

Wireless Consumer and Business User Profiles

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Wireless Consumer and Business User Profiles

Voice and Data Usage Patterns, Spending, Customer Satisfaction, and Mobile Device Adoption



Dan Shey
Principal Analyst – Business Mobility

Stuart Carlaw
Director – Wireless Research

Methodology

In March 2007, 1,223 cellular customers from the United States responded to fifty-two survey questions concerning their usage of cellular and wireless services. Survey respondents came from all fifty states, with 65% of the respondents being female and 35% male.

Survey questions focused on understanding respondents' current patterns of usage with wireless technologies and their interests in purchasing additional services. Questions also examined their viewpoints on new wireless technologies such as femtocells and Wi-Fi/cellular phones. Finally, survey respondents who answered questions about their employment provided insight into wireless usage segmented by business variables such as occupation, vertical, and size of business.

For this white paper, the survey results are examined in the context of how the respondents use their cellular phone – for personal reasons only or for business/personal reasons. Since only two respondents stated that they used their wireless phone only for business purposes, results for this type of usage cannot be examined. It is highly likely that very few cellular customers ever use their phone only for business reasons. To provide a baseline for reported results from cellular carriers, survey results will be presented based on segmentation into three categories – all respondents, personal usage respondents, and business/personal usage respondents. As will be demonstrated, customers who use wireless services for both business and personal reasons have different usage and service preference characteristics than customers who only use wireless services for personal reasons.

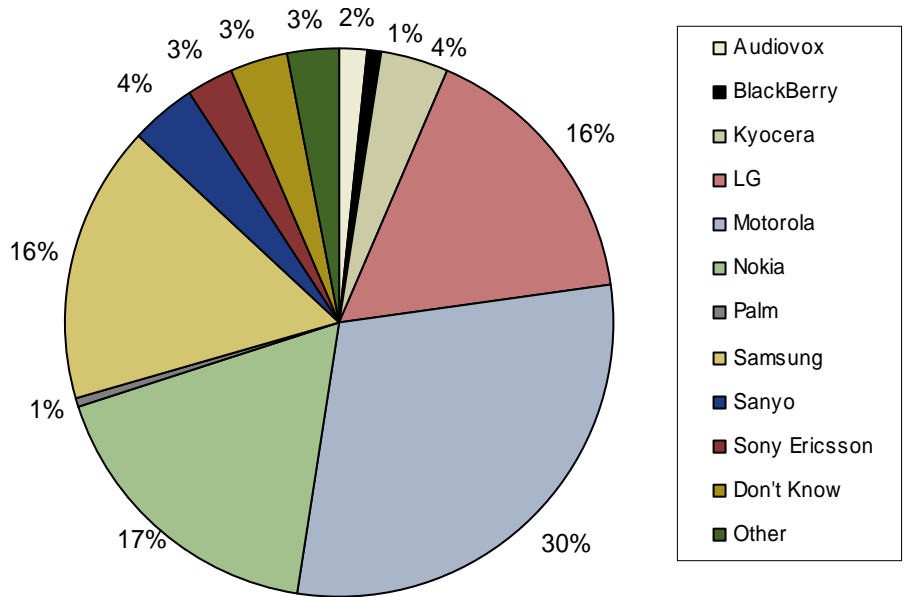
Cellular Customer – Today

Cellphone Brand and Features

Four companies led with survey respondents as the top choice for a cellular device: Motorola, Nokia, LG, and Samsung. Since the differences in the adoption of brands based on type of usage only varied by +/-2%, Chart 1 only shows cellphone distribution for all survey respondents.

A review of cellular phone choice against wireless spending habits shows that of the top four brands, customers of LG and Samsung phones tend to have the greatest cellular spend at \$74 per month and data service spend at approximately \$7 per month (\$6.12 for LG customers and \$8.01 for Samsung customers). This compares to \$53.46 and \$4.17 for customers with Nokia phones and \$69.56 and \$5.40 for customers with Motorola phones for total cellular spend and data spend, respectively.

Chart 1 **Respondent Phone Brand Distribution**

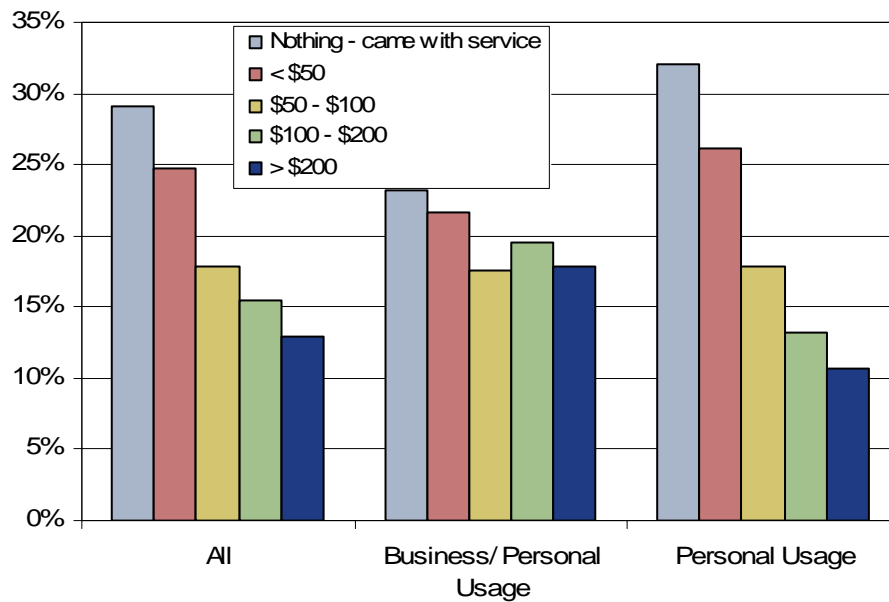


(Source: ABI Research)

N = 1220

Respondent Phone Brand Distribution

Variations do exist among customers that have different usage characteristics when examining the price paid by survey respondents for cellular phones, as shown in Chart 2. The weighted average price of phones for all respondents, business/personal usage respondents, and personal usage respondents is \$72, \$88, and \$64, respectively. This data demonstrates that business/personal usage respondents currently spend on average 38% more than personal usage respondents for a cellular phone.

