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THE BENEFITS TO USERS
OF TELIDON

Background Study
Etude de base

PROGRAM EVALUATION · DIVISION DE L'EVALUATION DES PROGRAMMES

THE BENEFITS TO USERS OF TELIDON

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PROGRAM EVALUATION SERIES

This is one of five Background Studies on the Canadian Videotex industry that form part of the evaluation of the Telidon Program.

The Study was conducted by Ekos Research Associates Inc. for the Program Evaluation Division of the Department of Communications, Canada.

The views expressed herein are those of the author and do not necessarily represent the views or policies of the Department of Communications.

Final Report of the Study of the Benefits to Users of Telidon

March 19, 1985

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1.0 SUMMARY AND CONCLUSIONS

1.1 Introduction

Since 1978 the Department of Communications has spent approximately $63 million to develop and promote the Telidon technology. The major objective of the Telidon program was defined as follows:

> "To foster the development of a complete and commercially viable Canadian videotex industry which will bring to Canada economic benefits from both the sale of videotex goods and services at home and abroad, and from the use of this technology."

The Telidon program operates under "sunset" legislation. Unless an explicit decision is made to extend the program, it will be terminated at the end of the 1984/85 fiscal year. To prepare for this decision the Auditor General recommended that a comprehensive assessment of the value for money of this large public investment be performed. This report presents the results of one research component of the comprehensive evaluation. It reports the findings of surveys undertaken to identify the social and economic benefits of Telidon to its end users.

At the outset of the research six major issues were identified. They are:

- Who are the users of Telidon and how do they use the various Telidon applications?

- How accessible does Telidon technology make the information it supplies?

- What is the perceived quality of the information available through Telidon?

- What benefits are derived from using Telidon?

- Has Telidon had any impact on the use of other information sources?

- What is the value attached to the benefits provided by the Telidon service and what implications does this have for the market potential of Telidon services and technologies?

We addressed these issues by carrying out interviews with users of three different applications of Telidon. We interviewed a sample of 100 farmers who subscribe to Infomart's Grassroots service, fifty-six employees of companies which subscribe to Marketfax, and 202 members of the public using general access terminals located in shopping centres and hotels and at tourist attractions.

This first chapter briefly summarizes the survey findings and based on this evidence, presents our conclusions about the realisation of the benefits of the Telidon technology and its marketability. The second chapter describes the research methodology and assesses the data quality. The following three chapters present the survey findings in detail. The appendices contain a critical review of the relevant literature, the three survey instruments (annotated with the statistics and marginals) and a report on the field work experience.

1.2 Summary of Findings

Who are the users of Telidon and how do they use the various applications?

Relative to the general population, users of public access terminals have a greater tendency to be male, under 35 years of age, university educated and employed as a professional. The distribution of respondents by French and English mother tongue is about the same as that for the general population.

Like public terminal users, Grassroots subscribers tend to be more highly educated and younger than the comparable general population. In addition they operate larger farms with higher gross revenues than do farm operators generally within the Prairie provinces.

Marketfax users are overwhelmingly male, university educated and employed by brokerage firms. Lack of comparable data prevents us from being able to discern whether these are systematic differences between the characteristics of respondents and those of the general population of firms and employees to which the service is designed to appeal.

For Grassroots users the most important reasons for subscribing to the service were its offer of more up-to-date information than available elsewhere, and because the information made available is directly related to the operation of the farm. Up-to-date information was also a prime drawing card for Marketfax subscribers. Equally important for this group was the ready access to information not easily obtainable elsewhere.

Among Grassroots and Marketfax users, the great majority consult their videotex service for specific information. Among public access terminal users, only forty-three per cent use Telidon to seek specific information. The remainder want to explore the technology, browse through the information banks or just kill time. Over three quarters of general public respondents had never or hardly ever used a public terminal before.

The average user of Marketfax or Grassroots consult their service about eighteen times per month or almost once a working day in the case of Marketfax. For the most part individual use sessions are quite short, with the average length being about fourteen minutes. Commercial subscribers pay by the minute and thus are encouraged to be efficient in their videotex use.

How accessible does Telidon make the information it supplies?

Problems logging on are frequent among Grassroots subscribers. Twenty-four per cent experience difficulties at least once a week and another thirty per cent at least once a month. Marketfax users do not experience such severe logging on problems: only four per cent report such difficulties at least once a week, but another one third experience problems at least once a month.

Users of each service were satisfied with their ability to control the format of the information retrieved for display. In contrast to user ratings of other aspects of the Telidon service, however, their satisfaction with the interactive capabilities was restrained, particularly among Grassroots subscribers. The relatively more enthusiastic

response of Marketfax respondents is probably rooted in the fact that their service allows them more individual user control.

Among general access terminal respondents, sixty-two per cent of those who indicated that they were looking for specific information also indicated that they were successful in this quest. While gaining access to information once on the system may be a problem for some general users, getting on to the system is generally not. Public users are not required to log on and only seven per cent had to wait to use the terminal when they used it just prior to the interview.

What is the perceived quality of the information available through Telidon?

All three groups of users were asked to rate the quality of information available through Telidon to that of similar information available through other sources. Within each group, the majority of users rated Telidon as superior to other sources in terms of the accuracy, variety, usefulness, uniqueness and detail of the information presented. As well it is considered to provide the information more quickly and to afford a greater degree of enjoyment during its use.

What benefits are derived from using Telidon?

Because the types of information available and reasons for the use of the public terminals are so diverse it is difficult to identify very specific benefits to general public users. As an overall indication of Telidon's impact, public users were asked to rate to what extent they

enjoyed using the terminal. Only eight per cent of the respondents indicated that they did not enjoy the experience of using the videotex service and just over three quarters found it to be enjoyable (five per cent were neutral about the experience).

Enjoyment by itself cannot be considered a very good indicator of the benefits of Telidon for public terminal users. However, when this rating is considered in conjunction with the generally positive assessment of the quality and utility of the information available on Telidon, relative to other sources, and the fact that forty-two per cent of respondents indicated they would be willing to pay a nominal fee to use the terminal, we can assume that the service is perceived to be generating benefits for some users.

Among Grassroots users overall satisfaction is high. Eighty-one per cent of the respondents are satisfied, and only seven per cent dissatisfied. Grassroots respondents were also asked to indicate their agreement or disagreement with a number of statements about specific potential benefits of the service. Of all of the potential benefits mentioned in this sequence of questions, "helping to make decisions about selling farm produce" seems the most important. It is also the most widespread, realised by eighty-six per cent of users. Other potential benefits are less important and only pertain to a minority of subscribers. The more frequently cited among these are helping to introduce new farming techniques, helping decide what fertilisers and chemicals to purchase, helping increase farm productivity and helping decide what crops to plant.

Marketfax users are very satisfied with their service. Ninety-three per cent of this group are satisfied with the service and only two per cent dissatisfied.

Marketfax respondents were asked to rate the extent to which the service produced benefits for them as individuals in the performance of their jobs as well as for the general operation of the firm. The most important individual level benefits are helping give better service to clients, followed in descending order of importance, by helping make investment decisions, reducing the time it takes to prepare presentations and reducing the time it takes to prepare reports. As for benefits to the overall operation of the firm, allowing better informed decisions is the most important followed by increased staff productivity and attracting clients to the firm. The majority of users indicated all these benefits were being realised to some degree.

One set of benefits enjoyed by all three groups of Telidon users are those derived from the use of colour and graphics on Telidon. Large majorities of all three groups rated the graphics and colour positively in terms of their visual quality, usefulness in making the textual information easier to understand, and enjoyment derived from them. The graphic capabilities of the technology in conjunction with the display format are particularly appreciated by Marketfax users because they improve the quality and speed of presentations - this attracts new clients and helps users provide better client service.

Has Telidon had any impact on the use of other information sources?

If they had not used Telidon, general access terminal users would have been most likely to have consulted newspapers, the yellow pages or staff at an information booth. Approximately one quarter of the sample feel that

Telidon has the potential to decrease their use of their most likely alternative source.

Among Grassroots users, the information sources most frequently cited as being the most heavily relied upon, previous to the availability of Grassroots, were farming newsletters and magazines, radio and newspapers. Almost one half of Grassroots users indicated that their use of this alternative source had decreased since subscribing to Grassroots.

The majority of Marketfax users indicated that the sources they relied on most heavily previous to their firm's Marketfax subscription were business publications, stock charting services and newspapers. Slightly more than one half of the Marketfax sample indicated that the availability of the videotex service had decreased their use of this earlier source. As with the other user groups, changes in the use of alternative sources did not vary significantly among the different sources.

What is the value attached to Telidon and what implications does this have for the market potential of Telidon services and technologies?

We used the difference between the maximum amount the user would be willing to pay for the service and the current payment to indicate the value of the videotex service to the user. This is not a perfect measure of value as respondents may be unaware of the true dollar benefit or fearful that a valid estimate would ultimately lead to the charging of fees or to higher user fees. One must also keep in mind that these contingent estimates will not be faithfully reflected in subsequent market behaviour and thus their use as predictors of future patterns is limited.

Forty-two per cent of general public respondents using the public site services would be willing to pay a small fee each time they use the videotex terminal. Asked to state how much they would be wiling to pay each time, the answers ranged from 5¢ to $1.00 with the median being 25¢ or the price of a telephone call in a public phone booth.

Of the fifty-eight per cent of respondents unwilling to pay for the service as is, thirty-four per cent would be willing to pay for the use of a terminal if improvements were to be made to the service. The most frequently volunteered improvements are more detailed information, followed by more variety in the types of information carried and the inclusion of current events and news items.

Grassroots users are currently paying a flat rate annual subscription fee as well as a monthly service charge which varies with the use of the service. Annual subscription fees are reported as ranging from $30 to $180: the average is $112. Estimates of the average current monthly service charges range from $3 to $300. The average monthly service charge is $44.

Forty-nine per cent of Grassroots subscribers value the service enough that they would be willing to pay even higher monthly charges for it. Estimates of the maximum monthly user charges that subscribers would pay range from $10 to $500 per month. The average maximum use charge is $65, or in other words, subscribers would be willing to pay an additional $21 per month for their present service. The average value of the benefits to users exceeds average current costs by almost fifty per cent.

Fifty per cent of Grassroots subscribers would be willing to pay more if substantial improvements were effected to the Grassroots service. If improvements were to be made, users would be willing to pay an average of $92 per month for use of the service, or an average of $48 per month over and above their current charges. With improvements the maximum payable would be over twice the level of current charges. The most frequently cited improvements are more detailed information or better variety of information, more updating of the information and improved technical reliability of the service.

Marketfax users pay a variable monthly fee which includes a subscription fee, any terminal rental fees and user charges. Estimates of this monthly fee are reported to range from $50 to $2,000, with the average total monthly charge being $774.

Twenty-one per cent of users feel their firms would be willing to pay more for the service. Fourteen per cent think their firm would be unwilling to pay more. Sixty-five per cent say they do not know. The average difference between the maximum monthly fee individual users estimate their firms would be willing to pay and what is currently paid is $334 per month or forty-three per cent of current fees.

Twenty-nine per cent of users also think their firms would be willing to pay more if certain substantial improvements were to be made to the system. If the suggested improvements were to be made, users would be willing to pay an average of $1,582 per month. This represents an avearge increase of $808 per month. This maximum with improvements is just over twice the level of

the average current charges. The most commonly suggested improvements valued by respondents are the inclusion of more detailed information, the addition of historical stock data, more frequent updates and faster log on procedures.

1.3 Conclusions

Based on these survey findings we can conclude that Telidon is very successful - once it has been used. This is borne out by consistently high levels of expressed satisfaction on a broad range of indictors for general access, Grassroots and Marketfax users. Respondents perceive tangible benefits from the use of the service - and these include ready access to high quality information via an enjoyable process.

. Our general access survey revealed that people without a French or English mother tongue may be prevented from using the terminals because of a language barrier. To what extent the services can or should accommodate other language groups is beyond the scope of this study - we merely wish to point out that there are linguistic barriers to use of the current services that restrain use by Canadians and undoubtedly prevent visitors from non-anglophone or non-francophone countries from accessing the tourism related data.

There are a few technical problems still requiring attention - difficulties experienced in logging on to the service are most prevalent with Grassroots subscribers. As familiarity with the service increases, users in all groups will probably demand greater complexity and more frequent updating of the information offered and more control and flexibility in ways in which the data is accessed and

displayed. These sort of problems are inherent in the development phase of a new technology and service. They can conceivably be overcome without government intervention as our data show a significant portion of users would be willing to pay higher user fees, and would be willing to pay even more if these improvements were to be effected.

