerce into the mobile environment. The global growth of electronic commercial transactions executed by means of mobile phones and communication devices, personal digital assistants PDAs and handheld computers, constitutes the latest and most important development in the area of E-Commerce. While E-commerce has been dependant on the operation of costly personal computer equipment, current advances in disruptive mobile technologies and ongoing migration to packet-based Internet protocol (IP) technologies have propelled the adoption of mobile phones and other devices capable of accessing web content *anytime, anywhere*, bringing E-commerce into the mobile world.⁷

International Law Applicable to M-Commerce

The United Nations Commission on International Trade Law's (UNCITRAL's) *Model Law on Electronic Commerce Model Law* drafted in 1996, is an initiative to modernize global regulatory frameworks pertaining to trade and commercial exchange that is executed entirely or partially by electronic or computerized means.⁸ The *Model Law* does not expressly define the notion of "electronic commerce", since the Internet-based economy was at a very early stage in the mid-nineties, when drafted, but it defines the terms "data message" and "electronic data interchange" (EDI), central to any legal definition of E-commerce. Data message is defined as:

"information generated, sent, received or stored by electronic, optical or similar means including, but not limited to, electronic data interchange (EDI), electronic mail, telegram, telex or telecopy;"⁹

And EDI is defined as:

"the electronic transfer from computer to computer of information used an agreed standard to structure the information."¹⁰

When addressing the issue of E-Commerce in the *Guide to Enactment of the UNCITRAL Model Law*, the Commission decided that it would have in mind a broad notion of EDI, to cover a large range of situations and trade-related uses of EDI and would refer to them as under the rubric of "electronic commerce".¹¹

⁷ In a recent report on the topic, the OECD defines M-Commerce as "a business model that allows a consumer to complete all steps of a commercial transaction using a mobile phone or personal digital assistant (PDA) rather than by going to a "bricks and mortar" store or making voice calls. Transactions involving the purchase of physical goods, such as books, that are delivered off line are still considered mobile commerce." See: Organisation for Economic Co-operation and Development, *Mobile Commerce* OECD, Directorate for Science, Technology and Industry, Committee on Consumer Policy, 16 January 2007, online: Organisation for Economic Co-operation and Development <<http://www.oecd.org/dataoecd/22/52/38077227.pdf>>.

⁸ *Model Law on Electronic Commerce*, GA Res. A/RES/51/162, UNCITRAL (1996), online: <http://www.uncitral.org/pdf/english/texts/electcom/05-89450_Ebook.pdf>.

⁹ *Ibid*, Chapter I, 2(a).

¹⁰ *Ibid*, Chapter I, 1(b).

¹¹ Means of communication encompassed in the notion of "electronic commerce", according to the Commission are the following: communication by means of EDI defined narrowly as the computer-to-computer transmission of data

The Model Law is intended as “a response to users’ need for a consistent set of rules to govern a variety of communication techniques that might be used interchangeably”.¹² The *Guide to Enactment* explains that as a matter of principle, “no communication technique is excluded from the scope of the Model Law since future technical developments need to be accommodated”,¹³ in a clear effort to exercise foresight and provide legislators around the world with future-proof model document that keeps pace with the reality of a changing telecommunications and computer networks-mediated world economy.

E-Commerce Working Definition Applicable to M-Commerce

OECD member countries have, since 2000,¹⁴ endorsed a broad and a narrow definition of what constitutes an E-Commerce transaction based on electronic data interchanges (EDI) as set out by the *Model Law*. According to the broad definition, it comprehends all electronic transactions and is described as the sale or purchase of goods or services, whether between businesses, households, individuals, governments, and other public or private organizations, conducted over computer-mediated networks. The goods or services are ordered over those networks, but the payment and the ultimate delivery of the good or service may be conducted on or off-line.¹⁵ According to the narrow definition, it is concerned with Internet transactions; and is described as the sale or purchase of good and services, whether between businesses, households, individuals, governments and other public or private organizations, conducted over the Internet. The goods and services are ordered over those networks, but the payment and the ultimate delivery of the good or service may be conducted on or off-line.¹⁶

The use of mobile phones for Internet commercial transactions and point of sale (POS) mobile payments belong in the area of E-Commerce according to the OECD,¹⁷ although data monitoring agencies such as Statistics Canada’s define E-commerce as transactions performed over the

in a standardized format; transmission of electronic messages involving the use of either publicly available standards or proprietary standards; transmission of free-formatted text by electronic means, for example through the Internet. The Commission considers that in certain circumstances, the notion of “electronic commerce” might cover the use of techniques such as telex and telecopy, which are older techniques that had some relevant use at the time of the drafting of the Model Law, but wider reference is made to modern communication techniques like EDI and e-mail. While in some situations digitalized information initially dispatched in the form of a standardized EDI message might, at some point in the communication chain between the sender and the recipient, be forwarded in the form of a computer-generated telex or in the form of a telecopy or computer print-out, data messages may be initiated as an oral communication and digitized in the form of a telecopy; or start as a telecopy and end as an EDI message. See: United Nations Commission on International Trade Law, *Guide to Enactment of the UNCITRAL Model Law on Electronic Commerce*, New York, 1999, online: <http://www.uncitral.org/pdf/english/texts/electcom/05-89450_Ebook.pdf> at 17.

¹² *Ibid.*

¹³ *Ibid.*

¹⁴ Organization for Economic Co-operation and Development (OECD), *Measuring the Information Economy*, Annex 4, 2002, online: Organization for Economic Co-operation and Development <<http://www.oecd.org/dataoecd/16/14/1835738.pdf>> at 89; See also: United Nations Conference on Trade and Development UNCTAD, *E-Commerce and Development Report*, 2001, Geneva, Switzerland, 2000, online: <http://r0.unctad.org/ecommerce/docs/edr01_en.htm> at 6.

¹⁵ *Ibid.*

¹⁶ *Ibid.*

¹⁷ *Supra* note 14.

Internet.¹⁸ However, mobile technologies are being gradually migrated to IP protocol -as it is currently happening with short message service (SMS)- and this may change the way E-commerce is defined and measured in the near future. The UNCTAD for example, considers any electronic transactions based on packet-based IP platform as newer forms of E-Commerce.¹⁹

According to the *Model Law* however, and based on its prior definitions of data messages and EDI, even when a mobile is used as a payment method for an M-Commerce transaction at a retail location or a “bricks and mortar” establishment, such transaction would have the elements of an E-Commerce transaction. As a result, it can be said that under the *Model Law* all M-Commerce transactions, including payments alone (M-payments), are inherently E-Commerce transactions, even if they are performed through the use of a closed network -or “walled garden”- instead of using the public Internet.²⁰ In 2004, the UNCTAD, listed M-Commerce along with E-commerce as E-business processes for the purpose of formulating standards to measure information and communications technologies’ (ICTs) participation in the growth of the global economy.²¹

CONSUMER PROTECTION IN A USER CENTERED M-COMMERCE WORLD

New, disruptive digital and radio technologies have had a great impact in shaping the new global economy over the last decade and triggering a structural shift from an economy characterized by passive end users to one of active, engaged users who interact with each other as well as with enterprises. This interaction generates valuable information for companies as they can map it together to visualize clients’ consumption patterns as well as meaningful private information like financial data. The greater consumer participation and engagement has not been accompanied with the corresponding greater degree of legal protections to consumers’ privacy, safety and warranties to their online transactions. In other words, consumers’ information trail remains to be legally protected. While engaging in electronic transactions entails greater risks and uncertainties for users than shopping at a physical store, the bulk of legislation pertaining to E-commerce has been related primarily with authentication of electronic signatures, which extend to the electronic realm the legal and contractual protections given to transactions in traditional commercial activities. Existing general consumer protection laws at the provincial level apply to E-commerce

¹⁸ Statistics Canada use of the narrow definition of electronic commerce, excluding EDI transactions probably due to the fact that it is easier to monitor the effect of the Internet alone on trade and commercial activities. See: Statistics Canada, *The Daily, Survey of Electronic Commerce and Technology 2006*, Thursday, April 20, 2007, online: <<http://www.statcan.ca/Daily/English/070420/d070420b.htm>>.

¹⁹ United Nations Conference on Trade and Development UNCTAD, *Information Society Measurements: The Case of E-Business*, background paper by the UNCTAD Secretariat, Geneva, 3 July 2003, online: <http://www.unctad.org/en/docs/c3em19d2_en.pdf>.

²⁰ Phillip Gordon and Judith Gebauer, *M-Commerce: Revolution + Inertia = Evolution*, Fisher Center for IT and Marketplace Transformation, Haas School of Business, University of California, Berkeley, March 2001, online: <<http://citm.haas.berkeley.edu/publications/papers/wp-1038.pdf>>. The author points at how FedEx was a pioneer of M-Commerce well before the Internet arrived. Back in the 1980’s the company created and rolled out their wireless Digital Assisted Dispatch System coupled with Super Tracker, a handheld device used by drivers that eliminated calls from drivers to dispatchers and the need to write millions of addresses a day. FedEx turned a wireless carrier as they had to buy spectrum across the United States for coverage and migrated from a package delivery company to a supply chain partner/outsourcer and an E-Business.

²¹ United Nations Conference on Trade and Development UNCTAD, *E-Commerce and Development Report 2004*, Geneva, Switzerland, 2005, online: <http://www.unctad.org/en/docs/ecdr2004_en.pdf> at 26.

and protect consumer's rights but they are not drafted to deal with electronic transactions specifically.

The *Canadian Code for Consumer Protection in Electronic Commerce* (CCCPEC) prescribes protections to consumers' rights to privacy, security and informed choice in electronic commerce.²² It is, however, it is a voluntary code and therefore not legally binding. The *Code* includes one of the few explicit E-Commerce definitions -applicable to M-commerce. According to this definition, electronic commerce is a commercial activity that involves a wide range of activities that go beyond just the buying or selling of goods and/or services, including the Internet.²³ Its application extends also to other commercial activities such as leasing, licensing, or otherwise providing a good or service online.²⁴ Activities contemplated in the *Code* include marketing as well as soliciting donations and operating contests and clubs.²⁵ It includes therefore not only activities that take the form of commercial transactions *per-se*, but also online activities that have as ultimate goal a commercial exchange.

It is relevant to note that the *Code* does not establish a difference between whether or not such transactions involve financial profit, as in the case of an outright sale; or if they are non-profit transactions, as in the case of soliciting or giving monetary donations. The gist of the *Code's* definition of E-commerce is its focus on whether the specific activity or transaction takes itself, in whole or in part, in electronic form.²⁶ All of the commercial activities contemplated in the *Code's* definition can be executed today through mobile phones and it could be assumed that members of government, businesses and consumer associations who drafted the *Code* back in 2003, did envision M-commerce as a natural development of E-commerce although it only makes reference to the words "online" and "Internet" and not to the words "mobile" and "wireless". However, all mobile communications devices manufactured for today's networks are, in essence, interconnected computing devices, precluding the need to specifically include those words.²⁷

²² The *Canadian Code of Practice for Consumer Protection in Electronic Commerce* is the benchmark for E-commerce business practices in Canada, endorsed by the Federal, Provincial and Territorial ministers responsible of consumer affairs and consultation with private sector and consumer organizations. See: *Canadian Code of Practice for Consumer Protection in Electronic Commerce*, 16 January 2004, online: Consumer Measures Committee CMC <<http://cmcweb.ca/epic/site/cmc-cmc.nsf/en/fe00064e.html>>.

²³ *Ibid.*

²⁴ *Ibid.*

²⁵ *Ibid.*

²⁶ *Ibid.*

²⁷ According to a report commissioned by Industry Canada's Office of Consumer Affairs to test the Canadian Code of Practice for Consumer Protection in Electronic Commerce, private enterprises' opinion of the Code was uniformly positive on both the pilot project and its business usefulness. See: *Canadian Code of Practice for Consumer Protection in Electronic Commerce, A Pilot Test Project*, Public Interest Advocacy Centre and L'Union Consommateurs, Ottawa, June 2003. Of note however, is the fact that relevant industry's associations, particularly the Cable Television Standards Foundation; the Canadian Wireless Telecommunications Association and the Information Technology Association of Canada were not present for the working group decision of January 10, 2003, to approve the Code in principle. Furthermore, the Canadian Cable Television Association abstained from the Working group vote to approve the Code in principle. See: *Canadian Code of Practice for Consumer Protection in Electronic Commerce*, January 2003, online: Industry Canada <<http://strategis.ic.gc.ca/pics/ca/consumerprotection03.pdf>>.

The *Code* is the result of a consensus reached by relevant stakeholders in the area of E-Commerce in Canada and it is intended to be reviewed when appropriate to keep pace with technology, business practices and the need to update its effectiveness in protecting consumers' interests.²⁸ The final draft approved by private sector, consumers' representatives; and government officials, draws significantly on the Organization for Economic Co-operation and Development (OECD) *Guidelines for Consumer Protection in the Context of Electronic Commerce*.²⁹

OECD Guidelines for Consumer Protection in the Context of E-Commerce

The OECD *Guidelines for Consumer Protection in the Context of Electronic Commerce* was drafted in 1999 after 18 months of consultations with OECD governments, business and to a less extent, with consumer representatives. Although the OECD *Guidelines* are proposed as an international benchmark for the adoption of fair commercial practices, it does not specifically define E-commerce. It however recognizes that providing consumers with transparent and effective protections as found in traditional forms of commerce has been and continues to be key to build consumer confidence and helps eliminate barriers to electronic, online trade".³⁰

Mobile Commerce: At the Core of ICT Infrastructure and Access

The Conference Board of Canada defines connectedness as the "availability and use of information and communication technologies (ICTs) to facilitate communications, interactions and transactions, whenever and wherever", and links ICT use with increased productivity and tangible benefits to competitiveness and quality of life.³¹ For the UNCTAD, advances in ICTs are crucial for social inclusion and cohesion and it proposes a list of basic or core indicators on access to, and use of, ICTs by people, businesses and government since they are the main actors in a society. Both in terms of access to ICT infrastructures and ICT use, the number of subscribers to mobile telephony and broadband Internet services are among the top indicators.³²

The OECD, along with the World Bank, Eurostat, UNESCO and the ITU have partnered with the UNCTAD in exposing the need of establishing benchmarks in the context of the Information Society to serve as guidance to member countries' governments and enterprises in fostering

²⁸ *Ibid.*

²⁹ Organization for Economic Co-operation and Development (OECD), *Guidelines for Consumer Protection in the Context of Electronic Commerce*, 1999, online: (OECD) <<http://www.oecd.org/dataoecd/18/13/34023235.pdf>>.

³⁰ *Ibid.* The OECD *Guidelines* recognize that the benefits of ease and speed at which electronic transactions are made between businesses and consumers also carry the possibility of creating commercial situations that could place risks on the interests of consumers. It refers to consumer protection as a means to limit fraudulent, misleading or unfair commercial conduct online.

³¹ Natalie Gagnon and Brian Guthrie, *Cashing in on Canadian Connectedness: The Move to Demonstrating Value*, The Conference Board of Canada, March 2004, online: <<http://sso.conferenceboard.ca/e-Library/LayoutAbstract.asp?DID=673>>.

³² United Nations Conference on Trade and Development UNCTAD, Partnership on Measuring ICT for Development, *Core ICT Indicators*, November 2005, online: <http://new.unctad.org/upload/docs/Core%20ICT%20Indicators_Eng.pdf>.

Information and Communications Technology (ICT) and E-Commerce development.³³ To respond to this need, it invited a group of experts from the business community to join the Information, Computer and Communications Policy (ICCP) Statistical Panel, with the objective of establishing a set of definitions and methodologies to compile internationally comparable data and measuring various aspects of the information society, the information economy and electronic commerce.³⁴ In October 1998, Ottawa hosted the first OECD Ministerial Conference on E-Commerce,³⁵ where a number of recommendations made by the ICCP group of experts were adopted and incorporated into the conclusions of the conference.³⁶

The experts underlined the role of governments in the promotion of E-Commerce and warned “technology and media-specific rules for recording, storing or transmitting information (for example, certain paper-based requirements) could impede the development of electronic commerce”.³⁷ In the area of legislative approaches to E-Commerce their main recommendation to governments was to support and endorse UNCITRAL’s *Model Law*.³⁸

In 1998, the OECD countries agreed to define the ICT sector as a combination of manufacturing and services industries that capture, transmit and display data and information electronically.³⁹ This definition was considered to be a first step towards an international standard to facilitate the measurement of the economic effect of the information economy. The definition of ICT sector is still a work in progress but it is clear that two central criterions to measure the influence of ICT is the degree to which consumers, households, businesses and government have actual access to the public switched telephone network (PSTN) both through mobiles or fixed lines and to broadband Internet service.⁴⁰

³³ The declaration of principles of World Summit on the Information Society (WSIS), proclaimed in Geneva, on December 12, 2003 was supported by official delegations from all over the world. Principle No. 1 sets the tone for the entire document by declaring “our common desire and commitment to build a people-centred, inclusive and development-oriented Information Society, where everyone can create, access, utilize and share information and knowledge, enabling individuals, communities and peoples to achieve their full potential in promoting their sustainable development and improving their quality of life, premised on the purposes and principles of the Charter of the United Nations and respecting fully and upholding the Universal Declaration of Human Rights. See: International Telecommunication Union (ITU), *The declaration of principles World Summit on the Information Society*, online: ITU <<http://www.itu.int/wsis/docs/geneva/official/dop.html>>.

³⁴ The Business and Industry Advisory Committee to the OECD (BIAC), *A Global Action Plan for Electronic Commerce Prepared by Business with Recommendations for Governments*, (ICCP Panel Recommendations) Ottawa, 1998, online: BIAC <<http://www.biac.org/statements/iccp/Actplan10.pdf>>.

³⁵ Organization for Economic Co-operation and Development (OECD) Ministerial Conference, *A Borderless World: Realizing the Potential of Global Electronic Commerce*, Ottawa, 7-9 October 1998, online: <<http://www.ottawaoecdconference.org>>.

³⁶ The ICCP group of experts became the Working Party on Indicators for the Information Society (WPIIS) in 1997. It participated in the OECD-Ottawa ministerial conference as the WPIIS, whose mandate, inherited from the ICCP, was to work towards the development of internationally comparable statistics for the information society.

³⁷ Organization for Economic Co-operation and Development (OECD), *Ministerial Declaration on Authentication for Electronic Commerce*, Directorate for Science, Technology and Industry, Committee for Information, Computer and Communications Policy, Group of Experts on Information Security and Privacy, online: <<http://ottawaoecdconference.com/english/announcements/reg9r4e.pdf>>.

³⁸ *Supra* note 8.

³⁹ Organization for Economic Co-operation and Development (OECD), *Measuring the Information Economy*, Annex I, Paris 2002, online: <<http://www.oecd.org/dataoecd/16/14/1835738.pdf>>.