Chart 2 Survey Respondent Uptake of Cellular Phones Based on Pricing Tiers

(Source: ABI Research)

N = 1221

Cellphone Features and Services

Survey respondents were asked to define the unique features of their cellular phone, as shown in Table 1. The results can be reviewed by grouping cellphone features into three categories: multimedia, voice productivity, and connectivity.

Multimedia – As a general rule across all categories, the time of introduction of a feature will dictate its uptake by the customer base, which is certainly evident in the multimedia category. The survey data showed that the camera phone has the highest penetration among the survey population, due in large part to the introduction of this feature in the United States during 2003. Video recording/player capability followed soon after the introduction of the camera phone and MP3 players in the cellphone appeared during 2006. The survey response category entitled “TV phone, which allows you to watch broadcast TV or download video clips” had the lowest response rate, likely due to several reasons. First, TV services were introduced in approximately 2004; however, the viewing experience in the first iterations of the product was limited by low phone screen resolution and frame rates. Second, broadcast mobile TV services, which are different from the early TV services, have been available in the United States only for a short time – less than a year. Finally, downloadable video clips use the cellphone’s video player; yet, video content has been available for less than two years.

Another notable aspect of the multimedia results is that business/personal usage customers have adopted phones with more multimedia features than customers who only use the phone for personal reasons. On average, the response rate difference between the two segments is 27%. Multimedia features have, up to this point, not shown much applicability to improving business processes or productivity. Consequently, the uptake drivers for business customers include greater disposable income, more familiarity with new feature capabilities due to higher cellphone

usage (soon to be demonstrated), and a more tech-savvy business customer. Regardless of the drivers, a common result from this survey is that cellular customers that use their phone for business purposes demonstrate higher usage and adoption of wireless services.

Voice Productivity – This category of phone features is primarily focused on improving and simplifying voice activities. Bluetooth capabilities allow customers to wirelessly connect their earpiece to the handset rather than placing the phone next to their ear. The speakerphone provides similar benefits. Voice-activated dialing, Personal Information Management (PIM)/PDA functions, and Push-to-Talk over Cellular (PoC) simplify initiating a call and connecting to another person. Since these are productivity features, it is no surprise that customers who use their phones for business purposes have adopted these features to a greater extent. The average adoption difference in this category between business/personal usage customers and personal usage customers is 34%.

Wi-Fi – This category indicates whether customers have a phone that can connect to a Wi-Fi access point. Again, business/personal usage customers show higher adoption of these phones over personal usage customers. Business customers' greater familiarity with technology, a result demonstrated in the multimedia category, is a likely reason for their greater uptake of this functionality.

Table 1 Respondent Cellular Phone Features

Phone Features	All	Business/Personal Usage	Personal Usage
Respondents	1,219	408	811
Music Phone	18%	22%	15%
TV	9%	11%	8%
Camera Phone	56%	63%	52%
Camcorder	28%	35%	24%
Bluetooth	31%	42%	26%
Speakerphone	68%	76%	65%
Voice-Activated Dialing	54%	62%	50%
PoC	7%	8%	6%
PIM/PDA Functions	5%	10%	3%
Wi-Fi	9%	12%	8%

(Source: ABI Research)

Cellphone Services

Business/personal usage customers not only show higher uptake of cellphones with greater device capabilities, but also higher uptake of services. The interesting aspect of the results shown in Table 2 is that service uptake is not simply for productivity applications, but for applications and services that also provide entertainment. Overall, customers that used their phone for both business and personal reasons exhibited the following increases in services adoption over personal usage customers for services grouped in four categories.

- Multimedia and Entertainment Applications: 78%
- Voice Productivity Applications: 66%
- Messaging Applications: 80%
- Business Productivity Applications: 90%

Table 2 Respondent Cellular Phone Services

Multimedia and Entertainment Applications	All	Usage	
		Business/Personal	Personal
Respondents	1,223	411	812
Purchase Screensavers, Games, Ringtones	10.3% - 25.2%	13.9% - 29.2%	8.5% - 23.2%
Listen to Digital Music/MP3	6%	9%	5%
Watch TV or Streaming Video	2%	3%	1%
Digital Camera Capabilities	39%	47%	36%
Digital Camcorder Capabilities	13%	19%	10%
Voice Productivity Applications			
Bluetooth Headset for Hands-Free Calling	13%	22%	8%
Speakerphone	56%	65%	51%
Voice-Activated Dialing	24%	31%	20%
Push-to-Talk/Walkie Talkie Capabilities	6%	6%	5%
Messaging Applications			
PDA Functions - Calendar, Contacts, Etc.	12%	20%	9%
Text Messaging	58%	67%	53%
Instant Messaging (IM) Using AOL, Yahoo!, MSN, Etc.	8%	10%	7%
Photo Messaging	20%	28%	16%
Video Messaging	5%	7%	4%
Mobile e-Mail	10%	16%	7%
Business Productivity Applications			
Location-Based Services - Driving Directions, Maps, Etc.	4%	4%	3%
Use Business Software Applications on Cellphone	2%	3%	1%

(Source: ABI Research)

Cellular Spend

The trends of greater uptake in services and phones with advanced features by business/personal usage customers over personal usage customers continue with the cellular spending differences between each group.