The fact that Telidon is only used by a relatively narrow segment of the population may suggest a marketing and promotion problem, rather than any inherent deficiencies in the technology or its operationalisation.

Given that users are highly satisfied with the services once they use them, the need is to increase market penetration by getting potential users to actually try the technology. Special promotional efforts may be required to combat any negative impressions which may have arisen due to the premature release of earlier versions of the Telidon technology which had not been completely debugged. We suggest this as a possibility because our survey found higher levels of satisfaction than did earlier studies of field trial participants. We feel that problems with the field trial selection process, hardware or data banks are the likely explanation for this discrepancy - our survey interviewed users who are operating reasonably reliable equipment or programs with a wider range of services.

Perhaps free trial use periods could be attempted, in the same way that Pay TV was marketed, as a promotional strategy. Aggressive marketing campaigns touting the tangible benefits to users might also be effective increasing take up among the populations with the potential to benefit from existing services. One can also easily

envisage the development of software services to meet new needs that would extend the overall market penetration of the technology - particularly among the public agencies and private businesses which could benefit from the graphic capabilities of Telidon.

Among the general non-paying public, innovative kinds of promotional strategies might be required - for example, free home trials of full service systems and perhaps lotteries to select the recipients.

In summary, our surveys have shown that Telidon provides significant social and economic benefits to users which will probably justify the public investment in its development and promotion. In order to fully realise these benefits however, greater penetration of existing and untapped markets is necessary.

2.0 RESEARCH STRATEGY AND DATA QUALITY

2.1 Research Strategy

To collect the necessary information we undertook a critical review of the relevant literature and interviewed end users. The focus of the literature review was the major empirical findings of previous Telidon research which addressed the six research issues dealt with by the present evaluation. The review performed two major functions. First, it aided in the formulation and design of the survey instruments, and secondly it allowed the findings to be cross-checked for consistency. This helped give an idea of the reliability of our survey results. The report on the literature review appears as Appendix A.

The major part of the research agenda consisted of the surveying of the three groups of end users. By interviewing Grassroots, Marketfax and general access terminal users, we are better able to differentiate between results which are unique to particular Telidon applications and those which are generalisable to Telidon services generally. Furthermore, in choosing three commercially run, full service operations, we were able to collect data about reactions to relatively mature Telidon services rather than reactions to the often comparatively primitive, technically troubled and experimental field trial services. As most of the existing user research is based on field trial experiences, user attitudes and perceptions gleaned from the literature review are not directly comparable with our findings.

There is no tangible evidence that our samples systematically differ from their respective universe

populations. Thus we can generalise our findings with a large degree of confidence.

The Grassroots and Marketfax respondents were interviewed by telephone, while public terminal users were interviewed on-site. The public user interviews generally lasted between five and ten minutes, while most of the Marketfax and Grassroots telephone interviews lasted between twenty minutes and half an hour.

A more detailed discussion of the sampling and field work is contained in the Field Report presented in Appendix B. Copies of the three survey instruments are provided in Appendix C. They have been annotated with the response statistics and marginals.

2.2 Data Quality

In most respects the quality of the data is excellent. There are, however, two major limitations which should be kept in mind. The first is endemic to all survey research, that is the disjunction between words and actions. It must be remembered that statements about past or expected future behaviour may not accurately reflect actual behaviour. This caveat should be kept in mind particularly in the interpretation of the data related to Telidon's effects on other information sources and the maximum amounts users would be willing to pay for videotex services in the future.

The second major limitation is specific to this piece of research and stems from the small sample size of Marketfax users. With only fifty-six respondents, even simple bivariate relationships have to be relatively strong

in order to be statistically significant. The sample size is especially problematic for questions which had low response rates. For example the questions on estimated dollar value of Telidon benefits and the maximum price users would be willing to pay elicited too few responses to allow us to be confident of the reliability of the results.

3.0 PROFILE OF THE USERS

3.1 Characteristics of the Videotex Services

This chapter will provide a short sketch of the offerings of each service, an in-depth descriptive profile of the three groups of Telidon users, and a description of the characteristics of their use of the service, such as motivation for subscription, the uses to which they are putting the service and frequency of use.

Our research deals with two public access terminal services, but the offerings of each are very similar. Both concentrate on supplying information about entertainment and recreational opportunities, shopping and other services, and general tourist information for visitors to the city in which the terminals are located. The terminals are found in shopping centres, hotels and at tourist attractions. There is no charge for using the terminals.

Grassroots offers its subscribers a wide variety of information and services. The central attraction of the service is its wide ranging agricultural information which includes markets and commodities listings, information on farming supplies and real estate, as well as detailed short and long term local, national and international weather forecasts. Grassroots also offers a good deal of non-agricultural information including news, sports, games and consumer information. In addition, the service offers a number of interactive capabilities allowing subscribers access to tele-shopping, tele-banking, and messaging services as well as to programs designed to assist in management and financial calculations.

Grassroots subscribers are required to pay an annual subscription fee of between $100 and $150 as well as communications fees of five cents per minute of use. In addition, those subscribers outside of Manitoba pay long distance telephone charges. Just under a third of the respondents have subscribed for twelve months or less, fifty-six per cent are in their second year of subscription and twelve per cent have been subscribers for more than two years.

Marketfax supplies its subscribers with data from the major North American stock exchanges, as well as data on currency exchange rates and commodity prices. Through a series of simple commands the user can chart or list various data related to individual stocks or to overall market activity. The service is also capable of performing historical trend analyses on individual stocks for up to two years.

Two pricing structures are offered to Marketfax users. Both charge according to use. With the first fee structure, the subscribers pay amounts ranging from $375 (for ten hours of use or less) to $1,800 (for eighty hours of use) per month. The second fee arrangement involves a flat payment of $100 per month plus communication charges which vary between $3 and $10 per hour depending on location. Users can only access the service during non-business hours. Approximately forty per cent of the sampled firms had subscribed for twelve months or less, forty-seven per cent had subscriptions for between thirteen and twenty-four months, and thirteen per cent had subscribed for more than two years.

3.2 Characteristics of Users

3.2.1 General Users

The basic socio-demographic characteristics of general access terminal users are summarized in the first column of Exhibit 3.1. Users tend to be young, male and well educated. Two thirds of the sample are male, two thirds are between twenty and thirty-four years of age and forty-six per cent have had some university training or are graduates. Approximately forty per cent of the respondents are professionals or senior managers or administrators.

In order to identify the distinguishing socio-demographic characteristics of general access terminal users, we compared our sample to 1981 census data for the Ottawa and Toronto census metropolitan areas. Because our sample has roughly equal numbers of respondents from each city, the census data were weighted accordingly to provide a meaningful comparison. It should be noted that the universe of public terminal users includes visitors to the two cities as well as residents. Indeed, thirty-two per cent of our sample indicated they live outside of a fifty kilometre radius of the city in which they used the terminal. Because the census data include only residents, our comparison must be interpreted cautiously and considered as suggestive rather than confirmatory of patterns of difference.

As can be seen from Exhibit 3.1, our sample over-represents professional occupations (thirty-six per cent of the sample respondents report themselves to be professionals compared to just eight per cent of census respondents), the university educated (forty-six per cent compared to twenty-four per cent), and those under

EXHIBIT 3.1
Socio-demographic Characteristics of the Telidon General User Sample and Toronto and Ottawa Census Metropolitan Area Residents (Percentage Distributions)*

Occupational Composition	Telidon Sample	Toronto/Ottawa (CMA's)
Semi-skilled or Labourer, or Skilled Tradesman	17.6	21.8
Sales, Service, Clerical	25.2	52.7
Professional	35.9	8.0
Junior or Senior Managerial	16.0	12.4
Other	5.3	5.3
Totals	100.0	100.2
Sex		
Male	67.8	48.8
Female	32.2	51.3
Totals	100.0	100.1
Educational Attainment		
Elementary School	0.5	14.7
Some High School	12.0	25.9
High School Graduate	23.8	13.3
Some College	12.4	6.4
College with Certificate	5.4	16.5
Some University	15.3	10.1
University Graduate	30.7	13.4
Totals	100.0	100.3
Age		
15 to 19 years	14.5	11.6
20 to 34 years	67.0	35.7
35 to 54 years	12.5	30.6
55 years or more	6.0	22.1
Totals	100.0	100.0

Mother Tongue	Telidon		Census	
	Ottawa	Toronto	Ottawa	Toronto
French	32.3	3.2	35.4	1.5
English	66.7	84.9	55.9	71.1
Other	1.0	11.8	8.7	27.4
Totals	100.0	99.9	100.0	100.0

* Because an equal number of interviews were done in Ottawa and Toronto, but the city populations are not equal, an average of the percentages for each city for each category was taken. The data are taken from the 1981 Census.

thirty-five years of age (eighty-two per cent of the sample versus forty-seven per cent of the census respondents).

Our data relating to occupation, sex, education and age are consistent with the findings of previous Telidon research (see for example, Casey and Seigeltuch, 1981: 4-6; Price Waterhouse, 1982:11; Yeates, 1982:47,67).*

The comparison with the census data also suggests that Telidon is used proportionately less by non-charter language groups. Users who identified themselves as having a non-French and non-English mother tongue represented only six per cent of our sample whereas individuals with other mother tongues constitute eighteen per cent of the census respondents. The Telidon terminals operated by our two general access services require a comprehension of written English or French, and thus not surprisingly, there seems to be a definite language barrier restricting use.

3.2.2 Grassroots Users

The characteristics of Grassroots users are summarised in Exhibit 3.2. Just about all subscribers are males between the ages of twenty and fifty-four, and they work farms which gross more than $100,000 per year. Fifty-six per cent of the respondents reported having at least some post-secondary education.

In order to delineate the distinguishing characteristics of Grassroots users, where possible we compared our sample data to the relevant 1981 census data for the Prairie provinces. We used these provinces because they contain the great majority of Grassroots subscribers. Less than four per cent of our sample is from Ontario.

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* The full references for cited works appear in the bibliography of the Telidon Literature Review, contained in Appendix A..

EXHIBIT 3.2
Characteristics of the Grassroots Sample with Selected Comparisons to 1981 Census Figures (Percentage Distributions)

Sex	Grassroots Sample	Census*
Male	92.0	97.5
Female	8.0	2.5
Totals	100.0	100.0
Educational Attainment		
Less than High School	6.0	31.4
Some High School/ High School Graduate	37.4	42.4
Post-Secondary	34.3	16.0
University Graduate	22.3	10.2
Totals	100.0	100.0
Age of Respondent		
15 to 19 years	0	.5
20 to 34 years	36.0	23.7
35 to 54 years	56.0	45.3
55 years or more	8.0	30.5
Totals	100.0	100.0
Farm Size in Acres		
1 to 179 acres	2.0	21.8
180 to 759 acres	18.0	39.5
760 to 1599 acres	35.0	27.6
1600 to 2879 acres	30.0	8.2
2880 acres or more	15.0	2.9
Totals	100.0	100.0
Gross Yearly Farm Revenues		
Under $2,500	0	8.3
$2,500 to $9,999	0	16.0
$10,000 to $49,999	1.1	45.3
$50,000 to $99,999	5.4	19.9
$100,000 to $249,999	41.3	8.7
$250,000 or more	52.2	1.9
Totals	100.0	100.0

* Census figures are for Manitoba, Saskatchewan and Alberta as Grassroots users are concentrated in those three provinces.

The comparisons (presented in Exhibit 3.2) suggest that Grassroots users tend to be younger and to operate larger farms than do farm operators in general. Just eight per cent of Grassroots users are fifty-five years of age or older, whereas the corresponding census figure is thirty-one per cent. The Grassroots sample is also more highly educated than the census group. Grassroots subscribers are twice as likely as census farmers to have some post-secondary education, or to be university graduates. Thus it seems that the younger, more highly educated farmers are more likely to adopt a new technology like Telidon.

Whether size is measured in terms of acreage or gross revenues, our data indicate that Grassroots subscribers tend to be the larger farm operators. While only thirty-nine per cent of the census farms were 760 acres or more, eighty per cent of the Grassroots farms are that large. Similarly, while only eleven per cent of census farms grossed at least $100,000, ninety-four per cent of the Grassroots farms reported doing so. Even allowing for the effects of four years inflation on gross yearly revenues for census farm operators, the data indicate the more well-to-do farmers may be more motivated and/or financially more able to subscribe to the service. Our data, concerning both the demographics of Grassroots farm operators and the characteristics of their farms, are consistent with the characteristics of Chance's and Overduin's sample of Grassroots users (1983: xvii).