⁴⁰ *Ibid.* at 37. According to the OECD, the contribution of the information economy to economic growth and performance also depends on the way new information technologies are used by individuals and businesses. Greater

M-PAYMENTS: THE USE OF MOBILE PHONES AS WALLETS

Millions of consumers are using their mobile phones to pay for small purchases in Japan and Korea, while sparking enthusiasm in Europe in North America, where carriers, banks and other companies are partnering to offer m-payments services to consumers.⁴¹ To the added convenience of being able to use a mobile as payment vehicle, technologies embedded in modern handsets have the potential to enhance the security of the transaction through the use of a Personal Identification Number (PIN) and information included in chips. Additionally, lost or stolen mobiles can be locked and traced to reduce the risk of their use by delinquent or unauthorized users.

However, in North America, where credit and debit cards are widely used, mobile penetration rates lag behind Europe and areas of Asia and subsequently, the roll out and adoption of m-payments technologies is slower. Canada particularly lags well behind even the United States in mobile penetration rates and this has had a direct impact in the roll out of M-payments and M-commerce in general, as it will be discussed later in this report.

Mobile payments in Japan have been available to consumers since 1999, when the system was based on short messaging system (SMS), but today handsets are equipped with chips, scanners and other technologies that allow users to simply wave their phones over a sensor and transactions are completed on the spot. According to NTT DoCoMo, by the end of March 2007, 18 million of its customers will have chip-embedded handsets for contactless and mobile payments. In the United States, mobile payments are still based on SMS, and allow money transfers through mobiles without storing users' information in the handset.⁴² Along with SMS, they rely on confirmation calls to senders and PIN numbers as layers of security to protect the authenticity of transactions.

M-Payments in Canada are not yet popular but mobiles are being currently used as an alternative method of payment. It is currently possible to pay for parking time in Vancouver, Toronto, Winnipeg, Edmonton, Calgary and Burnaby. Consumers need to place a call to the number printed in the parking meter to buy the amount of parking time necessary, which charged to their credit or debit cards. In Vancouver alone there are 8,300 of these parking meters m-payment enabled.⁴³ The three major MNOs, Rogers, Bell and Telus, have also announced a wireless

use of ICT in the production process help raise the overall efficiency of the use of capital and labour; and for technologies based on networks, such as the Internet, the more people who are connected, the greater the potential benefits of the network owing to spillover effects. However, access is a primary concern for policy makers as it is a prerequisite to the use of the technology.

⁴¹ *Supra* note 2: (*Making Mobile Payment Work for Everyone*). M-payments initiatives in Japan have largely been driven by the initiative of MNOs like NTT DoCoMo. In Korea, M-payments have been offered as a result of a partnership between MNOs and the banking industry. In North America, it is expected that the Korean partnership model is more likely to be adopted. *Supra* note 2: (*Making Mobile Payment Work for Everyone*).

⁴² Paypal Mobile is one of such services, online: <<https://www.paypal.com/cgi-bin/webscr?cmd=xpt/cps/mobile/MobileOverview-outside>>.

⁴³ Bill Boei, *Top Up Your Parking Meter with a Cell Call*, The Vancouver Sun, 27 June 2006, online: The Vancouver Sun <<http://www.canada.com/vancouversun/news/westcoastnews/story.html?id=3828b870-dfb1-47f8-a81d-c694702a11dd>>.

payment system through a venture between the three companies. Although the venture was announced in 2005, no commercial operation has started yet. The project would allow prepaid wireless users to buy additional minutes on their existing accounts with their debit or credit cards.⁴⁴

TECHNOLOGICAL FRAGMENTATION: A COSTLY BARRIER TO M-COMMERCE

A significant effect of the fragmented nature of the industry is the fact it translates into higher costs for consumers. Mobile operators have an incentive to adopt or to develop technologies that will differentiate their service making it incompatible with those of competitors at the global level and even at the regional level, as it is the case in North America, where consumers are often locked in by companies through incompatible technologies instead of by competitive service. Professor Bernd Kurz, Ph.D., at the Information Technology Centre, University of New Brunswick indicates in his study *Personal Digital Wireless Telecommunications: An Investigation and Evaluation of Technologies and Services* indicated to this respect:

“North America still suffers from the splintered deployment of up to 7 incompatible digital network standards, particularly in Canada where the generally low population density cannot support this mix of technologies (...) Poor area coverage, isolated subscriber pools, no inter-network roaming, and a late adoption of digital data services caused the wireless telecommunications industry to fall behind the rest of the world. A quick and drastic reversal of this policy is needed, combined with a competition by services rather than by technology and closer co-operation between network operators, to bring sustainability back into this industry and afford subscribers an adequate geographic coverage, better digital data services and roaming across the continent and worldwide”.⁴⁵

Lack of a unified adoption of an efficient universal technology, while beneficial in the short term to operators for maintaining a captive user base by creating a technological switching barrier, correspondingly creates technological duplication, confusing information and therefore, overall market inefficiency. The consequences in the short and long term will have meant higher costs of creating and/or different languages and protocols for different mobile technologies.⁴⁶ Such costs are passed directly on to consumers, slowing mobile and mobile broadband uptake rates, and therefore M-commerce applications. As MNOs persist in “disciplined” or higher pricing policies, their subscriber bases may stagnate and the mobile penetration gap between Canada and the rest of the industrialized world will keep widening. These are barriers that interfere with a swift roll

⁴⁴ Wireless Payment Services Inc. (WPS), *Press Release* 8 November 2005, online: <<http://www.wpspay.com>>.

⁴⁵ Bernd Kurz, Ph.D., *Personal Digital Wireless Telecommunications: An Investigation and Evaluation of Technologies and Services* University of New Brunswick, Faculty of Computer Science, Information Technology Centre, April 2002, online: Institute of Electrical and Electronics Engineers IEEE New Brunswick Section <<http://nb.ieee.ca/documents/bnb-report-20020430/FinalReport.pdf>>.

⁴⁶ Timothy Wu, *Wireless Net Neutrality: Cellular Carterfone on Mobile Networks*, February 2007. New America Foundation, Wireless Future Program, online: Social Science Research Network (SSRN) <http://papers.ssrn.com/sol3/papers.cfm?abstract_id=962027>.

out of affordable and reliable M-commerce services to consumers in Canada and which will be discussed in the second half of this paper.

OVERVIEW OF M-COMMERCE ENABLING TECHNOLOGIES

Cellular Technologies

Mobile telecommunications systems based on cellular technologies first appeared in the 1970s. Those first technologies and standards are known also as first generation (1G) technologies, but their use today is negligible and largely irrelevant to the development of M-commerce consumer market.⁴⁷ Over the last 20 years, new mobile telecommunication systems or technical approaches have appeared and, building upon these transmission technologies, the number of access and encoding or transmission protocol technologies has multiplied. Second generation (2G) and the newer third generation technologies (3G) are the denominations under which current technical approaches and mobile technologies are grouped today, accelerating data transmission rates and facilitating the growth of M-commerce.

A general, non-exhaustive description of the main wireless telephony access standards is provided below to facilitate a basic understanding of the involved technologies. Current proprietary technologies developed by equipment vendors and telecommunications companies use these standards and several more unaccounted for here that nevertheless add to the high fragmentation of the mobile wireless world.⁴⁸

Access technologies

⁴⁷ First generation or 1G mobile systems were analog and based on the Frequency Division Multiple Access (FDMA) technical approach or access technology. It appeared in the 1970s with the introduction of two key improvements: the microprocessor and the digitization of the control link between the mobile phone and the cell site. FDMA divided spectrum up into frequencies and then assigns frequencies and channels to users. Each user is assigned to a channel and the channel is closed to other conversations until the initial call is finished. Before 1G improvements, the first radiotelephones were introduced in the United States in the 1940s, and were meant to connect consumers in cars with the public switched telephone network (PSTN). By the late 1960s the first analog cellular systems were based on a Bell Systems technology called Improved Mobile Telephone Service (IMTS). The technology is called “cellular” because coverage areas served by high power transmitters and receivers were now instead split into smaller coverage areas served by low power transmitters and receivers. Although these early 1G mobiles were not only analog but circuit-based, narrowband and therefore suitable only for voice communications, 1G technologies were already fragmented. The Advanced Mobile Phone System (AMPS) is an analog system based on FDMA, and used to be the most used analog system worldwide; the Nordic Mobile Telephone (NMT) is a standard mainly developed in Nordic countries and in 1998 it was the standard for 4.5 million handsets in the Nordic countries, Asia, Russia and Eastern Europe; Total Access Communication System (TACS) was developed for use in the United Kingdom in 1985 and it was based on the AMPS analog system. See: International Telecommunication Union ITU, *About Mobile Technology and IMT-2000*, Evolution of the Mobile Market, online: International Telecommunication Union <<http://www.itu.int/osg/spu/imt-2000/technology.html>>.

⁴⁸ Referring to the proliferation of wireless standards, Mike McCammon, executive director of Ultrawideband (UWB) Forum, stated at a panel of industry experts at the Wireless Connectivity World (WiCon) conference in London : “...it is a complete and utter mess but hopefully we can move towards having one complete standard...companies currently championing various technologies need to cooperate to ensure that users get the most seamless connectivity experience possible”. UWB Forum is an industry group formed by over one hundred firms to facilitate the production of interoperable, faster wireless technologies. See: ZDNet, *Wireless Standards are ‘a Complete and Utter Mess’*, 26 May 2005, online: <<http://news.zdnet.co.uk/communications/0,1000000085,39200351,00.htm>>.

These are technological means or methods of using the radio magnetic spectrum for the purpose of optimizing the transmission of bits of information in the form of voice or data, also known as approaches. There are two main competing approaches:

TDMA: Time Division Multiple Access (TDMA) improves spectrum capacity by using the same frequency channel for different users and a base station that continually switches from user to user on the channel at different time slots. TDMA divides each frequency channel into six time slots and allocates two slots to each user increasing network capacity by 300% and it is the dominant technology for the second generation of mobile networks.

CDMA: Code Division Multiple Access (CDMA) increases spectrum capacity by allowing all users to occupy all channels at the same time. Transmissions are spread over the whole radio band and each voice or data signal is assigned a unique code to differentiate each call from all others made simultaneously on the same spectrum through a “soft hand-off” that allows for users to communicate with several base stations at the same time. Code Division Multiple Access CDMA is based on “spread” spectrum technology, long used by the military, as it allows encrypted transmissions.⁴⁹ Qualcomm developed the technology and it is currently widely used in North America, the United States and Korea.⁵⁰

As mentioned, many different standards or transmission protocols have been developed to improve data transmission speed and transfer rates using either one of the above approaches. While 2G standards are still predominant today, faster Internet-enabled 3G handsets are rapidly increasing their global market share.⁵¹

Second (2G) and “Second and a Half” (2.5G) Generation Mobile

Second generation (2G) cellular digital systems first appeared by the end of the 1980s, replacing existing analog, first generation (1G) handsets. These systems digitized the control link, the control panel and the voice signal, allowing for better quality and higher capacity at lower cost. Of the estimated 2.4 billion mobile subscribers in the world at the end of 2006, approximately 1.8 billion still use 2G mobile phones.⁵² 2.5G is a speed upgrade to the 2G standard.⁵³

2G and 2.5G standards

⁴⁹ George Lawton, *What Lies Ahead for Cellular Technology?* Institute of Electrical and Electronics Engineers IEEE, Computer Magazine, Vol 38, Issue 6, p14, online: IEEE Xplore <<http://ieeexplore.ieee.org/iel5/2/31000/01439446.pdf?tp=&isnumber=&arnumber=1439446>>.

⁵⁰ CDMA is the main approach used by mobile operators in Canada, with the exception of Rogers, that operates on GSM.

⁵¹ The fourth generation (4G) based on WiMax are currently being tested. The general consensus among researchers is that 4G networks will deliver peak rates of 1 Gigabit per second (Gbps), will be fully IP-based, and will support full network agility for handovers between different types of networks, e.g., 4G to 3G to WLAN.

⁵² CDMA Development Group CDG, 3G World Update: *The Accelerating Migration To 3G, September 2006*, online: CDMA Development Group <http://www.cdg.org/technology/3g/resource/3GWorldUpdate_9-06.asp>.

⁵³ While 2G data transfer is relatively slow: 14.4 kbps (kilobits per second), 2.5G can transfer data at higher speeds; typically 32-48 kbps.

GSM or Global System for Mobile Communications (GSM) uses TDMA technology. It was the first commercially operated digital cellular system,⁵⁴ and it is the standard for all mobile operators in Europe and the bulk of the user base in Asia Pacific, making the world's most widely used standard.⁵⁵ Only Rogers Wireless uses it in Canada, while in the U.S. GSM penetration was boosted after AT&T started its migration towards this standard, with its recent merger with GSM-based Cingular.⁵⁶ T-Mobile is another major GSM-based MNO in the U.S., followed by a list of 62 operators.⁵⁷

There are two 2.5G enhancements to GSM: General Packet Radio Service (GPRS) and Enhanced Data rates for GSM Evolution (EDGE).⁵⁸ The recently announced Apple Computer's iPhone will use GSM and accordingly, will be only offered through AT&T in the U.S.⁵⁹ Although the success of the iPhone is not guaranteed, Apple's decision to launch it in GSM format can certainly be read as Apple's endorsement of the most widely used format in the world today. If it is successful, the iPhone may likely to increase GSM penetration in the North American market.

CDMA IS-95 or CDMAone is a standard that increases capacity by using the entire radio band, with each user using a unique code. It is the standard used by all operators in Canada except Rogers Wireless. Sprint, Verizon, Alltel and USCellular are main users of this standard in the U.S.,⁶⁰ while South Korea is the largest CDMA IS-95 market in the world. The 2.5G version of CDMA is CDMA2000 1X.⁶¹

TDMA IS-136 is the digital enhancement to AMPS technology (a 1G technology),⁶² mainly used by AT&T in the U.S. It is also used in parts of Latin America, and Asia.

Personal Digital Cellular (PDC) is a standard introduced in Japan in 1994 based on TDMA technology and it is the second largest digital mobile standard after GSM. Its 2.5G upgrade is EDGE.

Third Generation Mobile or 3G

Third generation mobile offers the most advanced and faster data transmission speeds available to the consumer market today, capable of delivering online video content and interactive applications. It constitutes a platform for the distribution of converged fixed, mobile,

⁵⁴ Council Directive 87/372/EEC, *On the Frequency Bands to be Reserved for the Coordinated Introduction of Public pan-European Cellular Digital land-based Mobile Communications in the Community*, European Commission, 25 June 1987, online: Eur-lex

<<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31987L0372:EN:HTML>>.

⁵⁵ GSM World, *Statistics*, online: <<http://www.gsmworld.com/news/statistics/index.shtml>>.

⁵⁶ With well over 62 million wireless subscribers in the U.S., AT&T now controls more than 50% of the wireless market in the U.S., See: *AT&T, 1Q Investor Briefing*, 24 April 2006, online: <http://www.att.com/Investor/Financial/Earning_Info/docs/1Q_07_IB_FINAL.pdf>.

⁵⁷ 3G Americas, *GSM operators map*, online:

<http://www.3gamericas.org/english/maps/operators_maps/index.cfm>.

⁵⁸ Data transfer rate increases significantly with EDGE as it allows the use of up to 8 timeslots at 48 kbps for a maximum data transfer rate of 384 kbps.

⁵⁹ Stan Sigman, chief executive of Cingular, (now part of AT&T Unity), said the deal with Apple to distribute the iPhone amounted to a "unique partnership" in the industry. See: Kevin Allison and Richard Waters, *Apple extends its reach with iPhone*, *Financial Times*, 9 January 2007, online: <<http://www.ft.com/cms/s/e13df380-a00d-11db-9059-0000779e2340.html>>.

⁶⁰ CDMA Development Group, online: <<http://www.cdg.org/worldwide/index.asp>>.

⁶¹ Data transfer rates for CDMA2000 1X is 144kps and some operators consider it closer to 3G.

⁶² International Telecommunication Union ITU, *All about the Technology*, online: <<http://www.itu.int/osg/spu/ni/3G/technology/index.html>>.

voice, data, Internet and multimedia services. 3G services are being tested and deployed in many countries. The two major 3G technologies are:

CDMA2000 EV-DO (Evolution-Data Optimized) is the 3G standard for CDMA operators, capable of delivering 400 kbs. In Canada, Bell and Telus, deploying this 3G capabilities of the CDMA family.

UMTS or Universal Mobile Telecommunication System is the standard for GSM operators. It is also known as W-CDMA (Wideband-CDMA), which uses an enhancement called High Speed Downlink Packet Access (HSDPA) to deliver downlink speeds to up to 550 kbps. According to the ITU, sixty percent of the world 3G wireless broadband mobile market has adopted use this standard.⁶³

“Proximity” wireless technologies and applications enabling m-commerce

Besides the particular cellular approaches adopted by MNOs to enable faster data transfer rates, there are the “proximity” or short range radio technologies that enable point of sale (POS) m-payments and location-based services. While there are many short range wireless vendors offering their own technologies, handheld manufacturers are increasingly incorporating them into their mobile devices and MNO’s are rolling out new M-commerce applications in the race to increase their average revenue per user (ARPU).

While the ease of use and the convenience offered by the following short range radio technologies have gained acceptance among consumers they also raise privacy and security concerns to be addressed by operators and regulators to promote the growth of M-Commerce.

RFID (Radio Frequency Identification)

RFID is a generic term for technologies that use radio waves to automatically identify people or objects. The most common RFID use is to store a serial number identifying a person or object, and even storing other information, on a microchip that is attached to an antenna (the chip and the antenna together are called an RFID transponder or an RFID tag). The antenna enables the chip to transmit the identification information to a reader. The reader converts the radio waves reflected back from the RFID tag into digital information that can then be passed on to computers that can make use of it.⁶⁴ Although this technology has been in use for over 50 years mostly for military and industrial uses, the capability to manufacture chips smaller than a grain of rice or tags as thin as film, has expanded their use to the realm of electronic M-payments due to both their potential to replace plastic money when inserted in mobile phones for contactless payments,⁶⁵ as well as for location based services (LBS). RFID can be “short range” when the power source is lower, or “long range” when the power source is stronger. Mobiles’ batteries guarantee RFIDs performance for either purpose.

⁶³ *Supra* note 3 at 30 (Digital.Life).

⁶⁴ RFID Journal, Frequently Asked Questions, *What is RFID?*, online: RFID Journal <<http://www.rfidjournal.com/faq/16/49>>.

⁶⁵ *Supra* note at 60. (Digital.Life).