As shown in Table 3, business/personal usage customers spend 80% more in data services and have a total cellular bill that is 23% greater. The voice usage spend difference between these groups ranges from 19% to 35% depending on how voice usage is calculated. If voice usage spend is calculated based on each group's minutes of use and using average per minute rates for different minute volumes, spending on voice services is 35% greater for business/personal usage customers than for personal usage customers. If voice usage spend is calculated based on removing data spend from the total cellular bill and then removing an assumed 10% in taxes, voice usage spend is 19% greater for business/personal usage customers compared to personal usage customers.

Table 3 Survey Respondents' Average Cellular Usage

Segment	Units	All	Usage	
			Business/Personal	Personal
Average Monthly Cellular Bill	(\$)	\$68.14	\$77.66	\$62.93
Average Data Services Costs	(\$)	\$6.29	\$8.96	\$4.98
Voice Minutes of Use	Minutes	529	724	429

(Source: ABI Research)

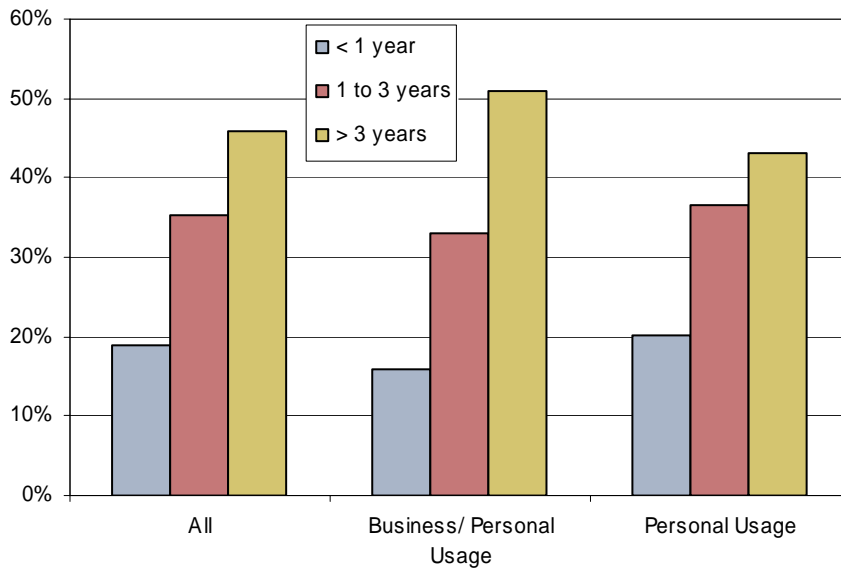
Service Satisfaction

Overall, survey respondents were quite happy with their current cellular provider. When asked to "Please rate your overall satisfaction with your current cellular provider, considering reliability of service, value for the money, quality of customer service, and any other factors important to you," nearly 70% of respondents stated they were "completely to very satisfied." By usage category, 68% of customers that were "completely to very satisfied" were in the business/personal usage category and 73% were in the personal usage category. Regardless of type of usage, only 5% of respondents were "not at all satisfied" with their current cellular provider.

Contributing to the high satisfaction ratings is the quality of coverage respondents indicated for their current cellular providers. When asked to "Please rate the quality of your cellphone service in the home, workplace, in their local area, and outside their local area," over 70% of respondents gave an excellent and good rating. Eighty-two percent of respondents gave an excellent and good response for coverage in their local area, while 71% gave an excellent/good response for coverage outside their local area.

The high satisfaction ratings of survey respondents cited above is reflected in respondents' length of service with their current cellular provider, as shown in Chart 3. Approximately 46% of respondents have been with their current provider for more than three years. When respondents were asked how likely they were to switch to a new wireless telephone company in the next 12 months, the results were mixed, as shown in Chart 4. The response rate to "definitely to probably will not switch" providers hovered at 60% for all respondents, indicating a generally satisfied customer. However, 10% of personal usage customers and 18% of business/personal usage customers responded they "definitely to probably will switch" providers. These responses do not necessarily indicate an unhappy customer. It could be a reflection of two situations. First, the US market is very competitive and regardless of usage characteristics, another company may have better pricing for either voice services or a bundle of services a customer desires. Second, another cellular provider may have the service/device characteristics that business customers desire so they can do their job more efficiently. Since mobile services provided by most operators that target the business customer are "light" at this time, this result could be driven by the better pricing and device choices of another operator. Moving forward, operators that can provide services that cater to the business customer will drive switching habits.

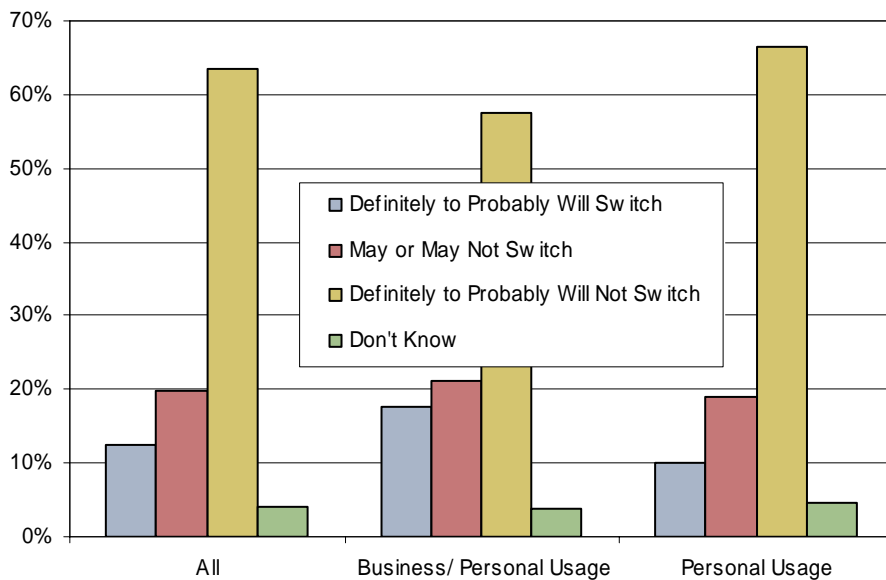
Chart 3 Respondent Length of Service With Cellular Provider



(Source: ABI Research)

N = 1217

Chart 4 How likely are you to switch to a new wireless telephone company in the next 12 months?