3.2.3 Marketfax Users

The survey of Marketfax users indicates that they are overwhelmingly male (eighty-nine per cent), university educated (eighty-eight per cent) and are employed by

brokerage firms (seventy-four per cent) or other financial companies (thirteen per cent). Furthermore, all but one of the fifty-six users indicated they are in a professional or managerial position. Our data on the number of employees of the subscribing firms indicate no striking concentration of subscribers within a particular firm size range.

None of these findings are particularly surprising given the nature of the Marketfax services. Unfortunately we do not have comparative data that would allow us to distinguish special traits of Marketfax subscribers relative to individuals and firms in the financial or brokerage sectors generally. Exhibit 3.3 summarizes this discussion.

3.3 Characteristics of Telidon Use

3.3.1 Motivations for Subscription and Use

Both Grassroots and Marketfax users were asked to rate the importance of various potential factors which might have motivated their decision to subscribe to the Telidon service. Each factor was rated on a scale from one to seven, with one being "not at all important" and seven being "extremely important". The mean ratings for each factor appear in Exhibit 3.4.

Grassroots users were most strongly motivated to subscribe by the offer of more up-to-date information and by the availability of information directly related to the running of their farm. Each of these factors received an average score of 5.6. The least important factors were the provision of non-farming information (mean score 3.6), the chance to use a new technology (mean score 4.7) or because

EXHIBIT 3.3
Characteristics of the Marketfax Sample
(Percentage Distributions)

Sex	
Male	89.3
Female	10.7
Total	100.0
Educational Attainment	
Some High School	1.8
High School Graduate	5.4
Some College	1.8
College with Certificate	3.6
Some University	16.1
University Graduate	71.4
Total	100.0
Age of Respondent	
25 to 34 years	35.2
35 to 44 years	46.3
45 to 54 years	14.8
Over 55 years of age	3.7
Total	100.0
Type of Firm	
Brokerage Firm	73.2
Other Financial Firm	12.5
Non-Financial Firm	8.9
Other	5.4
Total	100.0
Number of Employees	
Less than 20	6.0
20 to 99	18.0
100 to 499	24.0
500 to 999	14.0
1000 to 1999	20.0
2000 or more	18.0
Total	100.0

Telidon offered a more enjoyable way of accessing the information.

In examining the degree of importance attached to each potential factor according to the farm or farmer's characteristics, few relationships appear. One does find that the more highly educated are more likely to have been motivated by access to otherwise hard to get information (r=.23)* and that they are less likely to have been attracted by the offer of a more enjoyable way of accessing information (r=-.32). The better educated farmers may be more likely to want more scientific or difficult to obtain data than are the less well educated. The enjoyability of obtaining the information may be of less importance to the better educated if they do not perceive using Telidon as more enjoyable than other sources or if they do not attach a high value to the enjoyability of data retrieval. Their educational training may also have accustomed them to use other electronic technologies for organising or retrieving information, thereby reducing the potential novelty of the Telidon technology.

Among Marketfax users, the most important motivations for subscribing were the availability of information not easily obtainable from other sources, and the more up-to-date information offered by the videotex service. Both of these factors received an average rating of 5.3 on the same one to seven scale. Like Grassroots subscribers, Marketfax users were not particularly attracted to Telidon by the opportunity to use a new technology. This factor received a mean rating of only 4.5. The only plausible and statistically significant relationship between

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* "r" or the Pearson correlation coefficient, measures the strength and direction of the linear relationship between two variables. It ranges from 1.0 to -1.0.

EXHIBIT 3.4
Mean Ratings of Importance of Various Reasons for Subscribing to Grassroots and Marketfax

	Grassroots Users	Marketfax Users
Service offered information not easily available elsewhere	5.0	5.3
Service offered more up-to-date information than other sources	5.6	5.3
Service offered information related to running of farm/ firm	5.6	4.8
Service offered a chance to use a new technology	4.7	4.5
Service offered a more enjoyable way of accessing information	4.8	5.1

motivations and characteristics of Marketfax users is a negative correlation between level of education and the importance attached to the offer of more frequent updating of information ($r=-.25$). It may be that those with more education are in occupational positions which require a more long range perspective, than do the positions in which the less well educated find themselves.

If we turn to a consideration of the more immediate motivations for use of Telidon we find that the majority of both Marketfax and Grassroots users most frequently consult their videotex service for specific information. Eighty-seven per cent of Grassroots users and seventy-seven per cent of Marketfax users reported doing so. Eighteen per cent of Marketfax users reported spending equivalent amounts of time seeking specific information and browsing. The fact that Marketfax users are three times as likely to use the service in this fashion than are Grassroots subscribers is

probably rooted in the functional requirements of stock analysis and investment brokerage. Among neither group are there any significant relationships between user characteristics nor motivation for subscribing and the usual reason given for use of the videotex service.

Only forty-three per cent of public terminal users reported that they were looking for specific information. As Exhibit 3.5 indicates, about twenty per cent wanted to explore the technology, fourteen per cent wanted to browse through the information and another thirteen per cent just wanted to pass the time. An earlier Price Waterhouse study (1982: 11) found that approximately twenty-two per cent of their public users were looking for specific information. This difference may be due to the fact that the Cantel service (with which that research was concerned) presented a wide array of government information which was more conducive to browsing than to specific purposeful consultation.

The reasons for using public access terminals are not significantly associated with whether the respondent is a visitor or resident in the city. It is interesting to note that those with English as their mother tongue are more likely than the French or "other" groups to have used the service in order to find specific information (V=.24)*.

EXHIBIT 3.5
Reasons for Having Used General Access Terminals
(Percentage Distributions)

Was looking for specific information	42.6
Wanted to browse through information	13.4
Wanted to use/try out the technology	20.3
Wanted to see what information was available	8.9
Used the terminal to pass the time	12.9
Other	2.0
Totals (%)	100.1
(n)	202

* Cramer's V (V) is a measure of the strength of association between two nominal scale variables and they range from 0 (no relationship) to unity (perfect relationship).

3.3.2 Information Accessed

We can broadly divide the information content of the two public user videotex services into three categories: tourist; entertainment and recreational; and consumer, shopping and service information. Entertainment is the most frequently accessed type of information (by sixty-three per cent of the respondents) followed by consumer shopping and service information (thirty-eight per cent). Tourist information was the least used type of content, accessed by only eighteen per cent of respondents.

Those who consult entertainment information are more likely to be infrequent users of Telidon (V=.21), to be residents of the city in which the terminal is located (Phi=.16)*, to be of French mother tongue (V=.26) and to be under thirty-five years of age (Phi=.19). Entertainment users are significantly less likely than other users to have been looking for specific information (Phi=.31).

Not surprisingly, users of tourist information are more likely to be visitors to the city in which they used Telidon (Phi=.17) and over thirty-five years of age (Phi=.18). There were no distinguishing characteristics of users of consumer, shopping and service information.

Grassroots users were asked to indicate what types of operation the service was most useful for. Exhibit 3.6 presents the results. Clearly commodity and market information is the area in which Grassroots is most helpful (cited by fifty-five per cent of respondents). Crop information was the second most frequently mentioned type of

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* Phi is a measure of the strength of association between two nominal scale variables and they range from 0 (no relationship) to unity (perfect relationship).

operation (seventeen per cent of respondents.) The type of operation with which Grassroots is deemed most helpful is not significantly related to any of the users' characteristics or motivations for subscribing to Grassroots.

EXHIBIT 3.6
Type of Information With Which Grassroots is Most Helpful (Percentage Distribution)

Information on Markets amd Commodities	55.2
Crop Information	16.7
Information on Chemicals	7.3
Weather Forecasts	5.2
Livestock Information	4.2
Other	11.4
Totals (%)	100.0
(n)	96

These findings are consistent with reported frequency of use of the various sections of the service, as displayed in Exhibit 3.7. Crop markets, weather and chemicals information are the most often consulted types of information. Ninety-eight per cent reported consulting the crop market information frequently or sometimes, while ninety-two per cent access weather information and seventy-seven per cent consult information on chemicals that frequently. Crop management, feed and seed information and government information on farming matters are also consulted comparatively frequently. Clearly whether measured in terms of helpfulness or frequency of accessing information, Grassroots is used primarily for market related matters.

Marketfax users also were asked with what sort of operations the videotex service is most helpful. Exhibit 3.8 displays the results. Sixty-five per cent of the users indicated that it was most helpful in providing stock or market information and/or helping with investment decisions. The graphic characteristics of videotex were cited as most

EXHIBIT 3.7
Percentages of Grassroots Users Indicating They Used Type of Information Frequently or Sometimes

	Frequently	Sometimes
By Crop Producers:		
Crop Markets	88.0	9.0
Crop Management	18.0	34.0
By Livestock Farmers:		
Livestock Markets	46.0	23.0
Livestock Management	18.0	28.0
By All Subscribers:		
Weather Information	68.0	24.0
Information on Chemicals	30.3	46.5
News	34.0	29.0
Seed and Feed Information	12.0	41.0
Government Information on Farming	14.0	38.0
Farm Equipment Information	6.1	37.3
Farm Realty Information	1.0	11.0

EXHIBIT 3.8
Type of Operation With Which Marketfax is Most Helpful (Percentage Distribution)

Providing Information on Stocks/ Making Investment Decisions	54.5
Information on Graphing and Charting	12.7
Providing Information on Commodities Markets	9.1
Demonstrations to Customers/ Clients	5.5
Accounting Calculations	3.6
Other	14.5
Totals (%)	99.9
(n)	55

important by a significant minority of users: thirteen per cent mentioned graphing and charting uses and six per cent mentioned demonstrations and sales uses. There are no significant relationships between type of operation with which Marketfax is most useful and any user or use characteristics.

3.3.3 Frequency and Intensity of Use

Previous use of Telidon is very low among public terminal users. Thirty-eight per cent of our respondents indicated that they had never used a general access terminal previously. Eleven per cent reported using Telidon at least once a week, thirteen per cent at least once a month and thirty-eight per cent less frequently than monthly.

Those looking for specific information use Telidon more frequently than do others (V=.21). This is understandable given that a first time or infrequent user of Telidon would be more likely to browse in order to familiarize himself or herself with the information available or the technology. Residents tend to have used a Telidon system more often than visitors (V=.19). This might be explained by the lack of Telidon terminals in the home town or city of the visitors. It should be noted that this relationship has slightly more than a five per cent chance of being due to sampling error.

Both Grassroots and Marketfax users were asked to estimate the average number of times they used their videotex service each month and the average session duration. The results are presented in Exhibit 3.9. Both samples use the service approximately eighteen times per month. This is an average of 4.5 times per week, or almost once a working day by Marketfax users.

EXHIBIT 3.9
Frequency and Duration of Use: Grassroots and Marketfax (Percentage Distributions)

Average Number of Times per Month	Grassroots Users	Marketfax Users
1 to 5 times	18.4	16.1
6 to 10 times	21.4	17.9
11 to 20 times	36.7	50.0
Over 20 times	23.5	16.1
Totals	100.0	100.1
Mean Number	18.3	17.7
Average Length of Sessions		
1 to 5 minutes	32.3	34.5
6 to 10 mintues	31.3	23.6
11 to 20 minutes	21.2	30.9
Over 20 minutes	15.1	10.9
Totals	99.9	99.9
Mean Length	13.6	14.0

The distributions of average length of sessions also indicate that the great majority of respondents use the service for relatively short periods of time. Eighty-eight per cent of the Grassroots respondents and eighty-five per cent of the Marketfax respondents reported average use times of twenty minutes or less. Both samples of users had average session times of fourteen minutes. It should be remembered that both types of users pay by the minute for the service.

Among Grassroots subscribers, frequency of use is related to particular motives for subscribing. Those who were attracted by otherwise hard to obtain information are significantly more likely to be frequent users (r=.30). As might be expected those who were attracted by the utility of the service to their farming operations are also more frequent users (r=.23). There are no other statistically significant relationships between frequency or duration of use and user characteristics or motivations for use.

Among Marketfax users, those who subscribed because of the frequent updating of the information were moderately more likely to be frequent users (r=.37) but to use the service for shorter sessions (r=.31). The better educated also use the service less frequently. As we suggested earlier, perhaps this is because they are in positions in which they need less short term information. They may also be in more senior positions and might use junior staff to satisfy some of their information needs. Marketfax users who were motivated to subscribe by the availability of otherwise hard to get information are also significantly more likely to use the service for shorter sessions (r=.33). This motivation is not however significantly associated with frequency of use.

