

# What Microcomputers Can and Cannot Do: An Introduction

KENNETH A. BREWER

## ABSTRACT

An introduction is provided for the papers on the use of microcomputers in maintenance management. Managers are challenged to make a concrete assessment of the contribution made by microcomputers to the individual offices and to the overall system.

Just what is it that microcomputers can and cannot do for a highway maintenance agency at any level of government? Most texts and essays on computerization of management and design of computer systems find it easier to articulate what a system cannot do and contrast that with a list of things that a computer system of any size can do. That traditional tack is adopted here also.

Installing a microcomputer system in the engineering management offices of an organization will not make a good manager out of a bad one. Giving a computer of any size to a person who does not know how to communicate with people above and below him or her in the organization will not enhance communication; what is more it may make it worse. A microcomputer will not make people who habitually run late or close to deadlines submit reports earlier. They will use the additional information processing power to do more things before the deadline rather than submit material earlier. A microcomputer will not improve the planning ability of a person with little or no sense of intuitive priority on time and energy.

Installing a microcomputer system cannot be certain to lower costs of operation and may increase the cost of operation. More work may be accomplished with a constant staff level, but this may not be the work the upper level manager wanted. Providing microcomputers to lower level administrative offices will not give upper level management more control and influence over the organization.

If a microcomputer cannot do any of these things and a host of other things, why install one in an engineering management office in the first place? Why indeed? What can the microcomputer do in an engineering management office?

A microcomputer can permit the office to have a word processing station for more precise local editing of written communications such as memos, responses to outside complaints and inquiries, and technical briefs forwarded up the organization. The effort required to cleanup a document is little more than reading it over, whereas in the past a major effort was required to do a cut-and-paste rewrite.

A microcomputer permits the local office to assess the validity and importance of information generated within their jurisdiction before it is sent forward through data base management and electronic spreadsheet programs. In some organizations a microcomputer makes it possible for managers at the very bottom to have an idea what the data their people generate mean for overall organization policy even before the data are transmitted to the next level up. The capability to understand and identify with management decisions moves down the organizational chart to or near the first line supervisor.

A microcomputer permits some routine hand tabulation activities to be replaced by mark sense cards, optical scan cards, electronically coded plastic cards, and so forth; this frees technicians and administrative assistants to do other tasks. If those tasks are to take longer lunch breaks rather than devise better ways to do the remaining jobs that need to be done, the overall net effect can be questionable. However, most people working for a highway agency are public service oriented and will use the time to increase their service.

A microcomputer in a lower level office can permit local tracking of operational characteristics such as safety records, employee and equipment utilization, and trends in cost functions that might be aggregated and lost at the next higher level of management. Also, a microcomputer can permit an office to keep up with all those other offices that have a computer. This is not a very good reason to obtain one, but it is sometimes the main reason.

Having a microcomputer in the local engineering management office can permit the local staff to analyze problems of the level that requires a quick technical decision, whereas in the past a computational analysis of this type would have been forwarded to the central computer facility. Thus the general public will be more confident that field offices are technically competent and cognizant of matters of concern to the public than they were in the past.

All of these capabilities, and none of them, justify the installation of a microcomputer in an engineering management office. You are urged to read the papers by Nimz, Bell, and Nile that immediately follow this introduction. Read these papers with a "what's in it for me?" attitude. A Discussion by this author is included at the end of each of those papers.