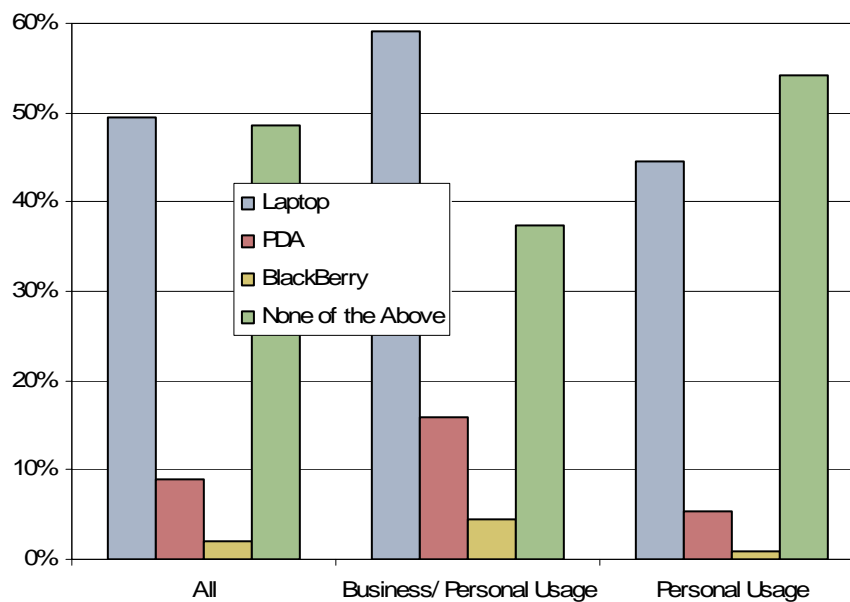
(Source: ABI Research)

N = 1216

Device Adoption

Chart 5 shows differences in the adoption of devices. The differences in ownership of devices between business/personal usage customers and customers who only use mobile services for personal reasons demonstrate the variations in the uptake of devices that improve productivity. Thirty-three percent more business/personal usage customers have laptops, a device common in the business environment, than personal usage customers. Customers with smartphones/PDAs and BlackBerries are two to four times more likely to be business/personal usage customers. The probable reasons for this trend include the PIM and mobile e-mail capabilities of these devices. These capabilities show greater adoption by business customers over personal usage customers, as demonstrated earlier in Table 2.

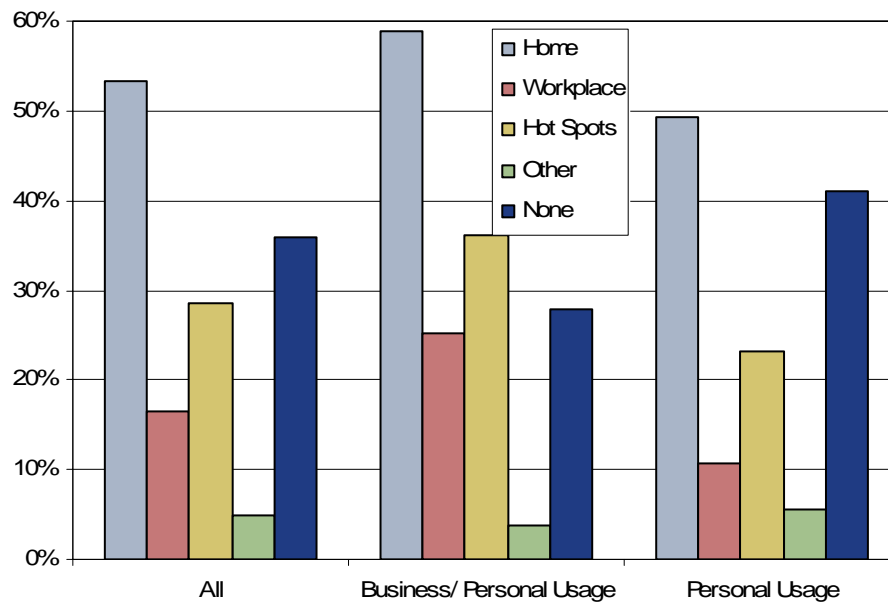
Chart 5 Device Ownership by Survey Respondents



(Source: ABI Research)

N = 1223

Shown in Chart 6 are the laptop Wi-Fi access location results. Generally, there is high usage of Wi-Fi in the home, and the response rate of 50% matches the 2007 estimated home penetration of fixed-line BB access in the United States. The most salient result of this data is that business/personal usage customers access Wi-Fi networks in the workplace two and one-half times more than do personal usage customers. Combining this result with business/personal usage customers' greater adoption of Wi-Fi in the home indicates that business/personal usage customers have a greater awareness of how to use Wi-Fi for network access. As will be shown later, this awareness level carries over into interest levels for other services and devices that will use Wi-Fi.

Chart 6 Survey Respondents Location Usage for Laptop Wi-Fi Access

(Source: ABI Research)

N = 601

Cellular Customer – Tomorrow

Mobile Application and Service Interests

Regarding the questions that asked about customer interest in various mobile services, customers who already used or were customers of these services were not separated from customers who did not use these services. The results in this section, therefore, should be viewed as interest levels indicative of an entire population of mobile customers.

