Case

Conglomerate Inc.'s New PDA (2001)[1]

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1. Before beginning any case, students should familiarize themselves with the model being used. Marketing Engineering for Excel comes with tutorials that demonstrate the capability of each model. The tutorial can be found under each model within the ME►XL menu after starting Excel. These tutorials are designed to work with our OfficeStar examples which are located in the My Marketing Engineering directory, usually installed in My Documents during software installation.
2. The data required for this case is located in the **My Marketing Engineering** directory (usually located within My Documents):

   ConneCtor PDA 2001 Data (Segmentation).xls

Introduction

Conglomerate Inc., a major U.S. wireless carrier, has teamed up with a PC manufacturer to form a joint venture, Netlink, to develop, produce and market a hybrid product integrating a Personal Digital Assistant (PDA) with a "smart" cellular phone. Its first product is tentatively called ConneCtor. ConneCtor directly transmits and receives both data and voice. It is lightweight but heavier than a cell phone whose shape it emulates. It comes with a backlit grayscale LCD screen of moderate resolution. Its operating system is the PalmOS, which is common in PDAs. Thus, ConneCtor allows the user, among other things, to access the standard tools of Personal Information Management (PIM) and also performs standard cell phone functions.

ConneCtor can send and receive faxes and e-mail, access the Internet, and record voice messages. Users can input data into the PDA in the following ways:

- By using the on-screen keyboard
- By using the numerical keypad
- By writing on the screen (using handwriting recognition software)
- By speaking into the phone, using a voice recorder.

An additional feature of ConneCtor is its ability to establish wireless links to other ConneCtors for voice and data transfer or to cell phones for voice transfer. For direct data transfer, the product includes an infrared port and also ships with a USB synchronization cradle. In summary, the key features of ConneCtor are:

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- Instant communication for voice and data
- Cell phone, pager, fax and e-mail, and instant messaging
- PIM functions
- Digital voice recorder
- Enabled voice commands
- PalmOS application base.

The History of the PDA

The Personal Digital Assistant (PDA) is basically a hand-held computer. In 1984, the first PDA, the Psion1, was introduced. It could store addresses and phone numbers, keep a calendar, and included a clock and calculator. In 1993, Apple introduced the Newton PDA, which was too bulky, too expensive and had handwriting recognition too inaccurate to be successful. However, the excitement surrounding the Newton hinted that there could be a market for such devices. The broad acceptance of PDA technology then materialized in 1996, when Palm Inc. came out with the Palm Pilot that featured an elegant user interface and a reliable character-recognition system.

By 2001, PDAs had evolved to offer many applications including wireless Internet capabilities, games and music playback. PDAs are designed for very specific tasks and environments: there are custom-built PDAs for amateur astronomers, truck drivers and teachers. In addition, there is specialized software available to fit specific needs; for example, people in the medical fields can obtain software that lists thousands of drugs with their dosages and interactions.

PDA Types

The 2001 palm-sized PDA market was mainly composed of two types, each with its own philosophy: (1) the PDA/Palm devices run PalmOS, whose developers sought to make PDAs simple but functional products focusing on Personal Information Management (PIM) tasks; (2) the PDA/Pocket PCs run the more complex operating system, Microsoft Windows CE, which allows these PDAs to offer extensive features. In addition, "smart" phones are breaking into the PDA world. These wireless application protocol phones extend traditional cell phones with PDA functions such as email and Web access.

The original Palm Pilot embodied the PDA/Palm design mission. It provided a simple organizational device, composed of a calendar, an address book and a to-do list with e-mail and Internet access. It also had a character-recognition system that worked for most people. Handspring, Palm's biggest competitor, introduced snap-on modules to expand the Handspring Visor and allow many applications, including an MP3 player, a web cam and digital camera. These features appealed to the youth market and enabled Handspring to gain considerable market share. In 2001, Palm also offered this same degree of expandability and was able to maintain a market share of more than two-thirds; in addition, all of Palm's close competitors licensed its operating system, PalmOS. Several electronic manufacturers have developed similar devices; for example, Sony introduced Clie as a direct competitor to Palm and Handspring.

