Use of Office Automation by Managers – How Much, and to What Purpose? **

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Published research on office automation's impact, outside of clerical ranks, is limited either to people who are already committed to the technology or to a narrow range of potential users. Consequently, there is inadequate understanding of the overall impact of office automation within a broad range of people who have managerial responsibilities. This study presents data on 276 individuals who were likely to make personal use of office automation. It included 92 respondents as well as respondents' observations on their immediate superior and a subordinate. We found that use decreases with ascending rank in an organization, but that use of office automation is made at all levels. Although absolute levels decline with rank in the hierarchy, the ratio of applications used is surprisingly similar at all levels. Forty-nine percent of the respondents claimed to have observed organizational changes which were caused by the use of office automation. These changes were about equally distributed among the categories of: individual roles, organizational dynamics/structure, and productivity. The consequences of these findings for the marketing, implementation, and management of office automation are discussed.

Keywords: Office automation, Personal computing, Impact, Manager, Organization.

1. Introduction

How is office automation affecting managerial work? Empirical research has addressed many aspects of this question: implementation; use within different levels of organizational hierarchy; use as a function of role; and the influence of system architecture [1,2,3,4,5,6,7,8]. All this research, however, was carried out on samples that were restricted in one of two ways. One limitation is the restriction of respondents to populations who were already using office automation. The second limitation was a focus on a very narrow range of potential users; e.g., executives' using...
decision support systems. Thus, data are missing on the penetration and impact of office automation technology among the general population of likely users. We know of no published survey that asks a broad range of managers about their use of office automation.

2. Methodology

A variety of universities in the Northeastern USA were asked to identify students who were likely to also be managers. Four institutions cooperated by providing access to participants in "executive management" or part-time business school programs. These groups received a questionnaire which asked respondents about their personal use of office automation, and about similar uses by two other people with whom the respondent had close contact: an immediate supervisor and a subordinate. The questionnaire was first developed by the authors, and then critiqued by several managers who had served as respondents in one of our previous studies [2]. Their comments were used to revise the instrument into its final version.

Combining the information from 92 respondents and the people on whom they had reported provided data for 276 individuals distributed across many rungs of the organizational ladder. Job descriptions were available for 250 of these cases. The breakdown across job categories was as follows: worker/staff - 26%; first line supervisor - 22%; middle management - 24%; senior management - 17%; and executive - 12%. Although this sample of convenience is not a random selection of potential users of office automation, it does encompass a much wider group of people than have been accessed in previous studies.

Most of the questions had an open-ended, short answer format; although forced choice questions where used whenever possible. In the main, questions dealt with the amount, type, and impact of office automation use. Other questions touched on a variety of questions which helped determine the nature of the respondents' work and work settings. The text of the questionnaire appears in Appendix 1.

The generic term "office automation" was chosen because not all questions referred to immediate hands on use by the manager who was responding to the questionnaire. Therefore, specific terms such as "personal computing" were avoided. Careful attention to question wording, however, made the user referent for each question abundantly clear.

3. Findings

Questions about personal use of office automation yielded data on 267 people: 92 actual respondents plus 175 of a possible 184 "superiors or subordinates". Of these, 51% made personal, "hands on", use of office automation. In terms of relationship to the respondent, percentages for hands on use were: respondent - 65%, supervisor - 21%, and subordinate - 63%. Distributing these figures across job levels yielded the following percents of users: worker/staff - 72%, first line supervisor - 61%, middle management - 49%; senior management - 41%, and executive - 28%. Eighty eight percent of the respondents' organizations were private sector companies. The remainder were various government agencies. Sixty one percent of the respondents' organizations had 1,000 or more employees.

Table 1 summarizes data on the applications that these users employ. Respondents were presented with a list of possible applications, and asked to respond whether each was "available" or "not available".

Once the availability of office automation technology was determined, an effort was made to

<table>
<thead>
<tr>
<th>Application</th>
<th>Available</th>
<th>Not available</th>
<th>No response</th>
</tr>
</thead>
<tbody>
<tr>
<td>word processing</td>
<td>88</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>spreadsheets and simulations</td>
<td>76</td>
<td>23</td>
<td>1</td>
</tr>
<tr>
<td>access to company data base</td>
<td>68</td>
<td>32</td>
<td></td>
</tr>
<tr>
<td>graphics</td>
<td>68</td>
<td>32</td>
<td></td>
</tr>
<tr>
<td>statistical packages</td>
<td>50</td>
<td>49</td>
<td>1</td>
</tr>
<tr>
<td>access to outside data bases</td>
<td>95</td>
<td>53</td>
<td>2</td>
</tr>
<tr>
<td>electronic mail</td>
<td>42</td>
<td>57</td>
<td>1</td>
</tr>
<tr>
<td>video conferencing</td>
<td>21</td>
<td>79</td>
<td></td>
</tr>
<tr>
<td>appointment scheduling</td>
<td>20</td>
<td>78</td>
<td>2</td>
</tr>
</tbody>
</table>

* Numbers in this table are percentages based on 92 respondents.
ascertain the office automation applications that were actually used. Table 2 presents this data, broken down by job category. The data come from a summation of figures from two open ended questions, one about the "most recent use of office automation", and the other about "other common uses" of office automation. Data are also collapsed across the respondent, a superior, and a subordinate. The categories employed in the table emerged from a content analysis of responses.

