STATE OF ICT IN BERMUDA

2010

Published by

GOVERNMENT OF BERMUDA
Ministry of Business Development and Tourism
Department of E-Commerce

Government Administration Building
30 Parliament Street, 3rd Floor
Hamilton HM 12, Bermuda

SAMPLE/METHODOLOGY

E-Commerce Residential Technology Benchmarking Research – December 2010

410 Bermuda residents aged 18 years and older were interviewed.

- The data was weighted to be representative of Bermuda's population with respect to gender, age, and nationality.
- The margin of error for this segment is +/− 4.9%.

E-Commerce Corporate Technology Benchmarking Research – December 2010

- 200 Business professionals aged 18 years and older were interviewed.
- The margin of error for this segment is +/− 7%.

E-Commerce Residential Technology Research – December 2010

403 Bermuda residents aged 18 year and older were interviewed.

- The data was weighted to be representative of Bermuda's population with respect to gender, age and nationality.
- The margin of error for this segment is +/− 4.9%.

100 Students in Bermuda aged 12 – 17 years were interviewed.

- The margin of error for this segment is +/− 9.3%.

INTRODUCTION

The purpose of the Department of E-Commerce's annual Information and Communication Technologies (ICT) Benchmarking Survey is to assess the prevalence of ICT in Bermuda, from an infrastructure, usage and skills perspective. The 2010 survey is the fourth benchmarking survey of the Bermuda landscape and it is designed to establish a benchmark against which to compare ICT progress, spot shortcomings and identify new trends. Given the rapidly changing nature of technology and its potential impact and implications, either positive or negative, regular and in-depth quantitative data needs to be gathered, and this survey meets the requirement.

While the 2010 survey shows improvement or in some cases maintains the status quo, the learning curve regarding technology is constant and therefore a strong focus on the technology agenda must be maintained, in order for Bermuda to continue to emulate global best practices or meet international standards. Social networking continues to be an interesting phenomenon in Bermuda as residents use such tools increasingly to access local news and information. There was also a significant shift in 2010 from the adoption of cellphones to ownership of smartphones across the residential and corporate segments. Also, this year the general benchmark was expanded with the inclusion of 100 students in Bermuda aged 12 – 17. Like many other countries, these students are seen as 'digital natives'. The European Commission's *European Digital Competitiveness Report 2010* considers this segment "extensive users of advanced and often recreational services". In that vein, Bermuda also looks at this segment as an indication of the ICT expectations of the island in the coming years.

While the adoption of ICT and attitudes continue to set Bermuda apart as a truly wired island, realizing any productivity gains requires organizational support of skills development and continued investment in infrastructure. Doing so not only allows Bermuda organizations to pursue innovative opportunities due to the edge that a skilled workforce and streamlined processes provide. Continued investment technology literacy and the adoption of cutting-edge tools also aid in recovery.

RESIDENTIAL FINDINGS

Computer and Internet Usage

Computer Ownership

2007	2008	2009	2010
87%	90%	90%	93%
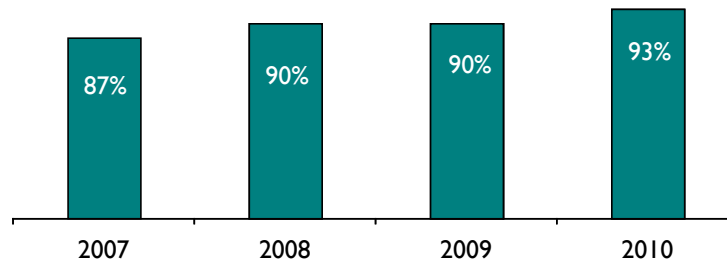
More than nine in 10 Bermuda households own a computer (93%). Compared to 2008, there was a decrease in the proportion of residents who owned a desktop computer (62% in 2010 vs. 63% in 2009), and an increase in the proportion of residents who owned a laptop (78% in 2010 vs. 68% in 2009).

Desktop versus Laptop: Computer Ownership

	2007	2008	2009	2010
Desktop Computer	76%	69%	63%	62%
Laptop Computer	55%	64%	68%	78%
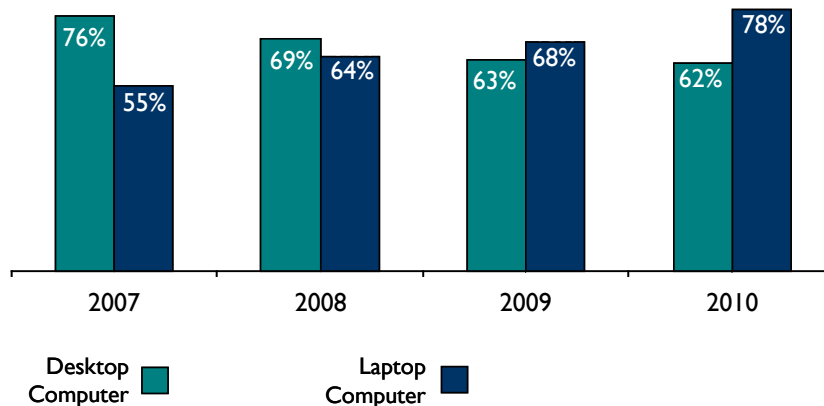
Less than 25 per cent (22%) said that they are likely to purchase a computer in the next six months. Residents were more likely to purchase a laptop rather than a desktop computer (17% vs. 7%). IT equipment is more likely to be purchased abroad (31%) than locally (22%), although 35% purchase both locally and abroad. The most popular IT equipment purchased locally includes phones (both cellphones and smartphone devices) and computers (laptops and desktops). Residents purchase IT equipment locally because of the convenience, ease of purchasing, warranties/servicing and to support local businesses. The most popular IT equipment purchased overseas includes computers (especially laptops), gaming consoles and Apple products such as iPods and iPads. Residents purchase IT equipment abroad due to cost and selection. Those who purchase both abroad and

locally decide where to purchase depending on the price, availability, size and importance of the item and whether they require a warranty on the equipment.

Wi-fi or Internet-ready device ownership was recorded at 52% in 2010. The most popular wi-fi or Internet-ready devices that residents own include gaming devices such as Nintendo devices (e.g., DS, DSi and Wii) and Playstation (e.g., PS2, PS3) and Apple devices (iPod, iPad).

Seventy per cent (70%) of residents who own more than one computer have a residential computer network. 77% of residential network owners have a wireless network, of which 88% in 2010 (versus 81% in 2009) are secure.
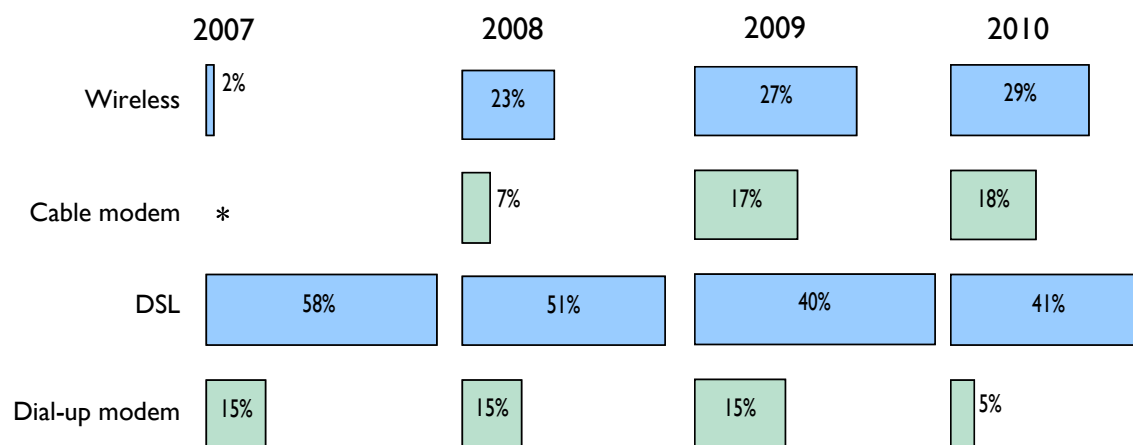
Residential Computer Networks

	2008	2009	2010
% have a residential computer network	54%	73%	70%
% have a wireless computer network	71%	75%	77%
% have a secure wireless computer network	87%	81%	88%

Ninety-four per cent (94%) of residents are aware that if their network is not secure, other users nearby can gain access to the Internet through their connection. Eighty-seven per cent (87%) have security/virus protection installed on their computer while 38% have Internet surfing filtering software/parental control/blocking software installed on their computer.

As in 2009, 89% of households have Internet access. However, 92% of residents use the Internet via their home, work, cellphone or smartphone device or at an Internet café. Fifty-one per cent (51%) of residents report that they use more than one method to connect to the Internet in their homes. Similar to 2009, the majority of residents with Internet access (89%) have a high-speed Internet connection (DSL, cable or wireless).

Internet Connections

	2007	2008	2009	2010
Wireless	2%	23%	27%	29%
Cable modem	*	7%	17%	18%
DSL	58%	51%	40%	41%
Dial-up modem	15%	15%	15%	5%

*Cable Internet was not offered in Bermuda in 2007.

DSL, cable modem and wireless access saw a slight increase (41% versus 40% in 2009 for DSL; 18% versus 17% in 2009 for cable modem and 29% versus 27% in 2009 for wireless), while dial-up usage decreased (5% versus 15% in 2009).

Thirty-four per cent (34%) of residents use speeds of 4MB or above. Residents spent approximately 10.9 hours per week using a computer at home. Seventy-two per cent (72%) of residents use the Internet over half the time they are using their computers at home.

Residential Computer Activities

Activity	Total Usage 2009	Total Usage 2010	Regular Usage 2010
E-mailing	84%	86%	80%
Using Government websites or public service websites	62%	83%	64%
Using an Internet search engine to find information	76%	83%	80%
Using the Internet to look for travel information	64%	81%	52%
Using word processing software like Microsoft Word	67%	77%	67%
Researching a product or service on the Internet before buying it	62%	74%	58%
Searching the Internet for information on a hobby or interest	56%	74%	57%
Using the Internet to get news	65%	74%	62%
Online banking and bill paying	62%	73%	55%
Overseas online shopping at home	60%	63%	27%
Checking the Internet for weather conditions	57%	63%	44%
Using spreadsheet software like Microsoft Excel	57%	62%	48%
Instant messaging	45%	61%	56%
Playing games	44%	61%	50%
Using digital photography software like Photoshop	48%	59%	35%
Using Internet site like MapQuest to look for a map or driving directions	48%	56%	22%

Similar to last year's results, the most regularly used computer activities included: e-mailing (86% versus 84% in 2009), using an Internet search engine (83% versus 75% in 2009), using Government websites (83% versus 62% in 2009), online banking and bill payment (73% versus 62% in 2009), overseas online shopping (63% versus 60% in 2009), playing games (61% versus 44% in 2009), and watching online videos on sites such as YouTube (54% versus 46% in 2009).

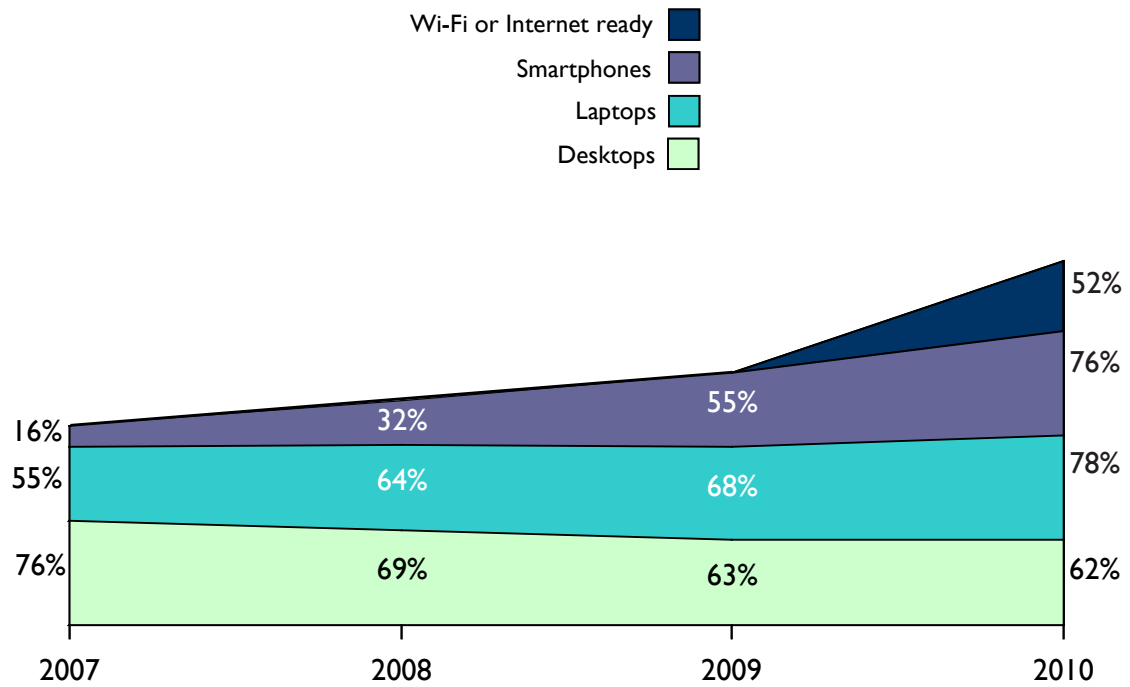|	Total Usage 2009	Total Usage 2010	Regular Usage 2010
Watching online videos on sites like YouTube	46%	54%	40%
Using presentation software like Microsoft PowerPoint	46%	52%	32%
Online local Government services (e.g., TCD licensing, payment of land tax or parking tickets) at home	38%	47%	5%
Using VOIP (e.g., Skype or Vonage)	28%	43%	32%
Downloading music	27%	42%	31%
Local online shopping at home	21%	35%	14%
Listening to Internet radio	26%	35%	26%
Watching movies or TV shows online	18%	33%	21%
Online educational courses	23%	32%	13%
Downloading movies	36%	30%	20%
Reading or writing blogs	*	30%	22%
Webinars	12%	26%	12%
Further education through distance learning	17%	26%	11%
Twitter	*	22%	17%
Podcast	11%	18%	6%
Gambling	5%	12%	7%

Other online activities that showed growth included: using online Government services (47% versus 38% in 2009), using VOIP (43% versus 28% in 2009), local online shopping (35% versus 21% in 2009), online educational courses (32% versus 23% in 2009) and participating in webinars (26% versus 12% in 2009).

