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Market Research

# 2000 Speech User Scorecard

*An annual quantitative study of consumer satisfaction, attitudes, and usage of V-Commerce™, Voice Web and other voice-driven systems*

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## Summary of Key Findings

Speech recognition is fast becoming a mass-market, self-service option that satisfies and is, in fact, preferred by the vast majority of users over other options — including human operators, touch-tone systems and the Web.

Overall caller satisfaction with voice-driven, over-the-phone services is high (87%), and increasing (+4% vs. 1999). This number is even higher amongst wireless users with the vast majority (96%) stating they are satisfied to very satisfied with their overall experience. Why? Because of the speed and ease of use, control and freedom afforded by speech recognition.

The 2000 Scorecard suggests that speech recognition has hit the mainstream and satisfaction is strong across demographic groups. In the past, many applications targeted the early adopter (men with higher incomes and technology usage), but callers in the 2000 study included men and an increasing number of women, with slightly above average incomes and technology usage.

These findings are further explored in the 2000 Scorecard summary herein. For information regarding other findings of the study, please contact Nuance Voice Interface Services at vis@nuance.com.

## Background

Hundreds of large-scale voice-driven applications are live today and handling millions of calls on a daily basis. As more and more companies see the benefits of voice-driven solutions, questions about its impact on the market, its effect on its customer base and the company itself, are identified. How well do people like interacting with a voice-driven application? Is my potential user-group suited to speech? What can I do to optimize my speech interaction? And the list goes on.

Nuance has taken a multi-faceted approach to answering those questions and gaining the knowledge to optimize voice interfaces and user experiences. Our approach embraces pre-deployment usability and in-market research techniques, which have been optimized for understanding voice-driven interactions of all types.

This study fulfills two objectives. First, it provides general statistics on the impact of speech recognition among consumers, providing Nuance with the insight necessary to answer questions about the acceptance of voice interfaces. Second, it provides a baseline against which companies can compare their own applications, and gauge the strengths and weaknesses of these applications. This survey is an annual benchmark, allowing us to monitor the evolution of user satisfaction, attitudes, and behavior regarding V-Commerce (voice-driven e-commerce), the Voice Web (voice-enabled Web content and telephony services) and other speech recognition applications. It also allows us to compare information over previous years.

This paper summarizes key findings from the 2000 Scorecard, and compares them to last year's results. Where helpful, contextual information is drawn from the years of voice interface research and experience at Nuance.

## Findings

### 1. User Satisfaction with Voice-Driven Systems

Eighty-seven percent (87%) of callers in the 2000 Scorecard were satisfied with the voice-driven applications they used, an increase of 4% over the 1999 study.

| Rating | 2000 Scorecard | 1999 Scorecard |
|---|---|---|
| Completely/Very Satisfied | 62% | 56% |
| Somewhat Satisfied | 25% | 27% |
| Total Satisfied | 87% | 83% |

Those who use voice-driven services while mobile tend to be even more satisfied. In fact, 96% of those who use a voice-driven service in the car, and 94% who use speech recognition on a wireless phone, are satisfied with the experience. These users are looking for better ways to get information while mobile. And voice-driven solutions like traditional call center applications, voice portals and voice-activated dialing, provide the mobile sources of information these users demand. In addition, since 60%[*] of wireless phone usage occurs while driving, these individuals need a hands-free alternative to touch-tone — and voice-driven solutions deliver a safer and more convenient solution.

It's also important to note that satisfaction does not vary across demographic groups, or by technology usage. Regardless of age, sex and income, voice-enabled systems achieve high marks. As speech systems themselves serve an increasingly *mass* audience, all types of users come in contact with speech recognition and experience its benefits.

[*] Insurance Research Council.

Why Users are Satisfied?