An RFID short-range technology is Near Field Communication (NFC) and it is being used to enable POS payments, while long-range RFID enables location-based services (LBS) through the actual geographic tracking of the device

NFC (Near Field Communications)

NFC is a short-range wireless connectivity technology standard that allows for safe communication between electronic devices, namely a mobile phone and a POS. The NFC-mobile must nearly touch or be brought within a few centimeters of the NFC-enabled POS for communication or “handshake” between devices to be established.⁶⁶ NFC technology is RFID-compatible and it is also one of the latest short-range wireless telecommunication technologies developed. NFC chips are currently embedded on mobiles for payments in transit systems ticketing primarily, but also for data transfers, calendar synchronization, electronic business cards and access to online digital content. It operates at 13.56 Mhz and can transfer data at 424 Kbs; and since devices must touch or almost touch to enable communication, risk of interference is minimum resulting in highly secure transactions.⁶⁷ While there are currently no NFC-enabled mobiles being offered in Canada, discussions between Visa, some mobile operators and banks for their implementation have been made public.⁶⁸

NFC-enabled mobiles are being used across Europe and Japan.⁶⁹ In the U.S. approximately 250 season ticket holders of the Atlanta Thrashers hockey team and the Atlanta Hawks basketball team have joined a NFC-enabled mobile trial program that allows them to make electronic payments, and download news, graphics and promotional video clips just by holding the mobile at centimeters from specially labeled "smart posters" throughout the arena. The phone's chip reads an URL from the poster's tag that allows the mobile's web browser to open that URL, allowing access to select content only to participants.⁷⁰

LBS (Location Based Services)

LBS using RFID are a fundamental element to the future of user location-centered targeted marketing services, also referred to as “context-aware services”.⁷¹ There are three levels of

⁶⁶ Near Field Communication Forum, *What is NFC?*, online: NFC Forum <<http://www.nfc-forum.org/resources/faqs/>>.

⁶⁷ Near Field Communication Forum, *The Keys to Truly Interoperable Communications*, online: NFC Forum <http://www.nfc-forum.org/resources/white_papers/nfc_forum_marketing_white_paper.pdf>.

⁶⁸ Simon Avery, *Can't Talk, My Phone's Buying Groceries*, 9 January 2007, Globeadvisor.com, online: <https://secure.globeadvisor.com/servlet/ArticleNews/story/GAM/20070109/RCESVISA09>>.

⁶⁹ In Hanau, just outside Frankfurt, the Rhein-Main-Verkehrsverbund (RMV) rolled out a commercial service with NFC-embedded Nokia mobiles to pay for bust tickets after trailing the system for 10 months. The city had already installed card-readers that were adapted to also read the mobiles, therefore eliminating the use of cards for mobile users. In Caen (France) two hundred mobiles are enabled with NFC to pay parking lot fees, obtain information from signs around the city and pay for groceries at local grocery stores, *See: Emily Flynn Vencat, Toss the Wallet and grab the Mobile*, *Newsweek International*, 10 April 2006, online: <<http://www.msnbc.msn.com/id/12113217/site/newsweek/>>.

⁷⁰ Mary Catherine O'Connor, *Sports Fans Use RFID to Pay and Play*, *RFID Journal*, 16 December 2005, online: <<http://www.rfidjournal.com/article/articleview/2051/1/1/>>.

⁷¹ In a context aware environment, users will be assisted with information from the close-by retailers sales and promotions to proximity of gas stations or restaurants, *See: Supra* note 3 at 57 (Digital.Life).

interactivity between mobiles and users: personalization, passive context-awareness and passive contexts awareness. In relation to LBS, mobile users could opt to personalize their interactivity levels according to their preferences. In a “pull” oriented framework, users define the kind of services and information they would like to have access according to their location, while in a “push” oriented framework unsolicited information will target the user. Likewise, in an active context-aware service the mobile would alert the user when friends are around and their location; while a passive context-aware system would alert the user of the presence of friends in the surroundings but leave to the user the option of locating them.

In principle, any one mobile phone user can be geographically located with more or less precision, thanks to triangulation technologies like enhanced observed time difference (E-OTD) and time difference of arrival (TDOA) which measure times of active voice signal or mobile arrival to base stations.⁷² However, compared to RFID chips, these methods do not offer the capability to integrate the operational information between users and enterprises required by M-commerce processes.

Global positioning system (GPS) is another LBS popular technology. GPS-enabled mobiles and smartphones are offered by all three MNO’s in Canada, but, as triangulation technologies, GPS is more concerned with the search of a specific geographic location than to the storage of personal information and the user profile. GPS functions and activation also remain under users’ control, while RFID chips or tags do not.

Consumer Concerns Over RFID Technologies

The main issue surrounding the use of RFID has to do with the kind of application this technology is to be used for. There’s no shortage of research work on the privacy concerns raised by RFID, particularly when used to locate individuals, in terms of informational privacy and loss of control and autonomy.⁷³ TNS Canadian Facts, a marketing research firm, conducted a recent poll on RFID-payments public acceptance on 1,056 shoppers at major grocery stores. The results shows that 74% of respondents think the main advantage of RFID is time-saving and 53% expect RFID to make their shopping experience easier. However, when given a choice between disabling RFID tags immediately after paying the bill or keeping it active so that it could continue to broadcast information to readers, 70% of consumers say they would disable the tags.⁷⁴ This last result is at odds with the 40% of consumers that according to the pollster express are concerned with issues such as security, privacy and safety.

According to the pollster, other “more practical matters”, concern consumers: that the technology would not work (75%) or that the implementation costs will be passed on to them (70%).⁷⁵ What the pollster calls “practical matters” are in fact important issues. Consumers would particularly

⁷² Linda Ackerman, James Kempf, Toshio Miki, *Wireless Location Privacy: Law and Policy in the U.S., EU and Japan*, Internet Society (ISOC) Member Briefing No. 15, November 2003, online: ISOC <<http://www.isoc.org/briefings/015/briefing15.pdf>>.

⁷³ George Hariton, John Lawford and Hasini Palihapitiya, *Radio Frequency Identification and Privacy: Shopping into Surveillance*, Public Interest Advocacy Centre, February 2006, online: PIAC <http://www.piac.ca/privacy/radio_frequency_identification_rfid_and_privacy_shopping_into_surveillance/>.

⁷⁴ TNS Canadian Facts, Press Release, *Canadian Internet Users Enthusiastic About RFID in Grocery Stores*, Toronto, 19 February 2007, online: TNS <<http://www.tns-cf.com/news/07.02.19-RFID.pdf>>.

⁷⁵ *Ibid.*

be concerned if the technology would not work only to the extent that it will affect their interests; in other words, only to the extent not that the technology is faulty and doesn't work, but to the extent that such failure would affect their privacy and safety of their transactions.

Another consumer concern is related to the informational privacy dangers when third unauthorized parties and private enterprises use RFID Systems to collect data beyond consumers' expectations and authorization.⁷⁶ There is also concern about the few attempts to enact specific information privacy legislation to locational data, where technical standards are in constant flux and the rules for the collection and disclosure of location information, as set out by the *Personal Information Protection and Electronic Documents Act (PIPEDA)*,⁷⁷ are broadly construed.⁷⁸

Online retailers will be major stakeholders in the new business field of context aware services, for which mobile-LBS technologies will be essential. There's recent evidence however, that current privacy standards put in practice by online retailers, with a few exceptions, are deficient, while non-compliance with privacy legislation like the *PIPEDA* is widespread, particularly in the openness, accountability, consent and individual access requirements.⁷⁹

Another major concern relates to the technical and informational complexity of context-aware services. Consumers have difficulty discerning between those services they want and those that they want not; and the different parties allowed to access to consumer's information. Well-informed consumer consent is very difficult to consolidate and this fact has important implications for the legitimacy of contract formation through electronic means.⁸⁰ It is only in the face of such consumer informational barriers that users may opt to give their consent to such services as it would be extremely difficult for them to fully realize the implications of their decisions; many of them taken "on the spot" or "on the go" basis.

Non-radio m-commerce enabling technologies

SMS

Short Message Service (SMS) is becoming one of the most successful revenue-generating applications for MNO's around the world. The capability to compose and send short messages came as a built-in feature of 2G mobile phones and curiously enough, it was users themselves

⁷⁶ Information and Privacy Commission of Ontario, *Tag: You're it: Privacy Implications of Radio Frequency Identification (RFID) Technology*, February 2004, online: Information and Privacy Commission Ontario <<http://www.ipc.on.ca/images/Resources/up-rfid.pdf>>.

⁷⁷ *Personal Information Protection and Electronic Documents Act* PIPEDA (2000, c. 5).

⁷⁸ Data collected and stored by public and private organizations has facilitated a range of new practices and uncontrolled decisions of thousands of decentralized public and private organizations on incremental invasion of privacy as a price worth paying for greater convenience and efficiency. Colin J. Bennet and Lori Crowe, *Location-Based Services and the Surveillance of Mobility: An Analysis of Privacy Risks in Canada*, Report to the Office of the Privacy Commissioner of Canada, June 2005, online: Department of Political Science, University of Victoria <<http://web.uvic.ca/polisci/bennett/pdf/lbsfinal.pdf>>.

⁷⁹ Canadian Internet Policy and Public Interest Clinic (CIPPIC), *Compliance with Canadian Data Protection Laws: Are Retailers Measuring Up?*, April 2006, online: <[http://www.cippic.ca/en/bulletin/compliance_report_06-07-06_\(color\)_\(cover-english\).pdf](http://www.cippic.ca/en/bulletin/compliance_report_06-07-06_(color)_(cover-english).pdf)>.

⁸⁰ *Ibid.*

who popularized the application before operators realized its monetization potential. An added interesting element of the SMS story is that the first country where users massively used it was the Philippines. Mobile plans used to include large amounts of free messaging, as the main application was voice; but as plan's minutes ran out, users turned to messaging to communicate with each other. By the year 2000, Philippines' mobile penetration went over 70%,⁸¹ -a watermark the U.S. has just reached but Canada is still far from-⁸² and the country became the world leader in short messaging, ahead of Europe, the U.S. and China.

Worldwide SMS Traffic Volumes per Region (In Billions, 2004 – 2010)
Person-to-Person and Application-to-Person*

Region	2004	2005	2006	2007	2008	2009	2010
Europe	204.8	232.3	292.9	384.2	521.9	605.5	639.6
Asia Pacific	434.1	540.1	672.8	802.4	935.9	1,072.1	1,212.7
North America	52.6	77.3	114.6	150.2	193.7	227.8	249.3
Latin America	44.7	72.3	89.6	115.8	136.2	156.7	174.8
Rest of the world	24.4	29.2	38.9	52.5	72.2	86.6	102.8
Global	760.6	951.2	1,208.8	1,505.2	1,859.8	2,148.6	2,379.3

Source: Portio Research "Mobile Messaging Futures 2005 – 2010", June 2005⁸³

Canadian MNOs only introduced SMS in 2002 and its use among mobile subscribers has mushroomed over the last years, making it a cost-efficient vehicle for communications and M-commerce among consumers, even though its use has been penalized with higher pricing plans. Statistics provided by Canadian Wireless Telecommunications Association (CWTA) indicates that Canadians sent 4.3 billion short messages in 2006, a 300% increase from the 1.5 billion short messages sent in 2005;⁸⁴ and according to the Canadian Radio-television and Telecommunications Commission (CRTC), wireless data revenue reported by all MNOs in 2005 amounted to \$1.3 billion.⁸⁵

⁸¹ International Telecommunication Union ITU, *Pinoy Internet: Philippines Case Study*, online: ITU <http://www.itu.int/itudoc/gs/promo/bdt/cast_int/79479.html>.

⁸² Mobile penetration in the United States is well above 70% while in Canada wireless penetration is just over 50%, a 20-percentile points difference. See: Wall Communications, *A Study on the Wireless Environment in Canada*, commissioned by the Canadian Wireless Telecommunications Association, 29 September 2006, online: <<http://www.cwta.ca/CWTASite/english/pdf/WallWE.pdf>>. (Wall Communications Report).

⁸³ Mobile Data Association, *Press Release*, 24 October 2006, online: text.it <http://www.text.it/mediacentre/case_study_list.cfm?thePublicationID=ED382B44-0F0C-208F-C63C73CB37656F26>.

⁸⁴ Canadian Radio-television and Telecommunications Commission (CRTC) *Telecommunications Monitoring Report, Status of Competition in Canadian Telecommunications Markets*, July 2006, online: <<http://www.crtc.gc.ca/eng/publications/reports/PolicyMonitoring/2006/tmr2006.pdf>>.

⁸⁵ *Ibid.*

Another popular messaging service is multimedia-messaging services (MMS) that deliver pictures, sound clips and video attached to the text message. Although wireless data comprises SMS, web browsing and MMS, the bulk of these revenues are generated by SMS alone, since they are a much more popular application.

Consumer Concerns on SMS

Due to its origin as an informal method of social interaction through mobiles, security and stability of SMS have not been major concerns although SMS alerts are stored in a mobile and if the mobile is stolen, a third person will have access to that information and to information sent afterwards, as long as the mobile is on. While SMS-based mobile payments systems are generally to be used with a personal identification number (PIN), it is very well known that PINs only add a level of security and as a system, has its own vulnerabilities,⁸⁶ making it insufficient on its own to eliminate fraud.⁸⁷ Additionally, reliability levels of SMS are directly linked to the reliability of the networks over which it is transmitted. The unreliability of SMS services can mean that a critical short message may never arrive and the sender may not be aware of this, and this is one of the reasons why SMS' use is still limited to the consumer market only. The business sector remains somewhat reluctant to adopt it as a means of communications for sensitive business processes as the likelihood of having "send and forget" instances undermines institutional or corporate communications.⁸⁸ For several person-to-person (P2P) payments platforms currently in the consumer market SMS is a fundamental communications tool and it should be noted that they are designed for relatively low value transfers, micro-payments and consumer transactions.⁸⁹

2D Barcodes

Mobile phones equipped with code readers are today of normal use in Japan and Europe and more recently in China for promotional uses via mobiles and to sell content.⁹⁰ Two-dimensional (2D) bar codes are a technology that can carry information initially used in the manufacturing industry to track inventory and can carry several hundreds times more data than conventional

⁸⁶ A report by the Toronto Star quoted William Giles, vice-president of advance payments for MasterCard Worldwide "PINs don't eliminate fraud, they do make it more difficult", See Dana Flavelle, *Chip-based cards may Cut into Fraud*, The Toronto Star, 30 January 2007, online: Thestar <<http://www.thestar.com/Business/article/176097>>.

⁸⁷ Omer Berkman and Odellia Moshe Ostrovsky, *The Unbearable Lightness of PIN Cracking*, MSc Thesis, Tel Aviv University, online: Algorithmic Research <http://www.arx.com/documents/The_Unbearable_Lightness_of_PIN_Cracking.pdf>. See also *Canada's Debit Card Fraud Shows Strong Increase*, Ottawa Sun, 7 July 2006.

⁸⁸ Mobey Forum White Paper on Financial Services, 2003 online: Mobey Forum <http://www.mobeyforum.org/public/material/Mobey%20Forum%20White%20Paper%20on%20Mobile%20Financial%20Services%20v1_14.pdf>. The Mobey Forum was founded to facilitate a standard in the creation of a system for M-payments.

⁸⁹ Paypal's service to shop through a mobile is 'Text 2 buy'. Paypal claims to guarantee the retribution of any payment sent without a client's authorization. Text 2 buy works by placing the call through the payment service provider and then entering a PIN whose confirmation is received by SMS. Payments are advanced only upon completion of a physical, human phone to authenticate the order.

⁹⁰ International Telecommunication Union ITU, *Shaping the Future Mobile Information Society: The Case of Japan*, Seoul, 2004, online: <<http://www.itu.int/osg/spu/ni/futuremobile/general/casestudies/JapanCaseLS.pdf>>.

serial codes.⁹¹ With the help of a code reader application in their mobile cameras, users can either create or de-code information encrypted in the code and carry it with them instead of having to enter it or record it manually. This information includes URLs, text, phone numbers, address books, business cards, flyers, SMS and any other texts.

In the context of M-Commerce, 2D codes are more commonly known as quick response (QR) codes and they allow users to read or scan the code's information which is normally an URL specifically formatted for mobile access from where users can download or buy content at premium prices. Users can also create their own codes for personal purposes, like business cards, resumes, flyers and exchange them via SMS,⁹² or "load" economic value, just like regular stored value cards.⁹³ The code displays in the mobile's screen to be read by another person or business' code reader. In Japan, where they have been in use since 2001, beverage-vending machines equipped with NFC and QR code readers that credit users with loyalty points and to redeem them in exchange for content, while in China they have been recently introduced with significant consumer response to retailers.⁹⁴

Mobile software applications for Internet access

The fragmented nature of the mobile sector extended for many years to the realm of applications that make possible access to the Internet from mobile telecommunication devices. However, there seems to be a better understanding that the key world for success in telecommunications is access and interoperability. A valuable lesson of which has been learned from the European industry and government led initiative to create the GSM standard, which today accounts for 82% of mobile handsets in use in the world.⁹⁵ There is growing consensus among global mobile operators about the overall net benefits to be reaped from progressing towards standardization to facilitate access as a means to increase user base -and therefore, ARPU, than inefficient, short-termed attempts of each operator to technologically isolate its users and lock itself in its own fraction of the market. While the following mobile web access protocols and environments can run on GSM or CDMA mobiles, the concept behind them in terms of accessing content through mobiles is quite different.

Wireless Application Protocol (WAP)

WAP is an industry-led initiative to counter mobile technological fragmentation as a barrier to access the Internet. It is an open standard protocol for mobile Internet applications that formats

⁹¹ *Ibid.*

⁹² QR-factory is a NTT DoCoMo's software for creating 2-dimensional codes (QR codes) that can be read by i-mode mobile phones with code recognition function. See: NTT DoCoMo, *QR-factory*, online: NTT DoCoMo <<http://www.nttdocomo.co.jp/english/service/imode/make/content/barcode/download/>>. Popular QR code-making software are Kaywa, QuickMark, Windows Live Barcode, The Mobile Codeatron and Active Print.

⁹³ *Supra* note 7.

⁹⁴ Mobile Data Association, *Mobile Couponing System Receives half-a-million Transactions in First Two Months*, Press Release, 19 December 2006, online: text.it <http://www.text.it/mediacentre/case_study_list.cfm?thePublicationID=9AC7CAAF-076F-5D8E-BAC7E1C82E88CC61>.

⁹⁵ GSM World, *GSM The Wireless Evolution*, February 2007, online: <http://www.gsmworld.com/documents/gsm_brochure.pdf>.

hypertext markup language (HTML) into wireless markup language (WML), so that it can be read by mobile phones. It provides the basic web browsing capabilities but it fits them into the reduced space of a mobile screen. WAP versions of Internet sites were often very slow to load and they offered only text content with few or no graphics. They were also difficult to navigate, requiring users click through several layers of menus. However, a newer version of the protocol, WAP 2.0, has been introduced, rendering more robust mobile Web pages that offer one-click access.

