The state of I.C.T. in Bermuda 2009

GOVERNMENT OF BERMUDA
Ministry of Energy, Telecommunications and E-Commerce
Department of E-Commerce

<p style="text-align:center">The state of</p>

<p style="text-align:center">Information and Communication Technology</p>

<p style="text-align:center">in</p>

<p style="text-align:center">Bermuda 2009</p>

Executive Summary

The Ministry of Energy, Telecommunications & E-Commerce conducted the following research in order to establish a benchmark view of Bermuda's technological competence, as well as their attitudes toward technology issues. In particular, the research probed Bermuda residents and professionals on their ownership and usage of:

- Computers;
- the Internet;
- Cell Phone & Mobile Devices; and
- other technology products.

For the purpose of trending, where possible, the results obtained this year were directly compared with those obtained in 2007 and 2008.

The economic climate in Bermuda in 2009, like elsewhere, has been challenging. While the impact of the global economic crisis on Bermuda has not been as extreme as in other jurisdictions, Bermuda residents and organizations have been strategic and cautious in their technology decisions. The 2009 benchmarking exercise therefore reflects some of the changes in both business and residential buying decisions. Bermuda residents continue to fill their needs for new technology, while businesses make strategic planning decisions to ensure they remain competitive.

Bermuda residents and organizations continue to become more and more sophisticated in their use of the Internet. The adoption of high-speed Internet connections allows for the diverse number of computer related activities that are used on a regular basis. This relates directly to the increasing level of expertise in the community. It also communicates to the importance of digital security.

Sample/Methodology

Technology Benchmark Survey - May 2009

Residential Segment
401 Bermuda residents aged 18 year and older were interviewed.
- The data was weighted to be representative of the population with respect to gender, age, education, and nationality.
- The margin of error for this segment is +/- 4.9% at the 95% confidence level.

Corporate Segment
- 204 Business professionals aged 18 year and older were interviewed.
- The margin of error for this segment is +/- 7% at the 95% confidence level.

Impact and Quantitative Research Surveys - October 2009

Residential Segment
- Both utilised Computer-Assisted Telephone Interviewing (CATI) to interview a representative sample of 400 Bermuda residents aged 18+. The surveys were conducted in October, 2009 and lasted approximately 12 minutes.

Weighting
- The total samples were weighted to be representative of Bermuda's population on the following factors – gender, age, education and nationality.

Margin of Error
- The margin of error for the study is +/- 5% at the 95% confidence level.

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RESIDENTIAL FINDINGS

The findings have been grouped into three distinct areas of insight:
- Attitudes towards Technology.
- Access to Technology.
- ICT Literacy.

Attitudes

■ I am very knowledgable about technology products such as computers and cell phones (M 79% / F 87%)

■ I am very interested in learning more about new technology (M 86% / F 86%)

■ New technology intimidates me a little (M 46% / F 44%)

■ I like to be among the first of my friends to adopt new products and technologies (M 60% / F 56%)

■ In general, I dislike change (M 25% / F 33%)

■ Having a strong knowledge of technology is essential in getting ahead today (M 94% / F 95%)

■ I'm too old to learn about new technologies like cellphones and email (M 18% / F 19%)

■ Technology products such as cell phones and the Internet have made life much easier (M 91% / F 95%)

■ Technology products like email and instant messaging have made it easier to stay in touch with your friends and family (M 92% / F 96%)

■ In order to compete in the global economy, Bermuda must continue to meet or exceed global technology standards (M 98% / F 100%)
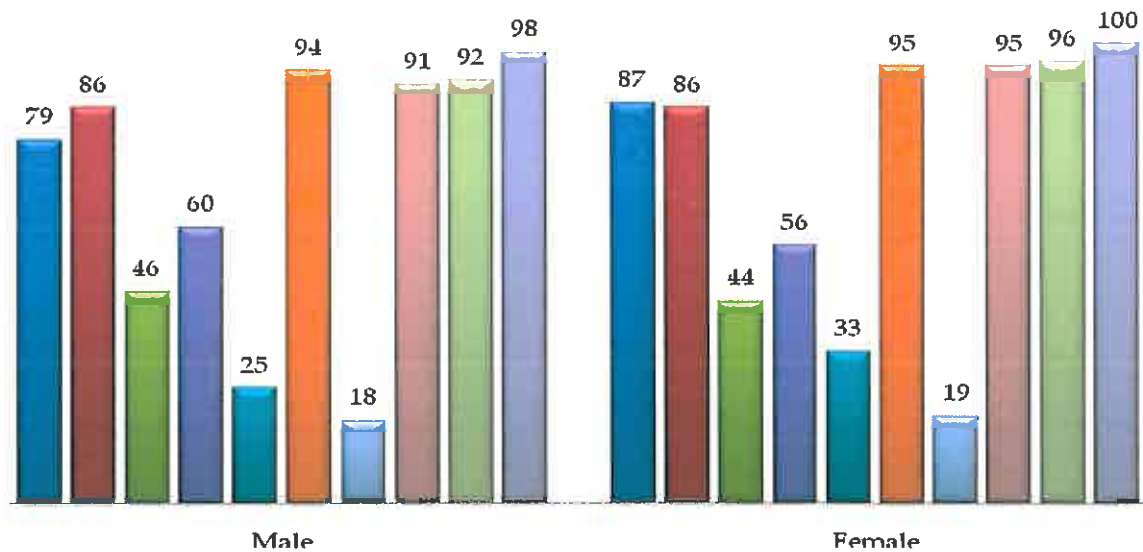
Compared to 2007 and 2008, residents were more knowledgeable about technology products, and were more interested in learning about new technology. Residents were also more likely to agree that to be successful, it is important to have a strong knowledge of technology. Addition-

ally, residents were more likely to want to be early adopters and believed that in order to compete in a global economy, Bermuda must continue to meet or exceed global technology standards. Consistent with last year's results, older residents (aged 65 years and older) were less likely to be knowledgeable about technology products and issues.