With knowledge of the amount of office automation use established, the analysis turned to the consequences of that use. Two perspectives on this topic were collected. First, respondents were asked an open ended question about why their most important use of office automation was judged to be so important. This question was repeated relative to the respondents’ superior, and a subordinate. Data from this analysis appear in Table 3, which is broken down by job category.

A second perspective on consequences of use came from an open ended question which asked respondents to cite any change they observed as a result of the use of office automation. Forty five of the 92 respondents claimed to have observed such change. A content analysis of responses yielded five types of impact: change in people’s roles or responsibilities – 16 responses; organizational dynamics/structure – 13 responses; changes in productivity – 12 responses; expectations about office automation – 3 responses; and implementation/training issues – 1 response.

In order to convey a better sense of these categories, some actual responses are paraphrased below.

1 – Lost control and authentication of written documents, particularly sensitive ones that are legal or directive in nature.
2 – Better access to information by more people.
3 – Attempts by traditional MIS organization to centralize access to and use of personal computers, and to standardize brands used.
4 – Feelings of favoritism, elitism, rejection by people not given office automation.
5 – Improved productivity.
6 – Office has become better organized – time is better used.
7 – Better communication.
8 – People become hungry for more information for performance measurement.
9 – There have been opposition movements by

Table 2
Applications of office automation by job category *

<table>
<thead>
<tr>
<th>Job category</th>
<th>Word processing</th>
<th>Financial analysis</th>
<th>Monitoring organizational activity</th>
<th>Information transfer</th>
<th>Scientific/technical</th>
<th>Number in job category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Worker/staff</td>
<td>39</td>
<td>20</td>
<td>33</td>
<td>05</td>
<td>03</td>
<td>61</td>
</tr>
<tr>
<td>First line supervisor</td>
<td>40</td>
<td>13</td>
<td>36</td>
<td>04</td>
<td>06</td>
<td>47</td>
</tr>
<tr>
<td>Middle management</td>
<td>22</td>
<td>10</td>
<td>41</td>
<td>19</td>
<td>07</td>
<td>41</td>
</tr>
<tr>
<td>Senior management</td>
<td>26</td>
<td>18</td>
<td>37</td>
<td>19</td>
<td>00</td>
<td>27</td>
</tr>
<tr>
<td>Executive</td>
<td>33</td>
<td>33</td>
<td>22</td>
<td>00</td>
<td>11</td>
<td>09</td>
</tr>
</tbody>
</table>

* Figures are percentages of responses within job category.

Table 3
Consequences of office automation by job category *

<table>
<thead>
<tr>
<th>Job category</th>
<th>Productivity/time saving</th>
<th>Access to information</th>
<th>Communication</th>
<th>Decision making</th>
<th>Number in job category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Worker/staff</td>
<td>62</td>
<td>16</td>
<td>02</td>
<td>19</td>
<td>37</td>
</tr>
<tr>
<td>First line supervisor</td>
<td>65</td>
<td>13</td>
<td>04</td>
<td>17</td>
<td>23</td>
</tr>
<tr>
<td>Middle management</td>
<td>26</td>
<td>22</td>
<td>17</td>
<td>35</td>
<td>23</td>
</tr>
<tr>
<td>Senior management</td>
<td>45</td>
<td>09</td>
<td>09</td>
<td>36</td>
<td>11</td>
</tr>
<tr>
<td>Executive</td>
<td>73</td>
<td>00</td>
<td>00</td>
<td>25</td>
<td>04</td>
</tr>
</tbody>
</table>

* Figures are percentages of responses within job category.
confrontations have occurred between departments who have and have not received the equipment.

10 People that can adapt and run the system gain recognition.

Finally, the study attempted to discover why office automation technology is used only to the extent that it is, and not more. First, respondents were given a forced choice question asking whether there are any applications they would like to use, but could not. The 50 respondents who reported a desire for more office automation use were then asked an open-ended question about major obstacles to further use. Content analysis of the 48 responses yielded the following: lack of access to hardware – 19 responses; company approval – 10 responses; lack of access to software or an appropriate database – 8 responses; lack of training concerning office automation – 7 responses; and lack of time – 4 responses.

4. Discussion

A basic finding is that office automation, is in fact, making considerable inroads outside of clerical ranks. Fifty-one percent of the respondents made personal use of the technology, while 63% report use by a subordinate, presumably under the direction of the respondent. Thus, use of office automation is common but far from universal. Although one cannot assume it is appropriate for all non-users to become users, the data to indicate considerable room for expansion. To facilitate this, further studies are needed to explain the personal and organizational circumstances of non-use. Once known, appropriate strategies can be developed for marketing, user support, and implementation.