While the two groups of respondents were similar in their frequency of use and length of sessions, they are very different when it comes to the number of individuals using the technology. As Exhibit 3.10 indicates, fifty-nine per cent of Grassroots users indicated that they were the only users, whereas only eight per cent of the Marketfax respondents did so. Among Marketfax respondents, roughly fifty-two per cent share the service with three or more other users, while only nine per cent of the Grassroots users share their service with more than two other people.

EXHIBIT 3.10
Number of Other Co-Workers Who Use the Service on a Regular Basis (Percentage Distributions)

	Grassroots Users	Marketfax Users
No Other Users	58.6	7.3
1 to 2 users	32.3	40.0
3 to 4 users	7.0	21.8
5 or more users	2.0	30.8
Totals	99.9	99.9
Mean Number	.8	4.5
Median Number	.4	2.9

The difference between the two services is easily explained by the smaller scale of operation typical of farms as compared to the businesses which subscribe to Marketfax. In many cases Grassroots terminals are located in the subscriber's residence, therefore many of the other users of Grassroots are no doubt not employees of the farm per se, but members of the subscriber's household. Marketfax is also used for demonstrations to clients and therefore one might expect more widespread use of the service within the organisation.

4.0 ASSESSMENT OF TELIDON CONTENT AND TECHNOLOGY

The Telidon information content and technology are assessed along three dimensions: the accessibility of the information, the quality of the information and the contribution of the unique colour and graphics capabilities of the technology. The impact of the service on the use of other information sources, which were relied on before the advent of the videotex service, will also be explored.

4.1 Accessibility of the Information

Accessibility is used here to refer to physical and technical ease of access to the information. General access users do not need to log on to the terminal, so unless the service is shut off, the only physical barrier to use will be waiting for other people to finish using the terminal. This has not been a problem for seventy-nine per cent of respondents and has been a slight problem for twenty per cent. Less than one per cent considered this to have been more than a slight problem. Seven per cent of respondents reported they had to wait to use the terminal just before their interview.

In response to an open ended question to elicit suggestions for improvements, increasing the accessibility to or reliability of the terminals was suggested by eight per cent of respondents to this question (two thirds of the total sample). Clearer operating instructions were requested by seven per cent and seven per cent wanted an audio capability added. These figures suggest accessibility is not a major problem with general access users however, a minority are having problems locating or using the terminals.

Previous research has found many Telidon users who subscribe to applications requiring log on procedures have difficulty connecting to the system (viz., Western Opinion Research Inc., 1983: 12-13; Soudack et al., 1982; 68, 101-102).

Logging on problems are frequent among Grassroots subscribers. Twenty-four per cent experience difficulty at least once a week and thirty per cent have difficulties less frequently than once a week but at least once a month. The severity of this problem is illustrated by the fact that only two per cent of subscribers have never experienced any difficulty in logging on. There are no statistically significant associations between reported difficulty and user characteristics, length of subscription or frequency of use.

Marketfax subscribers as well experience difficulties in logging on but not to the same extent as Grassroots subscribers. Four per cent report difficulties at least once a week and one third experience problems less frequently than that but at least once a month. Sixteen per cent have never had any problem. It is interesting to note that older respondents are somewhat more likely to experience problems and more frequent users are slightly less likely to have log on problems. Older respondents may be relatively less familiar with electronic technology and this unfamiliarity may cause some of their problems.

Farmers and brokers were asked to rate the interactive capabilities of Telidon service or their ability to control the format of the information retrieved and displayed. Seventy-one per cent of farmers rate it as good,

twenty-one per cent as neither good nor bad and eight per cent as poor. The mean score on the one to seven scale is 5.0, indicating the average user is satisfied with the interactive capability but not more than mildly satisfied. There were no significant relationships between the rating of the interactive capability and frequency of use, length of subscription, or user characteristics.

Marketfax subscribers are also generally satisfied with the interactive capabilities of the service. Eighty-three per cent rate the interactive capabilities as good, eleven per cent are neutral and six per cent rate them as poor. The mean score is 5.4 indicating the average user is more than mildly satisfied. As well, the modal category is six, chosen by forty-four per cent of respondents. Frequent users are more likely to be satisfied with Marketfax's interactive capabilities. Perhaps frustrations with their ability to control the format discourages some users from utilising the service more frequently. More recent subscribers are more positive about the interactive capabilities ($r=-.26$). This finding suggests that as users gain more experience and familiarity they may become frustrated with their ability to control the display or types of information retrieved.

4.2 Quality of the Information

Previous research has suggested that the quality of information available on Telidon has been the medium's greatest liability and that this, in turn, has led to its being unfavourably evaluated when compared to other information sources (Department of Communications, 1983:4;

Price Waterhouse, 1982:18). In contrast, our survey data presented below reflect a relatively enthusiastic evaluation of the Telidon information content. This may be partly due to the fact that our data were collected from users of mature commercial Telidon services, while the previously collected data were primarily drawn from field trial participants who were exposed to comparatively undeveloped data bases.

4.2.1 General Users

Users of the public access terminals were asked to rate various dimensions of the information content of the videotex system against that of other sources of information such as television, radio, newspapers and community newsletters. Videotex generally outperformed alternative sources along all dimensions, but the margin is greatest with respect to the time it takes to locate information. Seventy per cent of respondents feel Telidon is superior to other sources in this respect, nineteen per cent feel it is equal to other sources and twelve per cent feel it is slower. Thirteen per cent feel the videotex information is less accurate, sixteen per cent feel the system provides fewer types of different information and twenty-seven per cent feel the level of detail is worse.

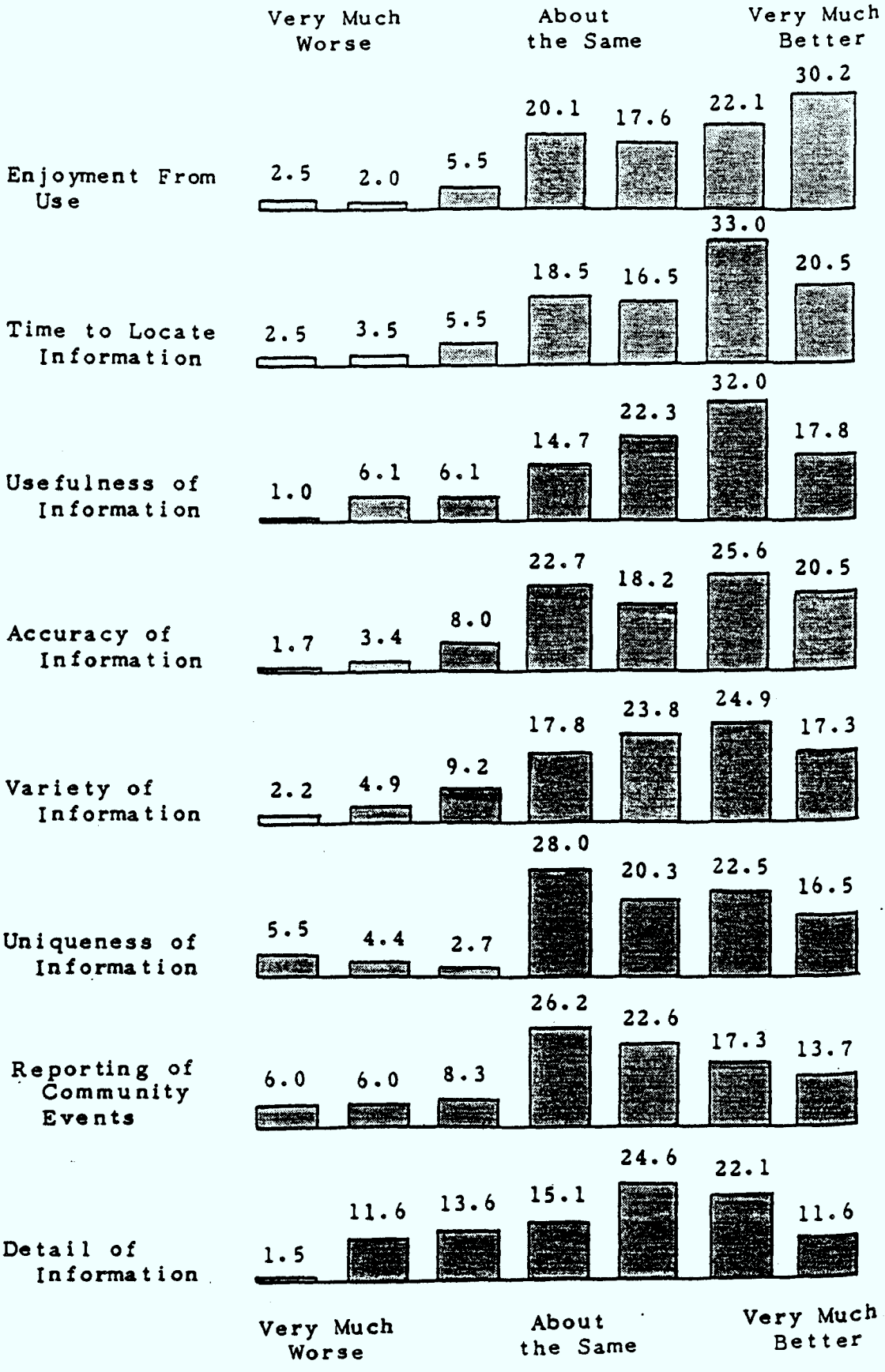
Despite these negative assessments, seventy-two per cent feel the information on Telidon is more useful than that provided by other sources and a further fifteen per cent equally useful. Sixty per cent feel the system provides information not available elsewhere and fifty-four per cent feel it is a better source of information on

community events. Ninety per cent feel that the service is at least as enjoyable, if not more enjoyable, than alternative sources. Exhibit 4.1 displays these ratings.

There are a few interesting and statistically significant correlations with the comparative ratings of Telidon as a source of information. Respondents who consider Telidon as more likely to provide useful information, as more effective in increasing awareness of community events or as more enjoyable to use are mildly more likely to be younger and less well educated (correlation coefficients range from -.11 to -.21). Respondents who consider Telidon as more likely to provide useful information are also more likely to consider that the graphics and colour enhance their understanding of the information presented (r=.21). Francophones are more likely to consider the videotex system as more enjoyable to use (than alternative information sources) than are anglophones (ninety-four per cent versus sixty-five per cent) however, they are less likely to consider that Telidon provides information not easily obtainable elsewhere (forty-four per cent versus sixty-one per cent).

As might be expected, some of the comparative ratings varied depending on the reason for using the terminal: users seeking specific information are more likely to consider Telidon provides more useful information than are users simply passing time (seventy-eight per cent versus fifty-four per cent). Just over half of users seeking specific information consider Telidon to be more effective in increasing their awareness of community events compared to twenty-eight per cent of those trying to kill time. There are no statistically significant differences among the comparative ratings respondents gave for the

EXHIBIT 4.1
Comparative Ratings of Telidon with Other Sources of Information (General Users)



speed, accuracy, variety, level of detail, uniqueness, enjoyability and impact on awareness of community events and the particular type of source for which Telidon is a substitute.