Computer & Internet Usage

Nine in 10 Bermuda households own a computer (90% - Any, 63% - Desktop, 68% - Laptop).

Compared to 2008, there was a decrease in the proportion of residents who owned a desktop computer (63% in 2009 vs. 69% in 2008), and an increase in the proportion of residents who owned a laptop (68% in 2009 vs. 64% in 2008).

About three-quarters of residents who own more than one computer (73%) have a residential computer network. This is a large increase from 2008, where 54% had a residential computer network. Seventy-five percent (75%) of residential network owners have a wireless network, of which 81% are secure.

HOUSEHOLD OWNERSHIP OF COMPUTERS

Laptop Desktop
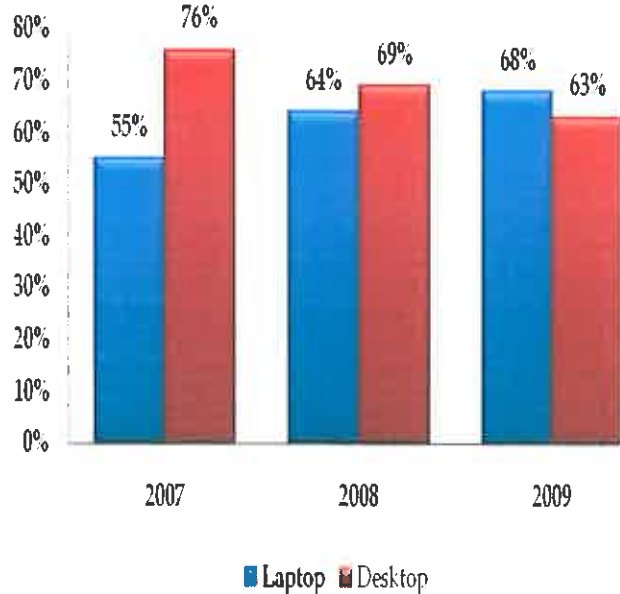
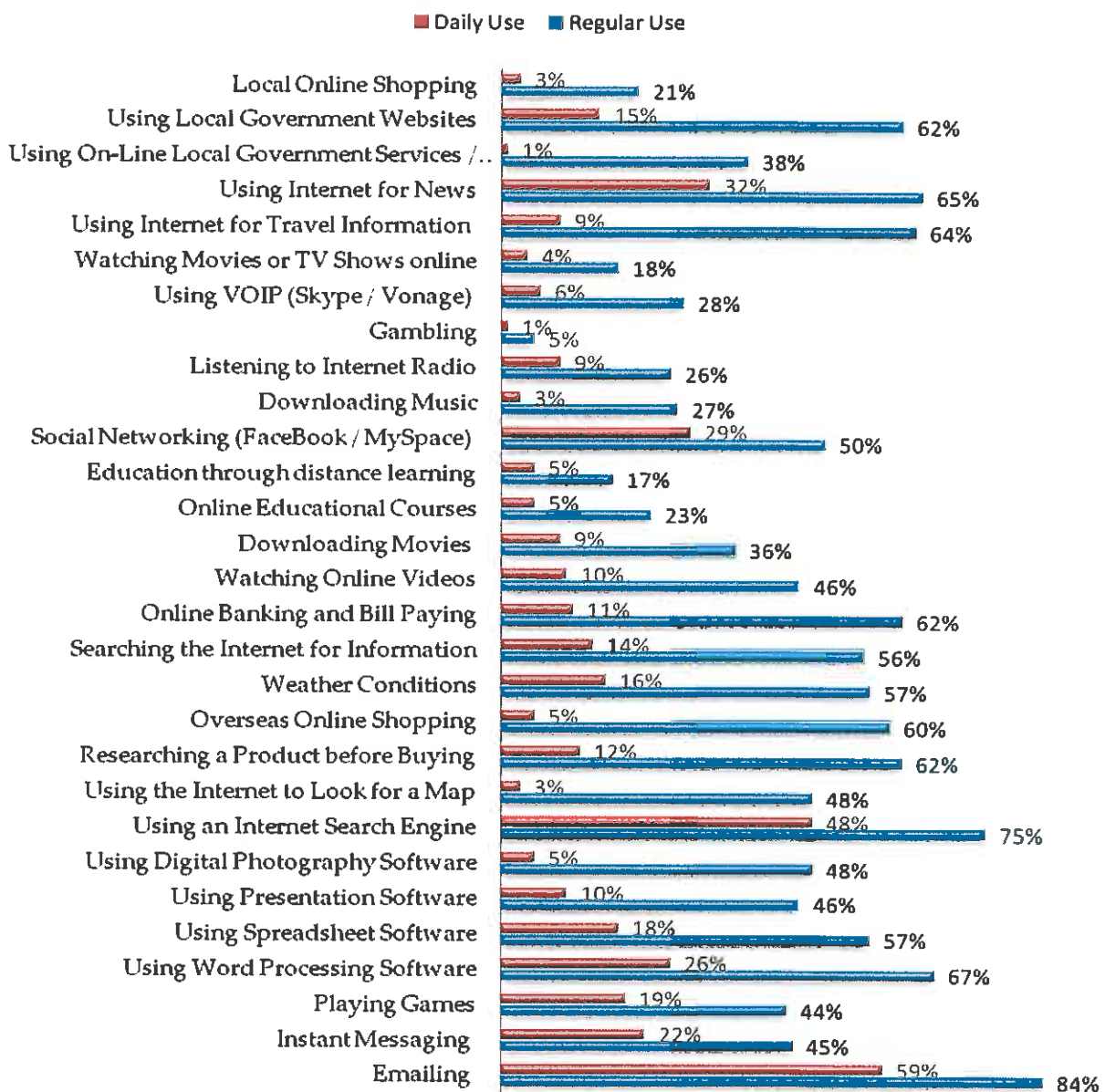**HOUSEHOLD CONNECTION TO INTERNET**