The WAP standard was created by the Open Mobile Alliance (OMA), an industry association formed in June 2002 by nearly 200 companies including the world's leading mobile operators, device and network suppliers.⁹⁶ Today, OMA has grown to have more than 360 member companies among telecommunication companies, MNOs, wireless vendors and content providers and one of its main goals is to promote the consolidation of standards in the use of mobiles as a viable method to access the Internet and the interoperability across different devices, geographies, service providers, operators, and networks regardless of the technological format of the device or the transmission technology used MNOs.⁹⁷

Binary Runtime Environment for Wireless (BREW)

Brew is a proprietary wireless application developed by Qualcomm mainly to cater to MNOs' needs to maximize ARPU through the sale of on-deck content, that is, content administered solely by the operator or licensed from content developers. It handles all the distribution, billing and payment processing.⁹⁸ BREW allows the operator to control all the components of the value chain of data transmission, with monetization as priority,⁹⁹ while exercising control of users' access to off-deck or third parties content.¹⁰⁰ The application's premise is not open web access for users but instead a controlled environment, akin to the conception of Internet as a "walled garden" and in opposition to the concepts of open network and net neutrality.¹⁰¹ Main operators using BREW are Verizon and Sprint in the U.S., KDDI in Japan, Telstra in Australia and China Unicom, and KTF in Korea. Main applications of BREW are gaming, customization through wallpapers, ringtones, news and weather forecasts.

Java Micro Edition (J2ME)

⁹⁶ Open Mobile Alliance, online: <http://www.openmobilealliance.org/about_OMA/index.html>.

⁹⁷ *Ibid.*

⁹⁸ Murray Bonner, *Getting Started With BREW*, online: Devx.com <<http://www.devx.com/wireless/Article/11932>>.

⁹⁹ According to Qualcomm's website, BREW customization capabilities of the user interface (UI) give the operator an untapped, additional revenue generator, Qualcomm, *Operator's Benefits*, online: <<http://brew.qualcomm.com/brew/en/about/uione.html>>.

¹⁰⁰ Most off-portal content is delivered today through WAP 2.0 or through MMS, and to that respect, Qualcomm's Internet Services Vice President of Product Management Mitch Oliver says "by using MarketOne, (a BREW application), operators will be able to have more control over the delivery mechanism (...). In other words, operators can designate which partners will be able to deliver via premium SMS or another delivery option. We think going forward it will be important to provide tools, technologies and services that allow negotiations to happen between the brand owner and the operator (...). This is a way to let operators determine how much control the content provider will have and be able to assign the necessary access and privileges." See: Sue Marek, *The Changing Colors of Content*, *Wireless Week*, 1 May 2006, online: <<http://www.wirelessweek.com/article/CA6330025.html?text=brew>>.

¹⁰¹ *Supra* note 46.

J2ME is an environment that allows mobiles, smartphones and PDAs to run small, user-installable software applications written especially for such devices. It allows users to have many different applications, such as a calculator or business applications and it is widely used by game developers. In fact a game built on J2ME might let users play among themselves in real time over the Internet. The developing toolkit is based on open source and can be developed by anyone. Developers don't have to pay license fees and neither have to phone manufacturers or operators. In Canada, all operators offer J2ME-enabled mobile phones. AT&T, Nextel, and T-Mobile in the U.S, support J2ME. Research in Motion (RIM) was the first wireless device manufacturer in the North American market to ship J2ME-based wireless handhelds.¹⁰²

NTT DoCoMo's i-mode

It is NTT DoCoMo's own proprietary mobile web environment created as a revenue-generating alternative for the company when the Japanese mobile telephony market was reaching maturity 1999. It was the first successful packet-based system for wireless access to the Internet in the world, although the sites to which users initially had access were all hosted by NTT DoCoMo servers only. The current approach of the largest Japanese operator today in relation to i-mode, however is open access, in opposition to the restricted or "walled garden" approach of the North American BREW environment. The i-mode environment uses a simplified version of HTML, Compact Wireless Markup Language (CWML) instead of WAP's Wireless Markup Language (WML).

There are today around 95,000 i-mode sites. Services available with i-mode include: game playing, videos, news and weather forecasts. Since its release, i-mode, attracted an overwhelming support from mobile phone users as it did not charge users for the time they remain online but only for the information they retrieve, although some websites are available only on a per-fee basis. The service today counts 46 million subscribers in Japan and 5 million users in other countries, mostly in Europe and Asia, where i-mode is offered by operators under DoCoMo's license.¹⁰³ NTT DoCoMo is the largest mobile network in Japan, with 56% share of the country's mobile market.

M-COMMERCE IN THE WORLD

Japan

NTT DoCoMo in Japan was the first MNO in the world to roll out 3G services in 2001, known as "freedom of multimedia access" or FOMA, to which 23,4 million users subscribed. By 2006, that number nearly doubled.¹⁰⁴ At the end of 2005 there was a total of 69,2 million people using

¹⁰² Sun Microsystems, *Java Technology Energizes Mobile Services with Innovative Solutions Sun's J2ME Platform set to Drive the Canadian Wireless World*, online: <<http://ca.sun.com/en/aboutsun/success-stories/rim/>>.

¹⁰³ i-mode is being provided world-wide through DoCoMo's partners through a licensing scheme involving mobile operators in the following countries: Germany, the Netherlands (KPN), Belgium (Base), France (Bouygues Telecom), Spain (Telefonica Moviles), Italy (Wind), Greece (Cosmote), Australia (Telstra) and Taiwan (Far East Tone). United Kingdom (O2), Singapore (StarHub), Israel (Cellcom), Ireland (O2) and Russia (MTS) have launched i-mode services on October 2005. The worldwide partnership is called the i-mode Alliance.

¹⁰⁴ Federal Communications Commission (FCC), *Annual Report and Analysis of Competitive*

the Internet from mobile devices in Japan, compared to 66 million conventional PC users, according to the Ministry of Internal Affairs and Communications' *Telecommunications Usage Trends Survey 2005*. The results indicate that for the first time, the number of Japanese accessing the Internet through their mobiles was higher than the number who accessed through PCs. Of these two user groups, 48.6 million use both a mobile device and a PC; making the size Japan's Internet population to go up to 85.3 million users, the equivalent to two in every three people in the country.¹⁰⁵

According to the *Survey*, mobile Internet users overwhelmingly use the mobile Internet for “communicating or exchanging information (including e-mail, SMS and MMS) with the office, friends, etc.”, (69,5%); followed by a 26,2% that uses it for downloading or playing digital content (music)”, and a 25,1% that uses it to access information such as news and weather forecasts. A 13,3% obtains information on products, merchandise and companies; 11,2% to buy digital content such as images and video and a 8,6% to purchase or trade merchandising. Mobile banking was only used by 1,9% of respondents. Predictably, all of the respondents said to take advantage of mobile technology as it allowed them to access the Internet while on go.¹⁰⁶

Japan's merchants are keen to cash in on the popularity of mobile Internet services like NTT DoCoMo's i-mode; accordingly, the number of m-commerce sites is increasing and consumers appear to be gradually taking to shopping via mobiles. In 2005 the total mobile Internet commerce market was worth ¥724 billion (US\$6.3 billion),¹⁰⁷ according to the report. Sales of mobile content like ringtones and wallpapers still make up a large proportion of that, but in 2005 sales of conventional goods from mobile Internet sites exceeded that of mobile content.

Europe

Although Europe, with only 11% of 3G penetration lags behind Japan, easily the leader in 3G networks (and mobile data usage generally) with close to 60% of 3G penetration,¹⁰⁸ it is some way ahead of the United States and Canada on mobile content usage. On-deck sales in Europe account for around 30 per cent of the total mobile content market, but vary significantly according to content category.¹⁰⁹ For ringtones for example, the figure is much lower, but for new services such as TV and music files, on-deck sales are much more important.¹¹⁰

Once the market for a type of content is established, off-deck mobile content providers have established themselves. This is typical for new types of mobile content – since the m-

Market Conditions With Respect to Commercial Mobile Services, Eleventh Report, Adopted September 26, 2006, online: <FCC http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-06-142A1.pdf>. at 88. (Eleventh Report).

¹⁰⁵ Ministry of Internal Affairs and Communications, Information and Communications Policy Site, Statistics, *Results of Telecommunications Usage Trends Survey for 2005*, 19 May 2006, online: Ministry of Internal Affairs and Communications http://www.soumu.go.jp/joho_tsusin/eng/Statistics/pdf/060519_1.pdf.

¹⁰⁶ *Ibid.*

¹⁰⁷ Digital World Tokyo, *More Internet Users Mobile than Wired in Japan*, 4 July 2006, online: Digital World Tokyo http://www.digitalworldtokyo.com/2006/07/more_Internet_users_mobile_tha.php.

¹⁰⁸ European Commission, *Information Society and Media, Interactive Content and Convergence: Implications for the Information Society, A Study for the European Commission*, Final Report October 2006, online: European Commission

<http://ec.europa.eu/information_society/eeurope/i2010/docs/studies/interactive_content_ec2006_final_report.pdf>.

¹⁰⁹ *Ibid.*

¹¹⁰ *Ibid.*

commerce's progress depends on the leadership role of the industry in facilitating access and it is very often the case that the first services are launched in partnership with operators through their portals. The vast majority of mobile phones are pre-set to have the operators' portal as a home page for the browser. Examples include Vodafone's *Live!* service and O2 Active. The first efforts to implement m-commerce, in the early 2000s were under the 'walled garden' which meant that access to mobile contents was controlled by the network operator. However, there is currently no major operator solely using a walled garden approach in Europe.

Although Europe lags behind Japan, by far the leader in 3G networks (and mobile data usage generally), Europe is some way ahead of the United States in both mobile and 3G penetration. According to the OECD, the European market for content in 2002 was estimated at around US \$2.5 billion,¹¹¹ today however the estimate is that the European mobile content market is somewhere close to the US \$35 billion.¹¹²

2005 Mobile music revenues (€m) Euro per capita

Country	Mobile Music Revenues (€m)	€ per Capita
Austria	2,7	0,34
Belgium	0,6	0,06
Denmark	0.3	0.07
Finland	0.5	0.10
France	14.2	0.23
Germany	12.6	0.15
Italy	10.3	0.18
Netherlands	0.8	0.05
Spain	3.7	0.09
Sweden	1.9	0.21
UK	28.2	0.47
Total	76.34	0.21

Source: European Commission....

United States

The overall coverage of 3G networks in the U.S. is currently well above 90% of the country's mobile user base.¹¹³ The largest U.S. mobile carriers Cingular (AT&T) Wireless, Sprint Nextel, T-Mobile and Verizon Wireless are already seeing huge growth in data usage. Together they generated more than \$6.3 billion in wireless data revenues for the first half of 2006.¹¹⁴ Overall,

¹¹¹ *Supra* note 7.

¹¹² Convergys, *M-commerce: Capturing the Revenue Stream*, January 2006, online: <http://www.convergys.com/white_papers.html>.

¹¹³ *Supra* note 104. (Eleventh Report).

¹¹⁴ Chetan Sharma, *Global Wireless Data Market Update 2006*, online: <<http://www.chetansharma.com/worlddatatrends2006.htm>>.

wireless data service revenues, which also include several regional carriers, exceeded \$7 billion in the first half of the year. Mobile carriers in the U.S. could generate more than \$15 billion in data revenue for all of 2006, meaning an almost 75% percent jump from 2005, when data services for the entire year accounted for \$8.6 billion.¹¹⁵

However, due to the fact that mobile virtual networks operators (MVNOs) do not own their own facilities-based networks and must lease them from facilities-based mobile network operators (MNOs) who own them, MVNOs are dependent on the underlying speed of the leased network. This means that even though the handsets are capable of doing much more, downloading content or surfing Web pages could still take a long time, or that MVNO users may find their traffic content delayed while MNO-portals traffic is prioritized. As a result there has been media reports indicating that MVNOs like Mobile ESPN and Helio have experienced difficulties to sign up new customers,¹¹⁶ contributing to slow down the growth of m-commerce in the world's largest economy and to the ongoing debate on net neutrality extending to the domain of the mobile Internet.

In the area of m-payments, Visa unveiled its project to capitalize on the accelerated mobile penetration in the U.S. in recent years by turning mobiles into e-wallets by adopting technologies that would allow mobiles to be swiped in front of merchants' POS scanners, just as it is done with plastic cards. For this purpose, Visa has partnered with Nokia Corp., the worlds' largest handset maker, to develop the platform. It has also partnered with IBM Corp., VeriSign, and NXP Semiconductors. In an announcement made on January 2007 in Las Vegas at the annual Consumer Electronic Show, the company stated that it expects to process \$140 billion through mobile payments by 2010.¹¹⁷

Africa

The m-commerce experience in Africa is not yet dominated by statistics on downloads of ringtones, wall papers or gaming as mobile Internet access cannot be afforded yet by the vast majority of users. M-commerce in Africa is more about m-business and how to be creative in the use of a mobile phone as a tool to counter material and financial scarcity.¹¹⁸ Due to historical very low average levels of wireline penetration and inefficient telephone companies operating monopoly markets, the embracing of mobile telephony is perhaps the most successful stories in Africa in recent years. In Tanzania for example, it took five years to mobiles to outnumber fixed

¹¹⁵ CNet News.com, *The Mobile Internet: Are We There Yet?* 29 August 2006, online: CNet News.com <http://news.com.com/The+mobile+Internet+Are+we+there+yet/2100-1039_3-6110100.html>.

¹¹⁶ *Ibid.*

¹¹⁷ Simon Avery, *Can't Talk, My Phone is Buying Groceries*, The Globe and Mail, 09 January 2007, online: The Globe and Mail <<http://www.theglobeandmail.com/servlet/story/RTGAM.20070108.wcesvisa0108/BNStory/Technology/home>>.

¹¹⁸ Impact of mobiles in economic growth is large in both developed and developing countries, but around twice as important in the latter group, where there is also a critical mass effect, according to a study conducted by specialists from the London Business School, University of Toronto and Jean Cabot University. The policy implication of their results for developing countries is clear: it will be worth investing large amounts in telecommunications to get close to universal service. As wireless technologies are much lower cost to roll out over large areas than fixed line systems, mobile can potentially play a vital role in economic development. See: Leonard Waverman, Meloria Meschi and Melvyn Fuss, *The Impact of Telecoms on Economic Growth in Developing Countries*, online: University of Michigan <<http://web.si.umich.edu/tprc/papers/2005/450/L%20Waverman-%20Telecoms%20Growth%20in%20Dev.%20Countries.pdf>>.

lines, while in countries like England it took 15 years, even when mobile pricing in Africa is not lower than in the rest of the world. In Nigeria, the world's fastest growing mobile market according to the International Telecommunications Union,¹¹⁹ the number of wireless users grew a 143% in 2003 alone. The discussion over wireline-wireless substitution is pointless across the continent because wirelines never reached the average African household, while today 75% of all new phone subscriptions are wireless.¹²⁰

Some examples of M-commerce and M-business uses in Africa are different than in developed economies, but speak to the unlimited potential of access for economic growth.¹²¹

- In a township in Cape Town mobile users buy pre-paid electricity cards via SMS and users receive a message back with a code to make the purchase.
- Mobile phones are used by students enrolled in distance courses at the University of South Africa to receive critical information on their courses.
- Kenya and Tanzania have projects sponsored by the United Kingdom and in partnership with Vodacom and Safaricom, commercial banks and micro-finance non-profit organisations to deliver banking services to unbanked or remote customers.
- Mafia Island's fishermen in Tanzania use mobiles to get market, fishing, and weather information, useful for time-management and information on prices while off-shore.
- A toy manufacturer in Cape Town employs deaf persons and communicates with them via SMS. Without SMS, according to the owner, it would not be possible to employ his staff.
- Entrepreneurs use mobiles to take pictures for business purposes; real state agents take pictures of their properties as marketing tool, and truck operators take pictures of crash scenes for insurance purposes.

Today, however, tens of millions of people in different countries in the continent are having access to mobile telephony, and Africans, along with populations of other low and middle-income countries, make up for more than 20% of all the world's mobile users.¹²² As more developed markets approach maturity, developing countries experiment market growth that doubles that of developed economies.

M-COMMERCE IN CANADA

¹¹⁹ Vanessa Gray, *The Un-wired Continent: Africa's Mobile Success Story*, Spring 2006, online: International Telecommunication Union (ITU) <http://www.itu.int/ITU-D/ict/statistics/at_glance/Africa_EE2006_e.pdf>.

¹²⁰ *Ibid.*

¹²¹ The Vodafone Policy Paper Series, *Africa: the Impact of Mobile Phones*, Number 2, March 2005, online: World Bank <<http://info.worldbank.org/etools/docs/library/152872/Vodafone%20Survey.pdf>>.

¹²² Africa however, only accounts for 5% of the world mobile subscriptions, with about 100 million subscribers in total, however, from 8 million wireless lines in 2000, the continent jumped to over 100 in 2006, nearly doubling Asia's wireless market growth. See: Xan Rice, *Phone Revolution Makes Africa Upwardly Mobile*, Times Online, 4 March 2006, online: Times Online <<http://www.timesonline.co.uk/tol/news/world/article737130.ece>>.

It is conventional wisdom within the telecommunications sector that in terms of modern digital wireless telephony technologies and content distribution, the Euro zone has been 12 to 18 months behind the Japan and Korea and the Canada and the United States are 12 to 18 months behind Europe,¹²³ among other reasons, due to the time difference in between these geographic zones in rolling out their 3G networks called also next generation networks (NGNs).

Size of the Canadian M-Commerce Market

The m-commerce market in Canada is not as significant as it is in the rest of the developed world in terms of size, available content and variety of services, perhaps due in part to the still low mobile penetration rate. However, data services are the fastest growing revenue source for MNOs. The main driver of mobile data services in Canada is SMS, followed by ringtones and wallpaper downloads.¹²⁴ A 25% of Canadian wireless users send or receive text messages,¹²⁵ lagging well behind the U.S., where the number is 34,9% and substantially behind Euro countries like the U.K. and Germany with 83,4% and 79,4% respectively. Even the number of Australians who use SMS more than doubles that of Canadians with 65%.¹²⁶ Only a 4% of Canadian wireless phone users actually use their mobile phones to access the Internet for information such as weather, news, financial information, sports scores and other content according to a study by Decima Research, *Usage of Wireless Communications in Canada*,¹²⁷ which did not include in the survey the question of why users who don't browse the Internet on their mobiles choose to do so.¹²⁸ Only 4% of users send or receive e-mails (a mere 2% increase since 2000) and an even smaller percentage of wireless users, or 3%, actually use MMS.¹²⁹

Activities performed over cellular phone in Canada.¹³⁰

Send or receive text messages	25%
Take pictures	15%
Download content	15%
Function as a Push-to-Talk service	7%
Instant messaging	6%
Send or receive emails	6%
Check for information on the Internet	4%
Send or receive multi-media messages	3%
Listen to music	2%
Download music	2%

Source: Decima Report

¹²³ Screen Digest Ltd., CMS Hasche Sigle, Goldmedia GmbH, Rightsmedia Ltd., *Interactive Content and Convergence: Implications for the Information Society, A Study for the European Commission*, October 2006, online: European Commission Information Society <http://ec.europa.eu/information_society/eeurope/i2010/docs/studies/interactive_content_ec2006_final_report.pdf>.

¹²⁴ Decima Research, *Usage of Wireless Communications in Canada*, Final Report, April 2006, online: CWTA <<http://www.cwta.ca/CWTASite/english/pdf/DecimaStudy%202006.pdf>>.

¹²⁵ *Ibid.*

¹²⁶ *Supra* note 104. (Eleventh Report).

¹²⁷ *Supra* note 124.