4.2.2 Grassroots Users

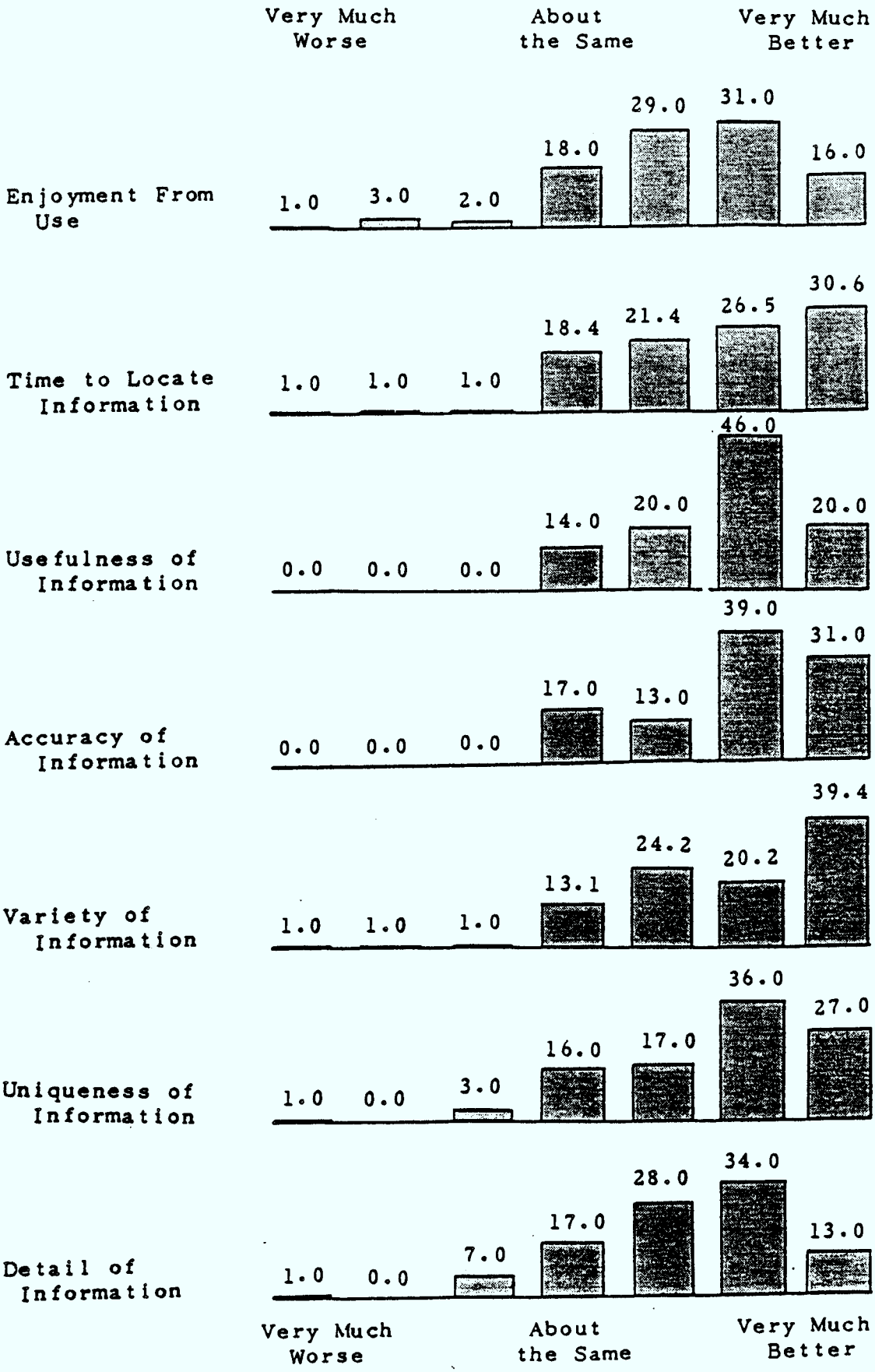
Grassroots users are very positive about how well the service compares with other sources of information such as the radio, newspapers, farming publications and agricultural representatives. Users are most impressed with the greater accuracy, usefulness and range of different types of information provided by the videotex service. Eighty-three to eighty-six per cent of respondents rated Grassroots as superior to other sources in these respects. Comparative ratings were also positive for the provision of information not easily available elsewhere (Telidon outperforms other sources for eighty per cent of respondents), the time it takes to locate information (seventy-nine per cent) and the level of detail (seventy-five per cent). Exhibit 4.2 displays these findings.

With one exception, the source most heavily relied on previous to Grassroots, did not affect the comparative ratings of Grassroots. The one exception is that ex-radio users are slightly more likely to rate the Telidon service positively on the time it takes to get the information (Phi=.22).

4.2.3 Marketfax Users

Marketfax subscribers are very positive about the quality of the information provided. Along all dimensions explored, the videotex service is rated as performing better

EXHIBIT 4.2
Comparative Ratings of Telidon with Other Sources of Information (Grassroots)



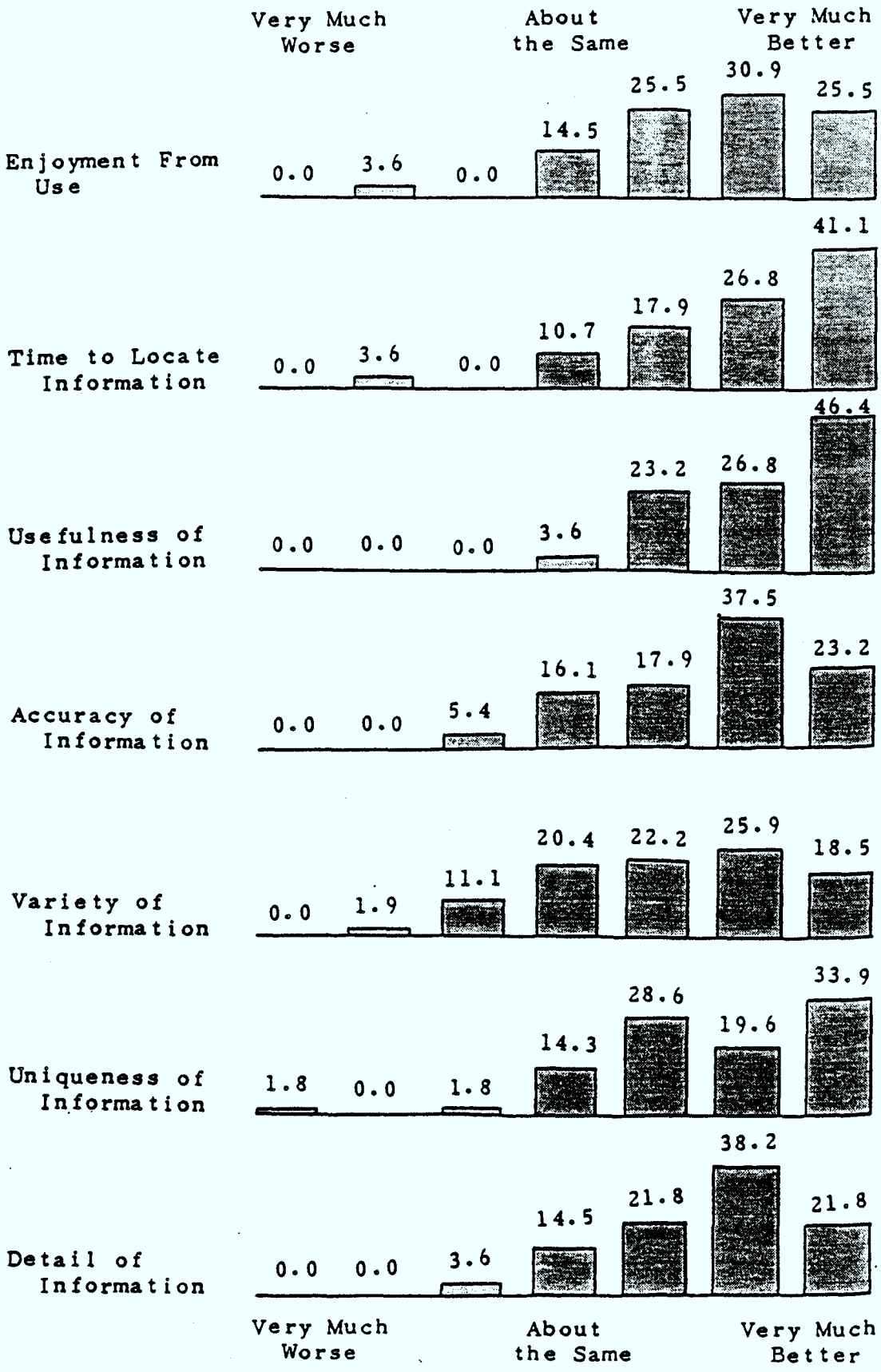
than alternative sources of information (for the specialised type of information it is providing). The utility of the information was rated as better by ninety-six per cent of our users and the speed of locating the information higher by eighty-six per cent of respondents. Respondents also feel very strongly positive about these aspects of videotex: the modal category for each of these comparative ratings, with just over forty per cent of respondents in each, is the most extreme positive category (seven on the seven point scale).

Eighty-two per cent consider that Marketfax is better than other sources at providing difficult to obtain information and better at providing detailed information. The accuracy of the information is considered higher by seventy-nine per cent of respondents. The lowest comparative rating is for the number of different types of information - sixty-seven per cent consider Marketfax to be superior, twenty per cent consider it to be comparable to other sources and thirteen per cent feel other sources are superior. Exhibit 4.3 displays these ratings.

4.3 Unique Graphic Capabilities

Telidon's graphics and colour capabilities are the characteristics which most distinguish it from other comparable information sources. While these features might be looked upon as largely cosmetic, it must be remembered that they can be used to clarify information through pictures, diagrams and charting. Previous research has indicated that response to graphics and colours has been enthusiastic (viz., Elton, 1982:85; ABM, 1983: 25; Department of Communications, 1983:18), despite the fact that large numbers of users feel that the graphics slow down the speed at which pages appear.

EXHIBIT 4.3
Comparative Ratings of Telidon with Other Information Sources (Marketfax)



Earlier research has paid scant attention to the degree to which the graphics and colour serve any purpose beyond the purely cosmetic. We addressed this question by asking respondents to indicate whether the colourful graphics make the information easier to understand or the service more enjoyable to use. Users were asked to rate the quality of the graphics and of the colour and to indicate whether the graphics take too long to appear.

General access users are very positive about the visual quality of the images and graphics: ninety per cent rate the graphics as good and ninety-two per cent rate the use of colour as good. Responses are heavily concentrated in the extreme positive end of the seven point scale - viewers feel strongly that the colour and graphics are very good.

The majority of general public users feel that the use of colour and graphics on the videotex system make it easier to understand the information presented and make the system more enjoyable to use than would be the case if only text were used on Telidon (by eighty-seven per cent and ninety-five per cent of respondents respectively). Again the modal categories are the extreme positive positions on the scale, chosen by forty-seven and fifty-nine per cent of respondents, respectively. In contrast, the public access respondents are almost equally divided over whether the graphics take too long to appear. Forty per cent feel they take too long to appear on the screen, forty-two per cent disagree and seventeen per cent neither agree nor disagree. That a significant share of users feel the graphics are too slow is also reflected in responses to an open ended question asking respondents to suggest possible improvements. One fifth of the sixty-six per cent of

respondents who volunteered suggestions feel the response time and/or graphics should be faster. This was the second most frequently voiced suggestion. Nine per cent voluntarily suggested that the graphics, colour and/or visual quality be improved.

As with general public users, the attitudes of Grassroots users to the colour and graphics are strongly positive. Ninety-three per cent of respondents agree the quality of the graphics is good and ninety-seven per cent feel the use of the colour is good. The graphic capabilities are considered to be a very positive contribution to the service: eighty-seven per cent feel this capability makes the information presented easier to understand and eighty-eight per cent think graphics make using the service more enjoyable. In contrast to general access users, three quarters feel the graphics do not take too long to appear on the screen, nine per cent disagree and fifteen per cent neither agree nor disagree.

Overall, the responses to the visual characteristics of the Marketfax service are very positive, however, Marketfax users are slightly more enthusiastic about the use of colour (ninety-eight per cent agree it is good) than about the quality of the graphics (eighty-eight per cent feel it is good).

The overwhelming majority of users also agree that the colour and graphics make the information source more enjoyable to use and aid in the process of understanding the information (ninety-five per cent and ninety-eight per cent respectively). U-ers hold these opinions strongly: the modal categories, chosen by over half of the respondents, are the extreme positive categories on the scales.

As with public access users, stockbrokers and investment analysts are divided as to whether the graphics take too long to appear on the screen. Forty-one per cent feel they do, thirty-six per cent feel they do not and twenty-three per cent neither agree nor disagree.

4.4 Impact on Other Information Sources

Previous research has indicated that Telidon may have the potential to affect the use of other sources of information (Chance and Overduin, 1984: XIV; Western Opinion Research, 1982:52). Our data are consistent with these earlier findings.

The other sources of information that general access respondents would have been most likely to use to find the information if they had not consulted the public terminal are displayed in Exhibit 4.4 below. The three most popular sources, cited by three quarters of the sample, are newspapers (thirty-seven per cent), the yellow pages in the phone book (twenty-one per cent) and asking someone, particularly someone in an information booth (seventeen per cent).

EXHIBIT 4.4
Alternative Information Sources for General Access Telidon (Percentage Distribution)

Newspapers	37.3
Yellow pages	20.5
Information booth/ asked someone	16.8
Television	6.8
Radio	3.7
Brochures, pamphlets	3.7
Seek source directly	3.1
Magazines	2.5
Library	1.2
Community newsletter	1.2
Other	3.1
TOTALS (%)	99.9
(n)	161

Asked to judge whether the availability of the public access Telidon terminals would increase or decrease their use of their most likely alternative source of information, one quarter of respondents reported they will decrease their use of the alternative source, sixty-six per cent do not intend to change their use and six per cent reported they will increase their use. There are no statistically significant correlations between intentions to alter use patterns and the sources of information.