2009 2008 2007
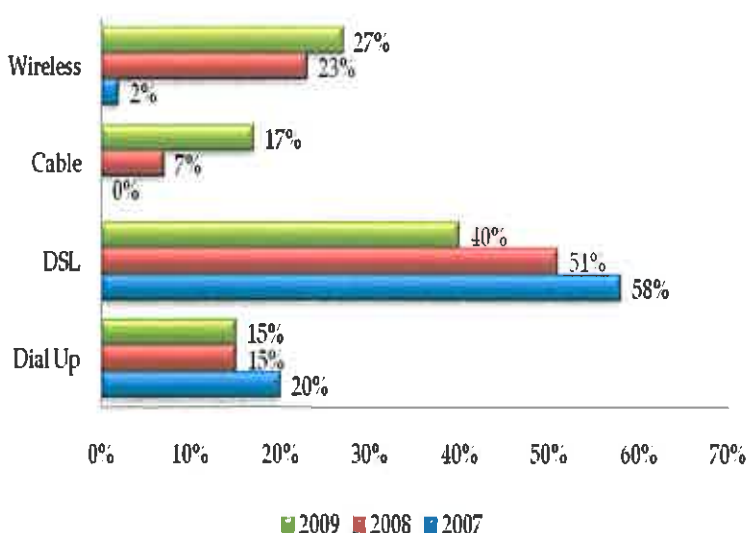
Eighty nine percent (89%) of residents have Internet access. Similar to 2008, the majority of residents with Internet access (85%) have a high-speed Internet connection (DSL, Cable or Wireless).

2009 also saw the continued growth of cable Internet access. Cable access increased from 7% in 2008 to 17% in 2009. Dial-up usage remained stable

in 2009. Residents spent approximately 11 hours per week using a computer at home. 74% of residents use the Internet over half the time they are using their computers at home (versus 59% in 2008).

Close to half of residents (49%) said that they are likely to purchase a computer in the next 6 months. Residents were more likely to purchase a laptop rather than a desktop computer (31% vs. 19%). IT equipment is more likely to be purchased locally (27%) than abroad (19%), although 30% purchase both locally and abroad. Residents purchase IT equipment locally because of the convenience, service and warranty, while their reasons for purchasing abroad include selection

COMPUTER RELATED ACTIVITIES

■ Daily Use   ■ Regular Use

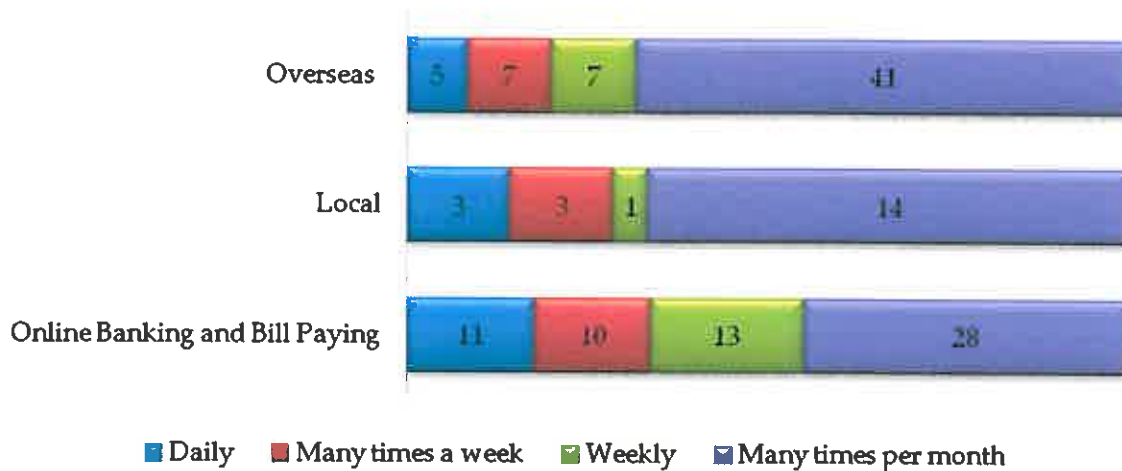| Activity	Daily Use	Regular Use
Local Online Shopping	3%	21%
Using Local Government Websites	15%	62%
Using On-Line Local Government Services /..	1%	38%
Using Internet for News	32%	65%
Using Internet for Travel Information	9%	64%
Watching Movies or TV Shows online	4%	18%
Using VOIP (Skype / Vonage)	6%	28%
Gambling	1%	5%
Listening to Internet Radio	9%	26%
Downloading Music	3%	27%
Social Networking (FaceBook / MySpace)	29%	50%
Education through distance learning	5%	17%
Online Educational Courses	5%	23%
Downloading Movies	9%	36%
Watching Online Videos	10%	46%
Online Banking and Bill Paying	11%	62%
Searching the Internet for Information	14%	56%
Weather Conditions	16%	57%
Overseas Online Shopping	5%	60%
Researching a Product before Buying	12%	62%
Using the Internet to Look for a Map	3%	48%
Using an Internet Search Engine	48%	75%
Using Digital Photography Software	5%	48%
Using Presentation Software	10%	46%
Using Spreadsheet Software	18%	57%
Using Word Processing Software	26%	67%
Playing Games	19%	44%
Instant Messaging	22%	45%
Emailing	59%	84%

and cost.

Similar to last year's results, the most regularly used computer activities included: emailing, using Internet search engines, using the Internet to look for travel information, researching products and services on the Internet, overseas online shopping, searching the Internet for information on a hobby or interest, using the Internet to get news and online banking.