¹²⁸ *Ibid.*

¹²⁹ *Ibid.*

¹³⁰ *Ibid.*

As SMS use popularized over the last years, MNOs proceeded to monetize short messaging to increase ARPU figures, having as natural result their data revenues double from \$416 million or 6% of the 4,7 billion revenue in 2001, to \$1,2 billion or 11% of the 8.2 billion MNOs revenue in 2005.¹³¹ While part of the revenue increase reflects wireless penetration and increased use of short messaging, it also reflects substantial price increases that operators have applied to SMS.

POLLARA'S SURVEY ON THE CANADIAN MOBILE INTERNET

In March 2007, the strategic public opinion and market research firm Pollara, conducted a survey commissioned by PIAC among mobile Internet users across Canada to inquire about central public interest and consumer issues raised by the growth of m-commerce, and particularly with the use of mobile phones to access packet-based (or, IP) content services using mobiles. Short messaging was excluded from the questions as SMS is a service that does not depend on packet-based technology or mobile Internet. While SMS represents the largest share of data revenue for Canadians MNO, it represents a complement to voice. SMS has been, for the purposes of the survey, characterized as a technology that can enable m-commerce activities like buying and selling, and m-payments; but distinct from distributed content. The results are reproduced in Appendix B of this report.

Limited Mobile Internet Content Offered in Canada

In addition to relatively low levels of mobile penetration for an industrialized economy,¹³² Pollara's survey, shows that the number of consumers that access packet-based content products off the Canadian mobile Internet is small. While only 18% of mobile users download ringtones (this item is far the most popular), a 4% download music tracks, followed by a 3% that say to access news services, and 2% who download videos. Finally, 7% of respondents access other information services, like weather forecasts and stock quotes.

Technology and Pricing: Barriers to Current Users

It is not surprising that given the small size of the m-commerce market and the limited number of products available to users, only 12% of them experience problems. However, of the 12% who said to have experienced problems with the packet-based services accessed through their mobiles, the majority of them, a 36%, mentioned software or environment incompatibility as the main difficulty, followed by a 28% who said to have had problems with billing and overcharges. Content delivery was too slow or received late for 18% of respondents; for a 9% difficulties were due to inability to answer the phone when services were offered; followed by a 9% who cited misunderstanding, another 9% who cited lack of clarity in the instructions and a final 9% who attributed difficulties to poor customer service.

Users' Information Security and Privacy: Government and Industry Must Act

¹³¹ *Supra* note 84 at 81.

¹³² The percentage of respondents who said to have access to a mobile phone was 60%, although the mobile penetration rate in Canada, by population is only 52%. *Supra* note 124.

Canadian mobile users are apprehensive about the implications of storing their personal financial data in chips inserted in their handsets and about their handsets being used as m-payment mechanisms. When asked about what would be the best mechanism to protect their rights as consumers under the above scenario, more than half of them or 52% responded that a combination of industry codes and government rules would be the best mechanism, followed by a 17% who think that government rules are the best mechanism. An industry-wide code of conduct alone was the best mechanism only for 9% of users, followed by a 8% who preferred none of the above; 5% who were content with a wireless phone company or online merchant own policies and 2% who preferred all of the above.

Mobile Internet Users' Stance on Spam

Spam constitutes a significant problem for all stakeholders involved in the mobile Internet. It is a nuisance that causes losses to consumers in terms of their own time, unwanted billing and damages to their equipment. When inquired as to how would be the best method to control mobile phone spam, 40% of them responded that spam should be made outright illegal and 31% responded that a combination of an industry-wide of conduct and government rules would be the best method. A 9% expressed that government rules would be best, followed by a 9% who opined that an industry-wide code of conduct alone would suffice. Only 2% of respondents agreed with no restrictions to spam.

Canadian Mobile Internet Users and Network Neutrality

The current low demand for packet-based content delivered through mobiles in Canada may be related with the fact that consumers expect an Internet experience that is real, unlimited access to the open network of the world wide web, instead of a service that prioritizes, privileges or restricts access to certain networks. When current mobile users were asked about whether they think if MNOs should be able to control their access to websites, 69% disagreed with the proposition and only 26% agreed.

BARRIERS TO M-COMMERCE IN CANADA

In the case of m-commerce in particular however, the distance between Canada and the rest of the mentioned economies is of greater proportions, given the many barriers that consumers still face to have access to real Internet-based services and products via their mobiles. Such barriers are predominantly access pricing,¹³³ followed by outdated “walled garden” approaches to m-commerce, and limited 3G network coverage.¹³⁴

Pricing

¹³³ The Seaboard Group, Lessons For Canada: *Wireless Pricing- A Cross-National Survey: U.S. Canada, and Europe*, July 2005, online:

<<http://www.seaboardgroup.com/main/index.php?option=content&task=view&id=290&Itemid=123>>.

¹³⁴ Canadian users have posted weblog complaints about speed and price uncompetitiveness of Canadian MNOs. See: Roland Tanglao's Weblog <<http://www.rolandtanglao.com/archives/2005/12/13/wireless-data-in-canada-is-ridiculously-expensive-boris-is-right>>.

Operators offer mobile web browsing and e-mail access as part of bundles or as add-ons to existing consumers' plans. All carriers in Canada offer metered plans that include a fixed amount of megabytes and keep track of the number of kilobytes subscribers use when they download any content and transmit or receive information. Bell's offer of web browsing starts with 'unlimited browsing' an access fee of \$7 that allows user access not to the Internet but e-mail along with a number of packet-based content on-deck channels (Bell's own portal): news and info, sports, games, dating, and shopping.¹³⁵ Telus charges a minimum of \$5 access fee coupled with a 5 cents per page visited. Telus' web browser allows access to a selection of around 100 sites. Telus' bundles go up to \$25 and ties web browsing to other services like e-mail, instant messaging, TV, radio, and music channels.¹³⁶ Rogers' mobile Internet browsing starts at \$5 including 2Mb of downloadable data, with every additional Kilobyte charged at 5 cents.¹³⁷ Invariably, when subscribers exceed the monthly number of megabytes under a specific plan, the carrier starts charging additional data fees on a per-megabyte basis or a kilobyte basis, depending on the contract's terms. Mobile subscribers may also access the same content on a pay-as-you-go basis, without purchasing a monthly data plan, but the pricing schedules of these plans is significantly higher and subject to additional connection fees and the metered per-kilobyte usage rate fee.

Mobile users' dissatisfaction with pricing

The comparatively higher prices that Canadians pay for the use of their cellphones has been amply documented, and consumers themselves have been vocal about their dissatisfaction with poor quality of service and the internationally uncompetitive fees they are charged and frequently posted their opinions in academic's blogs¹³⁸ and opinion threads posted online by national media.¹³⁹ A research study conducted by the Seaboard Group in 2005 on mobile telephony pricing in Canada, concluded that the average Canadian cell phone user pays 60% more than the average American and 19% more than the average European.¹⁴⁰ As a result of the study, the Seaboard Group made, among others, the following recommendations to Canadian wireless carriers (underlines added):¹⁴¹

- Canadian carriers need to encourage their customers to use their phones – not penalize them for use – and look to the U.S.; provide Canadians with less complex plans. Guaranteed maximum pricing, add-in the features and guess

¹³⁵ Bell Canada, *Unlimited Mobile Browser™*, online: <<http://www.bell.ca/shopping/MBUN.details>>.

¹³⁶ Telus Mobility, *Add a Spark Bundle*, online <http://www.telusmobility.com/on/wweb/how_bundle.shtml>.

¹³⁷ Rogers, *Navigate Mobile Internet*, <<http://www.shoprogers.com/store/wireless/services/voice/navigate-mobile-Internet.asp?shopperID=VNBKK2K0MCE78K5MN2KDW8CXAVTP7X10>>.

¹³⁸ Michael Geist, *Wireless Number Portability Only A First Step*, *The Toronto Star*, 12 March 2007, online: Michael Geist <<http://www.michaelgeist.ca/content/view/1795/159/>>.

¹³⁹ Some examples are: *Mobile Magazine*, *Canadians Pay More*, January 12, 2004, online: <<http://www.mobilemag.com/content/100/104/C2369/>>; Mark Evans, *A Canadian Take on Telecom and Technology*, online: <http://evans.blogware.com/blog/_archives/2005/2/5/303706.html> ; B.Mann Consulting, *Wireless data in Canada is ridiculously expensive*, online: <<http://www.bmannconsulting.com/blog/bmann/wireless-data-in-canada-is-ridiculously-expensive>>.

¹⁴⁰ The Seaboard Group, *Lessons For Canada: Wireless Pricing- A Cross-National Survey: U.S. Canada, and Europe*, July 2005, online: <<http://www.seaboardgroup.com/main/index.php?option=content&task=view&id=290&Itemid=123>>.

¹⁴¹ *Ibid.*

what? – usage will go up, our reliance on the mobile phones will increase, and migration from landline will take off.

- Worry less about the financial analysts. They really are a small market. They will be convinced by results – they can be trained to overcome their ARPU fixations. Grow your customer base. We have another 55% or more market penetration to achieve. The money will come.
- Long Distance in the wired world is creeping closer to free. Get with the programme. As the mobile phone becomes the key personal accessory reinforce the pattern. Stop penalizing users with long distance charges. Embrace the trend to free – include ‘long distance’ minutes in the general minute bucket. If your network architecture costs you too much, replace it with an IP fabric – but take the marketing high road.

Eighteen months later, the same comparative pricing research was conducted and the results showed no substantial change: The Canadian average high user still pays 56% more than her American counterpart.¹⁴² This time round, key findings were:

- A heavy cell phone user (he or she who uses approx. 1,200 minutes a month & certain data services) in Canada pays roughly 56% more than the same user in the United States. Average users pay about 33% more than his American counterpart.
- Light users referred to as a ‘survival users’, pay 27% less per month than the average American, but the news for the light user is not all good: – that same user would pay 42% less if he or she lived in Stockholm.
- Heavy cell phone users are searching the continent for the best deal, consider moving to Athens, Georgia – where an unlimited North American calling goes for approximately US\$95/month – about half the cost of a Canadian plan, which doesn’t include the benefit of unlimited long-distance calls.

Some news media outlets published pieces interpreting the findings of the study:

"Canadians aren't tech laggards, as has been suggested in recent discussions on the country's state of wireless phone competition (...) Instead, they are rational economic beings. Canadians hesitate to buy cellphones or to hit the send button on a cellphone knowing full well the cost at the end of the month will be breathtaking."¹⁴³

¹⁴² The Seaboard Group, *Lament for a Wireless Nation - A Cross-National Survey of Wireless Service Prices: Canada, the United States and Europe*, online:

<<http://www.seaboardgroup.com/main/index.php?option=content&task=view&id=601&Itemid=166>>.

¹⁴³ CTV.ca, *Canadians Avoiding Cellphones Because of Fees*, March 2007, online:

<http://www.ctv.ca/servlet/ArticleNews/story/CTVNews/20070306/cellphone_study_070306/20070306?hub=TopStories>.

According to the Seaboard study, Canada has one of the lowest mobile penetration rates among the OECD countries ranking second last. The study concludes that the relatively high cell phone prices in Canada suppress demand for wireless services.¹⁴⁴

Average Revenue per Subscriber (ARPU) per Month
First Quarter 2006

Country	ARPU/month US\$	5-Year Growth Rate
Canada	\$46	11%
France	\$37	6%
U.K.	\$32	3%
U.S.	\$53	-4%
Italy	\$25	-4%
Germany	\$21	-15%
Japan	\$55	-19%
Sweden	\$20	-32%

Source Merrill Lynch GWM 1Q06 (Wall Communications).

Moreover, The U.S. population,¹⁴⁵ with just over nine times Canada's population,¹⁴⁶ counts with about 180 facilities-based mobile operators or MNOs,¹⁴⁷ that is, thirty-six times the number of MNO's operating in Canada, which are only five.¹⁴⁸ In the U.S., 98% of the population has access to 3 or more mobile services, and in the most densely populated cities, which are just as densely populated as Canadian urban centres, consumers have access to six or more operators.¹⁴⁹

Wireless Pricing Relative to OECD Economies

Confirming the findings of the 2005 Seaboard Group study, Canada did poorly in OECD comparative pricing exercise among member economies for regular mobile users. In the OECD's *Communications Outlook, 2005*, a cross-OECD country mobile wireless service price comparison was conducted for low, medium and high volume users on the basis of rates in effect in August 2004. According to the analysis, rates for low volume users in the U.S were about 10% cheaper than those in Canada.¹⁵⁰ In the case of medium volume users, rates in Canada were seventh cheapest and about 15% cheaper than in the U.S. For high volume users however, Canada was 13th cheapest. Rates in the Canada in this case were almost 40% more expensive than those in the U.S. at the time.

¹⁴⁴ *Supra* note 142.

¹⁴⁵ United States Census Bureau, *Population Clock*, online: <<http://www.census.gov/main/www/popclock.html>>.

¹⁴⁶ Statistics Canada, *Canada's Population Clock*, online: <<http://www.statcan.ca/english/edu/clock/population.htm>>.

¹⁴⁷ Cellular Telecommunications & Internet Association, CTIA, *Wireless Quick Facts*, September 2006, online: <<http://www.ctia.org/media/index.cfm/AID/10323>>.

¹⁴⁸ Rogers, Bell, Telus, MTS, Sasktel.

¹⁴⁹ *Supra* note 104 at 19. (Eleventh Report).

¹⁵⁰ Organization for Economic Co-operation and Development (OECD), *Communications Outlook 2005*.

A recent study conducted among U.S. consumers, confirms that pricing is the main barrier for consumer adoption of 3G services.¹⁵¹ This, despite the fact that more consumers than ever before have 3G phones: Sixteen percent of mobile phone users have handsets with 3G technology, but only ten percent of those users make use of the 3G functionality.¹⁵² Globally, 20 percent of consumers have 3G capabilities, but only nine percent of users subscribe to the services that would exploit such features. Americans are more likely than their global counterparts to consider cost as a barrier to adopting advanced services, and although factors such as network speed, battery life, screen size, image quality and memory can also be obstacles for many services, their impact pales in comparison to that of cost.¹⁵³

3G network coverage

While urban density is often cited as the reason Canada wireless users pay higher fees and are at the back of the pack in terms of new wireless technological advance, the reality is that over 80% of the Canadian population live in densely populated urban areas,¹⁵⁴ where also the bulk of wireless users live. Although the population of the US is higher, urban density is not.¹⁵⁵ According to the *Decima report*, commissioned by the Canadian Wireless Telecommunications Association (CWTA), 30% of the mobile user population has access to 3G. In the U.S., due to a competitive wireless landscape that includes over 180 MNOs (175 more than in Canada), 3G coverage is about 95% of the user population,¹⁵⁶ and the number of 3G handsets is calculated to account for 7% of all handsets in the country.¹⁵⁷ Assuming that Canada's rate of adoption of NGN-enabled or 3G handsets is evolving somewhat similarly to that in the U.S., the number of 3G mobiles in circulation in Canada may be currently somewhere between one to two million, based on a 18-million mobile user base.

Net neutrality and the mobile Internet

One central theme around the current public discussion over net neutrality is the preservation of open access for all citizens to the Internet as an open, public network as it has evolved to the present day.¹⁵⁸ The mobile Internet currently represents a clear example of the struggle between

¹⁵¹ John Blau, *Users Shy Clear of High 3G Fees*, IDG News Service, InfoWorld, 12 October 2006, online: InfoWorld <http://www.infoworld.com/article/06/10/12/HN3gfees_1.html>. See also: *American Consumers Not Connecting with 3G Mobile Phone Technology*, 3G.co.uk, 25 October, 2006, online: 3G.co.uk <<http://www.3g.co.uk/PR/October2006/3810.htm>>.

¹⁵² *Ibid.*

¹⁵³ *Ibid.*

¹⁵⁴ *Supra* note 82 (Wall Communications Report).

¹⁵⁵ Peter Gordon & Bumsoo Lee, *Settlement Patterns in the U.S. and Canada, Similarities and Differences, - Policies or Preferences?* Lusk Center for Real State, University of Southern California, 3 October 2003, online: <<http://www-rcf.usc.edu/~pgordon/pdf/USCanada082903.pdf>>.

¹⁵⁶ *Supra* note 104 (Eleventh Report).

¹⁵⁷ *Supra* note 114 (Chetan Sharma).

¹⁵⁸ The concepts of “network neutrality” and “open access Internet” are the result of pro-competitive policies that made possible the transition in the telecommunications markets from the historical monopolies over legacy networks up to the 1990s to today’s more open and competitive landscape. It is related also to the ability of end-users to attach equipment of their choice, the provision of access on nondiscriminatory terms to bottleneck facilities, and the requirement that network providers interconnect are examples of these pro-competitive policies. See: Trevor R. Roycroft, *Network Neutrality, Product Differentiation and Social Welfare, A Response to Phoenix Policy Center Policy Paper No. 24*, 3 May 2006, online: <http://www.roycroftconsulting.org/Reply_to_Phoenix_Final.pdf>.

the private economic interests of de-regulated carriers in controlling traffic and content on the web on the one side, and the public interest on the other side, which is concerned with citizens' sense that it is necessary to preserve essentiality of access, non-discrimination, and freedom of speech on the Internet, mobile or fixed. However, the mobile Internet as it functions today is a carrier controlled-and-tolled environment that rings the alarm over what a non-neutral Internet could be.

The Internet, since its origin, has operated in a "neutral" environment of open standardization, interconnection, and deference to the network edge, an environment which has generated substantial benefits for consumers, firms, and society.¹⁵⁹ However, the current public debate on neutrality of the Internet has been triggered by the expressed interest of broadband providers and telecommunications carriers in exercising control over the wires that carry the data and taxing content and traffic as a means to generate additional revenue. The public concern gravitates over the fact that such control would effectively discriminate against the providers of content and services, and favor content and services provided by the last-mile broadband provider, its affiliates or strategic partners, as it is the case with the mobile Internet offered today. As noted before, mobile users in Canada do not agree with this kind of control by wireless carriers, and the low usage of both mobile Internet and consumption of packet-based on-deck content may be a response of Canadian consumers to the closed network environment model.

The Canadian "semi-walled garden" approach

One important aspect the current options available in the market is that what Canadian MNOs advertise as unlimited "mobile Internet" access is, in its majority, unlimited access to their own packet-based content portals. Consumers willing to browse off-deck sites customized for mobile access are subject to higher prices in the form of monthly fees for Internet browsing to charges per site visited. Applying pricing pressure on consumers to keep within the limits of the carriers' networks while restricting open Internet access is known as the "semi-walled garden approach".¹⁶⁰ When who would want to browse off-deck websites are charged higher fees, the mobile Internet experience for most users shifts away from being the mobile version of the e-commerce experience and gets closer to some form of carrier-controlled IP-based shopping channel.