PocketPCs make up the other group of PDAs, whose manufacturers include Compaq, Hewlett-Packard, Psion and Casio. These hand-held computers come with a large application suite of pocket Windows applications, e.g., a scaled-down version of MS Office. They usually come with more memory than PDA/Palms and with a range of accessories to be added to the devices (e.g.,

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digital cameras, web cams). However, they are bulkier, heavier and more expensive. In contrast, PDA/Palms perform basic tasks very well and, unlike the PocketPCs, synchronize with non-Windows systems.

A new technological thrust in 2001 involved the adoption of wireless technology for the PDA with manufacturers trying to assess if and how to add wireless capabilities. Wireless technology would make synchronization possible without docking, making PDAs true communication tools. AT&T, Nokia and other cellular phone companies have started developing wireless phones with some PDA functions.

The PDA Customer

As PDA designs have evolved, manufacturers have targeted different segments based on differing lifestyle and business needs. Palm initially captured innovators – people eager to adopt a new gadget. A typical early PDA user was a professional, high-income male. He was over 30 and probably worked in a technology field. Even as of September 2000, 93 percent of PDA users were male, according to IDC, a Massachusetts technology consulting firm.

Another major group of users is the mobile professional. Since this group frequently needs access to e-mail and the Internet while away from the office, it is also driving progress on the wireless front. A recent study by the University of California at Berkeley indicated that nearly half of the users had a technical job dealing with computers, and the overwhelming majority of the respondents rated themselves as technically sophisticated.

To attract more mainstream buyers in 2001, companies were working on increasing the usability of the PDA and its general appeal to nonbusiness users. For example, the new Claudia Schiffer Palm (sold via her Web site) is supposed to give Palm a sexier image, and Handspring's Visor line comes in many colors. Palm's affordable M series ($150) targets college students and other nonprofessional consumers. It is expected that such efforts will eventually open up the largely untapped young consumer and female market.

However in 2001, it appeared unlikely that the bulk of the mainstream population would enthusiastically embrace the PDA. A PDA was still relatively pricey and fairly limited. Handwriting recognition was slow and lacked quality, and keyboard facilities were either non-existent, too big to carry or too small to use. The display screen was too small for most applications other than text display. Internet connections were generally both slow and expensive. In addition, the mainstream market appeared to have little need for many of the more sophisticated features the PDAs were able to offer.

PDA Features

Given all the available design options, new product entries must make trade-offs between features. Customers want easy portability, but with more functions the PDA becomes heavier and bulkier. PDA users' needs are heterogeneous. Those who are looking for a high-tech way to store contact and appointment data may be satisfied with the basic models that cost $200 or less. They also are likely to prefer to keep a PC and cell phone separately rather than having an integrated PDA system that could do both. Users who plan to use the PDA as an extension of a PC by creating and accessing documents, sending e-mail, and doing basic Web surfing, might consider a Pocket-PC in the range of $350–$600. The appendix provides more details on PDA features.

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Facts About the PDA Market

In 2001, many companies participated in the PDA market, bringing in a variety of new products designed to appeal to new audiences. The market was changing and growing rapidly. PDA unit sales totaled 1.3 million in 1999 and more than doubled, totaling 3.5 million in 2000 (Source: NPD INTELECT in Business 2.0). IDC, a research and analysis company, predicts worldwide sales of handheld computing devices will reach 60 million by 2004.

In December 2000, the top five PDA brands in the United States (Source: NPD INTELECT) were:

Rank	Brand	Unit Share
1	Palm	72.1%
2	Handspring	13.9%
3	Casio	6.0%
4	Hewlett Packard	2.3%
5	Compaq	2.0%

The prices for PDAs have been relatively stable. According to NPD INTELECT, the average price of a PDA was $324 in 2000, down from $350 the year before.