Internet/Intranet Access

As shown in Table 4, the “extremely to somewhat interested” response to using the mobile phone for access to the Internet is 24%; for access to the intranet, it is 14%. For cellular customers in the United States, this is not an unusual result given that customers are used to a fast, “bigger screen” experience with the Internet. This trend is evidenced by the estimated 11% BB household penetration rate and the fact that the early forms of the mobile Internet were not considered a good service experience. Intranet access interest is lower simply due to the high percentage of personal usage customers who do not use their phone for business purposes.

If these results are reviewed based on type of usage, business/personal usage customers have significantly more interest in mobile Internet and intranet access by two to three times over customers who only use their mobile phone for personal reasons. This is not an unusual result since access to not only information in general, but also company-specific information, helps mobile business customers do their jobs. The mobile phone provides quick, easy access to network-centric information when compared to laptops because it is light, travels easily, and has instant network access that does not require any boot-up time.

Table 4 Survey Respondent Interested in Mobile Internet and Intranet Access Services

Information Access Interest	All	Usage	
		Business/Personal	Personal
Internet			
Respondents	1,217	408	807
Extremely to Somewhat Interested	24%	34%	19%
Neutral	15%	17%	14%
Not Very to Not at All Interested	62%	50%	68%
Total	100%	100%	100%
Company Intranet			
Respondents	1,212	408	804
Extremely to Somewhat Interested	14%	24%	8%
Neutral	13%	26%	11%
Not Very to Not at All Interested	74%	50%	81%
Total	100%	100%	100%

(Source: ABI Research)

Messaging Interest

Of the messaging services of SMS, IM, and mobile e-mail, only the SMS messaging service interest levels shown in Table 5 matched the SMS adoption levels listed previously in Table 2. The SMS adoption level in the survey respondent base is approximately 60% and the interest level is approximately 50%.

Interest levels are much greater than adoption levels for IM and mobile e-mail among all respondents. Adoption across the entire survey base for IM and e-mail is 8% and 10%, respectively. In contrast, interest levels for mobile IM and e-mail is 29%. The difference in current adoption and interest likely has two explanations. First, nearly everyone is familiar with the value of these services in the desktop environment and the extension of this value to the mobile world is a natural request. Second, awareness and mass market availability of mobile e-mail and IM is a relatively recent phenomenon that has developed within the last six to nine months.

Survey takers also responded to their interest level in PIM functions, such as calendar and contact management capabilities, most prevalent in smartphones and PDAs. Like mobile e-mail and SMS, there is greater interest in this feature than current adoption levels, demonstrating a desire across the entire mobile customer base for more capability in this area with their mobile phones.

The other significant result demonstrated in Table 5 is the higher interest in messaging services for customers using their phone for business and personal reasons versus respondents who only use their phone for personal reasons. The response rate difference between the two groups for mobile e-mail interest is 35%; for PIM/PDA functions, it is 41%. For IM and SMS, the interest level difference between the two groups is 35%. Again, this is not an unexpected result considering the increased productivity that occurs when cellular business customers have a robust set of messaging capabilities.

Table 5 Survey Respondent Interests in Messaging Services and Functions

Messaging Interest	All	Personal Usage	
		Business/Personal	Personal
SMS			
Respondents	1,210	407	805
Extremely to Somewhat Interested	49%	59%	45%
Neutral	16%	18%	16%
Not Very to Not at All Interested	34%	23%	40%
Total	100%	100%	100%
Instant Messaging			
Respondents	1,207	5	804
Extremely to Somewhat Interested	29%	35%	26%
Neutral	19%	21%	17%
Not Very to Not at All Interested	52%	44%	56%
Total	100%	100%	100%
E-mail			
Respondents	1,211	403	804
Extremely to Somewhat Interested	29%	37%	24%
Neutral	17%	19%	16%
Not Very to Not at All Interested	54%	44%	59%
Total	100%	100%	100%
PIM/PDA			
Respondents	1,209	404	805
Extremely to Somewhat Interested	33%	45%	27%
Neutral	16%	18%	15%
Not Very to Not at All Interested	51%	37%	58%
Total	100%	100%	100%

(Source: ABI Research)

Femtocells

Femtocells are small modular cellular radios with one to four channels that provide cellular coverage to areas the size of a home or small office. The newest versions can connect back to the mobile network core using DSL or cable lines, making them convenient for use in BB-connected households. Carriers are interested in these devices as a tool for improving indoor coverage – poor indoor coverage is an issue anticipated with the newer 3G networks. They are also interested in the potential of these devices to reduce macro network loads while simultaneously extracting even more voice and data usage from landline households.

Survey respondents were asked how likely they would be to purchase a femtocell for better indoor home coverage. Table 6 shows the response rates.

Approximately 72% of the respondents were neutral to not interested in such a device for the home. Reasons cited for the lack of interest overwhelmingly rested in two areas. First, 60% to 70% of the respondents said that cellphone service was fine in their home, which correlates to the earlier responses on home cellular coverage. Second, 40% of the respondents said that they simply do not see the need.

When asked what customers would be willing to pay for a femtocell, interestingly, over 80% expressed a willingness to pay and over 40% said that they would pay \$50 or more. These results are shown in Chart 7.

As indicated, customers cannot anticipate why they should need a femtocell if their current level of service satisfies their mobile needs. However, operators clearly understand how 3G network utilization will affect the customer experience in the future, so one of the biggest advantages of femtocells is the maintenance of current customer satisfaction levels. This advantage will manifest itself with the customer in two ways.