Takeaways

The graph below trends residential ownership of Internet-ready devices. In particular, it shows a significant increase in the adoption of portable Internet-ready devices such as laptops and smartphones over the past four years, and a decreasing trend in the adoption of desktop computers. Additionally, in 2010 over half of households (52%) owned wi-fi or Internet-ready devices such as gaming devices (e.g., Nintendo: DS, DSi and Wii, PlayStation: PS2, PS3) and Apple devices (iPod, iPad).

Internet-Ready Device Ownership

Wi-Fi or Internet ready

Smartphones

Laptops

Desktops

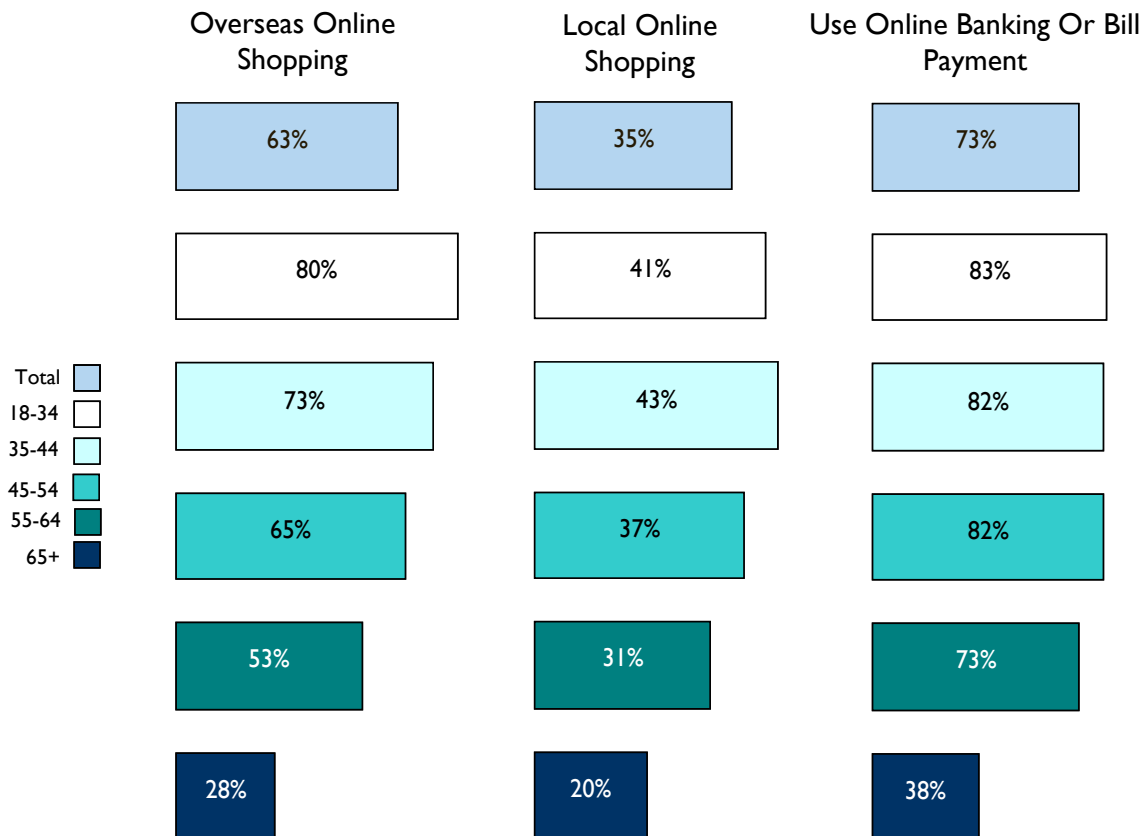|	2007	2008	2009	2010
Wi-Fi or Internet ready				52%
Smartphones	16%	32%	55%	76%
Laptops	55%	64%	68%	78%
Desktops	76%	69%	63%	62%

*Usage of Wi-Fi or Internet-ready devices was not measured in the 2007, 2008 and 2009 surveys.

Purchase of Goods and Services Online

Sixty-three per cent (versus 60% in 2009) of residents report that they purchase goods/services online from overseas vendors and 35% (versus 21% in 2009) from local vendors. 73% (versus 62% in 2009) use online banking and bill payment services. Residents 18 – 44 are significantly more likely to make purchases online and to use online banking and bill paying services weekly or more often.

	Overseas Online Shopping	Local Online Shopping	Use Online Banking Or Bill Payment
Total	63%	35%	73%
18-34	80%	41%	83%
35-44	73%	43%	82%
45-54	65%	37%	82%
55-64	53%	31%	73%
65+	28%	20%	38%

Local online purchases include books, alcohol, clothing, tickets and second-hand items using sites such as e-Moo, Bermylink and Sunshopper. Purchases via overseas sites were varied with residents purchasing clothing, books and various electronic devices, to name a few.


Takeaways

Bermuda residents continue to turn to the Internet for shopping and are increasingly looking to Bermuda-based vendors in order to cut down on shipping time and costs. Unlike online retailers in other countries, Bermuda-based online retailers appear to use innovative business models for their online offerings. It is common to see Facebook-based product offerings, clicks-and-mortar and third party payments used by these retailers. We expect to see additional innovations as residents continue to demand the convenience of online shopping.
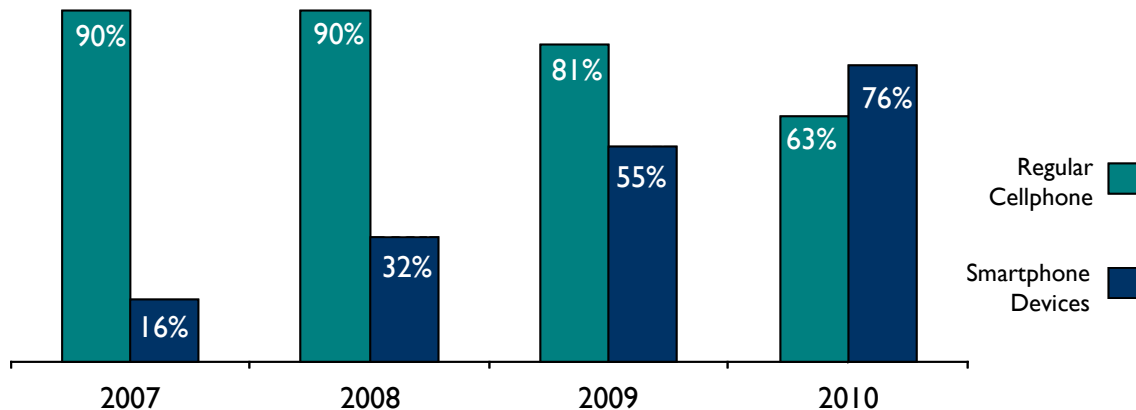
Cellphones and Smartphone devices

Consistent with 2008 and 2009, more than 9 in 10 households (94%) own a cellphone or smartphone device.

Cellular Device Ownership

2007	2008	2009	2010
90%	94%	94%	94%
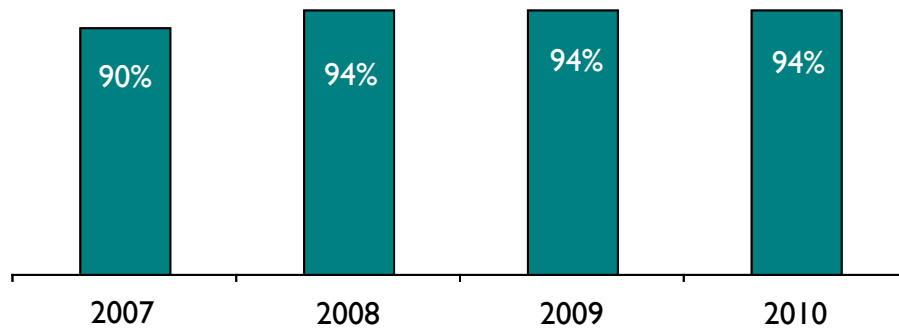
Again, the number of households that owned a smartphone device continued to increase (76% vs. 55% in 2009).

Regular Cellphone versus Smartphone Device Ownership

Almost one-quarter (23%) of residents are likely to purchase a smartphone device in the next six months. Thirty-two per cent of residents are using a 3G or 3G+ network. Residents aged 18 – 34 are more likely to be using a 3G or 3G+ network. Nineteen per cent (19%) of residents intend to upgrade to a 3G or 3G+ network.

The most frequently used cellphone and smartphone device features included text messaging and

e-mailing (56% versus 47% in 2009). Usage of the following activities on cellphones or smartphone devices: taking pictures (61%), accessing the Internet (55%), Blackberry Messenger (53%), downloading ringtones (45%), playing games (44%), social networking (40%), using Blackberry Pins (peer to peer) (40%), downloading applications (36%), purchasing goods online (27%), online banking (26%), bill payment (24%), downloading movies (22%), and using GPS for navigation (20%).

Text Messaging

Residents who use text messaging

72%	Total
90%	18-34
85%	35-44
79%	45-54
57%	55-64
30%	65+
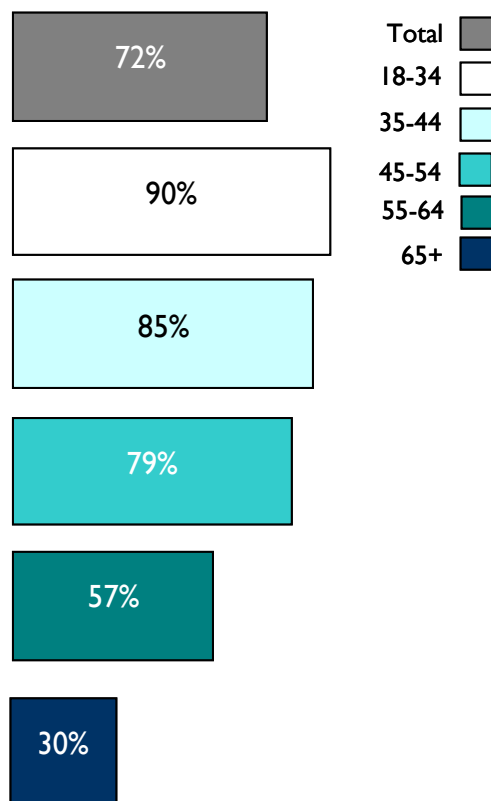
Usage of text messaging was very similar to the 2009 results (text messages sent by residents —71% versus 72% in 2009; text messages received by residents — 72% versus 81% in 2009). Forty-one per cent (41%) of residents text daily. Daily text messaging is higher than average among younger residents (18 – 24 years – 68%; 25 – 34 years – 54%).
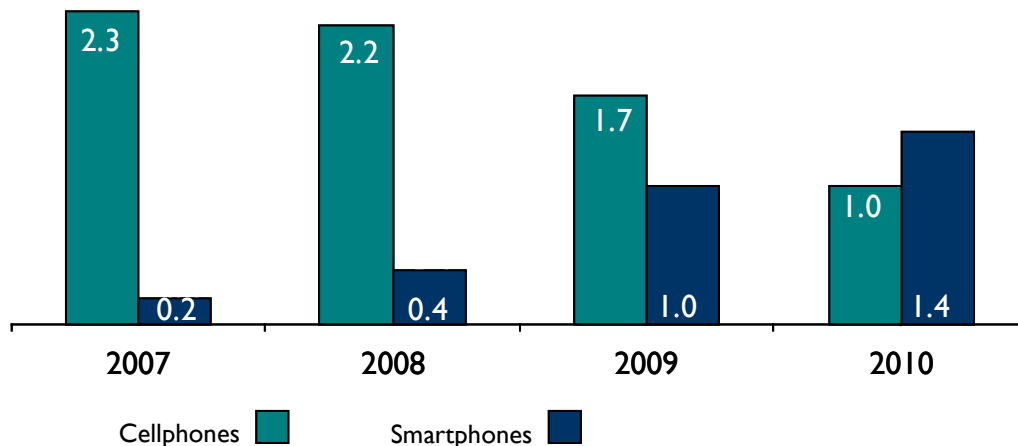
Forty-one per cent (41%) of residents reported that they would be very or somewhat likely to use online banking on their smartphone device if this service were available. Residents aged 18 – 34

years (49%) and 45 – 54 years (48%) were more likely to be interested in using this service compared to residents overall. The most popular reasons that residents said that they would be unlikely to use on-line banking on their smartphone device were concerns about security or a preference for accessing on-line banking on a computer.

Takeaways

The continued growth in use of smartphone devices and text messaging by Bermuda residents come as no surprise as the adoption of cellular technologies is aggressive in Bermuda. With the release of new models, many residents upgrade and often pass the old model on to family members, resulting in multiple cellphones and smartphone devices in a household. The graph below shows the average number of cellphones and smartphones owned by households. It shows a significant and increasing trend in the number of smartphones owned by households and a decreasing trend in the number of cellphones. The shift from cellphones to smartphones is a noteworthy shift in only one year. While purchase intentions have decreased, it is impressive to see the level of adoption of smartphone devices over the last year under difficult financial circumstances for many in the community.

