Supporting Casual or Naive Users of Externally Derived Statistical Data

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Abstract:
This paper describes a study of users of externally derived statistical data (EDSD) in academic, business, government and non-government organisations. It clarifies the terms casual user, naive user and novice user and applies these concepts to categorise the survey respondents. The survey reveals that users of EDSD are far more varied than has been previously thought. The paper identifies the type of interfaces that are suitable for casual or naive users, particularly for users of EDSD.

1. Introduction

Organisations are becoming more aware that they must incorporate external data as part of their information strategy and into their information systems if they are to be successful ([1] & [2]). Traditionally, this externally derived statistical data has been acquired in hard copy form. Diamond et al [3] indicate that this is still the case. Where software is used to retrieve and display the EDSD it is often designed to meet the needs of corporate clients with expert staff involved in the regular acquisition and analysis of this data. Little is known about any other users of EDSD.

Data was gathered from a variety of business, academic, government and non-government organisations to investigate differences in their use of EDSD. Only those organisations known to be users of EDSD were used in this study.

Table 1 - Number and % of Respondents by Group

<table>
<thead>
<tr>
<th>Users</th>
<th>Business</th>
<th>Academic</th>
<th>Gov't</th>
<th>NGO</th>
</tr>
</thead>
<tbody>
<tr>
<td>No.</td>
<td>35</td>
<td>18</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>%</td>
<td>53</td>
<td>27</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>

2. Classifying the respondents

Many authors ([4], [5] & [6]) have attempted to categorise users according to their frequency of use, their level of skill with a particular application and their level of understanding of computerised systems in general. For a fuller discussion see [7], [8] & [9]).

The general consensus of these papers suggests that users of a particular application begin as novices and develop expertise. With continued exposure to the application users may develop a deep understanding of the application, moving from a naive understanding to a level of expertise. This expertise is not simply a factor of time and usage but is also dependent on the user's attempting to understand the application more fully.

Apart from these two developmental dimensions, users may be categorised according to their frequency of use. Some users make frequent use of an application while others use it on a casual or discretionary basis. This dimension is related to the first two in that the development of both experience and expertise are dependent on frequency of use. However, a user may become either an experienced user or even an expert user of an application and then, due to changing circumstances, fall into a pattern of casual use. These concepts are central to our evaluation of the needs of users of EDSD.

Table 2 shows that many respondents identified themselves as non-regular users and there are a number of very infrequent users of EDSD even within the business and government groups. This has profound implications for the types of interface that needs to be provided for software used to disseminate EDSD.

Table 2 - % of Respondents who are casual users

<table>
<thead>
<tr>
<th>Frequencies</th>
<th>Business</th>
<th>Acad.</th>
<th>Gov't</th>
<th>NGO</th>
</tr>
</thead>
<tbody>
<tr>
<td>non-regular</td>
<td>17</td>
<td>61</td>
<td>-</td>
<td>50</td>
</tr>
<tr>
<td>casual usage</td>
<td>60</td>
<td>67</td>
<td>66</td>
<td>50</td>
</tr>
</tbody>
</table>

Table 3 shows that the vast majority of respondents were at a managerial or professional level in their organisations. Since it is unlikely that managers spend a long time each day using the system it is increasingly likely that a significant proportion of the respondents are naive or casual users.

Table 3 - % of Business Group by Role

<table>
<thead>
<tr>
<th>Roles</th>
<th>manager</th>
<th>accountant</th>
<th>staff</th>
<th>unknown</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>68</td>
<td>9</td>
<td>14</td>
<td>9</td>
</tr>
</tbody>
</table>

To clarify the functional requirements of users, respondents were asked to indicate whether they carried out further manipulation of the EDSD. The survey shows...

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that statistical data is manipulated or processed by 60% of the respondents. Those users who further manipulated EDSD were asked to indicate the type of manipulation involved. Some users produced summary tables while others extracted EDSD from a source table and incorporated it into tables or graphs. This has serious implications for the functionality of the software required by users. Many of the manipulations required are at a presentation level and few respondents indicated a need for further statistical manipulation. Far fewer of the respondents require a statistical manipulation tool than might otherwise have been thought. This tends to confirm the observation that, when dealing with EDSD, many respondents require an information retrieval tool with the ability to display data in various ways rather than a powerful statistical tool.

3 Types of interfaces required.

The survey has shown that there are significant numbers of naïve, casual users of EDSD. Software for such users must be easy to learn [9] because the intermittent nature of casual use means that users need to “re-learn” the interface when they return to it after each break. Obviously this recommendation is a valid for many of the respondents who use EDSD irregularly.

Some authors [11] suggest that the software should both protect users from making errors and ensure that the user is not left stranded if an error occurs. The errors made by novice users are predominantly associated with experimentation and the formation of poor guesses about how the system operates. The types of errors produced by casual users are often related to memory as they forget how to control the software from one session to the next. For casual users, the interface must either be easy to remember from one session to the next or it must allow for the fact that users will forget and provide informative feedback to help the user recall previously learned actions. This type of interface seems suitable for the survey respondents.

Shneiderman [6] and Bannon [5] recommend that systems for casual users should provide an interface that allows the user to develop more skills, at a time when the user feels the need for these, while still providing protection from danger. This is particularly relevant to the survey respondents who may use the EDSD software over a period of years, gradually becoming proficient.

Graphical user interfaces (GUIs) meet a number of the above requirements in that they are easy to learn and to remember. There is also some evidence to suggest that GUIs suit naïve users better [11]. Since the control of the computer dialogue is a serious burden to casual users, the system should control the dialogue as much as possible. This, too, is a feature of GUIs. While other types of interfaces might serve the casual or naïve users well, GUIs would certainly be preferable to command base interfaces or complex menu based systems.

4 Conclusion

While the dissemination of EDSD has traditionally been and still remains paper based, the use of electronic media for the dissemination of such data is increasing. This study has confirmed the existence of a significant number of both regular, specialist knowledge workers and casual, non-specialist users of EDSD. The types of interfaces required by the latter group are very different to those required by users with specialist skills. Several clear recommendations have been made about the type of interfaces that are suitable for these casual or naïve users.