First, operators can maintain cellular voice coverage as greater 3G services usage causes coverage areas to decrease. Voice is a major portion of operator revenue and will continue to be so moving forward. As data services such as mobile BB Internet access and viewing of videos from the mobile phone and cellular-enabled laptop start to consume large portions of network capacity, 3G networks will experience times of coverage loss. These effects will be felt most by users of cellular services inside buildings due to the negative effects of buildings on radio propagation. Assuming customer DSL or cable BB access, femtocells can be a quick way to patch temporary coverage holes. Macro network adjustments are the alternative, but they can take significantly more time to complete. The payback of keeping current customers happy with voice services will more than pay for the femtocells themselves.

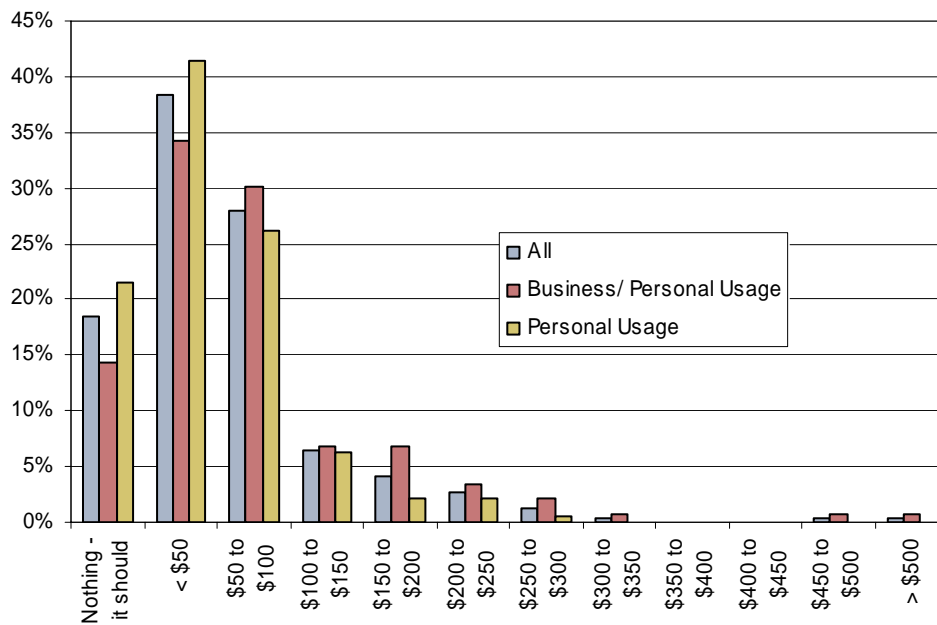
Second, operators can maintain customer satisfaction levels with data services, which will promote more cellular data usage inside buildings. Operators are at a unique point in their relationship with customers since they now have nearly all the tools to launch a product that will perform as they said it would. Fast networks with lots of capacity, various devices with advanced capabilities, and many of years of support experience with mobile data products all lend themselves to a positive customer experience with mobile data services. However, all these positive forces could quickly be negated by loss in coverage and capacity as 3G networks become more highly utilized. Femtocells bring the advantage of adding capacity to coverage capabilities, a benefit of significance for high bandwidth data services. It is well documented that mobile customers not only spend significant amounts of times in buildings, but they also use their mobile phone a lot within buildings. By improving an area's radio coverage and capacity with a femtocell, customers will have more positive experiences with their data services, which will ultimately promote even greater use.

Table 6 *Survey Respondent Interests in Femtocells*

Femtocell Interest	All	Usage	
		Business/Personal	Personal
Respondents	1,223	411	812
Extremely to Somewhat Interested	28%	36%	24%
Neutral	28%	24%	30%
Not Very to Not at All Interested	44%	40%	46%
Total	100%	100%	100%

(Source: ABI Research)

Chart 7 Survey Respondents' Willingness to Pay for Femtocells

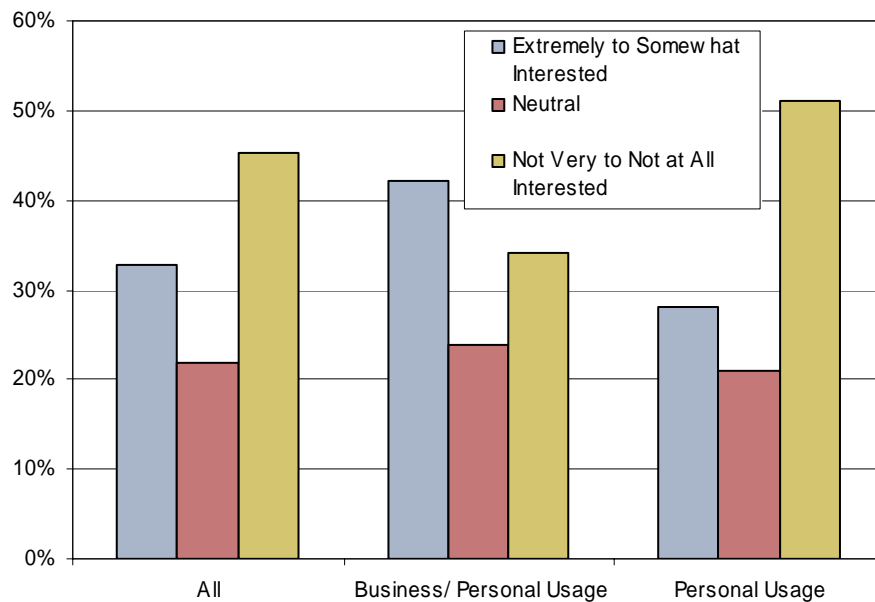


(Source: ABI Research)

N = 337

Cellular Modem for the Laptop

As noted earlier, accessing a Wi-Fi network is common among laptop owners, particularly in the home. Customers were asked: “Assuming that the price was right, how interested would you be in purchasing a cellular modem for your laptop PC, with wireless service that would allow you to access the Internet anywhere with cellular coverage?” The responses indicated that business/personal usage customers have a greater interest overall, as shown in Chart 8. An examination of business/personal usage customers that replied they were “extremely to somewhat interested” in purchasing cellular modems showed that they are the higher paying customers for all cellular and data services. It also showed that this group tends to include mobile e-mail and mobile video/TV services customers, as well as owners of smartphone devices.