Criterion	Examples of Considerations
I. Size and Growth	
1. Size	• Market potential, current market penetration
2. Growth	• Past growth forecasts of technology change
II. Structural Characteristics	
3. Competition	• Barriers to entry, barriers to exit, position of competitors, ability to retaliate
4. Segment saturation	• Gaps in the market
5. Protectability	• Patentability of products, barriers to entry
6. Environmental Risk	• Economic, political, and technological change
III. Product-Market Fit	
7. Fit	• Coherence with company's strengths and image
8. Relationships with other segments	• Synergy, cost interactions, image transfers, cannibalization
9. Profitability	• Entry costs, margin levels, return on investments

Exhibit 1: Some suggested criteria to use when evaluating segment attractiveness: use the ones that are most appropriate in your industry and for your business problem.

The HVC Survey

Netlink's management hired a market research firm, Happy Valley Consultants (HVC), to collect information about the needs of ConneCtor's potential customers. Netlink wants to use the data that HVC collected to identify

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segments within the market for PDAs, target appropriate segment(s) for ConneCtor, and position ConneCtor in the chosen segments.

For the targeting task, Netlink recognized that it had to develop criteria for segment selection. Using the items in Exhibit 1 as a starting point, Netlink identified two sets of key targeting criteria:

- Product-target market fit, in terms of Conglomerate's technical strengths, market needs and the ability of the current (or future) ConneCtors to meet those needs.
- Segment size and growth expectations, including both first purchases and upgrade/replacement buys.

The Questionnaire

HVC surveyed the market, looking at a range of occupation types. The survey included screening items that asked respondents if they had or would consider a PDA and if their job included time away from the office. Only those respondents who answered affirmatively to these questions were retained for further analysis.

The questionnaire asked the respondents to provide data on two kinds of variables: segmentation-basis or needs variables and variables that could be used in discriminating between or targeting the segments.

Questions for determining segmentation-basis or needs variables:

X1. Whenever new technologies emerge in my field, I am among the first to adopt them.
(1 = Strongly disagree ... 7 = Strongly agree)

X2. How often do you use a pager or an Instant Messaging service?
(1 = Never ... 7 = Very often)

X3. How often do you use a cell phone?
(1 = Never ... 7 = Very often)

X4. How often do you use personal information management tools; e.g., scheduler, contact-management tools, to-do list?
(1 = Never ... 7 = Very often)

While away from your office (including remote locations)...

X5. How often do others send you time-sensitive information?
(1 = Never ... 7 = Very often)

X6. How often do you have to send time-sensitive information?
(1 = Never ... 7 = Very often)

X7. How often do you need remote access to information?
(1 = Never ... 7 = Very often)

X8. How important is it for you to share information rapidly (e.g., synchronize information) with other people, e.g., colleagues?
(1 = Not at all important ... 7 = Very important)

X9. How important is it for you to view information on a large-sized, high-resolution display?
(1 = Not at all important ... 7 = Very important)

X10. How important is it for you to have constant access to e-mail?
(1 = Not at all important ... 7 = Very important)

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X11. How important is it for you to have permanent Web access; e.g., real-time stock prices, news?
(1 = Not at all important ... 7 = Very important)

X12. How important is it for you to use multimedia features; e.g., playing of music, video and games?
(1 = Not at all important ... 7 = Very important)

X13. How important is it for you to have a communication device that is not bulky?
(1 = Not at all important ... 7 = Very important)

How much would you be willing to pay for a palm-sized PDA with the following features: instant communication from PDA to PDA, cellular phone, instant messaging, instant file sharing, e-mail, Web access, fax, personal information management features (e.g., scheduler, calculator, address book)?

X14. Monthly price (for all services that you use)?

X15. Invoice price for the PDA device with all the features?