When asked why they are satisfied with speech recognition, users cited its speed, efficiency, and ease of use — just as they did in 1999. In the 2000 Scorecard, consumers are even more likely to cite these characteristics as reasons for satisfaction (38% of users in the 2000 Scorecard vs. 30% in the 1999 study). Those who access voice-enabled information from the office or the car were even more likely to appreciate its speed, efficiency and ease, as these characteristics were mentioned by 45% of office users and 45% of in-car users. Almost one quarter of surveyed users (24%) were satisfied because of the performance and reliability of the system.

The absence of strong negatives also attests to caller's satisfaction with the voice-enabled services they use. When users were asked what they felt was the *worst thing* about the speech application they used, the top response was *nothing* (mentioned by 27%) — substantially more than in 1999 (only 18% in 1999).

Among those who did have specific negatives, recognition-related mentions (It didn't understand/I had to repeat myself) were most common, but were mentioned by only 13% of the users. Given that 83% of those mentioning recognition as a negative remain satisfied with the application they use, mis-recognition is not an issue in deployed systems.

Only 5% mentioned that accuracy-related problems with a cell phone, car phone, or with background noise was the worst thing about the voice-driven system used. Among these individuals, satisfaction was 96%, further showing the improvements in car and cell phone recognition.

Future Usage

Given these positive responses, it is not surprising that more than 98% of the users claimed they would continue to use voice-driven services in the future.

Satisfaction Over Time

Satisfaction among new users is strong and increases over time. This suggests that (1) applications are well tuned and user oriented when they are deployed, and (2) callers get more comfortable with the voice-driven system with each call. Specifically, those who have used the system for more than three months are more satisfied than novice users.

**2. Compared to Users Previous Method**

How does the voice-driven system compare to users' previous methods for completing the same task? In 1999, a full three-quarters claimed speech recognition was better than or the same as their previous method. This year, this number is up to 82% — with 38% claiming that speech is a *great* improvement vs. the method used before (27% considered it a great improvement in 1999).

| Previous Method | Same or Improvement |
|---|---|
| Talking to a person | 84% |
| Using touch-tone | 80% |
| Using the Web | 84% |

*Similar data does not exist for 1999.*

Slightly more than half of current speech users talked to a live person (55%) prior to using their voice-enabled service. When asked why they prefer speech recognition, these individuals mention a range of responses (in the benchmark study and other Nuance research), including, 24 hours a day/seven days a week access to information, not having to wait on hold, not being concerned that live agents are entering the incorrect data, and not having to feel they are taking too much of the live agents time when checking the same information multiple times a day.

Forty percent (40%) of consumers used touch-tone applications prior to using a voice-enabled service. When asked why they prefer speech recognition, touch-tone users tend to mention that: speech recognition is easier to use, as, (1) there is no need to associate numbers with options, shortening the length of system prompts and reducing *cognitive load*; and (2) it can be used hands-free, and without visual attention. Also, callers perceive speech recognition as faster, because menuing proceeds more quickly.

Eleven percent of consumers used the Internet or a Web site to perform the same task that they now use speech to complete. These users are likely to mention mobility-related benefits as the reasons for their preference for speech recognition. Specifically, it can be used anywhere, and usage provides a valuable, self-service option while mobile (those who use the Internet tend to be more self-service oriented).

### 3. Attitudes towards Speech

The 2000 Scorecard asks consumers to rate how well various attitudinal statements match their feelings about the voice-enabled service they use. Our analysis of the benchmark suggests that there is a range of attitudinal statements that tend to be rated highly by those who are most satisfied with the voice-driven system they use.

| Statement | 2000 Scorecard Rating 4 or 5 | 1999 Scorecard Rating 4 or 5 |
|---|---|---|
| I like the freedom to use the system whenever, wherever I want | 78% (4.28) | 86% (4.41) |
| This is a system I feel comfortable with | 75% (4.05) | 69% (3.92) |
| I like speaking my responses better than pushing buttons | 68% (3.95) | 63% (3.82) |
| This system is really fast to use | 68% (3.89) | 52% (3.42) |
| The fact that the system exists tells me that the company cares about giving customers and employees what they want and need | 65% (3.82) | 54% (3.75) |
| This system understands what I say | 64% (3.76) | 58% (3.54) |
| I feel in control when I'm using the system | 62% (3.69) | 58% (3.54) |
| I can always get what I want from the system | 60% (3.64) | 53% (3.34) |