Chart 8 Survey Respondent Interests in Purchasing a Cellular Modem

(Source: ABI Research)

N = 1223

Wi-Fi/Cellular Phone

Survey respondents were asked what change they would make with their cellular carrier if the following benefits were provided to them by switching to a Wi-Fi/cellular phone. Respondents were also instructed in the question that the current capabilities and benefits of their existing relationship with their cellular carrier would not change.

Benefits:

1. Reduced prices on voice calls made from the home
2. Reduced prices for voice calls made from public Wi-Fi hot spots (coffee shop, hotel, airport, etc.)
3. Reduced prices for data services at home (Web, e-mail, downloads)
4. Reduced prices for data services at Wi-Fi hot spots (coffee shop, hotels, airport, etc.)
5. Better signal coverage in the home
6. Higher data speeds for all data services
7. Higher data speeds to send and receive pictures and video faster

Table 7 provides respondent results for benefits 1 through 4; Table 8 shows the survey results for benefit 5; and Table 9 provides results for benefits 6 and 7.

For all data sets, there was no relationship between customer usage or service characteristics and their propensity to change their service contract. As an example, there is no change in customer responses based on their minute usage or spending characteristics for either business/personal usage customers or personal usage customers.

However, the survey responses to these questions did yield that customers who use their cellular phone for business and personal reasons are more likely than personal usage customers to change their contract relationship with their current carrier to receive the benefits defined for Wi-Fi/cellular phones. On the one hand, this result seems appropriate given that these customers spend more money on cellular services, both voice and data. However, on the other hand, this result seems unlikely assuming that business customers have more spending power.

Another interesting result demonstrated in Tables 7 through 9 is that a very small percentage of the groups would immediately break their contract and switch to a new carrier to get these benefits. This result is aligned with the earlier results, which showed that customers are generally happy with their current carrier. Reduced costs are always attractive to any customer for any product, but generally happy customers that would be charged a fee if they broke their contract are not in a hurry to switch to another carrier.

Table 7 *Respondent Interests in Changing Carrier Contract If Wi-Fi/Cellular Phone Provides Reduced Voice and Data Costs When Accessing Wi-Fi From Home or Public Hot Spots*

Switch to a Wi-Fi/Cellular Phone	Usage		
	All	Business/Personal	Personal
Respondents	1,200	400	800
No Change	59% - 66%	49% - 56%	65% - 71%
Sign a New Contract With Current Carrier	13% - 17%	18% - 20%	10% - 15%
Switch Carriers After Contract Expires	19% - 22%	23% - 28%	17% - 19%
Break Contract - Switch Carriers Now	2.2% - 2.7%	3% - 4%	1.6% - 2.0%

(Source: ABI Research)

Table 8 *Respondent Interests in Changing Carrier Contract If Wi-Fi/Cellular Phone Provides Better Signal Coverage in Home*

Switch to a Wi-Fi/Cellular Phone	Usage		
	All	Business/Personal	Personal
Respondents	1,197	399	798
No Change	56%	46%	61%
Sign a New Contract with Current Carrier	19%	21%	17%
Switch Carriers After Contract Expires	22%	29%	19%
Break Contract - Switch Carriers Now	3%	5%	3%

(Source: ABI Research)

Table 9 Respondent Interests in Changing Carrier Contract If Wi-Fi/Cellular Phone Provides Higher Speeds for All Data Services and for Picture and Video Content Access

Switch to a Wi-Fi/Cellular Phone	Usage		
	All	Business/Personal	Personal
Respondents	1,197	399	798
No Change	62%	51%	68%
Sign a New Contract with Current Carrier	15%	19%	13%
Switch Carriers After Contract Expires	19%	24%	17%
Break Contract - Switch Carriers Now	4%	6%	2%

(Source: ABI Research)

Conclusions and Implications for Operators and Device Vendors

The survey results provide three primary conclusions:

1. Mobile messaging is a growth area for mobile value chain players, particularly messaging services that target the business customer, as evidenced by the differences in current adoption levels and interest levels of messaging services.
2. Business customers spend more money than consumers on mobile devices and services. Business customer service uptake is across all services, from productivity applications to entertainment applications.
3. Mobile customers exhibit moderate interest in newer technologies such as cellular modems, femtocells, and 3G/Wi-Fi devices. Customers are generally happy with their cellular services and cite a lack of need for these technologies to enhance their mobile experiences.

Implications for Operators

Operators, because they are aggregators of mobile services, face both challenges and opportunities in terms of increasing ARPU and margins and retaining customers. Each operator has a different set of assets to work with, so the carrier's approach for improving financial performance is different for every operator. However, a focus in a few key areas can enhance their overall opportunity in the marketplace.

1. **Increase portfolio of and customer access to more feature-capable phones.** The survey demonstrates, especially among business/personal usage customers, that higher-end phones drive higher data services ARPUs. This result may be somewhat of a chicken and egg scenario, where the services themselves drive the adoption of the more capable phones. Regardless, services-capable phones and the services are both needed to drive adoption of data services, which ultimately results in greater mobile service ARPUs. However, more feature capabilities in phones should not also mean a greater degree of complexity.
2. **Develop capabilities to better serve business customers.** Business customers are the highest ARPU customers for not only productivity applications, but also entertainment applications. Operators already have a strong set of entertainment services that can be combined with improvements in business-specific services that will allow them to gain greater business customer share and ARPUs.
3. **Continue to innovate and integrate.** In general, customers are very happy with their cellular services. This is both good and bad. The good is that customers are less likely to switch providers; the bad is that price can become the weapon of choice for competing. To avoid price wars for keeping and winning new customers, operators need to not only

continue to develop new services, but more importantly, also find ways to integrate the capabilities of the various services. With a range of messaging services, an immediate opportunity for carriers is the creation of an integrated mobile messaging experience.