The information sources which were relied on most heavily for the information now obtained from the Grassroots service are displayed in Exhibit 4.5. The three most popular, used by eighty-five per cent of the sample, were farming newsletters and magazines (thirty-five per cent), radio (thirty-four per cent) and newspapers (sixteen per cent of respondents).

EXHIBIT 4.5
Alternative Information Sources for Grassroots
(Percentage Distributions)

Farming newsletters and magazines	35.0
Radio	34.0
Newspapers	16.0
Agricultural representatives (provincial government)	6.0
Television	2.0
Other government sources	1.0
Other	6.0
TOTALS (%)	**100.0**
(n)	**100**

Just under half of subscribers reported that the availability of Grassroots had decreased their use of the alternative information source, and fifty-one per cent reported no change. Again there are no statistically significant differences in changes in use patterns among the different sources.

Exhibit 4.6 displays the information sources relied upon by our Marketfax respondents before the videotex service became available to them. Just over three quarters of the sample relied on business magazines and reports (thirty-five per cent), stock charting services (thirty-two per cent) or newspapers (eleven per cent).

EXHIBIT 4.6
Alternative Information Sources for Marketfax
(Percentage Distributions)

Business magazines, newsletters & periodical reports	35.2
Stock charting services (text)	31.5
Newspapers	11.1
Business & professional contacts	7.4
All sources listed above	3.7
TIL (telephone stock reporting)	3.7
Other	7.4
TOTALS (%)	**100.0**
(n)	**54**

Just over half (fifty-four per cent) of the Marketfax users report that they have decreased their use of the information source they relied upon before the videotex service became available. Thirty-nine per cent report no change and eight per cent have increased their use of the alternative source. As was the case with Grassroots users, there were no statistically significant differences in the effects of Marketfax on different sources.

5.0 BENEFITS DERIVED FROM USING TELIDON

User benefits will be defined differently for each type of user. Benefits to general public users will include the extent to which they achieved their purpose in using the terminal and the enjoyment they derived from the use of the technology. Benefits to users of the specialised agricultural and stock market services are defined as overall satisfaction with the service and the extent to which specific job-related benefits are being derived. After an exploration of the value of benefits derived (approached first as willingness to pay and secondly as the maximum amount user is willing to pay), the chapter will conclude with a discussion of specific improvements suggested for the technology and the information content of the videotex services.

5.1 General Satisfaction and Specific Benefits

A Department of Communications (1983:4) report summarizes the overall reaction to Telidon among field-trial participants as being "generally moderate". Our findings suggest that the users of commercial services tend to be quite positive about Telidon. The differences may be due to the difference between the quality of service provided by experimental field trials and that provided by fully operative commercial services.

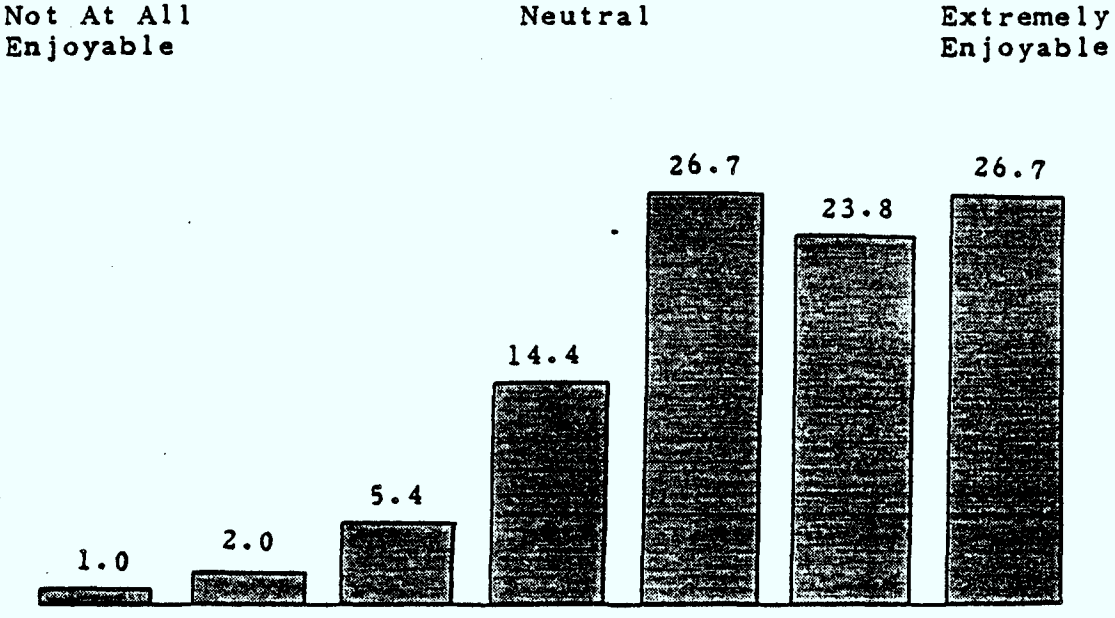
5.1.1 General Users

Sixty-two per cent of the 43 per cent of general access users seeking specific information found it and a further six per cent found some of it. Thirty-two per cent were unsuccessful. To the extent that obtaining desired

information (or reducing search time) is a benefit, thirty per cent of the total sample benefitted from using the terminal.

The majority (seventy-seven per cent) of respondents enjoy using the public access Telidon service. On a scale from one to seven with seven being "extremely enjoyable", the mean score was 5.4. Fourteen per cent are neutral, neither liking nor disliking to use the terminals, and eight per cent did not enjoy the experience. This high overall level of enjoyment is not unexpected given that respondents are voluntary users who enjoyed their previous encounters with the terminal enough to want to repeat it or were sufficiently predisposed to voluntarily try it for the first time. Exhibit 5.1 displays the frequency distribution in the form of a histogram.

EXHIBIT 5.1
Overall Enjoyment of Using Telidon
(General Users)



Levels of enjoyment decrease with increasing age (r=.20) and educational attainment (r=.22). Hypothesizing that the latter relationship reflected a correlation between age and educational attainment, we performed a partial correlation to control for the effects of age. We found that the relationship between educational attainment and level of enjoyment weakened slightly (r=.16), but nonetheless remained statistically significant.

Enjoyment is also significantly associated with mother tongue: ninety-seven per cent of francophones enjoy using the service compared to seventy-five per cent of anglophones and sixty-four per cent of users with other languages as their mother tongue. The differences between English and French respondents are consistent with the findings of the study of the IRIS field trials (Canadian Brodcasting Corporation, November 1984). The lower levels of enjoyment experienced by other language users may reflect cultural differences and/or language problems.

Enjoyment is not significantly associated with the sex of the user, employment status or occupation, whether the user was a local or non-local resident, the frequency of any previous use of the service, whether or not the user had to wait to use the terminal, the reason for using it, whether or not the specific information sought was found, and which alternative source of information would they have used if they had not consulted the videotex service.

Enjoyment is unrelated to frequency of use of computers but is significantly associated with frequency of use of video games and video cassette recorders. Frequent users of video games and VCR's are more likely to enjoy using the Telidon service compared to less than frequent

players. The novelty of the experience can also be a source of enjoyment. People who have never used VCR's or played video games are also slightly more likely to enjoy using the videotex terminal than infrequent users.

Ratings of the enjoyability of using Telidon are also significantly positively correlated with users' ratings of how the videotex service performs compared to other information sources such as television, radio, newspapers and community newsletters. Seventy per cent of respondents considered Telidon as more enjoyable to use than other sources and this was the modal category). This comparative rating correlated strongly with the overall enjoyability of the experience (r=.65). Users in general thought Telidon outperformed alternative sources along a number of other dimensions and these perceptions are modestly correlated with the level of overall enjoyment: speed of obtaining the information (r=.42), usefulness of the information (r=.38), the availability of unique information (r=.31) and the accuracy of the information (r=.30). The ratings of the extent to which Telidon outperformed other sources in providing detailed information or a number of different types of information are mildly but significantly correlated (r=.25 and r=.13 respectively). These correlations are weaker because the level of detail and variety of information are frequently suggested as features which need improvement.

Enjoyment is also significantly positively correlated with user ratings of the contribution of the videotex graphics and colour to the enjoyment of the process of obtaining the information (r=.34) and their contribution to the ease of understanding the information (r=.30). The quality of the colour and graphics are more weakly

correlated (r=.21 and r=.16 respectively). Users who think the graphics take too long to appear are significantly less likely to enjoy using Telidon (r=-.26). Speed of response and the quality of the colour and graphics are also frequently suggested as possible improvements to the service.

These findings suggest that once general public users have been motivated to try the technology, they will appreciate using it and that their enjoyment of using it owes both to the fun of the technology and to the quality of the information they obtain. Beyond enjoyment, benefits to general users consist of the rapid provision of accurate, useful and/or unique information. As we have seen in an earlier section most users perceived these benefits when they compared Telidon to other substitute information sources.

5.1.2 Grassroots Users

Grassroots users differ from general public users in that they are purchasing a service and one that is directly related to their livelihood. One should expect higher levels of overall satisfaction and this is the case: eighty-one per cent of respondents are satisfied with the service, twelve per cent are neutral and seven per cent dissatisfied. Levels of overall satisfaction are unrelated to such user characteristics as acreage of the farm, annual gross revenues or the age and education of the respondent.

In terms of the factors influencing the initial decision to subscribe, those who subscribed because the information was directly related to their farming operations are significantly more likely to be satisfied. Farmers who

rated the type of operation, for which the videotex service is most helpful, as very important to the running of their farms are significantly more likely to be satisfied with the service compared to those who find it helpful for relatively less important activities (r=.42). The most common type of operation for which the service is most helpful, cited by fifty per cent of respondents, is in determining commodity market prices. Higher levels of overall satisfaction are also associated with more frequent use of the service (r=.30).

Respondents were also asked to rate their level of agreement or disagreement with statements of potential specific benefits of the service to their farm operations. Helping make decisions about marketing farm produce is the most important benefit. The mean score on a one to seven scale (with one indicating strong disagreement that the service helped and seven indicating strong agreement) is 5.6. This is consistent with present uses made of the service and with an open ended question asking other reasons for subscribing: twenty-three per cent volunteered that the market information on the service was an important factor in their decision.

The mean scores for other benefits are 4.3 for helping introduce new farming techniques or choose fertilisers and chemicals and 4.2 for helping to increase farm productivity or to choose which crops to plant. These mean scores are marginally more positive than the neutral score of 4.0. This indicates that on average, these potential benefits are only being realised to a very modest extent.

All other mean scores for potential benefits were less than 4.0 and were realised by only a minority of respondents: help in choosing seeds (realised by thirty-four per cent), help in making decisions about buying livestock, reducing operating costs, bookkeeping and financial management or buying farm equipment (each are realised by thirty-two per cent); buying animal feed (twenty-seven per cent), deciding when to seed, when to harvest or help in buying or selling land (eleven per cent). No one felt that it helps them decrease their manpower needs. This discussion is graphically summarised in Exhibit 5.2 below.

These responses are consistent with use patterns: crop and livestock market information, information on chemicals, seed and feed, government farming information, information on crop management and the weather and news are consulted at least once per month by over half of the respondents.