*Numbers in parentheses are mean ratings on a five point scale where five is "fits the way I feel perfectly" and one is "does not fit the way I feel."*

The year-over-year increases that can be seen in these key attitudes suggest that the voice interface is better matched to caller interests. Speech recognition was more likely to be rated as *comfortable* and *fast* to use. It was more likely to be preferred to touch-tone. And interestingly, it was seen as an indication that *the company cares* about giving callers what they need. This last characteristic has been noted in other research by Nuance, and reinforces the ability of speech recognition to provide superior customer service to callers.

### 4. The 2000 Speech User

Last year, results indicated that more classic early adopters of technology were the majority using speech recognition applications. While this is still somewhat the case, year 2000 data shows the trend is moving toward more mainstream and mass consumers in terms of age, income and technology usage.

Current users of voice-driven solutions are still higher income individuals (median total household income of $100,000), are primarily male (65%), and are on the average 50 years of age.

| Category | 2000 Scorecard | 1999 Scorecard |
|---|---|---|
| Average Age | 50 | 44 |
| Male | 65% | 79% |
| Female | 35% | 21% |
| Household Income | $100,000 | $82,000 |

Callers included in the 2000 Scorecard sample access the voice-driven systems using a variety of phones (cordless, cell, regular, etc.). While they continue to use more electronic devices than the average population (PC/laptops, wireless phones, handheld devices, etc.), usage of high tech devices has diminished in the 2000 User Scorecard and is approaching the norm.

## About Nuance

Nuance is the leader in natural voice interface software that makes access to information, transactions, and services over the telephone convenient and secure Every day, millions of people place calls, make travel reservations, trade stocks, and interact with other telecommunications, enterprise and Web-based systems running Nuance's speech recognition, language understanding, and voice authentication software. Nuance is headquartered in Menlo Park, California with global sales offices and partners supporting multilingual solutions around the world. To experience Nuance's state-of-the-art speech technology, call 1-888-NUANCE-8 or visit the company's web site at www.nuance.com.

### About Voice Interface Services

Nuance's Voice Interface Services (VIS) group is composed of VUI research professionals dedicated to gaining the insight necessary to optimize speech applications—from the caller's perspective. The unbiased work of this group is important to Nuance, as we believe that it is essential for us to identify opportunities to improve speech interactions—only then can we produce the highest quality voice user experience. Additionally, Nuance's Voice Interface Services group applies: (1) research techniques designed to match the unique aspects of the speech interface, (2) contextual knowledge and survey data that can provides a benchmark against which feedback can be compared, (3) extensive experience with the design and research of voice portals and Voyager, Nuance's voice browser.

### Appendix F: Methodology

This study was conducted to gain a high level understanding of user reactions to the deployed speech recognition applications, and to assess the strengths and weaknesses of those systems. This type of information helps Nuance (1) track the performance of these systems over time, and (2) identify areas for improvement, so that Nuance and our customers/partners can further optimize voice interfaces and user experiences.

The study was conducted among 557 end-users of six deployed speech recognition systems. Applications were in a range of vertical markets (travel, financial, communications, and other business to consumer applications) and performed a variety of tasks (seeking information, connecting calls, checking status, ordering products, accessing information, etc.) Research was conducted by Evans Research, Inc. and analyzed by Nuance's Voice Interface Services group.

Companies who participated in the study received a report summarizing the findings of the study relative to their individual application, and comparing it to benchmark data — providing a context within which customers can gauge the success of their application.

Any report summarizing the survey results for an individual company's application is confidential to Nuance and the participating company. The 2000 Scorecard is our analysis of the aggregated benchmark data and can be reproduced as long as Nuance is credited with the survey itself and the applications included in the survey.

If you are interested in participating in 2001 and obtaining a report evaluating your speech application and compared to our benchmark data, please email us at vis@nuance.com.