Online activities continue to grow. Activities such as watching videos and TV online, listening to Internet radio and using VOIP services such as Skype also increased significantly.

Purchase of Goods and Services Online

60% of residents report that they purchase goods/services online from overseas vendors and 21% from local vendors. Residents 25-44 years old are significantly more likely to make purchases online and to use online banking and bill paying services on a daily basis.

ONLINE PURCHASING FREQUENCY

	Daily	Many times a week	Weekly	Many times per month
Overseas	5	7	7	41
Local	3	3	1	14
Online Banking and Bill Paying	11	10	13	28

Local online purchases include theatre/movie tickets, airline tickets, gift cards, electronics, registration for local races, books, household items, clothing and second-hand items using sites such as eMoo. Purchases via overseas sites were varied with residents purchasing airline tickets, music, household items, clothing, books, electronics shoes, and DVDs, to name a few.

Cell Phones & Mobile Devices

Consistent with 2008, more than 9 in 10 (94%) of households own a cell phone or mobile device. Again, the number of households that owned a mobile device continued to increase (55% vs. 32% in 2008).

HOUSEHOLD OWNERSHIP OF CELLULAR DEVICES

MobileDevice ■ Cellular Phones and Mobile Devices
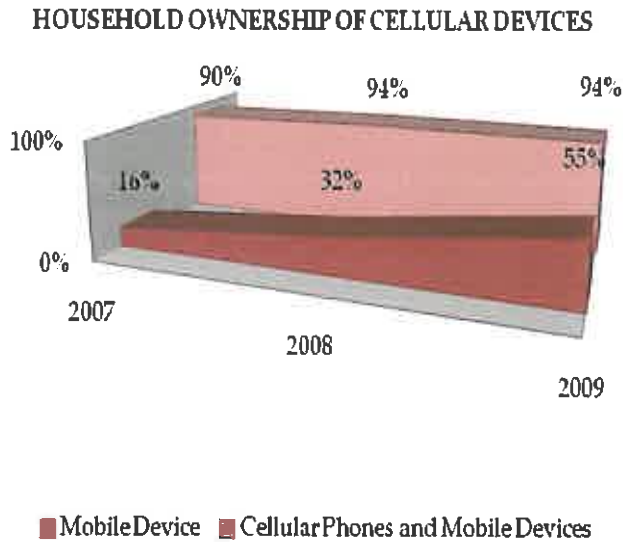
One-quarter of residents are likely to purchase a cell phone in the next 6 months. There was a 22 point increase in the proportion of residents who said that they would purchase a mobile device (34% in 2009 vs. 12% in 2008).

Consistent with 2008, the most frequently used cell phone and mobile device features included taking pictures and downloading ring tones. Significant growth was realized in the areas of accessing the Internet and sending pictures to others. The use of Blackberry Messenger increased from 12% in 2008 to 31% in 2009. Similar growth was realized in the area of Internet browsing, from 25% in 2008 to 42% in 2009. New questions asked in 2009 assessed usage of the following activities on mobile devices: email (47%), social networking (21%), games (19%), GPS software (13%), downloading movies (10%), purchasing goods (8%), downloading podcasts (6%) and bill payment (5%).

Overall, three-quarters of residents communicate via text messaging. Usage of text messaging increased dramatically in 2009 (text messages sent by residents– 58% in 2008 vs. 72% in 2009; text messages received by residents – 65% in 2008 vs. 81% in 2009). More than half (54%) text daily. Multiple daily usage is higher than average among younger residents (18-24 years – 68%; 25-34 years – 45%).

Overall Technology Competence

Residents were asked to rate their level of expertise regarding 24 technology areas related to general computing, Internet usage, cell phones, mobile 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).

62% of Bermuda's residents have a moderate to high level of ICT competence, versus 58% in 2008. This year, 38% of residents were classified as having low competence, 25% as having moderate competence, and 37% as having high competence.
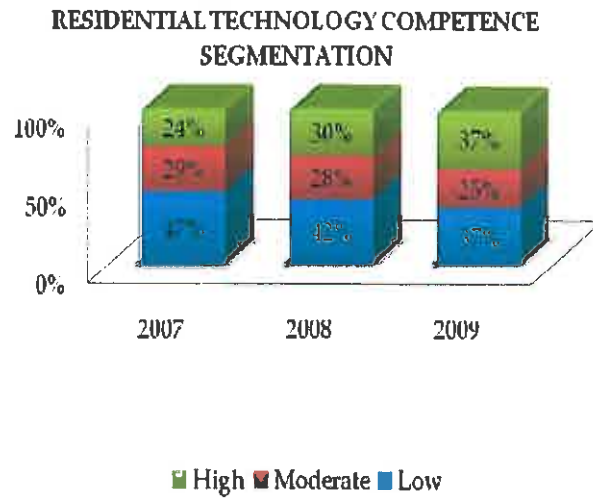
Compared to last year, there was a 4 point decrease in the proportion of residents classified as having low competence (38% vs. 42% in 2008) and a 7 point increase in the proportion of residents classified as having high competence (37% vs. 30% in 2008).

RESIDENTIAL TECHNOLOGY COMPETENCE SEGMENTATION

■ High ■ Moderate ■ Low

Across the board, the majority of respondents felt that they had the basic technology skills for; surfing the net, making and receiving cell phone calls, using voicemail, using a fax machine, using a digital camera, online banking and text messaging.