The degree to which the service helps the subscriber make marketing decisions is not correlated with overall satisfaction with the service. This suggests that overall satisfaction is determined by more than this specific utility of the service. For example the subscriber may be considering cost, benefits to other members of the household, log on problems, or other types of benefits.*

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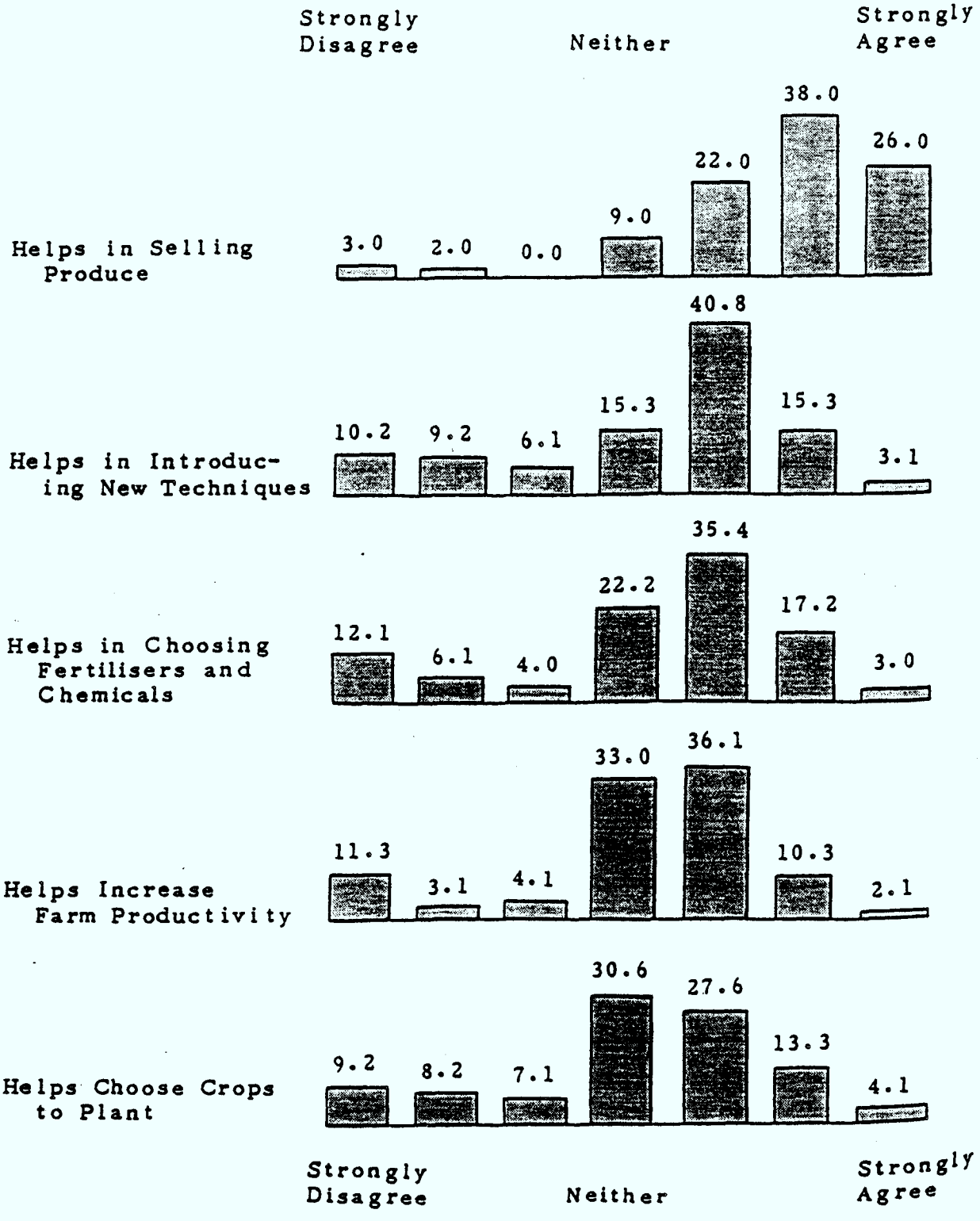
* For example, overall satisfaction is significantly positively correlated with the rating of the system's interactive capabilities (r=.44), negatively associated with frequency of log on problems (V=.30) and modestly positively associated with user ratings of the performance or utility of the service vis-à-vis other information sources. The highest correlations were obtained for the relative utility of the information (r=.42), followed by the amount of enjoyment provided by using the service (r=.39), the difficulty of obtaining the information elsewhere (r=.36), and the detail in which the information is provided (r=.36).

EXHIBIT 5.2
Histograms of Benefits to Grassroots Users



While other types of specific benefits may not be realised by the majority of subscribers, the degree to which they are being realised is positively modestly correlated with overall satisfaction. The highest correlations between level of overall satisfaction with the service and the extent to which specific benefits are being produced involve the following benefits: helping increase farm productivity (r=.40), helping reduce operating costs (r=.39) and helping introduce new farming techniques (r=.38).

The ratings of specific benefits are for the most part not significantly related to the characteristics of the farms or farm operators. However, age of operators and the gross revenues of the farm are related to some benefits. Smaller operations are slightly but significantly more likely to feel Grassroots helps them decide what kind of seed to plant (r=.24) or when to plant (r=.20), or helps them increase production (r=.18). Younger farmers are somewhat more likely to consider Grassroots helps in buying livestock (r=.30) or equipment (r=.25). It seems older farm operators may be more apt to rely on traditional decision making criteria, whereas the younger operators are more apt to use Grassroots.

Relative to the general public user, subscribers to Grassroots are more pragmatic in valuing the service for the information content rather than the glamour of the technology. The provision of market information is strongly perceived to be a benefit of the service by the majority of subscribers. While other benefits to the operation of the farm are being realised, they are not generally realised to the same extent or are only realised by a minority of subscribers.

5.1.3 Marketfax Users

Overall satisfaction levels with the Marketfax service can also be expected to be higher than for the general public because users are paying for the service. This group of users has higher levels of satisfaction than general users and farmers. Ninety-three per cent of Marketfax subscribers are satisfied (the modal category on the seven point scale, with sixty-three per cent of respondents, is six). Five per cent are neither satisfied nor dissatisfied and two per cent of users are dissatisfied.

Levels of overall satisfaction are unrelated to the age or educational level of the user or the size of the firm. Satisfied users are more likely to be recent subscribers (r=.26) and frequent users (r=.26) and people who were attracted to the service for the unique information offered (r=.37) and the up to date nature of the information (r=.20). They are also significantly more likely to enjoy using videotex to obtain information vis-à-vis other information sources (r=.33), to feel that the graphics are of high quality (r=.31) and that they make the information presented easier to understand than would text alone (r=.20). Perceptions of the speed at which the graphics appear are negatively correlated with overall satisfaction (r=-.26). This is not surprising when user charges depend on the length of time the service is used.

Individual users were asked to rate the extent to which the subscription produces specific benefits for them as individuals in the pursuit of their jobs and for the general operation of the firm.

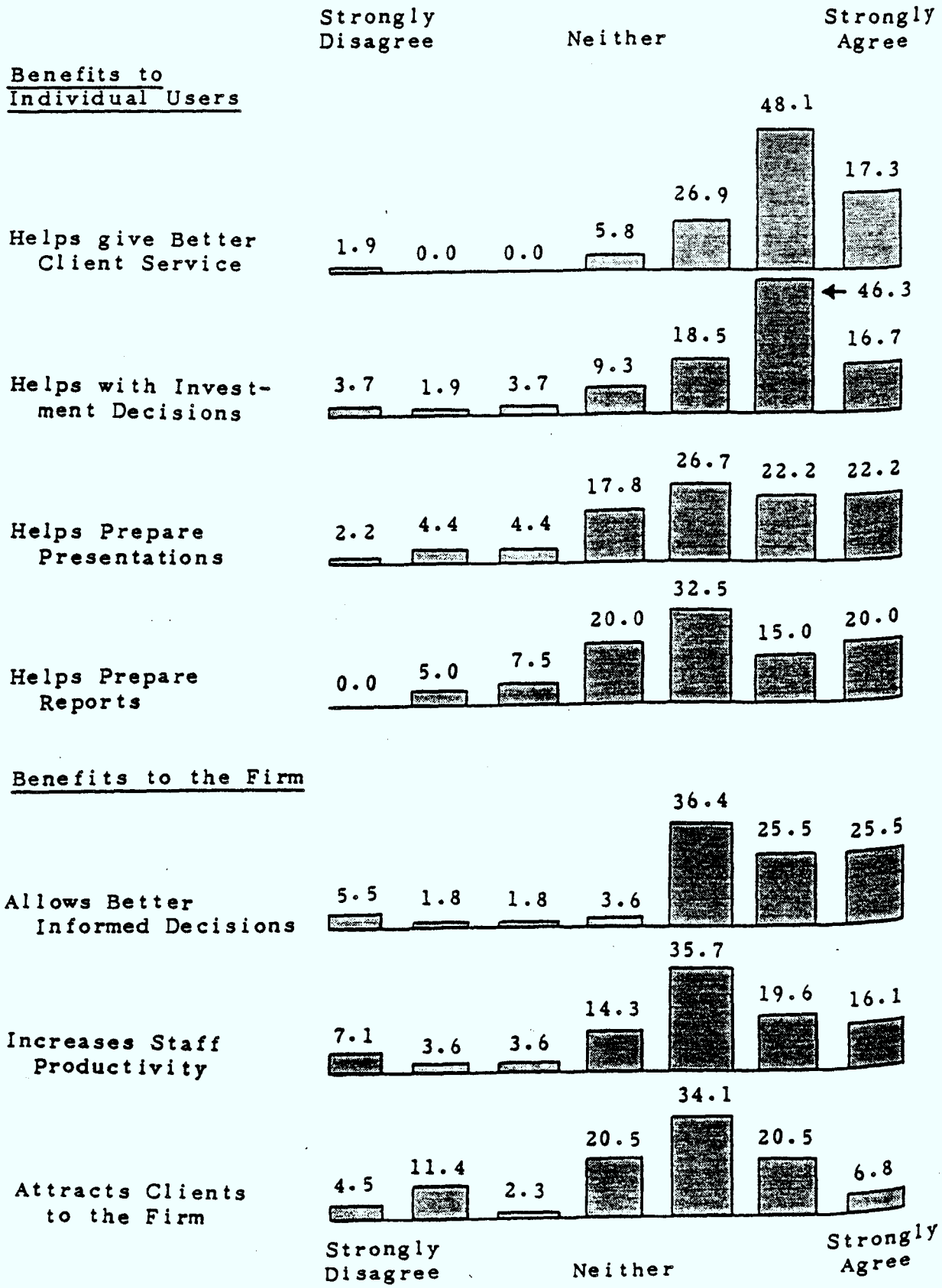
The most important benefit to the individual is in helping give better service to clients (the mean score on the seven point scale is 5.9). Ninety-two per cent of users indicated this is a benefit. Other important individual benefits are in helping make investment decisions (mean score 5.4), reducing the time it takes to prepare presentations (5.2) and to prepare reports (5.1). On an open-ended question, other important individual benefits are the fast provision of up-to-date information (volunteered by twenty-six per cent) and the graphing capabilities (suggested by twenty-one per cent of respondents to this question).

As for benefits to the overall operation of the firm, allowing better informed decisions is most important (mean score of 5.4, cited as a benefit by eighty-seven per cent of users), followed by increasing staff productivity (mean score 4.9) and attracting clients to the firm (mean score 4.6, cited by sixty-one per cent of respondents). Exhibit 5.3 displays these ratings of benefits. Marketfax is not generally considered particularly helpful in reducing manpower needs or other expenditures (mean score 3.5).

On an open ended question probing for other benefits to the firm, the most frequently cited was impressing clients, volunteered by one third of users who responded to this question.

Users are significantly more likely to be satisfied if the service helps them with activities which are considered very important to the operation of the firm ($r=.37$). The degree to which they perceive the Marketfax service helps them make investment decisions is significantly correlated with overall satisfaction levels

EXHIBIT 5.3
Histograms of Benefits to Marketfax Users



(r=.32), as are the strength of the perceptions that it helps increase staff productivity (r=.29) and helps reduce non-manpower expenditures (r=.24).

User perceptions that Marketfax helps them to better serve clients and to make investment decisions are, as one might expect, reflected in the greater frequency of use of the service (r=.33 and .26 respectively) and in the reduced use of the most important pre-Marketfax information source (r=-.24 and -.31 respectively) and positive ratings of the interactive capability of the technology (r=.30 and .26 respectively). None of the user ratings of the extent to which specific benefits are provided to them as individuals are significantly correlated with number of other regular users in the firm, the length of the subscription or the average session length.

Looking at the three most important benefits to the overall operation of the firm, perceptions of the marginal utility of the service can decrease as it becomes more available within the firm. Users in firms with fewer other users are significantly more likely to consider the service helps make better informed decisions or helps increase staff productivity (r=-.28 in both cases). On the other hand users in firms with many other users are more likely to feel that the service has attracted clients to the firm (r=.25). The number of other users does not simply reflect total number of employees: users in smaller firms are more likely to feel the service helps them better serve their clients (r=-.26), and more likely to feel the service attracts clients (r=-.21). Clients may be attracted by the ready availability of the products of the service or the high visibility of glamourous technology within the office. Many other users may serve to make the products more

available or the service more visible. The value of the service in attracting clients is also positively correlated with the user rating of the interactive capabilities of the technology (r=.28) and negatively correlated with the average length of the session (r=-.30).

These findings suggest there are practical benefits being realised by the majority of the users of the Telidon videotex service and that timely information to support decision-making, and reduction in staff time to prepare presentations for clients are important. The glamour of the technology attracts clients and this is also an important benefit to users, particularly those in smaller firms, over and above the utility of the information content and the format in which it is graphically presented.