Household Ownership of Cellphones versus Smartphones

	2007	2008	2009	2010
Cellphones	2.3	2.2	1.7	1.0
Smartphones	0.2	0.4	1.0	1.4

Social Networking and Websites

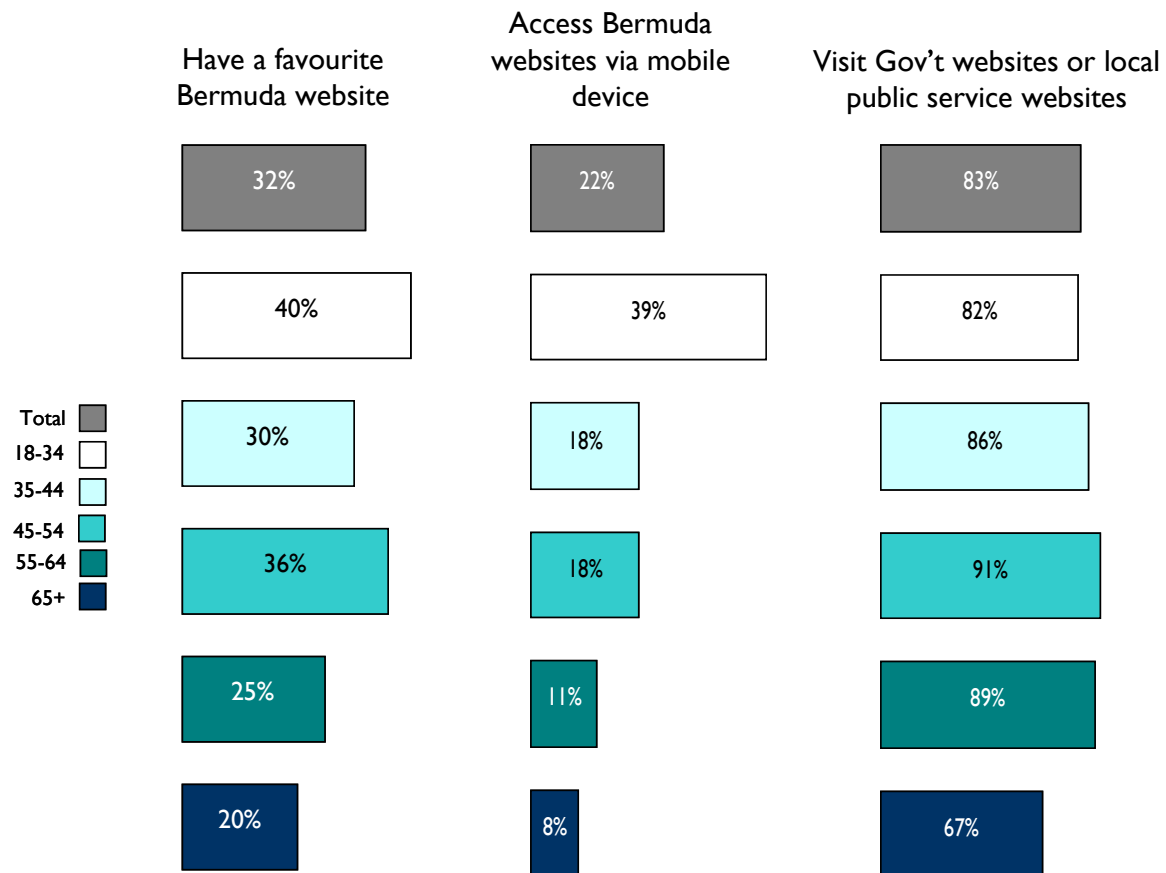In 2010, 87% of residents reported using social networking websites to communicate with friends, family members or relatives. Fifty-one per cent (51%) said that they used social networking sites daily and 63% of 18- 34-year-olds used the sites daily.

Thirty-one per cent (31%) reported using social networking sites for other reasons, including for advertising and news; 33% accessed news or information about Bermuda.

Usage of Social Networking Websites

	Total	18-34	35-44	45-54	55-64	65+
Myspace	30%	52%	31%	12%	6%	8%
Facebook	65%	90%	71%	53%	45%	32%
MSN Messenger	30%	52%	31%	12%	6%	8%
Chat rooms	30%	39%	49%	14%	10%	4%
Blogs	32%	42%	45%	22%	19%	10%
Twitter	37%	47%	49%	24%	21%	14%
LinkedIn	26%	43%	32%	11%	11%	6%
YouTube	63%	80%	65%	50%	63%	40%
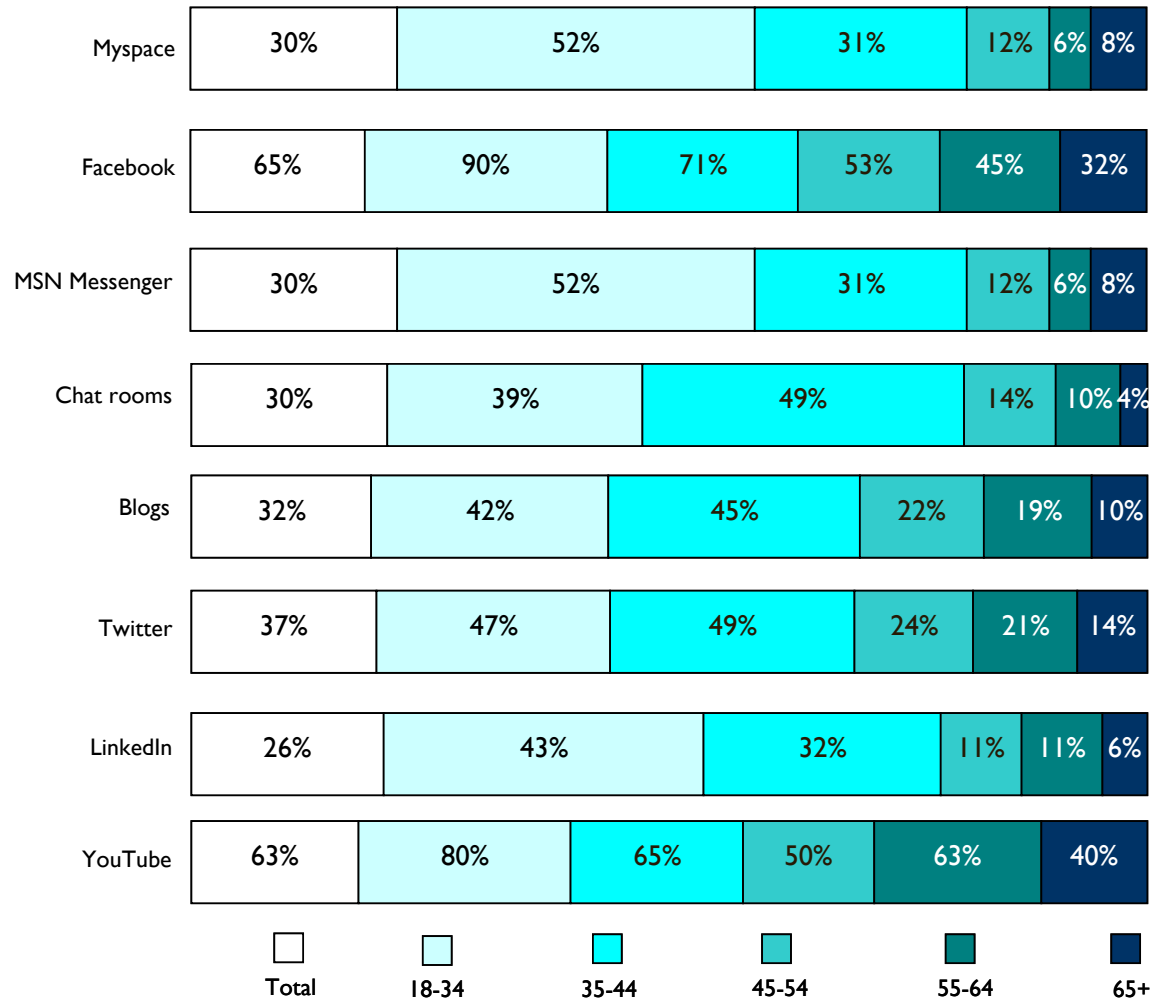
Facebook was the most popular social networking website with 65% residents reporting that they use it. Ninety per cent (90%) of 18- to 34-year-olds reported using Facebook. MySpace had 30% usage (52% of 18- to 34-year-olds) while 26% of residents used LinkedIn (43% of 18- to 34-year-olds) and 63% used YouTube (80% of 18- to 34-year-olds). 37% used Twitter (47% of 18- to 34-year-olds), 54% used MSN Messenger (68% of 18- to 34-year-olds), 30% used chat rooms (39% of 18- to 34-year-olds) and 32% visit blogs (42% of 18- to 34-year-olds). Thirty-three per cent (33%) of residents mentioned using other social networking websites including Google, Skype and Yahoo. Forty-nine per cent (49%) said that they or their place of employment use social networking websites to communicate for business reasons, such as marketing and personal networking. Facebook was used to access pages for Bernews, *The Royal Gazette*, the Bermuda Police Service and the *Bermuda Sun*.

	Have a favourite Bermuda website	Access Bermuda websites via mobile device	Visit Gov't websites or local public service websites
Total	32%	22%	83%
18-34	40%	39%	82%
35-44	30%	18%	86%
45-54	36%	18%	91%
55-64	25%	11%	89%
65+	20%	8%	67%

Thirty-two per cent (32%) of residents and 40% of 18- to 34-year-olds reported having a favourite Bermuda website. The most popular websites include bernews.com, theroyalgazette.com and emoo.com. Twenty-two per cent (22%) of residents visited Bermuda websites via their cellphone or smartphone device; 18- to 34-year-olds were more likely to visit Bermuda websites via their cellphones or smartphone devices (39%). Again, the most popular websites include bernews.com, theroyalgazette.com and e-moo.com.

Eighty-three per cent (83%) of residents visit Government websites or other local public service websites. Residents aged 45 – 54 are more likely to use these websites (91%). The most popular Government and public service websites include gov.bm, weather.bm and bermudaairport.aero. When asked for ways that the Government might help residents use technology more efficiently, recommendations included advertising or raising awareness of programmes and services available, improvements to Government websites and increasing the use of technology in schools.

Takeaways
Perhaps the most interesting trend with the popularity of social networking on the island is that it appears to have changed the way in which Bermuda residents access media. From news to events,

charities to local retail establishments, many access information via a social networking tool. Additionally, we have also seen anecdotally how social networking has impacted the way news is reported, the preferences for advertising and the power of word of mouth via one's social network. These are trends that will be monitored for further innovation.

Attitudes Toward Technology and Overall Technology Competence

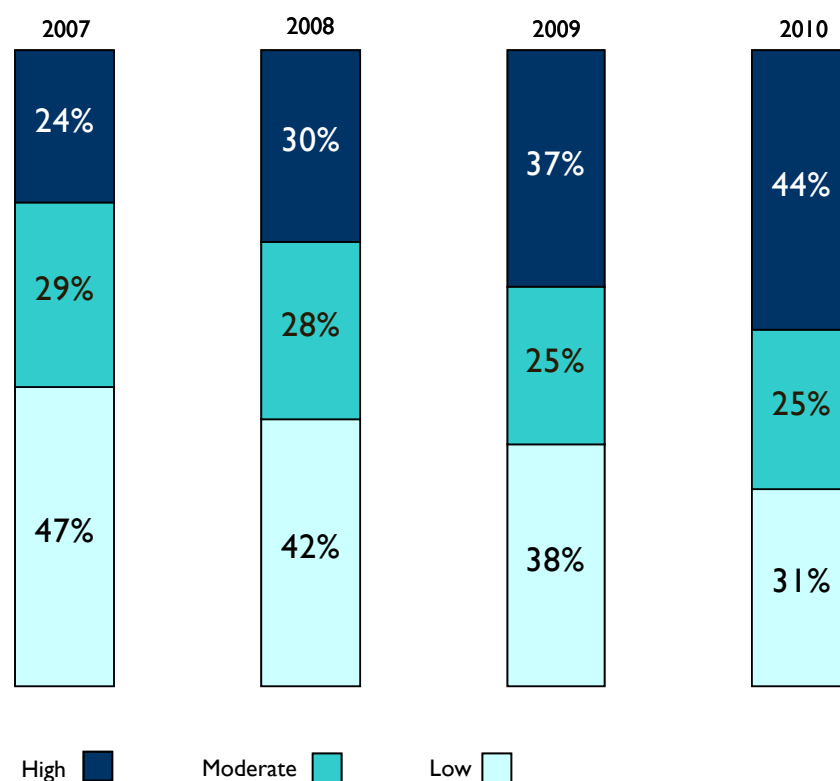|	2007	2008	2009	2010
I'm too old to learn about new technologies like cellphones and e-mail	12%	12%	19%	15%
In general, I dislike change	25%	26%	29%	20%
New technology intimidates me a little	28%	39%	45%	33%
I like to be among the first of my friends to adopt new products and technologies	41%	43%	58%	43%
I am very knowledgeable about cellular phones and mobile devices (e.g., BlackBerries or iPhones)	*	*	*	74%
I am very knowledgeable about computers	*	*	*	75%
I am very interested in learning more about new technology	74%	86%	86%	85%
Technology products such as cellphones and the Internet have made life much easier	87%	92%	93%	91%
Having a strong knowledge of technology is essential in getting ahead today	86%	96%	95%	92%
Technology products like e-mail and instant messaging have made it easier to stay in touch with your friends and family	89%	93%	94%	93%
In order to compete in the global economy, Bermuda must continue to meet or exceed global technology standards	70%	87%	99%	97%

*These questions were not included in the 2007, 2008 and 2009 studies.

Consistent with 2007 through 2009, residents in 2010 believed that in order to compete in a global economy, Bermuda must continue to meet or exceed global technology standards. Residents who were intimidated by new technology decreased (33% versus 45% in 2009), as did residents who disliked change (20% versus 29% in 2009). Residents continue to believe that having a strong knowledge of technology is essential to getting ahead today (92%).

Residents were asked to rate their level of expertise regarding 32 technology areas related to general computing, Internet usage, cellphones, smartphone devices, and other technologies. Based on these ratings, residents were classified as having either low, moderate, or high technological competence based on the number of areas for which they expressed a high level of expertise (9, 10 on a 1 – 10 scale).

Residential Technology Competence Segmentation

|	2007	2008	2009	2010
High	24%	30%	37%	44%
Moderate	29%	28%	25%	25%
Low	47%	42%	38%	31%

High ■ Moderate ■ Low □

Sixty-nine per cent (69%) of Bermuda's residents have a moderate to high level of ICT competence, versus 62% in 2009. In 2010, 31% of residents were classified as having low competence, 25% as having moderate competence, and 44% as having high competence.

Compared to last year, there was a 7-point decrease in the proportion of residents classified as having low competence 31% (versus 38% in 2009) and a 7-point increase in the proportion of residents classified as having high competence (44% versus 37% in 2009).

The areas that residents expressed a high degree of competency (i.e., 50% or more residents gave a rating of 9 or 10) are shown below. The top five areas included: making and receiving cellphone calls (78%), using a printer (70%), text messaging (67%), using voicemail (66%), using a digital camera and surfing the Internet (both 65%).