Internet browsing with features that resemble that of a PC experience, are nonetheless available to PDA and smartphone users (such as Blackberry or Palm), due to their processing capacity and

¹⁵⁹ *Ibid.*

¹⁶⁰ Walled garden is a term used to refer to a scenario where a MNOs place limitations on access and reserve bandwidth for the services and content they control. This has become evident with the development of VoIP services where a number of operators want to place limitations on Internet access to prevent users from accessing VoIP services to avoid high roaming charges. For example, Vodafone Germany is reportedly planning to disable Skype calls or other VoIP providers from July 2007. See: Organisation for Economic Co-Operation and Development (OECD), *Mobile Multiple Play: New Service Pricing and Policy Implications*, 15 January 2007, online: <<http://www.oecd.org/dataoecd/6/52/37917740.pdf>>. Equipment vendors promote the walled garden approach, as it means demand for additional equipment for those operators who "strives to have an exclusive relationship with the end user, from the device to the service". See: *Ericsson, Evolution Toward Converged Services and Networks*, White Paper, April 2005, online: Ericsson <http://www.ericsson.com/technology/whitepapers/convergence_b.pdf>.

have built-in web browsing capabilities. However, these products are priced substantially higher, as they are mainly targeted to business users.

Still, “mobile Internet” as advertised to mobile phone users is price-constrained access to the Internet yet unlimited access to pre-established packet-based content trays controlled by operators.

ISSUES RAISED BY M-COMMERCE AFFECTING CONSUMERS

The growth of M-commerce and the increasing use of mobile telephones, smartphones and PDA’s to access the Internet, entail the extension to the m-commerce arena of the existing concerns raised by e-commerce itself in the areas of consumers’ privacy, transaction security, dissemination of harmful content, and fairness of contractual terms.

Consumers’ Privacy and Personal Information Protection

The high penetration of mobile telephones and their ubiquitous presence is a central element of information society, where the concepts of “anytime”, “anywhere” access are linked to exchange, trade and wealth creation. Almost without exception, new mobile phones are computing devices with data-storage capabilities and, several data-transmission technologies, like RFID or Blue Tooth. Given their nature of consumer goods of intrinsically personal use, consumers’ information stored in these devices warrant a higher level of privacy protection than even a personal computer.

“Personal information” is defined in S.2 (1) of the *Personal Information Protection and Electronic Documents Act (PIPEDA)*,¹⁶¹ as “information about an identifiable individual” and it explicitly excludes the name, title or business address or telephone number of an employee of an organization.¹⁶² It includes information that can be used to identify individuals, such as: addresses, places of birth, telephone numbers, race and family status.¹⁶³

Risks of privacy violations by private actors

While PIPEDA recognizes the fact that technology facilitates information circulation between individuals and organizations and the need for information exchange it also establishes rules to protect “the right of privacy of individuals”, as prescribed in section 3 of the Act:

3. The purpose of this Part is to establish, in an era in which technology increasingly facilitates the circulation and exchange of information, rules to govern the collection, use and disclosure of personal information in a manner that recognizes the right of privacy of individuals with respect to their personal information and the need of organizations to collect, use or disclose personal information for

¹⁶¹ *Supra* note 77 (PIPEDA).

¹⁶² *Ibid.*

¹⁶³ Ann Cavoukian, Ph.D., Information and Privacy Commissioner/Ontario, *Privacy and Digital Rights Management: An Oxymoron?* October 2002, online: <<http://www.ipc.on.ca/images/Resources/up-1drm.pdf>>.

purposes that a reasonable person would consider appropriate in the circumstances.

Mobile phones are considered as consumer goods of personal use, and this “personal” nature will increase as growing numbers of mobile phones be built with capabilities that enable consumers to conduct financial transactions as well as payments. It has been happening years ago in wireless-advanced countries like Japan, where mobiles are already replacing the wallets of millions of consumers. The operation of the systems that enable mobile payments and the storage of consumer’s information will be under the responsibility of wireless carriers, financial institutions and their associates and this scenario raises concerns as these m-commerce stakeholders generate the highest numbers of privacy complaints, according to the Privacy Commissioner’s *Report on the Personal Information Protection and Electronic Documents Act Annual Report to Parliament 2005*.¹⁶⁴

Complaints received by the Privacy Commissioner under PIPEDA between January 1 and December 31, 2005 (by Sector)

Sector	Count	Percentage
Financial Institutions	113	28.25
Insurance	60	15.00
Telecommunications	55	13.75
Sales	44	11.00
Transportation	39	9.75
Accommodation	17	4.25
Professionals	13	3.25
Health	4	1.00
Services	2	0.50
Rental	1	0.25
Other	52	13.00
Total	400	100.00

Source: Privacy Commissioner.

The year 2005 was the second year in which *PIPEDA* covered all commercial activities in provinces that do not have substantially similar legislation in Canada. According to the Privacy Commissioner, there was a drop in 2005 in the number of complaints filed under *PIPEDA* with respect to the number of complaints received in 2004, which totaled 723. However, over 85% of all the complaints for personal privacy violations were related to issues relevant to the kind of challenges posed by m-commerce transactions: use and disclosure, access, collection, safeguards and consent.¹⁶⁵

Complaints received by the Privacy Commissioner under PIPEDA between January 1 and December 31, 2005 (by nature of complaint)

Complaint type	Count	Percentage
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¹⁶⁴ Privacy Commissioner of Canada, Privacy Commissioner’s *Report on the Personal Information Protection and Electronic Documents Act Annual Report to Parliament 2005*, online: Privacy Commissioner of Canada: <http://www.privcom.gc.ca/information/ar/200506/2005_pipeda_e.pdf>. (Privacy Commissioner Report).

¹⁶⁵ *Ibid.*

Use and Disclosure	143	35.75
Access	80	20.00
Collection	68	17.00
Safeguards	34	8.50
Consent	21	5.25
Time Limits	18	4.50
Accountability	10	2.50
Openness	8	2.00
Accuracy	5	1.25
Correction/Notation	5	1.25
Fee	3	0.75
Retention	3	0.75
Challenging Compliance	1	0.25
Other	1	0.25
Total	400	100.00

Source: Privacy Commissioner.

Mobile Internet use for e-commerce transactions is currently heavily offered by the telecommunication industry in Canada through their content distribution portals. As it has happened in countries where m-commerce has attained the highest growth, other industry sectors will soon claim their stake in the value chain: financial institutions will offer m-banking and m-payment services,¹⁶⁶ the transportation industry will sell tickets or accept point of sale (POS) payments through mobile commerce, and retail sales in general will be conducted using information generated by or embedded in mobiles. As banking and purchasing consumer behaviour will be collected and mined by MNOs for marketing purposes, these enterprises will naturally have an incentive build consumer profiles as part of the increasing personalization of services.¹⁶⁷ It is unclear whether they will partner with banks, and if they do, what the role of banks and creditors will be.

Privacy complaints lodged with the Privacy Commissioner under PIPEDA

The Privacy Commissioner's *Report*, also pointed at particular cases where organizations were intervened due to concerns as to their privacy protection and data handling practices:¹⁶⁸

- “An individual complained when his bank refused to allow him to opt-out of receiving marketing materials that were included in his credit card account statements. These materials, or “statement stuffers,” were advertisements for various products and services, such as magazines or travel insurance, and were being offered by the bank in conjunction with other organizations. In response to

¹⁶⁶ Sun Microsystems, *Bank of Montreal Forges M-Commerce Initiatives on Sun Technologies and Services*, Case Study, online: <<http://www.sun.com/mobility/documents/BMO.pdf>>.

¹⁶⁷ John Lawford and Sharon Roberts, *Consumer Privacy and State Security: Losing our Balance*, Public Interest Advocacy Centre PIAC, November 2004, online: PIAC <http://www.piac.ca/other/consumer_privacy_and_state_security_losing_our_balance>.

¹⁶⁸ *Supra* note 164.

the Assistant Commissioner's recommendations, the bank has implemented a procedure for customers to opt-out of receiving secondary marketing inserts.”

○ “An individual complained about a bank using his personal information for marketing purposes. The Assistant Commissioner concluded that the complaint was not well-founded, because the complainant had not requested that his name be suppressed from marketing lists. In reviewing the bank's privacy policy, however, she noted that it required customers to obtain and complete a form to have their names suppressed from the bank's marketing lists. She commented that this did not meet the reasonable expectations of most individuals – namely, that an immediate, easy and inexpensive means of withdrawing consent to the optional collection, use and disclosure of their personal information be provided. She therefore recommended that the bank review its opt-out procedures. In response, the bank amended its policy and procedures on direct marketing preferences. Clients wanting to opt-out of the use of their personal information for secondary marketing purposes can now simply contact any branch of the bank or the bank's call centre.”

Privacy concerns for consumers grow relative to the number stakeholders with an interest in the m-commerce value chain, and warrant closer scrutiny on the procedures adopted and steps taken by the parties involved in protecting the party that is more at risk: the consumer.

Risk of privacy violations by state action

In addition to the risk of privacy violations generated from industry parties, there's the increased risk of excessive and unreasonable surveillance practices and breaches to the right of privacy of citizens committed by governmental institutions. A notable example of abuses committed by government officials, particularly in the area of illegal use of authority in the form requests to telephone companies of clients' information, is presented by the U.S. Department of Justice's Office of the Inspector General in its report *A Review of the Federal Bureau of Investigations' Use of National Security Letters*,¹⁶⁹ on the extra limitations, excesses and lack of the FBI's internal controls in exercising the powers granted to the agency under the Patriot Act:¹⁷⁰

“National security letters seeking telephone toll billing records or subscriber information, or electronic information (e-mail) transactional records or subscriber information (sic) accounted for the overwhelming majority of NSL requests (...) We found that 60% of the investigative files we examined contained one or more FBI internal control policies relating to national security letters”¹⁷¹

¹⁶⁹ United States Department of Justice, Office of the Inspector General, *A Review of the Federal Bureau of Investigations' Use of National Security Letters*, March 2007, online: U.S. Department of Justice <<http://www.usdoj.gov/oig/reports/FBI/index.htm>>.

¹⁷⁰ *Uniting and Strengthening America by Providing Appropriate Tools Required to Intercept and Obstruct Terrorism* (USA PATRIOT ACT) Act of 2001 H.R.3162, 26 October 2001, online: U.S. Senate <<http://intelligence.senate.gov/patriot.pdf>>.

¹⁷¹ *Supra* note 169.

Risk for consumers of unauthorized surveillance practices is increased by the kind of NGN-mobiles that are at the center of m-commerce. In addition to data processing and storage capabilities, many of them have LBS capabilities that enhance the possibility for potential abuse.

Security of M-Commerce Transactions

The concern about how to make m-commerce transactions secure go beyond the authentication processes, since a stolen or cracked password may gain authentication and access even if it is being used by an unauthorized party. That is why the emphasis of all parties interested in the promotion of a secure m-commerce environment, including consumers, should be directed against fraud, unauthorized and identity theft.¹⁷²

Viruses attack on mobile phones and PDAs

The number of viruses and worms affecting mobile phones, smartphones and PDAs increased dramatically. There are currently viruses that send SMS messages to smartphones to numbers that charge the sender, or viruses that completely lock the phone.¹⁷³ Antivirus software is not of widespread use on mobiles and therefore they are to certain extent, a vulnerable target. The biggest risk posed by viruses spread through mobile phones is that the potential for damage increases as consumers use their mobiles to transfer data back and forth from their personal computers and enterprises do so as part of the growing trend to integrate mobile and fixed networks.

Identity theft

Identity theft ("ID theft") is the unauthorized collection of fraudulent use of someone else's personal information.¹⁷⁴ Personal identity is an asset that every individual owns even though many still fail to understand the just how important it is in the information society. Loss of identity in the current networked reality creates the risk for individuals to lose everything. Victims of identity theft can spend months or years trying to repair the damage wrongdoers can do to a good name and a credit record built after years. The losses can extend to losing job opportunities, refused loans, housing, transportation, and even police investigations. Humiliation, anger and frustration are among the feelings victims feel while going through the process of restoring their identity.¹⁷⁵

¹⁷² The Canadian Internet Policy and Public Interest Clinic (CIPPIC) defines "Identity theft" as the unauthorized collection and fraudulent use of someone else's personal information. Stolen information may be used in a variety of improper ways, including gaining illegal access to bank accounts, obtaining credit and taking out loans, obtaining accommodation, and in other transactions, all carried out by masquerading as the victim. *See: What is Identity Theft?*, online: <http://www.cippic.ca/en/faqs-resources/identity-theft/general/#faq_general_what-is-identity-theft>.

¹⁷³ 'Fontal.A' is a trojan that installs a corrupted font file onto phones while pretending to be legitimate software, causing the phone to fail when the mobile phone is next rebooted and locking it completely. *See: Computing, New Mobile Malware Wipes Phones*, 6 April 2005, online: [Computing.co.uk](http://www.computing.co.uk) <<http://www.computing.co.uk/vnunet/news/2127096/mobile-malware-wipes-phones>>.

¹⁷⁴ Philippa Lawson and John Lawford, *Identity Theft: The Need for Better Consumer Protection*, Public Interest Advocacy Centre, PIAC, November 2003, online: PIAC <http://www.piac.ca/financial/full_report/>.

¹⁷⁵ *Supra* note 3. (Digital.Life).

A September 2003 survey by the Federal Trade Commission (FTC) estimated that 10 million U.S. citizens, 3% of the country's population, have been victims of one kind of identity fraud or another. The survey found that:

- Only 15 %of victims find out about the theft due to a proactive action taken by a business;
- The average time spent by victims resolving the problem is about 600 hours;
- 73% of respondents indicated the crime involved acquiring a credit card;
- The emotional impact is similar to that of victims of violent crime.¹⁷⁶

M-commerce fraudulent activities on the rise: TACD

The Transatlantic Consumer Dialogue (TACD) is a forum of U.S. and EU consumer organizations that develops joint consumer policy recommendations directed to the U.S. government and European Union to promote the consumer interest in EU and U.S. policy making. In August 2005 the organization published the "Resolution on M-commerce",¹⁷⁷ expressing concern for the increase in consumer complaints about m-commerce for fraudulent activities as well as for unfair business practices:¹⁷⁸

- Unauthorized purchases made with a consumer's mobile phone without that person's knowledge or consent. Unless there is a PIN or some other form of authentication required, it is easy to use someone else's mobile phone to purchase something at that person's expense;
- Marketing to children who are using mobile phones but may not have the capacity or authorization to make purchases. Advertisements for ring tones, games, and other products or services popular with young people can be found in media (television, radio, Internet, and print publications) targeted toward children and adolescents;
- Inadequate disclosures in advertisements about the products and services offered, the cost, and the terms and conditions. Often the details of the transaction – for instance, that there will be a recurring monthly charge – are in fine print or are not made clear or easily-readable;
- Deceptive solicitations for products or services. Products and services may be misrepresented by fraudulent vendors;

¹⁷⁶ *Ibid.*

¹⁷⁷ Trans Atlantic Consumers Dialogue (TACD), *Resolution on Mobile Commerce*, August 2005, online: TACD <<http://www.tacd.org/docs/?id=283>>. See also: European Commission, *TACD 2005 Recommendations Report and European Commission Services' Responses*, June 2006, online: European Commission <http://ec.europa.eu/consumers/cons_issue/tacd-recommendations_2005_en.pdf>.

¹⁷⁸ *Ibid.*

- Spam being sent to mobile phones. Consumers may become deluged with unsolicited offers for mobile commerce;
- Security of financial information given to vendors to make mobile commerce transactions. Information could be intercepted in transmission or obtained surreptitiously by hidden RFID readers;
- The disparity of dispute rights depending on how payment is made. Dispute rights for unauthorized transactions and incorrect charges may differ according to whether the charges were placed on a telephone bill, billed to a credit card, deducted from an “e-wallet,” or debited from a consumer’s bank account. They also differ from country to country. In addition, consumers may not be protected from their mobile service being terminated for failure to pay disputed charges that were billed to their mobile accounts. They may also find it hard to prove the terms on which they purchased, if the details of transactions are not confirmed (e.g., on itemised phone bills);
- Illegal activities ranging from child pornography to gambling. Consumers may be able to partake of, and pay for, activities that are illegal in their jurisdictions;
- Privacy and discrimination issues related to tracking purchases and the locations of the device users. Mobile commerce vendors may be able to collect information about what goods and services consumers purchase and where they go, and use it for secondary purposes or share it with others. This could lead to more intrusive marketing and other uses of information about consumers’ activities and locations that they neither expected nor desired. This information could also be used to identify the most profitable consumers and offer them the best deals, leaving less profitable consumers increasingly excluded from markets.

TACD’s also called to the U.S. government as well as to the EU to take legislative action to address consumers concerns (reproduced in Appendix A). Concerns around the security of the mobile devices themselves and their protection against theft and unauthorized users, may be addressed, to a certain extent with new technologies, like locking the mobile from control or locating it through LBS procedures. System vulnerabilities within organizations that store sensitive personal information about clients, constitute a more serious risk to consumers and enterprises themselves. Consumers stand to financial and identity losses, while enterprises stand to lose the trust of consumers.

Recent events of data security breaches and identity theft in Canada:

On January 2007, Canadians learned about major incidents of data theft and hacking into the systems of an investment firm owned by one of Canada’s largest banks and two major retail outlets that resulted in substantial data losses, including clients’ financial information.¹⁷⁹ In the

¹⁷⁹ Canwest News Service, *Security Breaches Hang Over Millions of Mutual Fund, Credit Card Holders*, Ottawa Citizen, 19 January 2007, online: Canada.com <<http://www.canada.com/ottawacitizen/news/story.html?id=0bfad5c4-60a7-4864-85c9-3b131207e48e&k=95359>>.

case of the investment firm, a computer hard drive containing vital personal financial information of at least half a million clients went missing, while in the case of the retail outlets, client's credit card information was accessed to and subtracted from the stores' servers and later used to attempt access into the systems of a U.S.-based discount chain company.¹⁸⁰ To this date, it is uncertain what could be the consequences or how that information may be used in the future, but what is known so far is that the data theft to the stores in Canada are part of the biggest card heist recorded in history.¹⁸¹

Consumers have been vocal about the necessity to make a legal duty to notify explicit under PIPEDA for organizations. In a 2005 national survey, 68% of respondents expressed that organizations should notify both individuals and government in the event of a data security breach.¹⁸² Notification on security breaches will be an effective incentive for organizations to take security more seriously to avoid their security failings becoming public knowledge. This in turn may help reduce identity theft and other fraudulent uses of personal information.

Security complaints lodged with the Privacy Commissioner under PIPEDA

It is often the case that organizations' laxity in establishing controls to guarantee the privacy of personal information handled in the course of business, or in enforcing existing policies, translate in actual harm to consumers. Harm can flow from system's vulnerability to data leakages and unauthorized parties' intrusion or lack of staff's awareness of the organization's policies and duties with respect to consumers. Following, two examples cited by the Privacy Commissioner's Office in its *PIPEDA Report to Parliament* in 2005:¹⁸³

- An individual complained that his former employer was able to access his account with a rewards program and make changes to it. In her letter of finding, the Assistant Commissioner recommended to the organization now responsible for the rewards program that it implement password controls on the account holder information that can be accessed through its automated system. Our follow-up confirmed that the organization had introduced voice print technology and password protection for access to account holder information.