Questions for determining variables for discriminant analysis

Z1. Age

Z2. Education (1 = High school, 2 = Some college, 3 = College graduate, 4 = Graduate degree)

Z3. Income

Type of industry or occupation: (0 = No, 1 = Yes)

Z4. Construction

Z5. Emergency (fire, police, ambulance, etc.)

Z6. Sales (insurance, pharmacy, etc.)

Z7. Maintenance and service

Z8. Professional (e.g., executive, lawyers, consultants)

Z9. Computer (e.g., computer programmer, software engineer)

Z10. Do you own a PDA? (0 = No, 1 = Yes)

Z11. Do you own a cell phone? (0 = No, 1 = Yes)

Z12. Do you own or have personal access to a desktop/notebook computer? (0 = No, 1 = Yes)

Z13. How often do you spend time away from the office?
(1 = Rarely ... 7 = Almost every day)

Media consumption (Readership of magazines) (0 = No, 1 = Yes)

Z14. Business Week

Z15. PC Magazine

Z16. Field & Stream

Z17. Modern Gourmet

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EXERCISES

1. Run **Segmentation** from the **Segmentation and Classification** tool in ME>XL (without Discrimination) on the data to try to identify the number of distinct segments present in this market. Consider both the distances separating the segments and the characteristics of the resulting segments.
2. Identify and profile (name) the clusters that you select. Given the attributes of ConneCtor, which clusters would you target for your marketing campaign?
3. Rerun the analysis in Exercise 1 with Discrimination. How would you go about targeting the segments you picked in question 2?
4. How has this analysis helped you to segment the market for ConneCtor?
5. What concerns do you have with the approach (data collection, analysis, etc.) so far?
6. What are the next steps you would recommend for Netlink and the development of ConneCtor?

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Appendix: PDA Features Guide[2]

Operating System

There are a number of different operating systems (OS's) used for PDAs. The two main OS's are PalmOS and Windows CE from Microsoft. Both license their systems to other manufacturers. Another system, EPOC from Symbian, is especially prevalent in Europe. Some manufacturers, such as Apple (Newton), use proprietary operating systems. A PDA should be compatible with the user's desktop computer. When using a PDA in a corporate environment, it is important to have compatibility with other PDAs; that way, co-workers using the same OS can swap data more easily.

Windows CE is basically a mini version of Windows, similar in look and feel to Windows 95/98. PocketPCs typically run Windows CE that Microsoft released for small devices like PDAs and set-top TV controllers. PocketPCs can only directly synch with other MS operating systems; i.e., this poses a problem for Mac users.

Palm OS is most common with palm-sized PDAs, none of which come with a built-in keyboard. Developed by 3Com/Palm Computing, this is the OS for all Palm models, certain IBM Workpad models and the Handspring Visor. The Palm OS is simple, speedy and easily customizable via third party software and shareware programs. Its Palm OS is compatible with Windows, Mac, OS/2, Unix and Linux given the right software.

EPOC is an OS developed by Symbian, a joint venture of Psion, Ericsson, Motorola, Nokia and Matsushita. This OS is used for mobile wireless devices like smart phones as well as PDAs. In many ways, this OS resembles Windows and is fully Windows compatible. However, EPOC tends to run faster and use less power than Windows CE. With the proper software, EPOC also supports Mac, Psion, Ericsson and some others.

Screen

Most PDAs are monochrome models, but color is becoming popular. Color is more expensive; it drains batteries faster, and a color screen might wash out in direct sunlight. It is also advisable to get a screen with a backlight, which makes it easier to read under a variety of lighting conditions including the dark.

The greater a screen's resolution is, the sharper the image will be. Resolution on PDAs is limited by the compactness of the screens. On Palm units, screens are roughly 4 inches across the diagonal with resolutions up to 240 x 320.