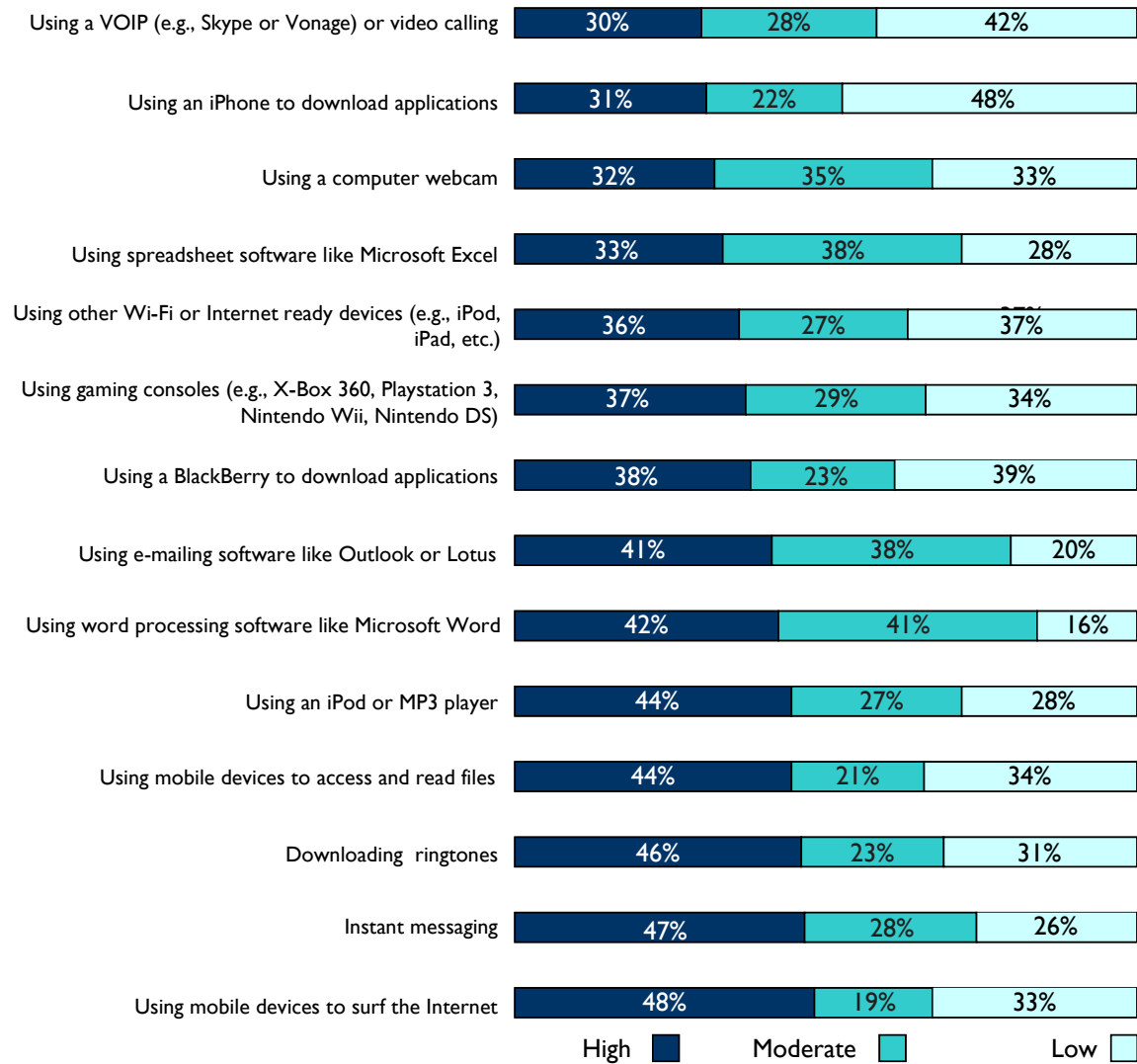The areas that residents expressed a moderate degree of competency (i.e., 30 – 49% of residents gave a rating of 9 or 10) are shown below.
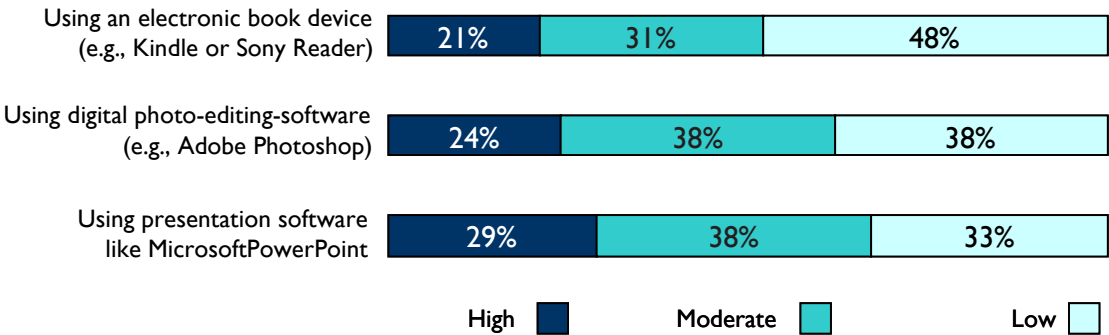
High Technology Competence
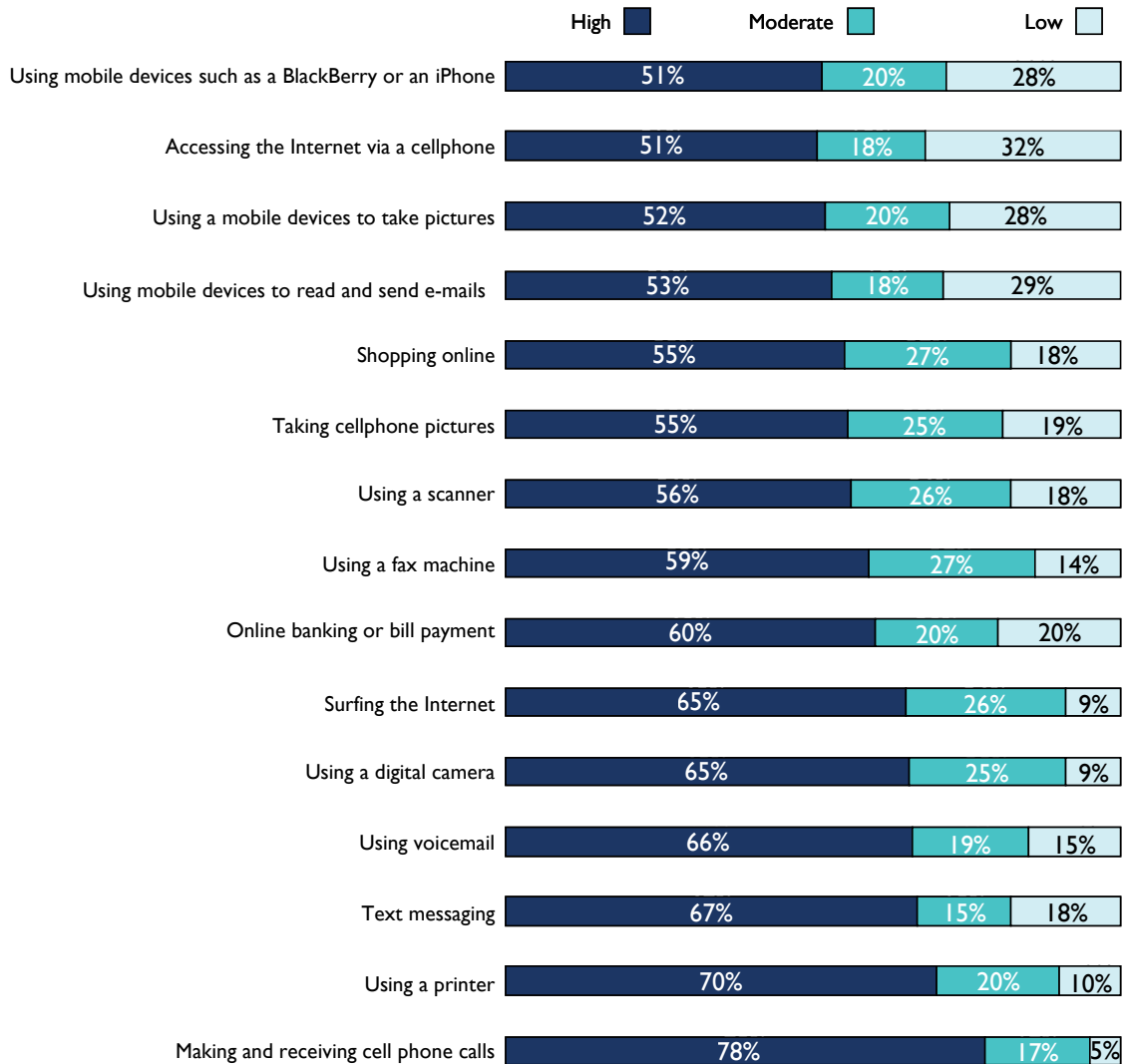
Residents expressed a low level of competency (i.e., 0 – 29% of residents gave a rating of 9 or 10) when it came to using presentation software (29%), using digital photo editing software (24%) and using an electronic book device (21%).

Moderate Technology Competence

	High	Moderate	Low
Using a VOIP (e.g., Skype or Vonage) or video calling	30%	28%	42%
Using an iPhone to download applications	31%	22%	48%
Using a computer webcam	32%	35%	33%
Using spreadsheet software like Microsoft Excel	33%	38%	28%
Using other Wi-Fi or Internet ready devices (e.g., iPod, iPad, etc.)	36%	27%	37%
Using gaming consoles (e.g., X-Box 360, Playstation 3, Nintendo Wii, Nintendo DS)	37%	29%	34%
Using a BlackBerry to download applications	38%	23%	39%
Using e-mailing software like Outlook or Lotus	41%	38%	20%
Using word processing software like Microsoft Word	42%	41%	16%
Using an iPod or MP3 player	44%	27%	28%
Using mobile devices to access and read files	44%	21%	34%
Downloading ringtones	46%	23%	31%
Instant messaging	47%	28%	26%
Using mobile devices to surf the Internet	48%	19%	33%

High ■ Moderate ■ Low □

Low Technology Competence

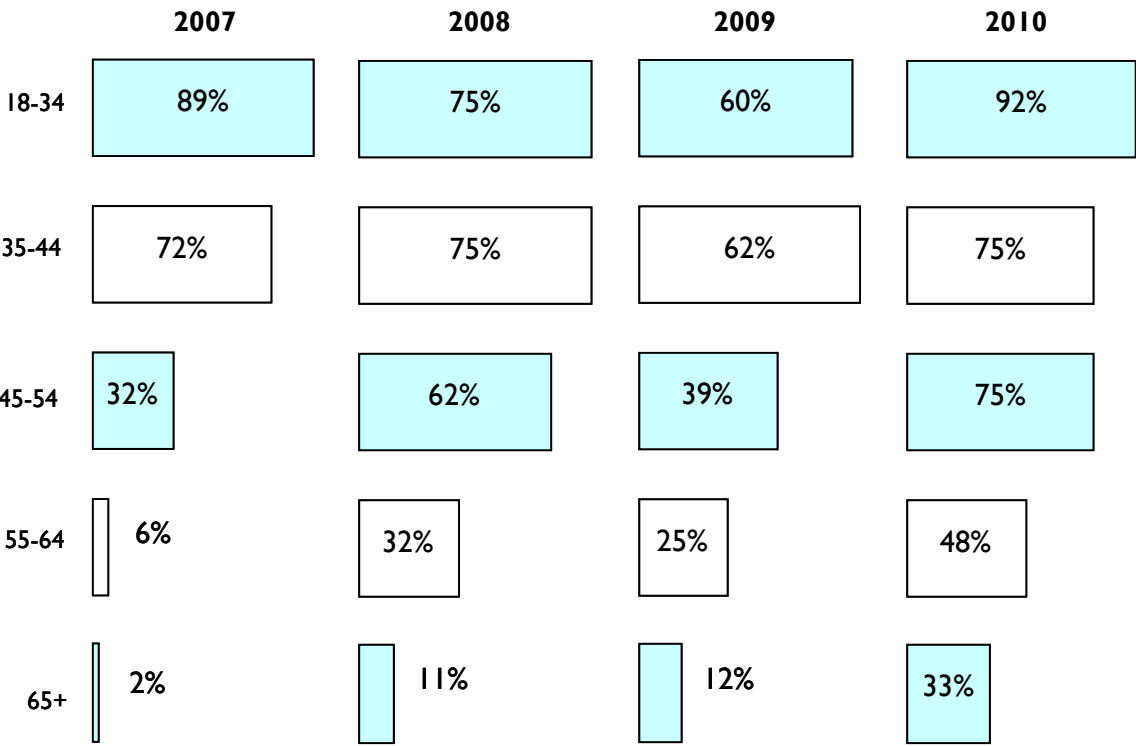|	High	Moderate	Low
Using an electronic book device (e.g., Kindle or Sony Reader)	21%	31%	48%
Using digital photo-editing-software (e.g., Adobe Photoshop)	24%	38%	38%
Using presentation software like MicrosoftPowerPoint	29%	38%	33%