- An individual complained that her Internet service provider failed to protect her personal information adequately, did not provide her with a satisfactory explanation when she tried to resolve her concerns, and did not give her access to the personal information she had requested. The investigation did not support the allegations about failure to protect her personal information, and the access complaint was resolved during investigation. On the accountability issue, the Assistant Commissioner recommended that the company implement a procedure for outstanding privacy concerns to be brought to the attention of the company's

¹⁸⁰ *Ibid.*

¹⁸¹ Ellen Messmer, *TJX Data Theft Called Largest Ever: 45.7M Credit Card Numbers*, Network World, 29 March 2007, online: Network World <<http://www.networkworld.com/news/2007/032907-tjx-data-theft-largest.html>>.

¹⁸² EKOS Research Associates, *"Identity Theft & Identity Management: Looking Through the Eyes of the Canadian Public"*, (Presentation to the 7th Annual Privacy and Security Workshop, Toronto, 3 November 2006), online: <www.cacr.math.uwaterloo.ca/conferences/2006/psw/Saravanamuttoo.ppt>.

¹⁸³ *Supra* note 164 (Privacy Commissioner Report).

privacy officer. The organization already had such a procedure, but acknowledged that its staff required greater awareness of and sensitivity to privacy. It undertook to provide the necessary training.

The development of increasingly complex systems seems to be advancing at a faster pace than the mechanisms designed to protect consumers' privacy and information. Experience shows that consumers are insufficiently equipped to deal with the rising number of interactions occurred in the digital space. While it may be relatively simple to identify machines and servers, it is not as easy to identify a person involved in a particular online transaction. In the case of unauthorised use of a mobile phone or similar device, risks for fraud are multiplied by the number of technologies embedded in each device, be it a RFID or other chip, NFC, a web browser, SMS, etc. They are all different avenues that open opportunities to fraudsters for illegitimate use.

Industry still not up to the security threat: The Deloitte & Touche survey

The firm Deloitte Touche Tohmatsu (DTT) Technology, Media & Telecommunications Industry Group (TMT) conducted a security survey among the security officers of 150 Technology, Media and Telecommunications organizations in over 30 countries.¹⁸⁴ It found that companies have been for the most part dealing with market uncertainty in the aftermath of the dotcom, while coping with accelerated technological change and convergence. However, firms' attention to their systems security has not always been a priority. Over half of the firms surveyed reported breaches causing millions of dollars worth of damage, along with a consensus in their opinion that the frequency and sophisticating of the attacks are increasing.¹⁸⁵ Main findings on how enterprises do not dedicate enough attention to their data systems were, as established by the study:

- Inadequate resources and funding
- Ineffective actions that do not address the latest threats
- Lack of awareness and management support
- Insufficient attention to internal risks
- Failure to plan for serious attacks and business disruptions

Deloitte's study among the technology, media and telecommunications sector results are of central relevance to other industry stakeholders on m-commerce as well as consumers.

What consumers can do

The United States Computer Emergency Readiness Team (US-Cert) is a partnership between the Department of Homeland Security, other U.S. government agencies, and private and non-profit sectors established in 2003 to protect the nation's Internet infrastructure. US-CERT coordinates

¹⁸⁴ Deloitte Touche Tohmatsu, *Protecting the digital assets, The 2006 Technology, Media & Telecommunications security survey*, online: Deloitte <http://www.deloitte.com/dtt/cda/doc/content/dtt_DR_ProtectingDigitalAssets_062106.pdf>.

¹⁸⁵ *Ibid.*

defense against and responses to cyber attacks across the nation and it formulates the following tips to mobile users to avert viral attacks:¹⁸⁶

- *Follow general guidelines for protecting portable devices* - Take precautions to secure your cell phone and PDA the same way you should secure your computer (see Cybersecurity for Electronic Devices and Protecting Portable Devices: Data Security for more information).
- *Be careful about posting your cell phone number and email address* - Attackers often use software that browses web sites for email addresses. These addresses then become targets for attacks and spam (see Reducing Spam for more information). Cell phone numbers can be collected automatically, too. By limiting the number of people who have access to your information, you limit your risk of becoming a victim.
- *Do not follow links sent in email or text messages* - Be suspicious of URLs sent in unsolicited email or text messages. While the links may appear to be legitimate, they may actually direct you to a malicious web site.
- *Be wary of downloadable software* - There are many sites that offer games and other software you can download onto your cell phone or PDA. This software could include malicious code. Avoid downloading files from sites that you do not trust. If you are getting the files from a supposedly secure site, look for a web site certificate (see Understanding Web Site Certificates for more information). If you do download a file from a web site, consider saving it to your desktop and manually scanning it for viruses before opening it.
- *Evaluate your security settings* - Make sure that you take advantage of the security features offered on your device. Attackers may take advantage of Bluetooth connections to access or download information on your device. Disable Bluetooth when you are not using it to avoid unauthorized access (see Understanding Bluetooth Technology for more information).

Mobile Spam – SMiShing

The first use of the term “spam” was to refer to articles posted to online message boards, which were of no relevance to the topic in discussion and violated the forum policies. This kind of content was sent to several newsgroups, and quickly became a nuisance to other users. Later, the term was then applied to describe junk e-mail messages, many of them of commercial nature and many other of a dubious nature.¹⁸⁷ Today the term is used as a synonym for unsolicited

¹⁸⁶ United States Computer Emergency Readiness Team (US-CERT), *Defending Cell Phones and PDAs Against Attack*, online: <<http://www.us-cert.gov/aboutus.html>>.

¹⁸⁷ International Telecommunication Union (ITU), *Spam in the Information Society: Building Frameworks for International Cooperation*, 2005, online: ITU <http://www.itu.int/osg/spu/spam/contributions/Background%20Paper_Building%20frameworks%20for%20Intl%20Cooperation.pdf>.

commercial e-mail.¹⁸⁸ The term SMiShing is relatively new and it is used to refer to spam when its transport mechanisms are SMS and MMS.¹⁸⁹

With the number of mobile telephones surpassing the 2-billion around the world, the opportunities in the wireless world for spammers have also multiplied, to the extent that it is now considered as a threat to the safety and security of the Internet. In 2000 spam accounted for about 10 percent of all electronic mail. Six years later, in 2005, it accounted for 80 percent of all email traffic.¹⁹⁰

Wireless Spam is more intrusive and damaging than that sent to personal computers because follows the user everywhere; secondly, consumers have to assume the cost of either paying for it or opting for discontinuing the use of SMS features. In addition, as text messaging tends to be more personal than emails, users also tend to trust them more. As criminals have been found new possibilities with SMiShing and carriers continue to charge higher fees for texts received, the confidence in text messaging has eroded and with it, a legitimate tool for m-payments and the sale of content over mobile networks.¹⁹¹

Mobile Spam in the World

In Japan, where 3G networks have been deployed since 2000, and billing to consumers is on the basis of “receiving party pays” it is calculated that 90 percent of all spam is sent to mobile phones.¹⁹² In the U.S. and Canada, where the same approach “receiving party pays” is used by MNOs to bill consumers, spam has become a further barrier to 3G services penetration. In Canada particularly, some companies with advanced mobile communication systems have discarded the use of SMS in order to protect against the spam threat.¹⁹³

Japan, the EU and the U.S. have adopted legislative measures and regulatory action to control mobile spam. In April, 2002, Japan passed two pieces of legislation: the Law for Appropriate Transmission of Specified Emails (Law No. 26 of 2002) and the Amendment to the 1976 Specific Commercial Transactions Law (Law No.28 of 2002). They introduced changes to counter the overwhelming rise on wireless spam, like several opt-out and sender identity disclosure requirements while imposing civil and criminal liabilities.¹⁹⁴ Japanese MNOs also moved to suspend services and establishing email quotas as part of a concerted public-private effort to curb spam levels, attaining successful results in the reduction of unsolicited email

¹⁸⁸ Both the ITU and the Anti-Spam Action for Canada agree on this definition of spam. See: Canadian Task Force on Spam, *Report of the Task Force on Spam*, May 2005, online: <http://www.itu.int/osg/spu/spam/contributions/Background%20Paper_Building%20frameworks%20for%20Intl%20Cooperation.pdf>.

¹⁸⁹ Symantec, *Internet Security Threat Report, Trends for July-December 06*, March 2007, online: Symantec <http://eval.symantec.com/mktginfo/enterprise/white_papers/ent-whitepaper_Internet_security_threat_report_xi_03_2007.en-us.pdf>.

¹⁹⁰ *Ibid.*

¹⁹¹ *Ibid.*, at 22.

¹⁹² *Supra* note 187.

¹⁹³ Joanna Pachner, *Dumb Spam Coming to Smart Phones*, *The Globe and Mail*, 19 December 2007, online <<http://www.theglobeandmail.com/servlet/story/RTGAM.20061219.gtspamsmartphones1219/BNSStory/Technology/einsider>>.

¹⁹⁴ Evan Cramer, *The Future of Wireless Spam*, 2002, *Duke L. & Tech. Rev.* 0021 (2002), online: *Duke Law and Technology Review* <<http://www.law.duke.edu/journals/dltr/articles/PDF/2002DLTR0021.pdf>>.

levels.¹⁹⁵ In 2002, Europe introduced the Directive on Privacy and Electronic Communications,¹⁹⁶ which introduced an opt-in requirement, whereby prior explicit consent of the recipient should be obtained before “unsolicited communications for direct marketing” may be sent to mobile phone devices.¹⁹⁷

The Federal Communications Commission’s wireless spam rules are similar to those adopted in Europe in the sense that they require recipients to “opt-in” to receive commercial messages on mobile phones and other wireless devices.¹⁹⁸ The wireless spam rules provide that in the absence prior express authorization of the recipient, a mobile service commercial message (MSCM) may not be sent to any email address that includes a reference to an Internet domain found on the FCC’s official list of wireless domain names. The list was released to the public in February 2005 and is subject to regular updates. As an example, if the FCC list includes the domain name *cingularme.com*, this means that a company is prohibited from sending an MSCM to any address including that domain name (e.g., john.doe@cingularme.com) absent recipients’ express prior authorization. Opt-out alone procedures are insufficient, as the recipient must expressly opt-in to receive such messages.¹⁹⁹

In Canada, while relevant provisions of PIPEDA, the Competition Act and the Criminal Code may be useful legal tools to counter spamming activities, specific legislation similar to that enacted in the above countries is not in place in Canada. The May 2005 the Anti-Spam Action Plan for Canada, in its report to the Minister of Industry, recommended legislative action against the following practices:

- the failure to abide by an opt-in regime for sending unsolicited commercial email;
- the use of false or misleading headers or subject lines (i.e. false transmission information) designed to disguise the origins, purpose or contents of an email, whether the objective is to mislead recipients or to evade technological filters;
- the construction of false or misleading URLs and websites for the purpose of collecting personal information under false pretences or engaging in criminal conduct (or to commit other offences listed);
- the harvesting of email addresses without consent, as well as the supply, use or acquisition of such lists; and

¹⁹⁵ *Ibid.*

¹⁹⁶ Directive 2002/58, *Concerning the Processing of Personal Data and the Protection of Privacy in the Electronic Communications Sector*, 12 July 2002, online: European Data Protection Supervisor <<http://www.edps.europa.eu/EDPSWEB/Jahia/lang/en/pid/17>>.

¹⁹⁷ *Ibid.*

¹⁹⁸ Federal Communications Commission FCC, *Rules and Regulations Implementing the Controlling the Assault of Non-Solicited Pornography and Marketing Act of 2003*, 4 August 2004, online: FCC <<http://www.fcc.gov/cgb/policy/canspam.html>>.

¹⁹⁹ Edwin N. Lavergne, *FCC gives Teeth to the Can-Spam Act of 2003*, Vol. 1, Number 3 N.Y.U. J.L.& Bus. (2005).

- dictionary attacks.

CONTRACTUAL ISSUES

The wireless industry in Canada is not subject to price or terms of service regulation and carriers are free to set prices at their own discretion. The factors that generally affect pricing of mobile telephony user agreements are the duration of calls in minutes or seconds, time and day of the call, number of calls, call origination place and combination with other services, or “bundles”. In the context of m-commerce, additional agreements must be arrived at with consumers as prerequisite to deliver content and other products online, adding to the contractual complexity of the terms of service. This is an important issue since consumers are not always aware of the legal implications of the contracts they sign. While carriers have expertise and specialized knowledge at their disposal, consumers have a lack thereof.

Carriers’ Terms of Service

While MNOs have “packages” or “plans” of services available at different price levels, they are subject to substantial price increases when the limits of a specific plan are exceeded. The user agreement or contract to which consumers adhere sets out all the terms and limitations of the service and the eventual tariffs to which consumers are subject should they use the service beyond what’s stipulated in their particular plans.

Wireless service user agreements tend to be a complex read to the average consumer and disputes over accurate billing and overcharges are very common in Canada. A study conducted by the *Service d’Aide au Consommateur* (SAC) in 2004 that analyzed the terms of user agreements of Canadian MNOs and help focus groups with consumers, found that the most common mobile users’ complaints were.²⁰⁰

- Haste in getting consumers to sign service contracts.
- Advertised prices that do not correspond to charges in consumers’ bills.
- Handsets advertised as free when they are not.
- The possibility to use services for free for several months that end up not being free.
- Deficient coverage even in areas where consumers sign up for services.

Two years after, in a follow-up report to Industry Canada, the OCA reiterated further difficulties faced by consumers, such as an inability to obtain contract terms before concluding the transaction, billing problems, and poor quality of customer service.²⁰¹

The 2006 ranking of consumer complaints filed with the Canadian chapter of the Better Business Bureau (BBB) seems to confirm the findings of the OCA.²⁰² In a list of 1,161 categories of

²⁰⁰ Service d’Aide au Consommateur (SAC), *La Téléphonie Cellulaire: Les Pièges de la Transaction*, Shawinigan 2004, online: Service d’Aide au Consommateur <http://www.service-aide-consommateur.qc.ca/pdf/SAC_francais.pdf>.

²⁰¹ Industry Canada, Consumer Trends Update, *The Expansion of Cellphone Services*, Fall 2006, online: Industry Canada <[http://strategis.ic.gc.ca/epic/site/oca-bc.nsf/vwapj/CTUCellen.pdf/\\$FILE/CTUCellen.pdf](http://strategis.ic.gc.ca/epic/site/oca-bc.nsf/vwapj/CTUCellen.pdf/$FILE/CTUCellen.pdf)>.

²⁰² Canadian Better Business Bureaus, *Consumer complaints ranked by complaint, 2006*, online: Canadian Better Business Bureaus <<http://www.bbb.org/about/stat2006/ca06compsort.pdf>>.

complaints, Internet services and Internet shopping rank 4th and 5th with 568 and 516 complaints respectively. Cellular telephone services and telephone communications rank 8th and 9th with 446 and 426 complaints,²⁰³ making the main m-commerce industry stakeholders the single largest source of consumer complaints in Canada. In BBB's Canada-U.S. combined consumer complaint statistics, the category "Cellular Telephone Service & Supplies" comes out at the top of a list composed of almost 3,000 consumer complaints categories, with 29,237 complaints.²⁰⁴ In its report on consumer complaints on telecommunications services,²⁰⁵ the Federal Communications Commission (FCC) reports that in the fourth quarter of 2006, out of a total of 4,149 complaints on wireless telecommunications, 50% were on billing and rates, with the remainder shared almost equally between complaints on carriers' marketing and advertising, termination clauses, service quality, and breaches of the Telephone Consumer Protection Act.²⁰⁶ Unfortunately, the CRTC in Canada does not release statistics on the number of complaints the Commission receives from the public, as its American counterpart. The release of this information to the public would indeed be a beneficial indicator to help the industry to better assess their relationship with customers and the reasons as to why they would rather limit their mobile usage to the minimum in the face of deficient levels of service.

It is important to note that while not all complaints filed by users with the BBB are substantiated or yield specific findings, the fact that the mobile telecommunications industry generates the vast majority of consumer complaints of the whole of the economy, is it certainly an indication of major failures in the information exchange process between customers and carriers, undermining their relationship and the credibility of the industry. There seems to be a substantial number of disgruntled consumers who have an erroneous idea or insufficient knowledge of the terms of user agreements. As mobile communications become the very essential service of the information society and mobile pricing is comparatively high,²⁰⁷ consumers find themselves in the necessity to subscribe to terms of service that are uniform across the industry and they do not necessarily agree to.²⁰⁸ Given that all mobile services contracts are similar, consumers' only alternative puts them at a disadvantage: to renounce to having a mobile phone.

Additionally, a significant public concern among consumers is MNOs practice to include in their contracts clauses that make arbitration mandatory or intend to nullify consumers' right to initiate class action suits.²⁰⁹ In the words of the Office of Consumer Affairs of Industry Canada, "the

²⁰³ *Ibid.*

²⁰⁴ Better Business Bureaus, *U.S.-Canadian Consumer Complaints Ranked by Complaint*, 2006, online: Better Business Bureaus <<http://www.bbb.org/about/stat2006/combo06compsort.pdf>>.

²⁰⁵ Federal Telecommunications Commission, *Quarterly Report on Informal Consumer Inquiries and Complaints*, 11 January 2007, online: Federal Telecommunications Commission <http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-269432A1.pdf>.

²⁰⁶ 47 U.S.C. 227, *Telephone Consumer Protection Act*, online: Legal Information Institute (LII), Cornell Law School <http://www.law.cornell.edu/uscode/html/uscode47/usc_sec_47_00000227----000-.html>.

²⁰⁷ See discussion on pricing in Canada included in this report.

²⁰⁸ *Supra* note 200..

²⁰⁹ This practice has been documented before by PIAC in the context of Internet services. See: Michael Janigan, *Consumer Issues With Internet Services: Is Industry Self-regulation Working?* Public Interest Advocacy Centre (PIAC), August 2004, online: Canadian Coalition Against Unsolicited Commercial Email (CAUCE) <http://cauce.ca/system/files/PIAC_ISP_Report.pdf>. In the United States, these clauses have been deemed against public policy and struck down by courts. See: *Ting v. AT&T*, 319 F.3d 1126 (9th Cir. 2003).

ability to evaluate contract terms is particularly important in the Canadian context, where close to 80% of mobile phone users have post-paid, longer-term service contracts.”²¹⁰

M-Commerce Terms of Service

Beyond the variety and volume contractual difficulties that many consumers experience with their mobile telephone services, the use of mobiles as for e-commerce purposes raises a host of new contractual issues in the sense that given the physical limitations of mobile devices, particularly phones, when compared to personal computers. Wireless devices’ size entail the difficulty to properly convey terms and conditions to end users; raising questions as to whether the amount and clarity of the information presented to consumers is sufficient or not to be characterized as an informed agreement.²¹¹ Many online transactions, and particularly, m-commerce transactions can not be characterized as transactions that give rise to contracts in the traditional sense: the jural relation that is founded upon agreement.²¹² Consent must be present at the core of all valid contracts, and it is necessary that such consent be expressed in a sufficient and unambiguous manner.²¹³ And an important question that arises with m-commerce is to what extent the information that is presented to consumers through the screen of a mobile communications device purporting to be a contract satisfies the consensual requirement.²¹⁴

These are complex issues that need to be addressed even though mobile technologies develops continuously, but as one author has proposed:

“The proper attitude to follow by the industry is one that respects the consumer and that takes her or his position into consideration (...) it is now possible to encourage clients to act more responsibly regarding their general attitude towards security and to act more diligently than they do in traditional commerce. However, this can only be achieved if the client has previously properly been appropriately informed of his duties and obligations. Once this is done the consumer can start to incorporate these qualities within the framework of his judicial relationships.”²¹⁵

Consumer confidence in a specific product or service progressively erodes when large numbers of them have negative experiences with that product and service. The slow penetration of mobile communications in Canada may be due in part by consumer wariness. Likewise, demand for the limited m-commerce services currently in the market may be also tampered by the number of negative experiences of early users. Pollara’s survey seems to point in that direction.