Memory

PDAs need memory to store the operating system, standard applications, additional software, data, etc. Although more memory is usually better, storage capacity between models with different operating systems should not be directly compared, e.g., a PalmOS running model with 4 MB of RAM will store more data than a 4 MB model running Windows CE. To allow more applications to run, the memory of many PDAs can be upgraded. Other PDAs support removable storage like CompactFlash. However, greater memory leads to shorter battery life.

Ergonomics

PDAs come in a wide range of sizes: from credit card to book size. Size, weight and hands-on feel directly influence the PDA's portability.

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Synchronization

Synchronization refers to the two-way process that exchanges and updates information between the PDA and the user's computer. The connection can be via cable or, significantly slower, via the Infrared port. Most devices come with a special stand or cradle that facilitates synchronization and often recharges the PDA's batteries.

With the right software and appropriate connection, a PDA can sync with a PC remotely; for example, PDAs can access and synchronize with data stored on a corporate network. Other programs allow syncing over the Internet by keeping the information on a web server. When using the same OS, users swap information by syncing their PDAs with another user's devices, e.g., using Infrared transfer.

Batteries

Most PDAs come with rechargeable batteries, and many also work with regular alkaline batteries. Among the rechargeable batteries, Lithium-ion–based ones are the most expensive, but they hold their charge longer when not in use. Battery life also depends on how extensively the PDA is used. Monitoring the life of the battery is useful to avoid losing all data in case of power failure.

Modem and Online Services

Mobile access to the office/home PC is possible with a PDA modem or cable adaptor. Most PDAs support at least optional modems. For complete mobility, a wireless modem and wireless network access are needed.

Web

Monitor size and quality constraints strain the Web-surfing experience. However, there are several special Web browsers for PDAs that reformat regular Web content so it can be viewed on a PDA. "Web clipping" services exist that answer requests by sending back stripped down "clips" of information from participating sites. Other applications, like ProxiWeb, use proxy servers to reformat Web content before it gets sent. Lastly, PDAs can be used to download web content for offline viewing – even if the PDA does not have a modem; every time the user synchronizes the PDA, the Web content is updated through the user's PC Internet connection.

E-mail, etc.

A PDA can be used to read, write, send and receive e-mail either by synchronizing e-mail with a desktop or directly online by using a modem. The writing of e-mails, however, is cumbersome on most PDAs, especially if there is no keyboard. Applications also exist for Usenet and instant messaging.

Handwriting Recognition

PalmOS-based devices and PocketPCs come with a touch-screen and handwriting recognition software for writing text. PDA/Palm handwriting recognition programs require that the user learn a predefined set of pen strokes to form characters. Some handwriting programs let the user customize standard pen strokes to suit the user's writing style. For Windows CE, there is a full recognition application (no pen strokes to learn) available that allows writing anywhere on the screen, but recognition is slower and uses more memory.

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Other Software

A PDA comes bundled with a variety of software: e.g., synchronization software, PIM applications (calendar, addresses, to-do-list, etc.) and handwriting recognition software. In addition, there is plenty of third-party commercial software, shareware and freeware available – at least for PalmOS, Windows CE and EPOC, but not for PDAs with a proprietary OS.

Accessories

Sync cradles or cables are usually included in the price of the PDA. Internal modems are sometimes included in the upfront price, but add-on or wireless modems are extra. Other accessories include small keyboards for palm units, AC adapters and styluses that double as pens and bar scanners. Protective screen overlays or carrying cases are also available to increase durability and style.

Audio

PDAs have differing audio capabilities. Virtually all have built-in speakers for alert noises. Others have internal microphones for recording notes or limited voice recognition uses. Depending on the device, there may be jacks for headphones or external microphones. Audio features will be especially important for users who want to use a PDA for multimedia purposes, e.g., watching video clips or listening to MP3s. In general, PocketPC units offer more audio features, although there are add-on audio accessories for PalmOS devices as well.

[1]This case describes a hypothetical situation.

[2]Source: www.viewz.com

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