High ■   Moderate ■   Low □

Takeaways

The availability of technology tools continue to increase which make technology skills integral to the way that Bermuda residents live and work. We expect to see that as the baby boom generation continue to enter retirement, the trend for the senior component of the population will increase their technology competence and have more favourable attitudes towards the relevance of technology in their lives. This trend is depicted in the graph below which shows an increasing trend in technology competency for residents aged 55 years and over from 2007 to 2010. At the other end of the spectrum, it appears that technology literacy is common and there is no fear in pursuing additional skills. This is beneficial for Bermuda's continued development as a digital economy.
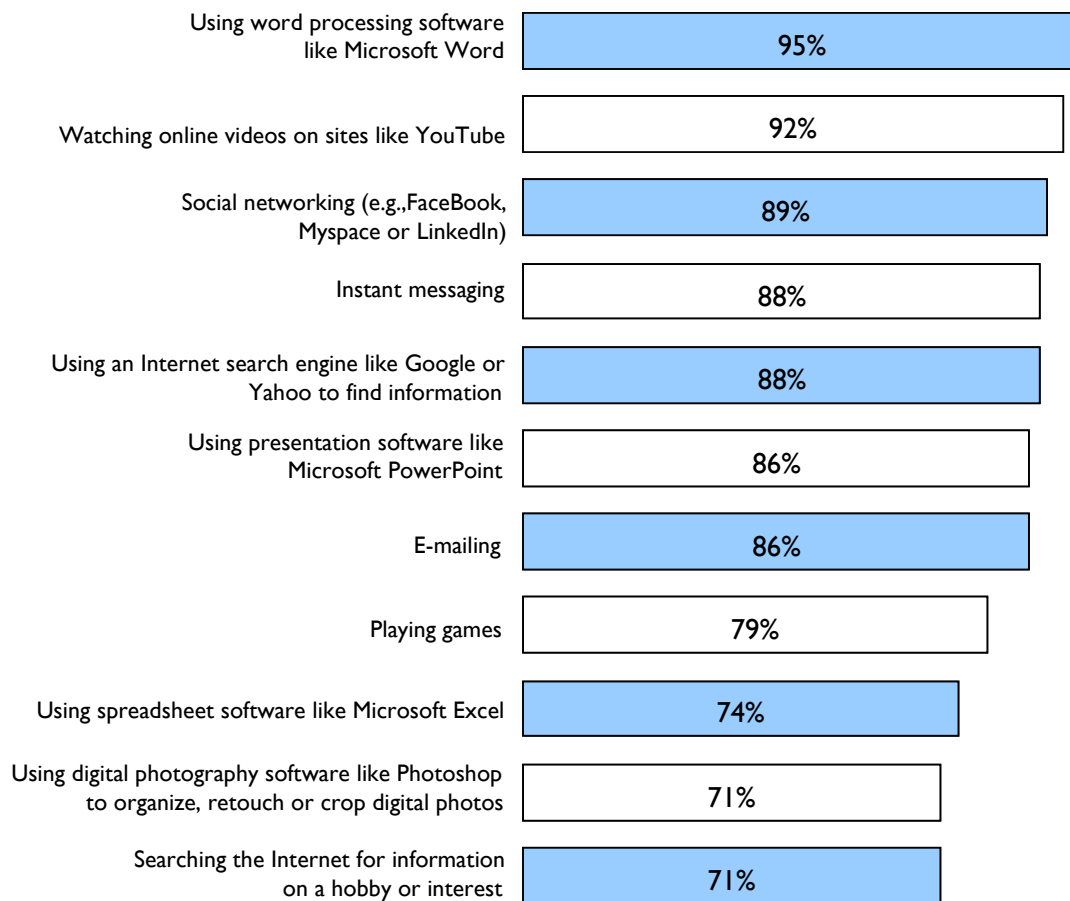
Moderate or High Technology Competency

	2007	2008	2009	2010
18-34	89%	75%	60%	92%
35-44	72%	75%	62%	75%
45-54	32%	62%	39%	75%
55-64	6%	32%	25%	48%
65+	2%	11%	12%	33%

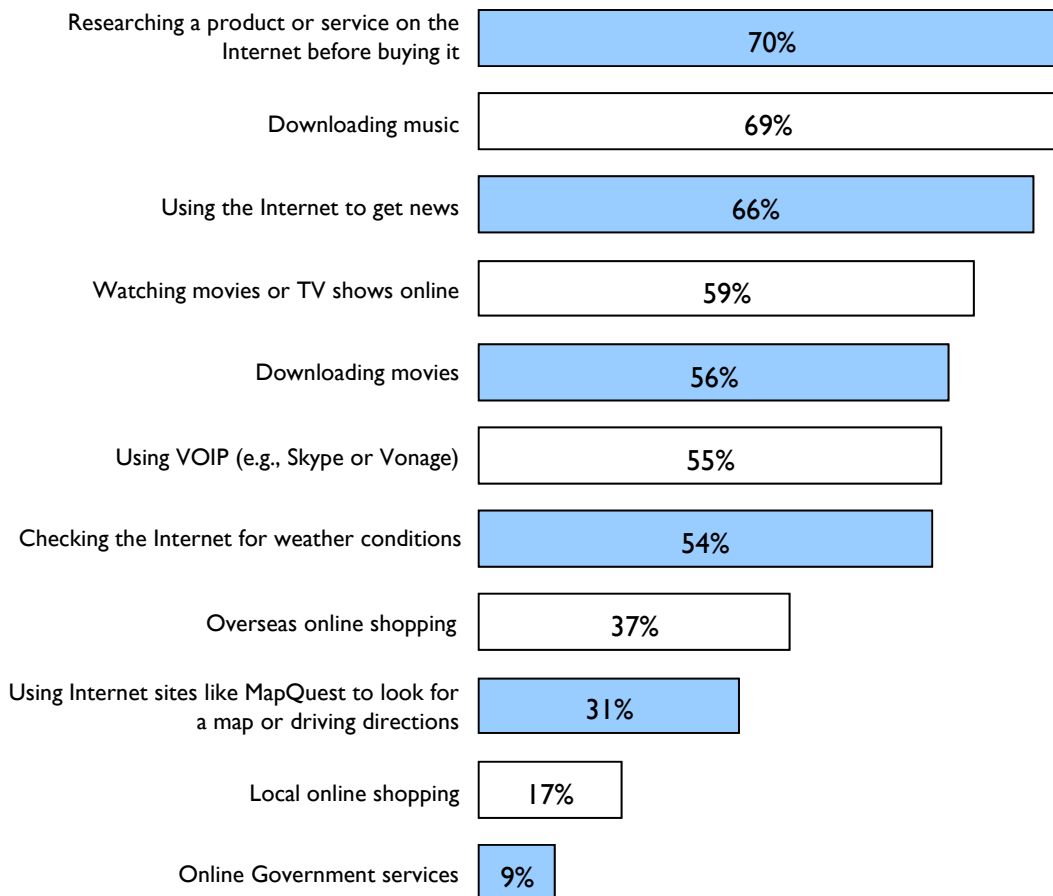**Student Technology Research Results**

The activities of students aged 12 – 17 was added in 2010 as there was great interest in exploring this demographic to gain insight into a generation for which technology is so important. The desire was to assess how they used technology and via what means information reached them. Such information is beneficial ultimately to educational institutions, employers, and parents. The findings from the 2010 Student Technology Research indicate that the use of technologies for a number of activities is significant and perhaps may indicate trends for the future.

Top 10 Student Computer Activities

Activity	
Using word processing software like Microsoft Word	95%
Watching online videos on sites like YouTube	92%
Social networking (e.g.,FaceBook, Myspace or LinkedIn)	89%
Instant messaging	88%
Using an Internet search engine like Google or Yahoo to find information	88%
Using presentation software like Microsoft PowerPoint	86%
E-mailing	86%
Playing games	79%
Using spreadsheet software like Microsoft Excel	74%
Using digital photography software like Photoshop to organize, retouch or crop digital photos	71%
Searching the Internet for information on a hobby or interest	71%

The use of a computer for activities at home indicated both school and social usage. Activities that were school related included word processing (95%), using an Internet search engine (88%), presentation software (86%), spreadsheet software (74%) and online educational courses (42%). Social activities included instant messaging (88%), playing games (79%), researching a product or service before buying (70%), watching online videos (92%), social networking (89%), downloading music (69%), and using VOIP (55%). Almost a quarter of the respondents reported that they play

games, watch videos online, download music and use VOIP daily. Seventy-one per cent (71%) of students were also aware that it is illegal to download music, movies and other materials from the Internet without the permission of the copyright owner.

Activity	Percentage
Researching a product or service on the Internet before buying it	70%
Downloading music	69%
Using the Internet to get news	66%
Watching movies or TV shows online	59%
Downloading movies	56%
Using VOIP (e.g., Skype or Vonage)	55%
Checking the Internet for weather conditions	54%
Overseas online shopping	37%
Using Internet sites like MapQuest to look for a map or driving directions	31%
Local online shopping	17%
Online Government services	9%

Seventeen per cent (17%) of students use a computer for local online shopping. Products and services purchased locally included movie tickets and etcd.gov.bm. Thirty-seven per cent (37%) of students use a computer for overseas online shopping. Products and services purchased from an overseas vendor included shoes, clothing, movies, games, and books from amazon.com. Nine per cent (9%) of students reported using online Government services. Services mentioned included TCD licensing, accessing bus and ferry schedules and looking up information on the Government portal for school.

Students communicate via computers, cellphones/smartphone devices and numerous other devices including games consoles, mp3 players and other wi-fi devices.

On average, students send and receive 79 text messages a day. Sixteen per cent (16%) of students

send 100 or more text messages per day. Three-quarters of students said they text message daily. As shown below, daily text messaging is more prevalent among students than the adult population.
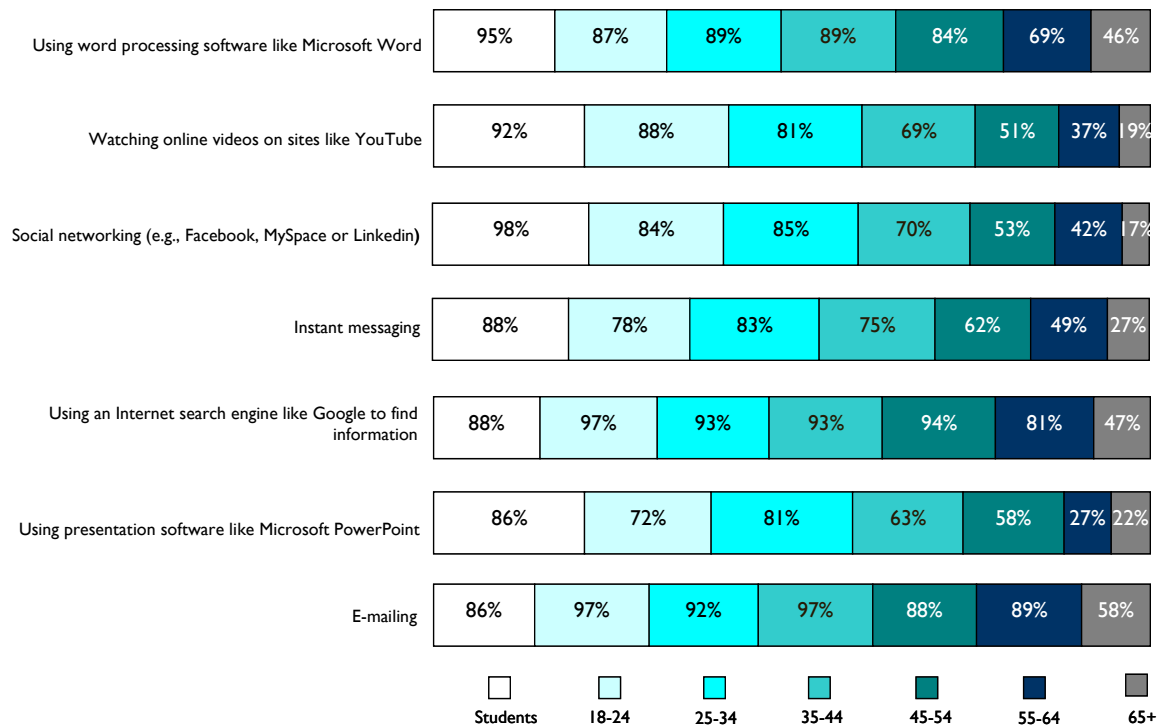
Daily Text Messaging

75%	68%	54%	59%	43%	26%	8%
Students	18-24	25-34	35-44	45-54	55-64	65+
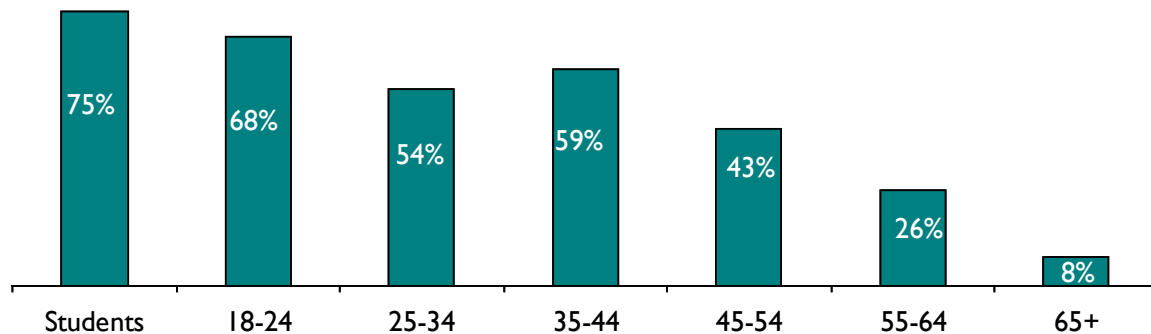
Almost all of the students surveyed (97%) indicated that they use social networking websites to communicate with friends, family members, or relatives, with 90% using the sites weekly or more and 67% reporting daily use. Other reasons for using social networking sites included for news and to find out what is going on in Bermuda. Facebook (93%) was reported as the most popular social networking website, followed by YouTube (90%) and MSN Messenger (73%).

When accessing news or information about Bermuda via social networking websites, most looked to Bernews, *The Royal Gazette* and the Bermuda Police Service. When asked for a favourite Bermuda website, students preferred eMoo (29%), Bermynet (24%), Islandstats (24%), Bernews (12%), Bermuda Weather (6%) and *The Royal Gazette* (6%). Eighteen per cent (18%) of students visit Bermuda-based websites on their cellphones/smartphone devices. The most popular websites visited were Bermynet, eMoo and Bernews.

Takeaways
Surveying students in 2010 was an enlightening process as it confirmed many of the thoughts that were prevalent concerning student technology literacy and adoption of social networking tools. As seen in the graph below, the adoption levels for many of the activities and communication tools were often higher than previous assumptions that were made from data collected from 18- to 24-year-olds and the rest of the adult population. Additionally, this demographic uses other messaging platforms, such as instant messaging and Facebook, instead of e-mail to communicate.