Patterns of use across job levels and applications yield interesting insight into how office automation affects work life. As expected, the total amount of use decreases steadily with ascending rank in the organization. The distribution of applications across rank, however, is remarkably constant (Table 2). Lower level staff do more word processing, but the difference seems much less than conventional wisdom would suggest. Rates of use for financial analysis fluctuate, but with no clear pattern across job level. Monitoring organizational activity ranges only from 33% to 41%, excluding the small number of executive level personnel in the sample. While the specific content of applications surely changes with position in an organization, the type of assistance people seek from office automation remains fairly stable.

Of special note is the heavy use of word processing, even at higher levels of management. Document preparation is always a pressing issue, and clerical support seems always at a premium. In this light, the managerial use of word processing is understandable. But given the cost of management time, and the unique functions that only managers can perform, heavy managerial use of word processing may signal a problem involving the sub-optimal use of people's time.

Explanations as to why use of office automation is limited dwelt heavily on problems that can be solved only at considerable expense; as they often involve problems such as lack of access to hardware, software, or data. Further, the amount of demand for more office automation is quite high: approximately 50% of the respondents expressed such an interest. Because of the large unfilled demand for expensive technology, it is incumbent upon organizations to develop careful strategies to guide decisions about the acquisition and distribution of office automation, and for optimizing the contribution of whatever office automation capacity is obtained.

A surprising finding was the weak emphasis given to lack of training as an inhibiting factor: only 14% of the reasons for lack of use dealt with this issue. While improvements in training are always desirable, priority attention must be given to other, and more expensive, inhibitors.

Finally, the data yield valuable insight into the extent and type of organizational change that is being effected by office automation. Forty-nine percent of the respondents claimed to have observed some organizational change as a result of the technology. The sheer amount of observed change is impressive, even without data on their importance and whether they are transient or permanent. Further, the data suggest that the extent of office automation-induced change is about equally distributed among changes in the roles of individuals, factors involving organizational behavior, and productivity.
Appendix — Overview of Survey Instrument

Below is a facsimile of the questionnaire. In the original, questions 1–8 were repeated with appropriate wording changes to refer in one section to respondent's boss, and in another section to a person supervised by the respondent.

1 – Do you use office automation in a manner that involves your actually running the equipment yourself? ...........yes no (1) (If NO, skip to question #9.)

2 – Please briefly describe the last two times you remember personally using office automation equipment. (2)

use #1

use #2

3 – Does your answer to question #2 represent the most frequent uses you personally make of office automation? ............yes nc (3) (If YES, skip to question #5.)

4 – What is the most frequent use you personally make of office automation? (4)

5 – Besides the use listed in question #4, are there other common uses you have for office automation? .............yes no (5) (If NO, skip to question #7)

6 – Please briefly describe some of these other common uses for office automation. (6)

use #1

use #2

7 – Given all the times you can ever remember personally using office automation in your present job, what use had the greatest impact for you or your company? (7)

8 – Why was the use described in question #7 so important? (8)

9 – (If YES, skip to question #5.)

27 – What is your direct supervisor's job title? (Use approximate or descriptive titles if you are unsure of precise wording.) (27)

28 – What is/are the job title/s of the people you immediately supervise? (Use approximate or descriptive titles if you are unsure of precise wording.) (28)

1.-

2.-

3.-

29 – What are the major products or services supplied by your company? (29)

30 – Approximately how many employees are there in your company? (30)

31 – How many people do you directly supervise? (31)

32 – Are any of the following office automation services readily available to you or to the people you supervise? (32)

available not available

electronic mail

word processing

video conferencing

access to company database

access to outside databases (ex: Dow Jones)

electronic appointment scheduling

spreadsheets or other simulation programs (ex: Lotus 1, 2, 3.)

graphics

statistical program (ex: "t" tests, time series)

others, please specify

33 – Are there any applications you would like to use office automation for, but cannot in your present job? (33) (If NO, skip to question #35)

34 – What are the major obstacles to the use you mentioned in the previous question? (ex: access to hardware, available software training, approval of company, etc.) (34)
35 – The advent of office automation has given rise to claims that it affects organizational dynamics such as supervisory relationships, getting one’s way with peers or superiors, coalition formation, communication patterns, and the like. In your experience, is any of this speculation true? . . . . yes no (35)

(If NO, skip to question #37)

36 – What organizational consequences of office automation have you observed? (36)

37 – Do you have any pet theories about the effects of office automation on your company or the people who work there? If so, please share them with us. (37)

38 – **AN INVITATION** Our research team is interested in three basic issues: 1—the impact of office automation on managers, 2—the implementation process for office automation, and 3—the effects of office automation on organizations. We would be happy to explore with you the possibility of doing studies on these topics in your company. In return, we are willing to share our findings and make recommendations. If you are interested in exploring this possibility, please put your name and phone number here:

(38)

39 – If you would like a summary of the results of this survey, please put your name and address here.

(39)

**THANK YOU**

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**References**