Unfair or Inefficient Contracts: The Behavioural Economics Perspective

²¹⁰ *Supra* note 201. (Consumer Trends).

²¹¹ Brantley, Allison S. et al. *The Legal Web of Wireless Transactions*. 29 Rutgers Computer & Tech. L.J. 53-87 (2003).

²¹² Ian R. Kerr, *Bots, Babes and the Californication of Commerce*, U of Ottawa Law & Tech Journal, Vol. 1 (2003-2004) 285.

²¹³ Vincent Gautrais, *The Colour of E-consent*, U of Ottawa Law & Tech Journal, Vol 1 (2003-2004) 195.

²¹⁴ *Ibid.*

²¹⁵ *Ibid.*

The findings of the SAC study with mobile users' focus groups and the number of complaints lodged with the BBB and the FCC, are consistent with behavioural economic studies. Although behavioural economic approaches to market inefficiencies are consistently overlooked by legislators and courts, they constitute evidence that the asymmetric information between vendors and consumers create substantial cognitive biases that result in the prevalence of unfair or inefficient standard-form contract provisions bound to reach erratic and unjust conclusions.²¹⁶ These cognitive biases, along with the fact that consumers' actual interests are often ignored contributes to:²¹⁷

- consumers' tendency not to read standard form contracts even when by doing so they fail to maximize their utility;
- consumers' inability to evaluate correctly contract terms once they do read them; and as a result
- sellers' capability of manipulating consumers.

Much of contract law assumes that people usually know what they want, considering the individual as the best judge as to her own utility. However, the application of behavioral economics insights to consumer contracts calls this fundamental notion into question. Given the cognitive limitations consumers suffer, consumers as a class frequently violate the rational-maximizing-expected utility function that contract law theory ordinarily attributes to contracting parties.²¹⁸ From the behavioural economics perspective, presuming the efficiency of form contract terms might be misguided due to fundamental behavioral failures on the part of consumers.

COMMUNICATIONS WITH MINORS AND ILLEGAL CONTENT

Some of the most important lessons to be learned from countries like Japan and Korea, where the uses of mobile telephony are more advanced, is that their potential to expose children to harmful content is the same as with the fixed Internet, with the difference that with mobiles, the dangers are present with them all the time.²¹⁹ The extremely popular use of Internet-enabled phones in the country has been linked with an increase in the number of sex-related crimes involving dating sites frequented by minors.²²⁰

Adolescents are more susceptible to fashions, trends and styles and mobiles, due to their potential for personalization through ringtones, wallpapers and featured colours, are adopted

²¹⁶ Shmuel I. Becher, *Behavioural Economics and Consumer Standard Form Contracts: Imperative Lessons from Behavioral Science*, Yale Law School, 1 August 2005, online: New England Law Library Consortium (NELLCO) <<http://lsl.nellco.org/yale/student/papers/8/>>.

²¹⁷ *Ibid.*

²¹⁸ *Ibid.*

²¹⁹ Christian Ahlert, Victoria Nash & Chris Marsden, *Implications of the Mobile Internet for the Protection of Minors*, Oxford Internet Institute, April 2005, online: Forum per la Tecnologia della Informazione FTI <http://www.forumti.it/fti/downloads/Ahlert_Nash_Marsden.pdf>.

²²⁰ Consumer Affairs Victoria (CAV), *Considering the implications of M-Commerce -A consumer perspective*, July 2004, Melbourne, online: <[http://www.consumer.vic.gov.au/CA256902000FE154/Lookup/CAV_Publications_Computers_Internet_Discussion_Papers/\\$file/M-CommercePaper.pdf](http://www.consumer.vic.gov.au/CA256902000FE154/Lookup/CAV_Publications_Computers_Internet_Discussion_Papers/$file/M-CommercePaper.pdf)>.

among them as a fashionable, trendy item, beyond its characteristics as communications device. According to a recent swiss study on pre-teen phone adoption:

“There is certainly no other digital device evoking so much emotionality and personalized involvement, certainly not TV sets, digital cameras, VCR’s or TV’s. No other electronic device is instrumentalized so much for purposes of identity management. Its evolution goes along with a constant expansion of personalized features: wallpapers, ring tones, coloured covers etc.”²²¹

Since younger generations are, for many different reasons, heavy consumers of wireless services, they are also heavy purchasers of mobile data and services. Carriers and content providers are well aware of this and consider teens as one of their main target audience.²²²

Concerns about the accelerated use of mobile phones among pre-teens and teenagers and their interaction with undesirable or inappropriate content is twofold: on the one hand there is content directed to children such as exposure to misleading advertising or pornographic content, and on the other hand, illegal content produced by minors through the use of mobiles, like photographs and video clips.

Content and Industry’s Self-Regulation in Canada

There are no specific statistics as to the number of under-18 who have mobile phones in Canada. However, the fact that in the U.S. 51% of urban teens use their own mobiles may suggest that the number of urban teens in Canada who own mobiles is likely to be just below that number.²²³ Children who use mobile phones in Canada constitute a demographic that can be easily targeted for either the production or consumption of unlawful and harmful content. A major concern is evidently posed by the risk that minors could end up involved in the production or distribution of pornographic material online. However, the production, printing, publishing and possession of child pornography in Canada are offences contemplated in the *Criminal Code*.²²⁴

Another kind of inappropriate content not produced by minors but targeting minors is intrusive and pervasive advertising. This kind of advertising on the Internet is not regulated but the industry regulates itself through several self-generated codes. The Canadian Code of Advertising Standards (ASC Code) and the Broadcast Code for Advertising to Children (Children’s Code) are administered by Advertising Standards Canada (ASC), a trade association with about 200 member companies. The third code is the Code of Ethics and Standards of Practice, administered by the Canadian Marketing Association. However, the effectiveness of these self-generated codes has been subject to criticism, calling for circumspection about accepting these purported controls on advertising in codes written by and for parties that are engaged in the marketing

²²¹ *Supra* note 1. (Hans Geser)

²²² *Supra* note 201. (Consumer Trends).

²²³ Pew Internet & American Life Project, *Teens and Technology: Teens Are Leading the Transition to a Fully Wired and Mobile Nation*, 27 July 2005, online: Pew Institute <http://www.pewInternet.org/pdfs/PIP_Teens_Tech_July2005web.pdf>.

²²⁴ *Criminal Code of Canada*, 1993, c. 46, s. 2; 2002, c. 13, s. 5; 2005, c. 32, s. 7.

practices. There is concern over the fact that industry drafters have both a vested financial interest in weak standards and a professionally honed skill for “selling” their own standards.²²⁵

The European Co-Regulation Approach

In Europe, co-regulation has been choice of governments, consumers and industry to tackle these issues, as a middle ground between government supervision and industry self-generated and self-imposed rules and codes. In the United Kingdom, the advantages of a co-regulatory environment have been acknowledged as bringing together the best of the three parties involved in the issue: governmental authorities offer their experience in developing rules and regulations while industry brings their expertise and the flexibility necessary to deal with these issues as technology changes. The Independent Mobile Classification Body (IMCB) is an industry self-regulatory body which groups the six major MNOs in England (3, Vodafone, Orange, T-Mobile, Virgin Mobile, O2) and works in conjunction with Ofcom to exercise control over mobile content. The IMCB’s *Guide and Classification Framework for UK Mobile Operator Commercial Content Services* was drafted in 2005 and of the highlights of *Code* are:²²⁶

- All commercial content unsuitable for under-18s will be classified as “18” and will only be made available to customers when the network is satisfied that the customer is 18 or over.
- The classification network will be comparable to those applied to other media, and will be created by a body independent of the mobile operators.
- Chat rooms available to under-18 will be moderated
- Parents and persons entrusted with minors’ supervision will be able to apply filters to network operators’ Internet access service to restrict the content available via a particular phone.
- Mobile operators will work to combat bulk and nuisance communications
- Mobile operators will work with law enforcement agencies to deal with the reporting of content that may break the criminal law. Where a mobile operator is hosting content, including web or messaging content, it will put in place notify and take down provisions.

CONCLUSION

Mobile commerce is the new, uncharted territory of electronic commerce that holds the promise for an enormous economic expansion. Some economies like the Japanese and the Korean are already reaping the benefits of making the Internet accessible to consumers through their mobile telecommunication devices and MNOs around the world are looking for ways to emulate the development achieved in these Asian countries. However, beyond the barriers imposed by technological disparity, there are significant barriers that are likely to prevent the adoption of

²²⁵ Bill Jeffery, *The Supreme Court of Canada’s Appraisal of the 1980 Ban on Advertising to Children in Quebec: Implications for “Misleading” Advertising Elsewhere*, Loyola of Los Angeles Law Review, 39 Vol. 237.

²²⁶ Independent Mobile Classification Body (IMCB), *Guide and Classification Framework for UK Mobile Operator Commercial Content Services*, February 2005, online: IMCB <<http://www.imcb.org.uk/assets/documents/ClassificationFramework.pdf>>.

mobile commerce at a faster pace. In Canada, these barriers are related to the lack of competitiveness in pricing and a marked preoccupation for the security and privacy aspects of engaging in electronic commerce through mobile phones.

It is the prevailing school of thought in Canada that leaving the telecommunications sector to market forces alone will improve everything from penetration rates and affordability to technological innovation and efficiency gains. However, the current state of M-commerce in Canada could be interpreted as a sign that market forces when left alone, may operate to consolidate the presence of the strongest actors. Evidence of a natural and normal rivalrous behaviour among competitors in mobile markets dominated by duopolies or oligopolies, should not be confused with a competitive marketplace. Presence of only two or, at best, three competitors in a mobile market, may not be sufficient to create the incentive to make essential telecommunications services affordable to all members of society.

The poor mobile penetration rates and the uncompetitive pricing of mobile telephony in Canada as compared with the bulk of OECD member countries are evidence of the lack of choice Canadian consumers face and that high pricing is having a negative effect on penetration. It is to be expected that the current low mobile penetration rate in Canada will have an adverse effect in the country's ICT indicators. These barriers to M-commerce ultimately tamper the growth of a diverse and strong mobile market in the context of the current information economy.

Although projects like WPS are positive steps toward putting Canada's name in the map of M-commerce beyond just ringtones and wallpapers, elevated prices to consumers remain a significant barrier. While it is clear that early and high penetration of wirelines, personal computers and Internet in Canada may partially explain the slow mobile penetration rate, it should not conduce to conclude that in wireless telecommunications Canada is an international leader. The reality is that the full potential for economic growth propelled by mobile telecommunications sector is being more efficiently realized in other regions of the world, including many emerging economies.

Consumers welcome expanded new and convenient services facilitated by new technologies, as access to telecommunication technologies, including mobile telephony, is essential in the new global context of the information society. However, Canadians will only be able to have access to these new essential services and technologies if they both affordable and secure in terms of protection to their personal information and privacy. On-line safety, security of data and safeguards to privacy are concerns in the mind of Canadian consumers. These concerns, if left unattended, may become roadblocks to the adoption of the mobile as the Pollara survey suggests.

Canadian consumers are educated consumers who know well the Internet. For as long mobile commerce does not resemble the Internet experience on mobiles, it may not develop in Canada beyond a mere mobile shopping channel for ringtones. M-commerce should not be seen as simply a matter of telco-controlled content distribution; such vision underplays the enormous potential of this area of e-commerce to generate economic growth and overall wealth to the economy.

Spreading the benefits of m-commerce to consumers will depend, to a great degree, on the outcome of the current debate on net neutrality. Central to the concept of net neutrality is the issue of control: who is going to have it, at what cost and, more importantly, if elected governments and their regulators will adopt adequate policies for the future of the Internet based on the public interest, that is, the interests of their constituents. What is certain for now is the fact that the telecommunication industry and consumer's interests are at odds on the issue of net neutrality. As consumers consider it a matter of economic freedom in the sense that it would impose limitations on their ability to interact and to trade on the Internet, it may prove difficult for a particular mobile network or association of networks, to reap sustainable benefits from their efforts to constrain access to or prioritize online contents.

RECOMMENDATIONS

Canada must, as other advanced countries do, consider the mobile economy as more than a matter confined exclusively to the profitability of a few dominant operators. While it is key that market players be profitable, without increased competition, it is unlikely market-dominant players in the context of an oligopoly will have the incentive to allow for a pricing structure that would increase affordable access for citizens. In the mobile economy there are wider considerations that can not be left to be decided, as a matter of public policy, by two or three market-dominant private enterprises. These considerations are universal access and affordability, two key elements on which content production (and therefore, wealth production) entirely relies. Consumers, in the context of the information economy are also producers, and poor access rates necessarily mean opportunities lost in terms of increased productivity for the overall Canadian economy. Further consideration must be given to the fact that Canada's economic competitiveness in a global information economy, where affordable and widespread mobile broadband is key, may be in fact being tampered by operators' particular short-termed financial interests that conflict with the long-term overall interests of the Canadian economy. Canada's telecommunications industry is lagging behind its peers in most other advanced and even some emerging economies. While the wireless industry continues to proclaim itself as competitive, it has also represented that it follows the strategy of "smart follower", an approach that means that the industry "waits and sees" what their peers south of the border do, instead of innovating at home.

Consumers constitute a citizenry and are the single most important stakeholder in the information economy. Government, and providers must pay heed to consumer interests. Consumers' participation has been the linchpin of the Internet as networked structure and as business success story.²²⁷ For those consumers who have enjoyed readily available electronic access and can afford it, overall levels of literacy and sophistication are significantly higher today. Widespread availability of networked information has made possible increased commercial exchanges and accelerated economic growth thanks to the availability of better and more accurate information about products and markets. Keeping information channels open and unrestricted for consumers has been the best way to build the Internet platform as one of the greatest economic successes in history.

²²⁷ The Economic and Social Impact of E-Commerce, Preliminary Findings and Research Agenda, Organisation for Economic Co-Operation and Development, OECD, Paris, 1999.

Content prioritization should not be encouraged, as it will be the equivalent to economic censorship. Allowing a pipeline operator to have control over the content circulation and exchange is likely to go against the public interest. The price restrictions imposed through price discrimination to consumers and enterprises alike by pipeline operators will tantamount to establishing an economic censorship over the free circulation of information and expression. It will put a price on the fundamental democratic right of freedom of expression. Freedom of expression and open access to information has been the very essence of the web. As emphasized in this report, consumers are unlikely to assume a high cost for accessing a web that would mostly resemble a shopping channel, as they will not receive added value as benefit. The Internet's value for consumers and enterprises is the usefulness of the information it delivers. If there is not enough added value for consumers in the Internet in exchange for the price they pay for access, be it fixed or mobile, subscriber base is not likely to grow. To facilitate widespread economic growth, unrestricted access to contents must be maintained and guaranteed.

Price-fixing of an essential service as telephony should not be entirely left at the discretion of dominant market players. This is, in fact, the main reason why, to date, the number of Canadians with mobile Internet access is stagnant and trailing most OECD countries and even some emerging economies. The Canadian wireless market risks to become even less competitive and Canadians will be exposed to even higher pricing as two of the three existing facilities-based mobile operators explore the possibility of a merger, turning the current oligopoly into a duopoly. The poor performance of mobile telephony penetration rates in Canada is evidence of how restrictive pricing setting is in a market dominated by only three country-wide MNO's. The current situation undermines Canadian ICT indicators and further consolidation will likely have a negative impact in the capability of Canadians to globally compete in the context of the information society.

The Canadian Code of Practice for Consumer Protection must be amended to specifically refer to M-Commerce as a subset of E-Commerce. In the spirit of the *OECD Guidelines*, mobile Internet commercial activity would be strengthened by amending the *Code* and making it binding to all mobile Internet and/or 3G services providers. Notwithstanding the fact that when the *Code* was drafted in 2003 and later in time tested and approved in 2004, wireless mobile networks were experimenting historical growth rates, the mobile Internet is not yet specifically referred to in the provisions of the *Code*, even though it has become a substantial part of E-Commerce.

Consumers are concerned with both privacy and convenience, but the privacy concern cannot be interpreted as a trade-off for convenience. Privacy and security are not the opposite of convenience. What should be guaranteed to consumers is the best of the two concerns. There are recent examples in Canada of very serious corporate systems leakages and data breaches. Indeed, the greatest data breaches in history. These kinds of threats on their privacy and security is not what Canadian consumers want in exchange for the convenience of engaging in E-Commerce or using a credit card online. Industry players should strive to better understand the extremely savvy and sophisticated users to which it caters, and understands that privacy issues are intimately related to the public image of companies, and ultimately, to the rewards of having citizens buying and consuming its products.

Joint ventures and commercial partnerships in M-Commerce must be closely supervised in their privacy obligations toward consumers. M-Commerce to be successful implies the coordinated participation of different suppliers in the value chain, such as MNOs, banks, retailers, content providers and payment providers. The fragmented nature of the supply chain of the service provided to consumers may entail the blurring of responsibility and accountability of providers to consumers. In performing transactions, operators will provide a service in combination with other merchants that demand a high degree of involvement between them. Users must be provided with a clear definition of whom the payments/transaction provider is; who is responsible for the data collected and mined; who is responsible for potential failure of each transaction and where liability falls in cases of breaches of consumers' security and privacy rights.

Mobile commerce services and mobile payments services providers must be subject to have a system in place to channel consumers feedback and/or effectively deal with consumers' complaints. The growing lack of confidence of users in their mobile providers is widely documented and well known, both in North America and elsewhere. Consumer lack of confidence represents a significant barrier for the development and establishment of M-Commerce. Consumer complaints for mobile telephony and mobile Internet services must be made public as a useful means to encourage industry to address these concerns and correct problems faced by consumers in accessing mobile services.

Changes to PIPEDA are needed to include the obligation on suppliers and merchants of informing consumers of data leaks or breaches involving their personal private information.

Additionally, the process to obtain consumer consent should be more meaningful, avoiding a blanket signature on a consent form. Truly free and informed consent is more than a one-time, wide-open consent. Informed consent is a dynamic process that involves keeping individuals actively aware of the purpose for which their personal information is to be used, if any at all, by a firm.