Computer Activities Across Age

Activity	Students	18-24	25-34	35-44	45-54	55-64	65+
Using word processing software like Microsoft Word	95%	87%	89%	89%	84%	69%	46%
Watching online videos on sites like YouTube	92%	88%	81%	69%	51%	37%	19%
Social networking (e.g., Facebook, MySpace or Linkedin)	98%	84%	85%	70%	53%	42%	17%
Instant messaging	88%	78%	83%	75%	62%	49%	27%
Using an Internet search engine like Google to find information	88%	97%	93%	93%	94%	81%	47%
Using presentation software like Microsoft PowerPoint	86%	72%	81%	63%	58%	27%	22%
E-mailing	86%	97%	92%	97%	88%	89%	58%

CORPORATE FINDINGS

Computer and Internet Usage

As in previous years, nearly all Bermuda companies have computers.
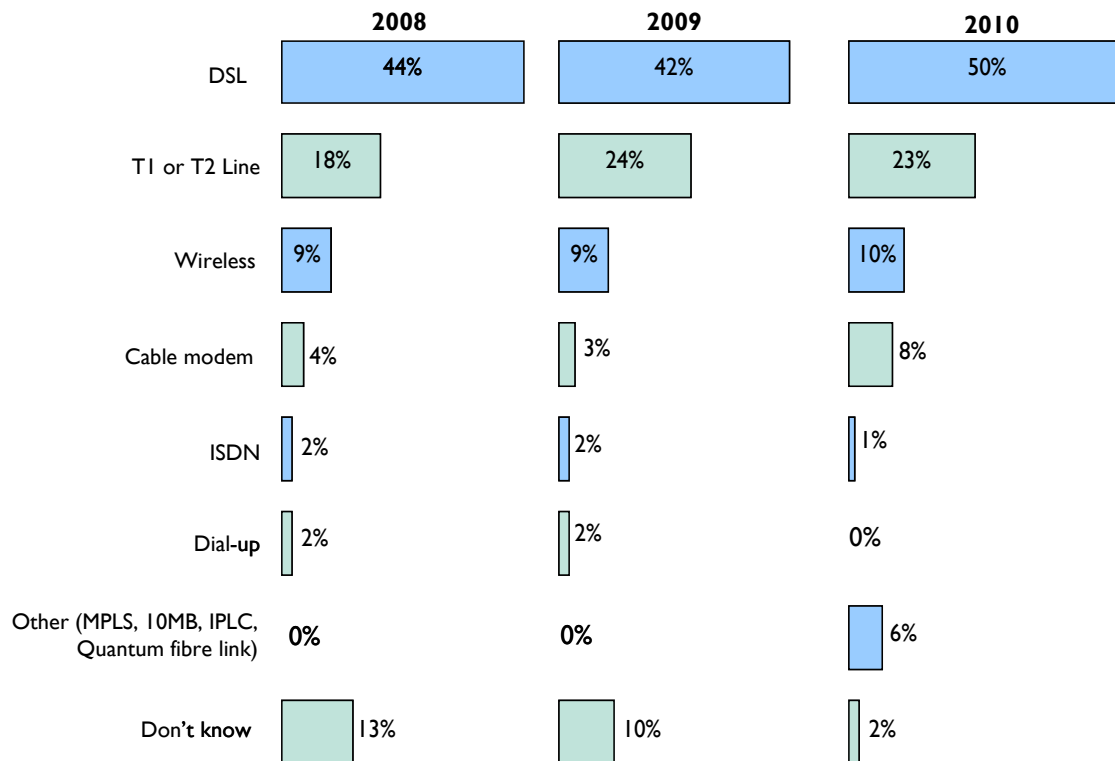
Computer Ownership
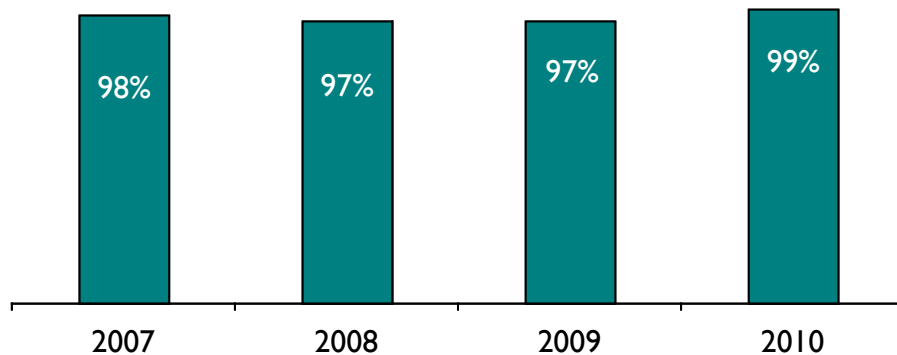
However, this year, the proportion of companies owning laptop computers increased (88% vs. 85% in 2009). 67% of companies own wi-fi or Internet-ready devices such as iPads and netbooks. Approximately 35% of Bermuda's firms plan to purchase a new desktop or laptop computer in the next six months.

Desktop versus Laptop: Computer Ownership
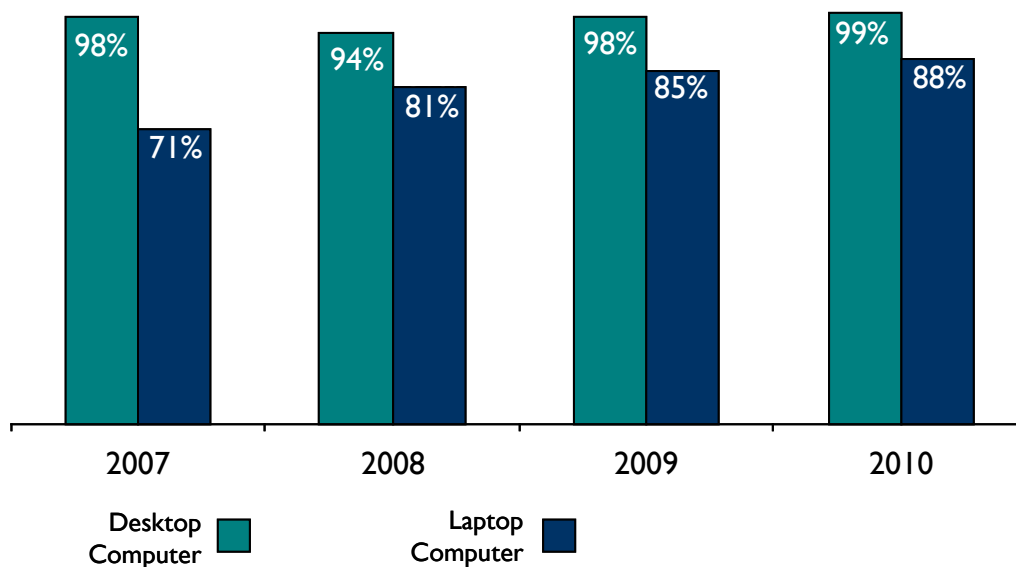
Nearly 100 per cent (98%) of firms have Internet access and the majority of companies have a broadband connection (91%). DSL connections are the most common at 50% (versus 42% in 2009), followed by a T1 or greater line (23%); 57% use speeds of 2MB or above. Six per cent (6%) of companies report connections using MPLS, 10MB, IPLC or a Quantum fibre link; 41% use more than one method to connect to the Internet.

Corporate Internet Connections

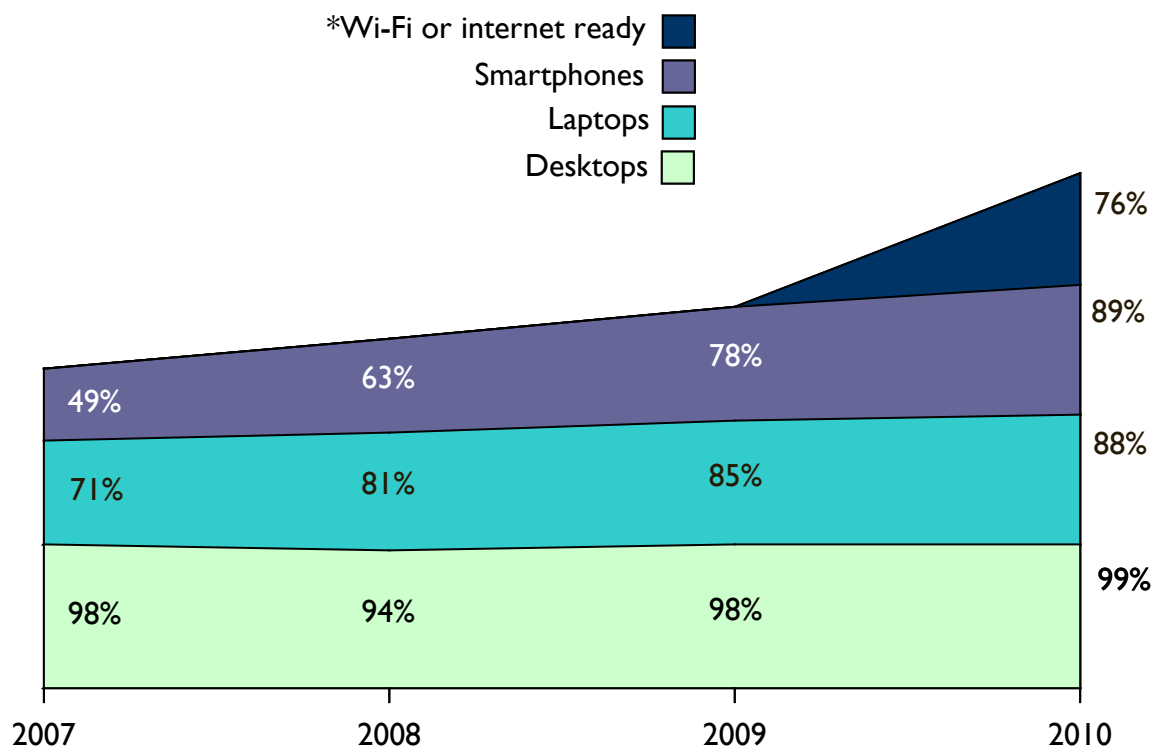|	2008	2009	2010
DSL	44%	42%	50%
T1 or T2 Line	18%	24%	23%
Wireless	9%	9%	10%
Cable modem	4%	3%	8%
ISDN	2%	2%	1%
Dial-up	2%	2%	0%
Other (MPLS, 10MB, IPLC, Quantum fibre link)	0%	0%	6%
Don't know	13%	10%	2%

Consistent with last year, employees spent approximately 30 hours per week using a computer at work. Less than half of that time is spent on the Internet (8.1 hours). Not surprisingly, high computer usage is more common across the following industries: insurance/reinsurance, financial services, education, telecommunications and law.

Takeaways

The adoption of more portable computing (i.e., laptops, smartphones and other wi-fi or Internet devices) by companies is an interesting trend as shown in the graph below. It shows a continued move away from desktop computing and towards mobile computing. Anecdotally, it is also an indication that many of these devices are reliable for the needs of business processing and with proper security, a cost-effective option for companies.

Internet-Ready Device Ownership

Legend:
- *Wi-Fi or internet ready (dark blue)
- Smartphones (purple)
- Laptops (teal)
- Desktops (light green)

2010 values (right side):
- 76%
- 89%
- 88%
- 99%

2007: 49% / 71% / 98%
2008: 63% / 81% / 94%
2009: 78% / 85% / 98%

*Usage of Wi-Fi or internet ready devices was not included in the 2007, 2008 & 2009 surveys.

Corporate Use of Technology and the Internet

The vast majority (87% versus 78% in 2009) of companies, particularly medium and large businesses, surveyed have a company website; 54% (versus 56% in 2009) have a .bm site. Almost one-third of businesses (32% versus 24% in 2009) offered an online payment facility.

Almost four in 10 businesses (38%) reported having a company intranet. Almost a third of companies have video conferencing (29%) and over a quarter use webinars (26%).

A large proportion of companies have a common server (86% versus 81% in 2009). 98% of companies that use a common server have made it a secure server; 72% have a server that can be accessed remotely, with 52% (versus 45% in 2009) accessing via VPN and 27% (versus 45% in 2009) by secure access over the Internet.

Technology Usage In Business

	2007	2008	2009	2010
Business to Business (e.g., inventory control, procurement, contracts, payment & invoices)	93%	83%	93%	92%
Business to Consumer (e.g., facilitating payment, sales & providing product or service information)	80%	69%	78%	79%
Internal Systems (e.g., financial systems, HR, payroll & proprietary systems)	74%	64%	89%	78%
Business to Government (e.g., payroll tax, immigration & social insurance)	*	*	71%	77%

*Use of technology for Business to Government was not measured in 2007 and 2008.

Most companies continue to report that they use technology for business to business (92%), business to consumer (79%), internal systems (78%), as well as business to Government (77%) purposes. E-mailing, online billing/invoicing and online bill payment are the most popular uses of technology for business to business and business to consumer transactions. E-mail, accounting software and online banking/invoicing are the most popular uses of technology for the management of internal systems. Eighty-seven per cent (87%) of companies reported using Government websites or local public service websites, with 77% using online Government services. Online payment of payroll tax, social insurance and TCD were the most popular uses of technology for business to Government transactions. Other uses of technology reported by companies included electronic file sharing repositories, trading stocks and futures contracts, directory services and client management.

Large firms are more likely to have a defined technology security policy (86%) than small (34%) and medium (57%) firms. 83% of companies host their data locally and 87% back up their data locally.

14% of companies (29% of large companies) are subject to data privacy regulations or laws for personal information. The most popular privacy regulations/laws mentioned by companies were PCI (Payment Card Industry), EU and US laws.

Eighty-five per cent (85%) of companies have a disaster recovery and business continuity plan, with medium (91%) and large (94%) being more likely to have a plan in place. Fourteen per cent (14%) of companies reported using cloud computing. Large companies (29%) were more likely to use cloud computing. This is the first time we have captured information on cloud computing and expect to see additional activity in this area in the future.