5.2 Value of Benefits

The value of the videotex service to the user is represented here by the maximum amount the user would be willing to pay for the service. This is not a true measure of value as some general public users may be unwilling to pay or indicate they would pay, even though a few minutes earlier they had felt that using Telidon would be a worthwhile thing to do. In other cases we cannot assume the maximum amount cited reflects the dollar value of the benefits produced by the service because the respondents may be unaware of the true dollar benefit or fearful that a close estimation will ultimately lead to higher user fees. Finally, these subjective responses will not be faithfully reflected in subsequent market behaviour and their use as predictors of future patterns is limited.

5.2.1 General Users

Forty-two per cent of respondents using the service would be willing to pay a small fee each time they use the videotex terminal. Asked to state how much they would be wiling to pay each time, the answers ranged from 5¢ to $1.00 with the average being 31¢ (median fee 25¢) or about the current price of a telephone call in a public phone booth.

Of the fifty-eight per cent of respondents who are unwilling to pay for the service as is, thirty-four per cent stated they would be willing to pay for the use of the terminal if improvements were to be made to the service. The most frequently volunteered improvements are more detailed information (put forward by fifty-four per cent of the thirty-seven users who responded to this question), more types of information (thirty-two per cent) and the inclusion of current events and news items (sixteen per cent).

The mean amount that users would be willing to pay should the service be improved by the addition of more detail or current events and news is the same as the mean sum that users would be willing to pay for the service without improvements (31¢).

Whether the user is willing to pay for the use of the videotex terminal (with or without improvements) is unrelated to their enjoyment of its use. The amount of money users stated they would be willing to pay is mildly but negatively correlated with the user rating of their enjoyment of using Telidon ($r=-.20$). This suggests users willing to pay for the service as it is currently available may value it for the information it provides and not for the

amusement that the technology may afford them. Support for this theory is suggested by the somewhat greater willingness to pay something for the use of the terminal among users seeking specific information (sixty-two per cent) than among users who were just browsing or curious (fifty-six per cent). This difference, however, is not statistically significant. Willingness to pay is unrelated to whether the specific information sought was found, the frequency of any previous use of the technology, the most likely alternative source of the information, or the sex, employment status or occupation of the user.

Francophones are more likely to be willing to pay (fifty per cent) than are anglophones (thirty-nine per cent) or users with another language as their mother tongue (thirty-three per cent), however the possibility of this difference occurring by chance is slightly greater than the five per cent level normally used to indicate the statistical significance of a finding. Non-residents are significantly more likely to be willing to pay for the service than are local residents (fifty-four per cent as compared to thirty-six per cent).

Whether the general user is willing to pay for the use of the terminal is significantly associated with some of the ratings of the performance of the videotex system as compared to the most likely alternative information source.

Users who feel that relative to alternative sources Telidon provides information more rapidly, provides more useful or exclusive information, is more enjoyable to use or increases awareness of community events, are significantly more likely to be willing to pay for the service. Exhibit 5.4 displays the proportion of users willing to pay,

distributed according to their assessment of Telidon along a variety of dimensions. It is interesting to note that the amount of money that users are willing to pay for the current service is not significantly correlated with these comparative ratings of the performance of Telidon against other information sources. Overall the table shows that willingness to pay is dependent on the perception that the service provides useful benefits and is enjoyable to use.

EXHIBIT 5.4
Percentage of General Users Willing to Pay User Fees for Comparative Ratings of Telidon with Other Information Sources

	Worse	Same	Better
Time of locate information	13.6	40.5	47.1
Usefulness of information	12.0	34.5	47.9
Enjoyment from use	20.0	30.8	48.2
Uniqueness of information	17.4	35.3	51.4
Increased awareness of community events	26.5	34.1	54.5

User assessments of the graphics and colour are not significantly correlated to willingness to pay, with the exception of the length of time the graphics took to appear. Thirty per cent of respondents who feel they take too long were willing to pay compared to fifty-six per cent of respondents who feel the graphics do not take too long.

5.2.2 Grassroots Users

Grassroots users are currently paying a flat rate annual subscription fee as well as a monthly service charge which varies with the use of the service. Annual subscription fees are reported as ranging from $30 to $180*: the average is $112 (the median fee is $102). Seventy-one per cent of respondents are paying $100 per year and an additional twenty per cent paying $150. Estimates of the average monthly charges range from $3 to $300. The average

* There were two estimates of annual subscription fees under $50. We were advised by Grassroots that these were unrealistic in that the minimum subscription fee is $100. The remaining estimates are reasonable.

monthly use charge is $44 (the median charge is $30). Twenty-four per cent pay less than $10 per month on average and fifteen per cent more than $50 per month. Exhibit 5.5 displays the frequency distribution of current user charges.

EXHIBIT 5.5
Frequency Distributions of Respondents by Levels of User Charges (Grassroots)

	Current Charges	Maximum Without Improvements	Maximum With Improvements
$ 3 to 10	23.5	5.1	0.0
$ 11 to 20	20.0	21.8	14.5
$ 21 to 35	20.0	26.9	27.4
$ 36 to 50	21.2	19.2	19.4
$ 51 to 100	8.2	11.5	19.4
$101 to 300	7.1	15.4	19.4
Totals (%)	100.0	99.9	100.1
Number of respondents	85	78	62
Mean charge	$44	$65	$92
Median charge	$30	$31	$49

Forty nine per cent of subscribers value the service enough that they would be willing to pay even higher monthly charges for it. Sixteen per cent are paying the maximum they would pay without substantial improvements to the service and thirty-five per cent did not know whether or not they would pay more or did not answer the question. Estimates of the maximum monthly user charges that subscribers would pay range from $10 to $500 per month. The average maximum user charge is $65 (median charge $31) or in other words on average subscribers would be willing to pay an additional $21 per month ($257 per annum) for their present service. The average value of the benefits to users exceed current costs by almost fifty per cent. Of all the user and use characteristics we examined only age and education came close to being significantly related to

whether or not respondents indicated they would pay for Grassroots. The younger and better educated were likelier to be willing to pay more. However, these tendencies were slight and were not quite statistically significant.

Fifty per cent of subscribers would be willing to pay more if substantial improvements were effected to the Grassroots service. Three per cent would be unwilling, and forty-seven per cent did not know or did not answer the question. The most frequently suggested improvements are more detailed or a better variety of information (twenty six per cent of respondents), more up to date information (fifteen per cent), improvements to the log on procedures or technical reliability (thirteen per cent), and a faster response time, generally (five per cent). If these and other improvements were to be made, users would be willing to pay an average of $92 per month (median charge $49) for the use of the service, or an average of $48 per month over and above their current charges. This is more than a 100 per cent increase over current charges. Once again lower age and higher educational attainment are associated with a willingness to pay more. While in this case the relationships are statistically significant, they are nonetheless still quite modest.

5.2.3 Marketfax Users

Marketfax users pay a variable monthly fee which includes a subscription fee, any terminal rental fees and user charges. Estimates of this monthly fee are reported to range from $50 to $2,000, with the average monthly charge being $774 (the median fee is $669).

Twenty-one per cent of users feel their firms would be willing to pay more for the service, or in other words, that the current benefits to them from subscribing outweigh the costs of the subscription. Fourteen per cent are unwilling to pay more and sixty-five per cent did not know or did not respond to the question. The average difference between the maximum monthly fee individual users estimate their firms would be willing to pay and what is currently paid is $334 per month or approximately $4,000 per annum. Exhibit 5.6 compares current charges to the maximum charges users would be willing to pay.

EXHIBIT 5.6
Frequency Distributions of Respondents by Level of User Charges (Marketfax)

	Current Charges	Maximum Without Improvements	Maximum With Improvements
$ 50 to 500	32.4	26.9	19.0
501 to 750	26.5	11.5	9.5
751 to 1000	20.6	23.1	14.3
1001 to 2000	20.6	34.6	42.9
2001 to 6000	-	3.8	14.3
Total	100.1	99.9	100.0
Number of respondents	34	26	21
Mean charge	$774	$1108	$1582
Median charge	$669	$925	$1488

The size of the potential increase in fees ranges from $100 to $950. The average maximum amount users would be willing to pay without improvements is forty-three per cent higher than the average current charge. Whether or not respondents estimate their firms would pay more for Marketfax is positively related to having been motivated to subscribe to the service by its offer of more up to date information. The mean rating of the importance of that motivation for those who say their firm would pay more is 5.7, while that of those who said their firm wouldn't pay more or that they didn't know is 4.1. Users in firms with many other users are more likely to think their firm would be willing to pay more than are users in firms with few other users.

Twenty nine per cent of users are also willing to pay more if certain substantial improvements were to be made to the system. Nine per cent said their firms would not be willing, while sixty-two per cent said that they did not know, or did not answer the question. The four most commonly suggested improvements are more detailed information, the addition of historical stock data, more frequent updates and faster log on procedures. If these and other suggested improvements were to be made, users would be willing to pay an average of $1,582 per month or an average increase of $808 per month (about $9,700 per year). This is 104 per cent higher than the average current charge. Once again the importance of up to date information is related to perceived willingness to pay more for the service, however, in this case the relationship is not statistically significant. However, the number of users is significantly related with willingness to pay if improvements are made. Firms with many users are perceived to be more willing to pay.

5.3 Perceived Problems and Suggested Improvements

5.3.1 General Users

Two thirds of our general user survey sample made suggestions when asked if they could think of any improvements that should be made to the videotex system. The most common responses are presented in Exhibit 5.7 below.

Suggested improvements can be generally grouped as concerning the information content (the level of detail, types of information and frequency of updating), the accessibility of service (access to terminals, clarity of instructions and organisation of the information) and the format of its presentation (speed and quality of the graphics and colour).

EXHIBIT 5.7
Incidence of Suggested Improvements to General Access Services

Provide more detail/more complete information	38.3
Speed up graphics/increase response speed	19.5
More varieties of information	15.8
More frequent updating	9.8
Improve graphics/colour/print	9.0
Increase access to/reliability of terminals	8.3
Improved index system/organisation of information	6.8
Provide audio	6.8
Provide clearer instructions	6.0

The three most common suggestions are for more detail (volunteered by twenty-five per cent of the total sample), faster response speed (thirteen per cent) and more variety of information (ten per cent). The overall impression is that users feel they could handle more complexity in the data provided. This may be related to the fact that videotex terminals tend to attract a higher than average proportion of people who are already initiated in the use of videogames and computers. While these relatively more sophisticated users may be attracted to the terminals by the technology, the service is set up to accommodate the relatively unsophisticated first time user seeking specific information.

The final question in the interview was an open ended solicitation for comments about the Telidon system. Thirty-nine users made positive comments (twenty-eight expressing satisfaction) and fifty-eight made negative comments (seventeen remarked that the information was too restricted, mostly dealing with restaurant listings and bus routes, and thirteen wished for greater accessibility to the terminals).

Exhibit 5.8 displays the most common suggestions volunteered by the eighty per cent of Grassroots subscribers who responded to an open-ended question asking for possible improvements that would make the service more useful or more convenient to use.

EXHIBIT 5.8
Incidence of Suggested Improvements to Grassroots

More detail/depth	37.5
Improved log on/better technical reliability	23.8
More updating	17.5
Reduce price	12.5
Faster response speed	11.3
More instructions	10.0
Improve index system/ organisation of information	8.8

The major concerns are clearly the addition of more detailed information, for example, on suppliers, markets, news and province-specific information, and improvements to the logon procedures. These are consistent with user ratings of the information quality vis-à-vis other sources and with the high incidence of logon problems experienced.

A final open ended question elicited eight positive and forty negative comments. Seven users expressed their satisfaction with the service. Of the negative comments, five expressed general dissatisfaction and five commented that the system was too slow, especially when users were being charged by the minute.

Eighty-six per cent of users volunteered at least one suggestion as to improvements that would make the Marketfax service more useful or convenient to use. The incidence of respondents by most common types of improvement is presented in Exhibit 5.9.

EXHIBIT 5.9
Incidence of Suggested Improvements to Marketfax

More frequent updates	22.9
More detailed stock data	35.4
Improved graphics	14.6
Speed up response	12.5
Lower cost	10.4
Faster log on	10.4
Better printout	8.3

Most of the improvements concern the information content (the level of detail, the addition of historical stock data and frequency of updates), however, the presentation of the information (graphics and speed of response) are also important concerns.

In reviewing this list one must remember the overwhelming overall satisfaction of users with the service and that these comments are in response to an open ended question eliciting negative feedback. On a further final open ended question, ten negative and ten positive comments were supplied. Those who gave positive comments mostly remarked that they were not using the system to its maximum capability. The negative comments did not focus in any one area although they often concerned pricing and the need for improved hard copy.

THE BENEFITS TO USERS OF TELIDON