4. **Positioning is as important as capabilities for new cellular technologies.** For generally happy customers who use mobile services in ways that provide them the most value, introducing new capabilities that address needs already served sufficiently by other technologies will not immediately create great interest in new products. Operators can take several approaches for implementing new technologies. However, first and foremost, customers must see the immediate value of new technologies in terms of costs, solving a problem, or improving the mobile experience. The proper positioning of new technologies both internally and externally will improve uptake and reduce negative customer reactions.

Implications for Device Vendors

Device vendors are and will continue to be key players in the delivery of mobile services. The survey results suggest two key findings that will help device vendors maintain share and average handset revenue with both end users and operators.

1. **Introduce advanced features in lower-end handsets to promote uptake of higher-end devices.** Device vendors' portfolios essentially consist of low, medium, and high capability phones with pricing commensurate with the handset's capability. As demonstrated in the survey results, customers with more feature-rich phones tend to spend more on mobile services. Part of the reason for this result could be related to disposable income. However, the United States has the highest incomes of any country in the world, so incomes cannot be the only reason for the relationship between services uptake and handset capability. Device capability can drive services uptake, so device vendors should consider targeting feature capabilities within lower-end devices that will promote the future adoption of higher-end devices. There are trade-offs with this approach, since greater capabilities in one phone feature may also require improvements in other phone features. However, targeted feature introductions in lower-end devices can put customers on an upgrade path that not only causes them to buy higher-priced devices, but also keeps them buying the same brand of phone. Feature examples for introduction in lower-end devices include one-button access to messaging and entertainment applications, improved screen resolutions in low memory devices, and enhanced PIM functions.
2. **Target Wi-Fi in devices where Wi-Fi access will provide the most customer value and can be supported.** As demonstrated by the survey results for Wi-Fi/cellular phones, customer interest in these devices is not overwhelming, even when respondents were given pricing and services incentives. Carrier acceptance of these devices varies depending on their network assets and how usage scenarios will affect their costs and revenue. For instance, carriers with only cellular assets may warm to Wi-Fi phones if it takes load off of their networks, but may sour on these devices if they think Wi-Fi access will lower customer ARPUs. Regardless, Wi-Fi is here to stay, and the cost and capacity benefits cannot be ignored by customers or carriers. Pull demand from customers will help push operators to actively request Wi-Fi in their handset lineup. To drive such pull demand, handset vendors must target the implementation of Wi-Fi into devices used by customers with the greatest need for cost reductions and network access. An example of a customer in this category is the international traveler who gets hit with exorbitant voice and data roaming fees. Device vendors also need to target Wi-Fi implementation in the devices of users who will receive support to assist in connecting to Wi-Fi access points. The key barrier overcome with support services is that Wi-Fi capability does not mean connectivity. Enterprise customers fit this requirement because they have IT support for managing connectivity issues.

RELATED REPORTS

Mobile Business Applications and Services: Communications, Information Access, Computing, and Business Process Solutions

As demonstrated in this white paper, customers who use their phones for business purposes adopt mobile services at higher levels. As a result, they have higher average revenue versus customers who only use their phones for personal reasons. However, this result begets three questions: 1) “What are all the applications and services used by business customers?”; 2) “What is the taxonomy of these applications and services?”; and 3) “What is the forecast for business customer applications and services?” This report answers these questions by examining all of the technologies that provide mobile applications and services to this segment, categorizing them into five broad categories, and culminating the analysis with five-year forecasts for each service and application category. In addition, this report examines and quantifies the value of mobile applications and services for improving business processes – processes that ultimately affect the bottom line and competitiveness of a business.

Expanding Cellular Broadband Connectivity to the Laptop: PC Cards, Internal Modems, USB Modems, and 3G/Wi-Fi Routers

The year 2006 saw cellular operators around the world focus heavily on upgrading their networks to the 3.5G technologies of HSDPA and EV-DO, Rev A. Greater cellular broadband coverage was a key linchpin for increasing the uptake of cellular modems, and operators matched network efforts with increased marketing efforts to lift sales of broadband access plans and modems. The year 2006 also saw cellular modem form factors increase from only PC Cards to USB modems and 3G/Wi-Fi routers. Finally operators, laptop vendors, and modem suppliers continued to strive to reduce value chain issues and complexities to promote sales of laptops with internal cellular modems. As operators continue to compete on speed, laptop vendors continue to add cellular mobility, and new modem supplier competition heats up, the cellular modem market will stay equally dynamic. This report examines in detail the complexities of the cellular modem market and quantifies sales based on region and form factor. In addition to its examination of technology, this report also provides market share analysis and pricing forecasts.

SOURCES AND METHODOLOGY

This white paper studied the responses of 1,223 individuals who answered questions on current and anticipated mobile services usage. Respondents came from all fifty states within the United States, with a gender distribution of 65% female and 35% male. Survey responses were grouped into two categories based on type of usage. Customers who only used their phone for personal reasons were one category. The second category was customers who used their phone for business and personal reasons. Comparison of usage for a range of cellular and wireless services between these groups formed the basis for discussion, analysis, and value chain implications.

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©2007 ABI Research
PO Box 452
69 Hamilton Avenue
Oyster Bay, NY 11771 USA
Tel: +1 516-624-2500
Fax: +1 516-624-2501

<http://www.abiresearch.com/analystinquiry.jsp>

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