ICT COMPETENCE OF SPECIFIC COMPUTER ACTIVITIES

■ Low ■ Moderate ■ High
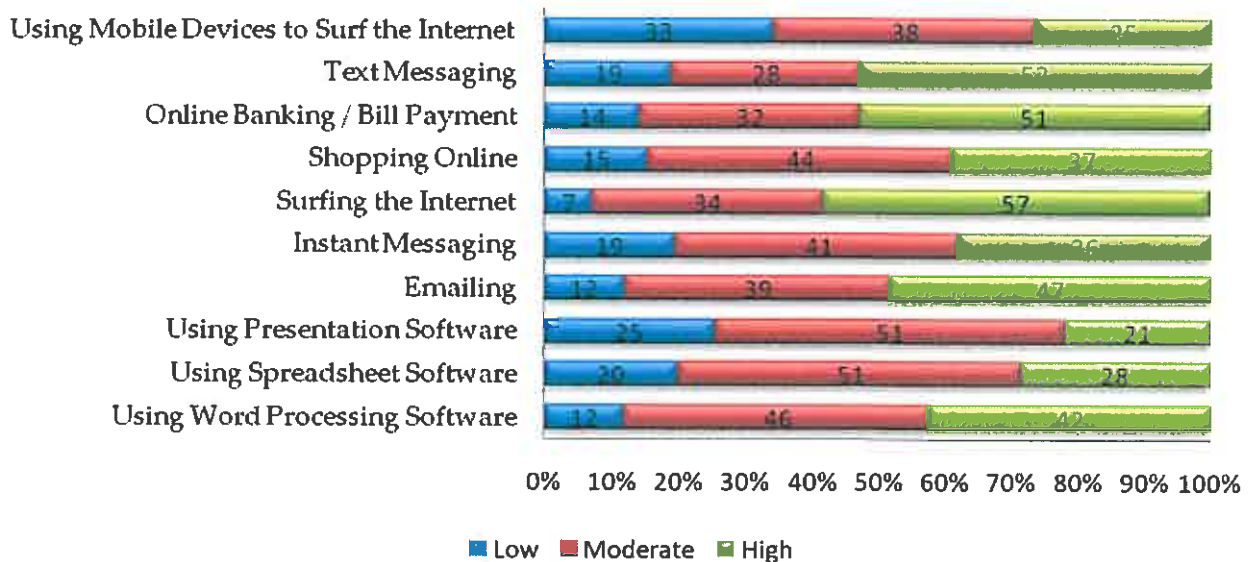
In addition to the basic skills above, those with moderate competency can use word processing, email, instant messaging software, perform online shopping, use mobile devices in general and to read/send email, use a cell phone for picture taking, and using an ipod/mp3 player and a scanner.

Respondents with the highest skill levels have proficiency in using spreadsheet and presentation software, downloading ring tones, accessing the Internet via a cell phone, using digital photo editing software, as well as using gaming consoles.
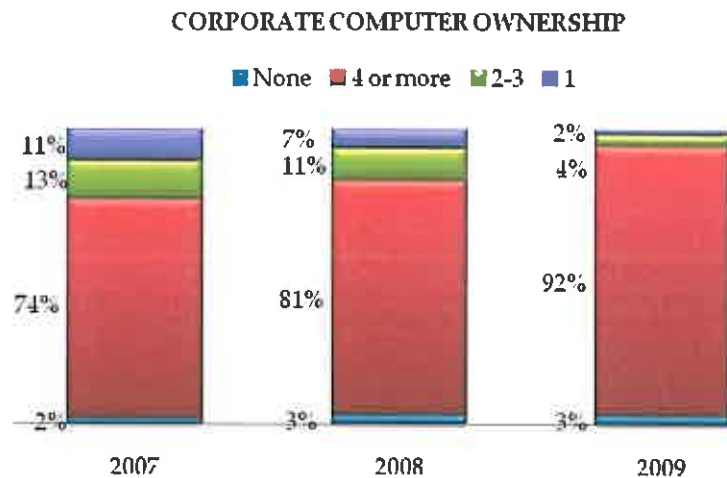
CORPORATE FINDINGS

Attitudes

Companies continue to have strong attitudes with regard to technology. In particular, the majority see the benefits of using technology products such as email, mobile devices and the Internet, and believe that a strong knowledge of technology is important for their success.

Companies are committed to having the best technology products for their employees, and believe that the majority of their employees are knowledgeable about common technology products such as computers and mobile devices. The majority of companies also believe that in order to compete in a global economy, Bermuda must continue to meet or exceed global technology standards.
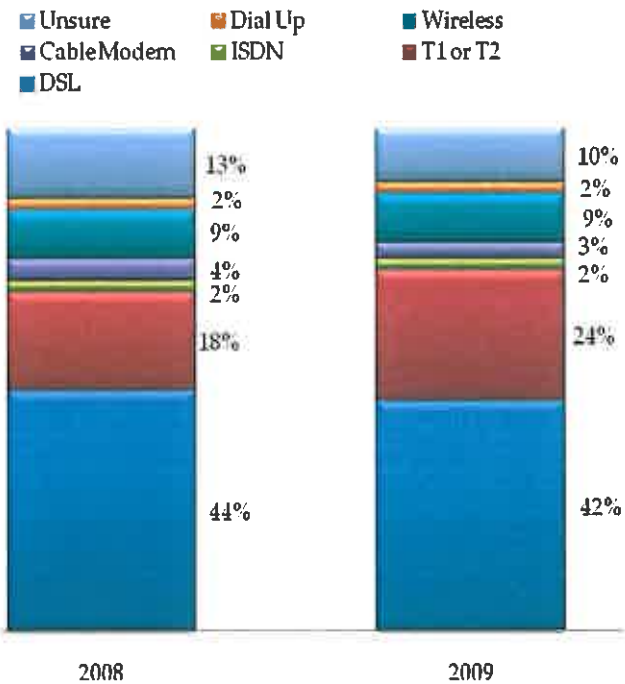
Computer & Internet Usage

Consistent with last year's results, nearly all Bermuda companies have computers as detailed in the corporate computer ownership chart. However, this year, the proportion of companies owning laptop computers increased (85% vs. 81%).