Disaster Recovery and Business Continuity

|		
73%	84%	85%
2008	2009	2010
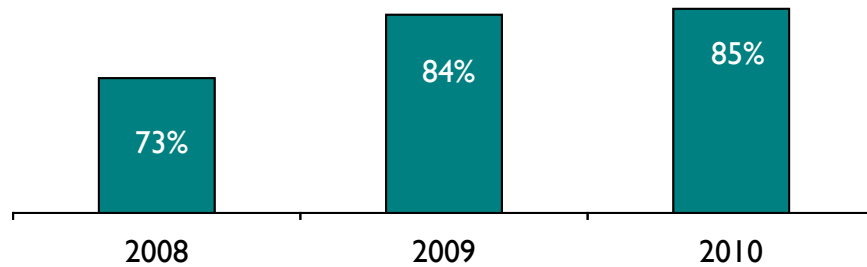
Takeaways

Technology continues to be seen as an important business tool in companies of all sizes. Of particular interest is the use of technology between businesses and between business and Government. Such trends are critical to Bermuda's evolving digital economy, indicating that the corporate community is leveraging the ICT infrastructure.
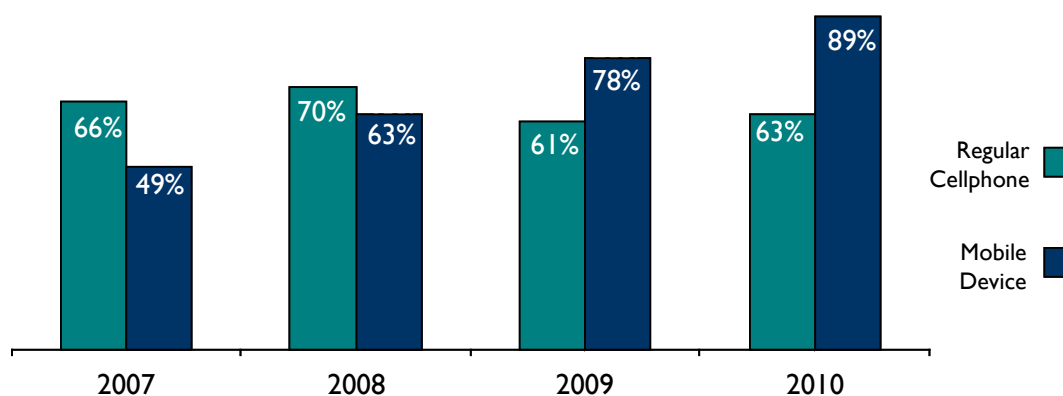
Cellphones and Smartphone devices

Cellular Device Ownership

75%	85%	87%	89%
2007	2008	2009	2010
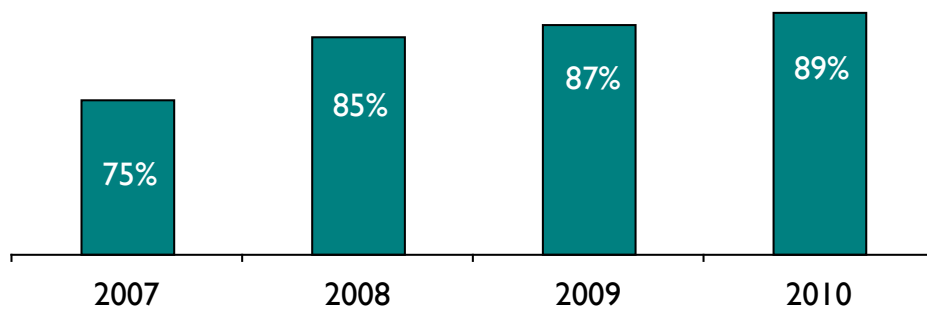
Corporate ownership of cellphones and smartphone devices increased nine points to 89% (versus 80% in 2009). Smartphone devices ownership increased from 78% in 2009 to 89% in 2010, while cell phone ownership remained consistent with 63% in 2010.

Regular Cellphone versus Mobile Device Ownership

The average number of cellular devices (cellphones and smartphone devices) owned by Bermuda companies remained the same as in 2009 (22 devices per company). On average, companies own 19 smartphone devices, 10 3G devices and 17 3G+ devices for their employees, as compared to five cell phones. Compared to last year's results, there was a 13 point drop in the number of companies that said that they are likely to purchase a cellular phone in the next six months (from a 19% positive likelihood in 2009 to 6% in 2010), while the likelihood of purchasing smartphone devices decreased by 10 points to 27%. 17% of companies are likely to purchase 3G devices for their employees.
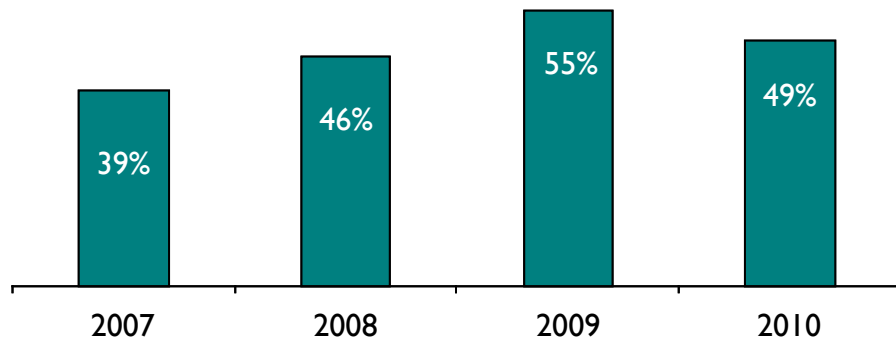
The most popular applications that employees use on their smartphone devices include e-mail, messaging applications and text messaging. Smartphone devices are also being used with custom applications that meet the specific needs of the organization. Other uses identified by respondents include using productivity software applications (i.e., word processing and spreadsheets), voice dictation and GPS.

Takeaways
Continued growth in this area, and specifically with smartphone devices, is impressive as this growth occurs in the midst of economic recession. While the purchase intentions for the coming year have decreased, with new devices being released in the coming months, it will be interesting to see whether there will be a decrease in purchases in next year's survey. With the availability of faster speeds and the versatility of devices, companies may find that smartphones are a wise investment and alternative to laptop computers.
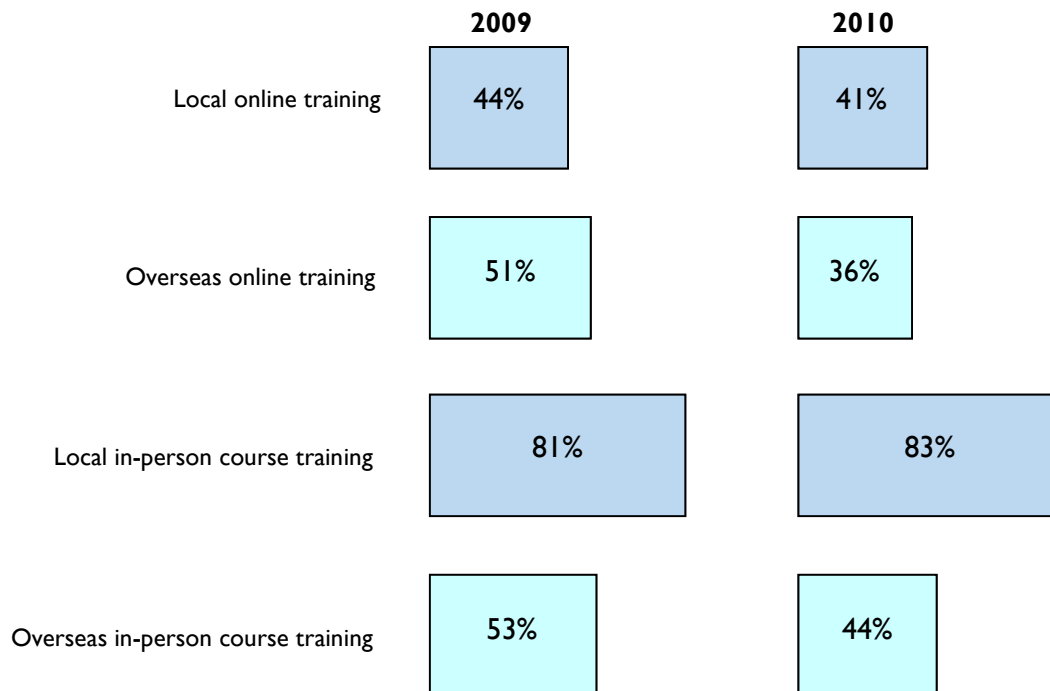
Formal Technology Training

Almost 50 per cent (49%) of companies offer formal technology training. The majority offer local in-person training sessions (81%), with a little more than half (53%) offering overseas in-person training options. Online training continues to increase with 51% (versus 36% in 2009) leveraging overseas online training and 44% (versus 41% in 2009) using local online training options.

Corporate Technology Training

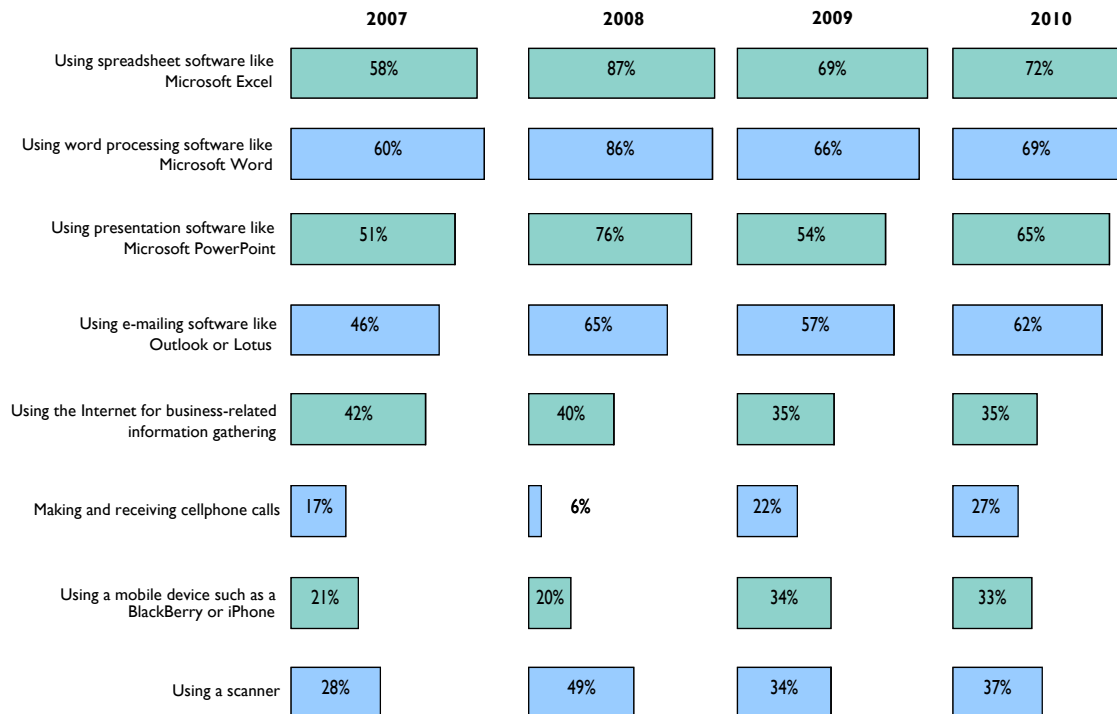|	2009	2010
Local online training	44%	41%
Overseas online training	51%	36%
Local in-person course training	81%	83%
Overseas in-person course training	53%	44%

Consistent with 2007, the most commonly offered basic technology training was in the use of word

processing, spreadsheet and presentation software. Other technology training offered included using e-mail applications, and using cellular and smartphone devices. Training in corporate applications specific to the company's industry included courses on accounting packages, billing and CIS, document management systems, insurance, point of sale and work management.

Basic Corporate Technology Training

	2007	2008	2009	2010
Using spreadsheet software like Microsoft Excel	58%	87%	69%	72%
Using word processing software like Microsoft Word	60%	86%	66%	69%
Using presentation software like Microsoft PowerPoint	51%	76%	54%	65%
Using e-mailing software like Outlook or Lotus	46%	65%	57%	62%
Using the Internet for business-related information gathering	42%	40%	35%	35%
Making and receiving cellphone calls	17%	6%	22%	27%
Using a mobile device such as a BlackBerry or iPhone	21%	20%	34%	33%
Using a scanner	28%	49%	34%	37%

The 2010 benchmark included questions related to specialist IT resources. For seven in 10 companies (64%), the most senior IT person is Bermudian. Companies are looking for a variety of skill sets in the future including analysts, VMware, software development, network engineering, security, project management, SharePoint, Cisco networking and wireless infrastructure. Most require at least basic computer training with a bachelor's degree and /or IT certifications. IT Certifications required included A+, CCNA, CCNP, and MCSE, among others. The most popular types of training for IT specialists included local in-person training, followed by local online training and overseas in-person training. However, it also appears that IT professionals are expected to be responsible for their continued development.

Seventy-three per cent (73%) (versus 70% in 2009) of companies use off-the-shelf products purchased in the mass market. The use of customized products increased for both locally developed (40% versus 27% in 2009) and overseas developed (44% versus 32% in 2009) products. 2% of the companies surveyed hold patents related to technology they developed, while 11% have an intellectual property (IP) policy in place for the management and protection of their intellectual property.

Takeaways

Nontraditional training methods continue to increase as companies explore online options for training. While online courses may provide cost savings versus face to face training, it also may provide a broader range of subject matter opportunities for employees.

The increase in the use of customized products in 2010 was significant. While many still leverage mass market devices, often to keep costs low, investment in customized products is beneficial for differentiation and to increase competitive advantage in the marketplace. Locally customised products also indicate that there is development talent on the Island that can serve the unique needs of companies, some of which offer very specialized services.

Attitudes and Overall Technology Competence

	2007	2008	2009	2010
Technology products like email and instant messaging have made it easier to stay in touch with one's clients and work colleagues.	97%	97%	97%	95%
Most employees in my firm are very knowledgeable about cellular phones and mobile devices (e.g., BlackBerries and iPhones)	*	*	*	93%
Technology products such as cellphones and the Internet have made the work environment much easier.	91%	96%	92%	92%
In order to compete in the global economy, Bermuda must continue to meet or exceed global technology standards.	80%	84%	97%	92%
Most employees in my firm are very knowledgeable about computers.	*	*	*	89%
Having a strong knowledge of technology is essential in a firm's success today.	92%	95%	90%	87%
Most employees in my firm are open to technology training.	*	*	85%	83%
My firm is committed to having the best technology products for its employees.	78%	80%	74%	70%
My firm is usually one of the first on the Island to adopt new products and technologies.	46%	52%	40%	43%
My company plans to use social networking websites within the next year to communicate with clients and businesses.	*	48%	15%	39%
In general, most employees at my firm dislike change.	43%	43%	42%	36%
A lot of the employees at my firm feel that new technologies like mobile devices (such as BlackBerries and iPhones) are difficult to learn.	20%	36%	22%	33%
My company uses social networking websites (like Facebook or MySpace) to communicate with clients and other businesses.	*	47%	11%	31%

*Denotes questions that were not included in particular years.