In line with last year's results, approximately half of Bermuda's firms (52%) plan to purchase a new desktop or laptop computer in the next 6 months.

CORPORATE COMPUTER OWNERSHIP

■ None ■ 4 or more ■ 2-3 ■ 1

2007: 11%, 13%, 74%, 2%
2008: 7%, 11%, 81%, 3%
2009: 2%, 4%, 92%, 3%

HOW COMPANIES CONNECT TO THE INTERNET

Legend:
- Unsure
- Dial Up
- Wireless
- CableModem
- ISDN
- T1 or T2
- DSL

2008: 13%, 2%, 9%, 4%, 2%, 18%, 44%

2009: 10%, 2%, 9%, 3%, 2%, 24%, 42%

100% of firms with computers have Internet access and the majority of companies have a broadband connection. DSL connections are the most common at 42%, followed by a T1 or greater line (24%).

Compared to last year's results, employees spent slightly more hours per week using a computer at work (30.4 hours per week vs. 27.1 hours per week).
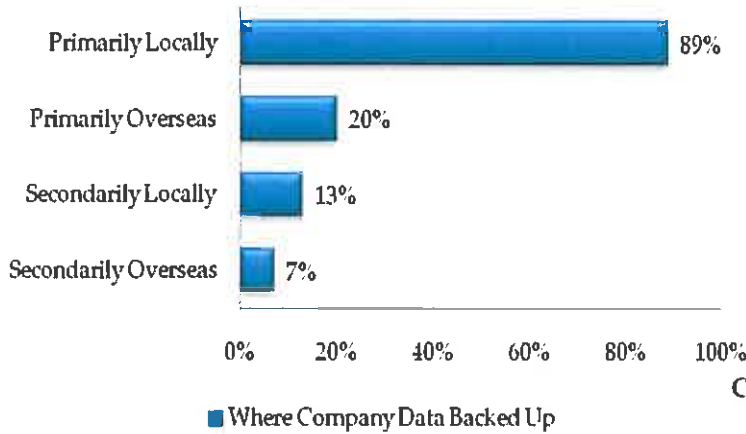
Not surprisingly, high computer usage is more likely among larger firms and in the industries of Banking, Financial Services, Insurance/Reinsurance, Tourism/Hospitality, Telecommunications and Health.

Corporate Use of Technology and the Internet

The vast majority (78%) of businesses surveyed have a company website. 56% of business used a .bm top level domain, while 40% used .com. Almost one-quarter of businesses (24%) offered an online payment facility. Four in ten businesses reported having a company intranet. More than a third of companies have video conferencing (35%) or use webinars (38%). Only 6% of the companies surveyed have a social networking presence. Those that do have a social networking presence indicate that it is used for information sharing within the company, online meetings, social events and to provide a company overview.

Most companies continue to report that they use technology for business to business (93%), business to consumer (78%), internal systems (89%), as well as business to government (71%) purposes. These companies also indicated that they use technology for a variety of other specific uses, including banking, engineering, GPS tracking, sales, trading stocks, modeling, data storage, marketing, security and software development.

BACK UP OF CORPORATE DATA

Primarily Locally	89%
Primarily Overseas	20%
Secondarily Locally	13%
Secondarily Overseas	7%

0% 20% 40% 60% 80% 100%

■ Where Company Data Backed Up

Large firms are more likely to have a defined technology security policy (89%) than small (46%) and medium (59%) firms. Most firms (89%) back up their data locally. Nearly 85% of businesses have a disaster recovery and business continuity plan.
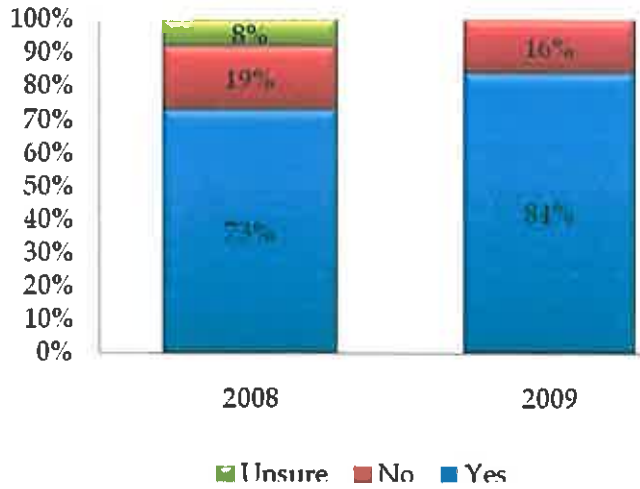
Cell Phones & Mobile Devices

Corporate ownership of mobile devices increased dramatically from 63% in 2008 to 78% in 2009, while cell phone ownership decreased from 70% in 2008 to 61% in 2009.

BUSINESSES WITH CELLULAR/MOBILE DEVICES

	2007	2008	2009
Mobile Device	75%	85%	87%
Devices and Phones	49%	63%	78%

■ Mobile Device ■ Devices and Phones
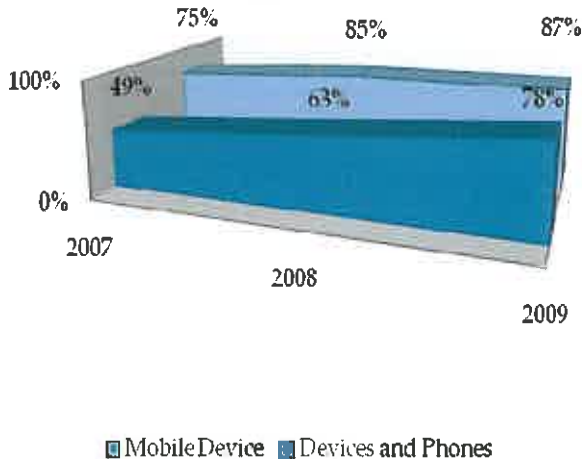
In 2009 a large proportion of companies have a common server (81%). Companies continue to be security conscious. 99% of companies that use a common server have made it a secure server. 74% of companies with a common server have remote access, with 45% accessing via VPN and 45% by secure access over the Internet.