Companies continue to agree that in order to compete in the global economy, Bermuda must continue to meet or exceed global technology standards.

A significant shift in corporate attitudes was recognized concerning social networking. 31% of companies reported using social networking websites such as Facebook to communicate with clients

and other businesses, as compared to 11% in 2009. Additionally, 39% versus 15% in 2009, plan to use social networking websites within the next year to communicate with clients and businesses.

Policies related to the use of social networking by employees are developing. 30% of companies report blocking the use of social networking sites all the time while 6% do so only during working hours. Almost 60% currently do not have a policy regarding the use of social networking sites.

Professionals were asked to rate the expertise of the average employee at their firm regarding 23 technology areas related to general computing, Internet usage, cellphones, smartphone devices, and other technologies. Based on these ratings, the respondents' firms were classified as having either low, moderate, or high technological competence based on the number of areas for which they expressed a high level of expertise (9, 10 on a 1 – 10 scale).

Consistent with last year's results, 74% of employees in businesses were in the moderate or high technological competence categories. This is an 18 point increase over 2009. The number of firms classified as having a moderate degree of competence has increased significantly (26% in 2009 versus 43% in 2010).
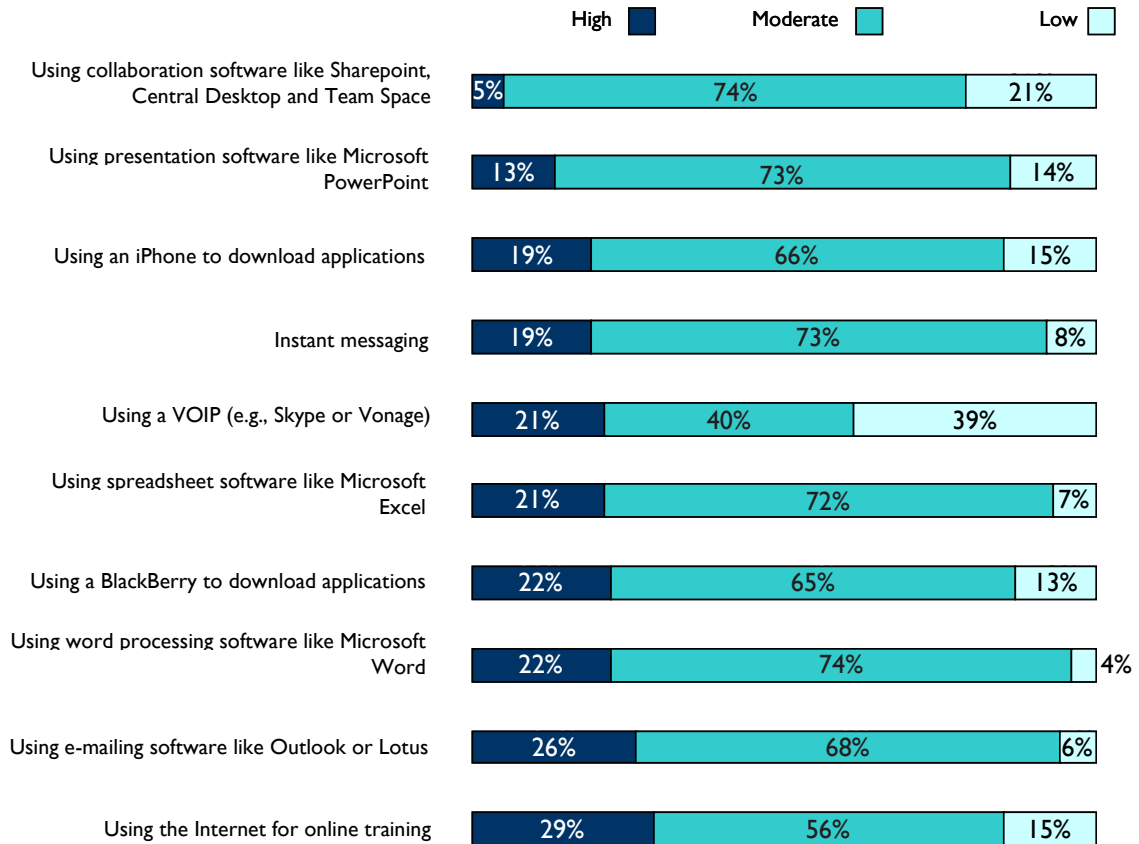
Corporate Technology Competence Segmentation
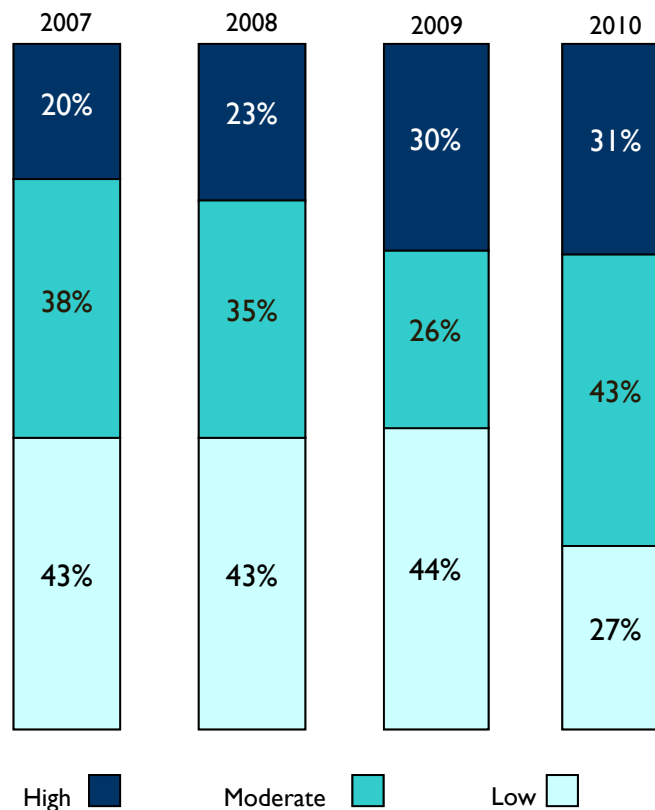
Those areas with the lowest degree of competency (i.e., 0 – 29% of companies gave a 9 or 10

rating) are shown below and included activities such as using collaboration software (5%), using presentation software (13%) and using an i-Phone to download applications (19%).

Low Technology Competence

	High	Moderate	Low

	High	Moderate	Low
Using collaboration software like Sharepoint, Central Desktop and Team Space	5%	74%	21%
Using presentation software like Microsoft PowerPoint	13%	73%	14%
Using an iPhone to download applications	19%	66%	15%
Instant messaging	19%	73%	8%
Using a VOIP (e.g., Skype or Vonage)	21%	40%	39%
Using spreadsheet software like Microsoft Excel	21%	72%	7%
Using a BlackBerry to download applications	22%	65%	13%
Using word processing software like Microsoft Word	22%	74%	4%
Using e-mailing software like Outlook or Lotus	26%	68%	6%
Using the Internet for online training	29%	56%	15%

Technology areas with a moderate degree of technology competency (i.e. 30 – 49% of companies gave a 9 or 10 rating) are shown below.

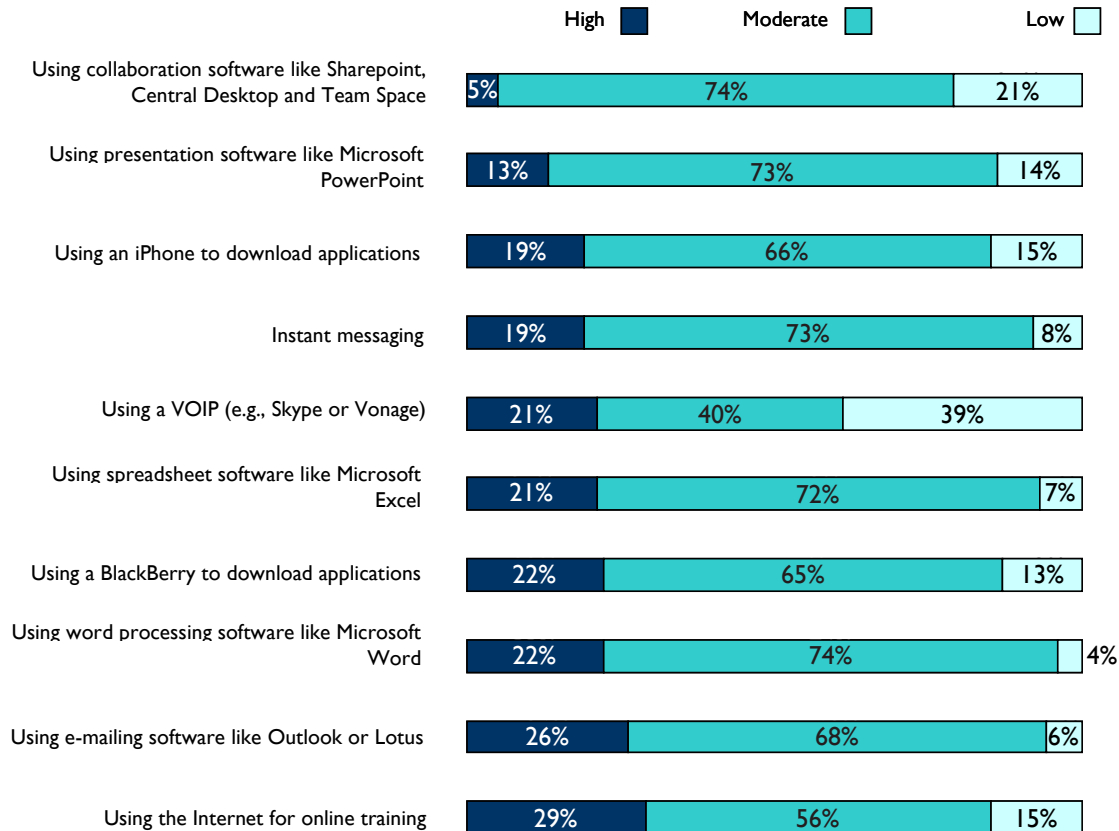## Moderate Technology Competence

Using mobile devices such as a BlackBerry or an iPhone to access and read files: High 30%, Moderate 62%, Low 8%

Using mobile devices such as a BlackBerry or an **iPhone** to surf the Internet: High 31%, Moderate 64%, Low 5%

Using your company's website: High 42%, Moderate 47%, Low 10%

Using mobile devices such as a BlackBerry or an iPhone to read and send e-mails: High 44%, Moderate 53%, Low 4%

Accessing the Internet via a cellphone: High 48%, Moderate 44%, Low 9%

Using mobile devices such as a BlackBerry or an iPhone: High 49%, Moderate 48%, Low 3%

High ■   Moderate ■   Low ■

Businesses showed a high degree of competency (50% or more businesses gave a 9 or 10 rating) in areas such as using a fax machine (77%), Making and receiving cellphone calls (75%) and using a printer (75%).

Low Technology Competence

High ■ Moderate ■ Low □

	High	Moderate	Low
Using collaboration software like Sharepoint, Central Desktop and Team Space	5%	74%	21%
Using presentation software like Microsoft PowerPoint	13%	73%	14%
Using an iPhone to download applications	19%	66%	15%
Instant messaging	19%	73%	8%
Using a VOIP (e.g., Skype or Vonage)	21%	40%	39%
Using spreadsheet software like Microsoft Excel	21%	72%	7%
Using a BlackBerry to download applications	22%	65%	13%
Using word processing software like Microsoft Word	22%	74%	4%
Using e-mailing software like Outlook or Lotus	26%	68%	6%
Using the Internet for online training	29%	56%	15%

Takeaways

The growth of the use of social networking websites by companies was seen as an interesting development over the last year. It indicates that companies are considering how to engage existing and potential customers and employees. Additionally, while there are more business focused social networking sites, such as LinkedIn, companies also leverage Facebook due to the reach that it provides.

CONCLUSION

Notwithstanding the current economic climate, the state of ICT in Bermuda continues to be healthy. Incremental development in many areas indicates the important nature of technology within both the residential and business communities. We are witnessing a convergence of devices, with smartphones and wi-fi device adoption increasing. Additionally, we can no longer measure Internet access by household connections as residents connect using many devices and varying locations. Things may be good within the ICT realm in Bermuda, but we cannot stop there.

Technology continues to be referred to as a transformative presence in the world. In the April 2011 World Economic Forum publication *The Global Information Technology Report 2010 – 2011*, the editors offer, "while changing the way individuals live, interact, and work, ICT has also proven to be a key precondition for enhanced competitiveness and economic and societal modernization, as well as an important instrument for bridging economic and social divides and reducing poverty". It is therefore no real surprise that the adoption of social networking by both residential and business users is significant and has become a platform for communication, commerce and innovation. This also supports the trend we now see towards the increased prevalence of smartphones in the community, allowing mobile computing in its truest sense. The 2010 State of ICT in Bermuda also provides detail that can benefit employers, retailers, e-businesses and educators, perhaps providing an added facet to their respective decisions on how to leverage ICT.

The State of ICT in Bermuda 2010 paints Bermuda as a true digital society in its use of ICT socially and professionally. It also provides some insight into Bermuda as a digital economy. The use of ICT empowers business and entrepreneurship and fuels innovation. Therefore to build and further Bermuda's economic growth requires increasing the depth of technical literacy. To continue development in both of these areas, awareness and training are critical. This means that all stakeholders, including government, have a role to play in encouraging residents to continue to embrace technology and hone their technical skills, from the next generation, our future workforce, through to the retiring baby boomers. With the evolution of the Internet and the introduction of IPV6, as well as the increasing reliance on mobile applications to help run our personal and professional lives, economic opportunities continue to exist for those who know how to spot a niche and leverage the technology to help make the business a reality.