COMPANIES WITH DISASTER RECOVERY OR BUSINESS CONTINUITY PLANS

|	2008	2009
Unsure	8%	
No	19%	16%
Yes	73%	84%

■ Unsure ■ No ■ Yes

The average number of cellular devices (cell phones and mobile devices) owned by Bermuda companies increased marginally (from 20.4 to 22.0 devices per company). Compared to last year's results, there was a 11 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 30% positive likelihood in 2008 to 19% in 2009), while

the likelihood of purchasing mobile devices held steady at 37%.

Training Programs & Innovation

Compared to 2008, there was a 9 point increase in the percentage of companies that offer formal technology training, increasing from 46% to 55%.

COMPANIES OFFERING FORMAL TECHNOLOGY TRAINING
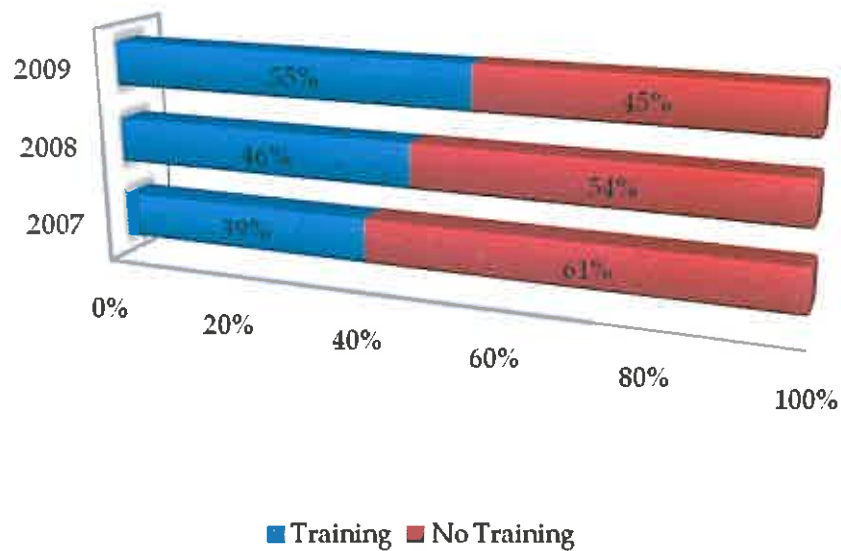
Consistent with 2007 and 2008, the most commonly offered technology training was in the use of word processing, spreadsheet and presentation software.

ICT TRAINING BY COMPANIES
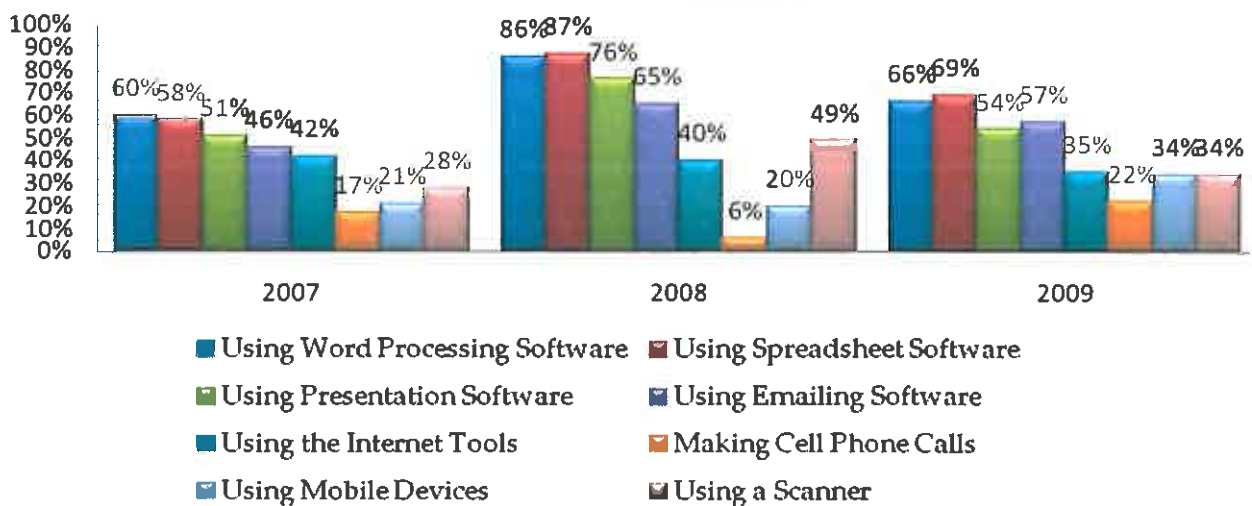
As with the 2008 findings, the study indicated again this year that over half of the companies use customized technology products developed both locally and overseas. However, there was a decrease in the usage of customized products developed both locally (from 40% in 2008 to 27% in 2009) and overseas (from 63% in 2008 to 32% in 2009).

59% of companies said that they had developed propriety or adapted software or hardware relating to ICT. This was particularly true of large companies. 49% of these companies were willing to share their story, compared to just 5% in 2008.

Overall Technology Competence

Professionals were asked to rate the expertise of the average employee at their firm regarding eighteen technology areas related to general computing, Internet usage, cell phones, mobile 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).

CORPORATE TECHNOLOGY COMPETENCE SEGMENTATION
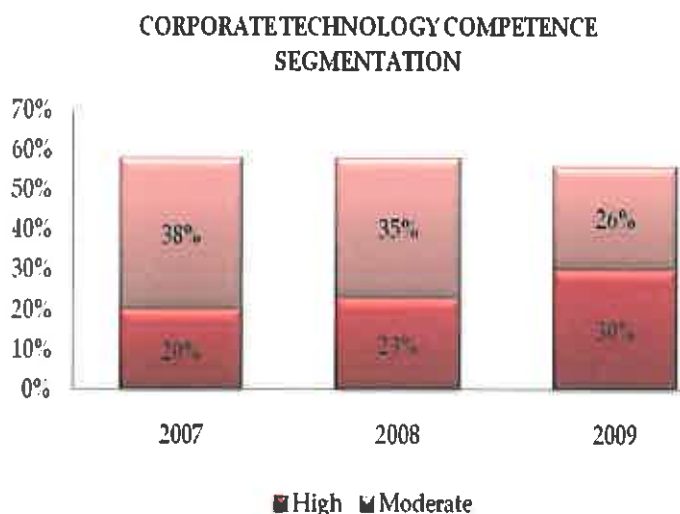
High ■ Moderate

Consistent with last year's results, 56% of employees in businesses were in the moderate or high technological competence categories. The number of firms classified as having high competence has increased significantly since 2007.

Those areas with the lowest degree of competency are able to make and receive cell phone calls, and use a fax machine.

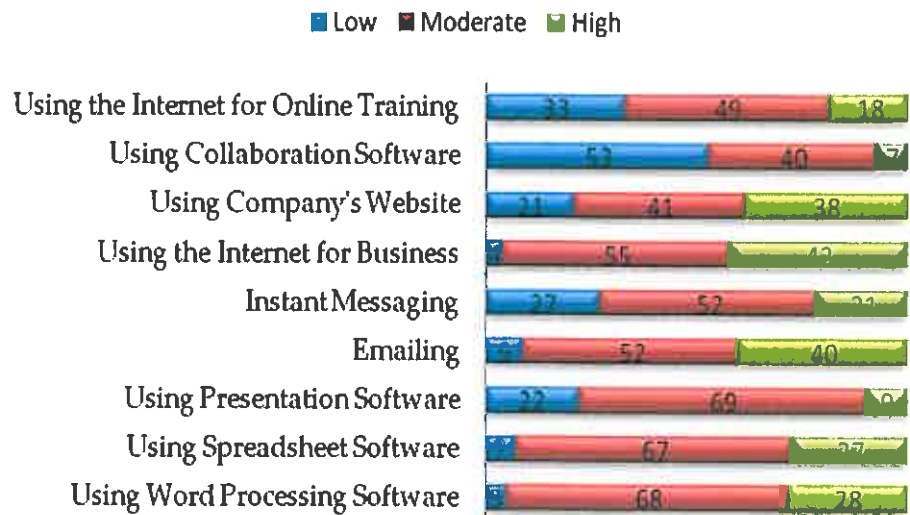Technology areas with a moderate degree of competency included: using the Internet for business-related information gathering, using a company's website, using email software, text messaging, using a mobile device in general and using it to read and send emails, accessing and reading files and to surf the Internet.

Employees with a high degree of competency have the skills for using spreadsheet and presentation software, instant messaging, using a mobile device, collaboration software and using the Internet for online training.

Compared to last years results, professionals were more competent in the following areas: text messaging, using a mobile device in general

EMPLOYEE ICT COMPETENCE

■ Low ■ Moderate ■ High

	Low	Moderate	High
Using the Internet for Online Training	33	49	18
Using Collaboration Software	53	40	7
Using Company's Website	21	41	38
Using the Internet for Business		55	42
Instant Messaging	27	52	21
Emailing		52	40
Using Presentation Software	22	69	9
Using Spreadsheet Software		67	27
Using Word Processing Software		68	28

eral to read and send emails, accessing and reading files and to surf the Internet.

Conclusions

Notwithstanding the current economic climate, the state of ICT in Bermuda is healthy. Incremental development in many areas indicates the important nature of technology within both residential and business communities. Connectivity, particularly high-speed Internet connections, supports the diverse activities available online.

Security and disaster recovery are critical in the Bermuda market. Online security continues to be an important issue for both the residential and business community. The adoption of future services in areas such as banking relate directly to digital security. Disaster recovery planning is important in Bermuda due to its location and the quality of business that flows through the Islands.

The ICT literacy of the islands residents is very encouraging, with 62% of residents feeling they have a moderate to high level of comprehension of software and applications. As in previous years, the challenge for the Islands is to promote continuous learning of ICT skills. The basics are not enough for the workforce to compete with global pressures. While both residents and companies find it important that in order to compete in a global economy, Bermuda must con-

tinue to meet or exceed global technology standards, training often suffers during time of economic difficulties.

The adoption of mobile devices continues to increase among residents and businesses. Such high penetration rates provide an environment for innovation in the local ICT community, particularly as mobile services are the way of the future. Acting on the high levels of mobile device adoption, in 2009 the Ministry of Energy, Telecommunications and E-Commerce in partnership with BlackBerry manufacturers Research in Motion (RIM), and local carriers CellularOne, Digicel and M3 Wireless, held the "App-ti-tude" competition to encourage software developers and entrepreneurs to create innovative applications for a BlackBerry phone. Bermuda was the first country to sponsor such an event with Research in Motion (RIM). The contest was seen to jump-start the development of local-based applications for mobile devices. Other jurisdictions evidence the growth in the use of mobile data services when there is increased availability of applications for smartphones. Bermuda must therefore continue to innovate in this area, developing content and services that meet the needs of residents and businesses.

Bermuda is resilient and appears to be navigating these difficult economic times with measured steps and strategic investments.

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