"Looking at 'Human Factors' in the Automation of
Job Service Offices--A System Dynamics Approach"

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ABSTRACT

During the last 25 years manufacturing productivity has
increased by 25%; yet, white collar productivity has only in-
creased by 4%--and this in a society rapidly converting to white
collar dominated service industries.
Office automation has been touted as the key to significant
gains in white collar productivity, and one of the earliest users
of such automation in government has been the Job Service of the
U. S. Department of Labor. Early experiments in the 1960's with
automated systems for matching employers and job applicants led
to nationwide expansion during the last ten years. This expansion
of automated systems has met with very uneven levels of utiliza-
tion, performance and integration into day to day operations.
Some offices report full integration or routinization of the systems
and can't imagine trying to meet their performance goals without
them, while others have abandoned automated matching systems alto-
gether, viewing them as a serious impediment to their level of per-
formance. Between these two extremes exist a wide variety of offices
combining various available automated and manual options.
A recent nationwide study of the Job Service Matching System
funded by the Department of Labor and the National Science Foundation
found significant correlation between high rates of utilization of
the automated systems and office productivity and general office
effectiveness. Why, then, are automated matching and other auto-
mated systems under-utilized and ineffective in many locations where
they have been introduced?
A growing body of literature places the blame on organizational
elements, the "human factors". The study just mentioned has gathered
considerable information on human factors and rates of utilization
through questionnaires and interviews conducted annually for the
past four years in 35 offices in 17 states representing urban, rural,
large and small offices in a variety of economic and demographic
settings. Preliminary results indicate that human factors are, in-
deed, significantly correlated with rates of utilization. A review
of this study suggests that organizational acceptance (and utiliza-
tion) of office automation is heavily influenced by a variety of
human factors and, further, that these factors are strongly feedback
oriented.
This paper presents a system dynamics model of human factors
in the implementation of office automation in the Job Service. The
model includes sectors representing model acceptance by managers,
supervisors, professionals and clerks with the various factors im-
pacting on such acceptance. Since the perceived usefulness of the
automated system for office performance is quite important (especi-
ally for managers), sectors representing workflow and efficiency
are also included.
The model suggests that individual human factor structures are
embedded in larger feedback relationships which combine their effects
into "macro-behaviors". The structure of these macro-behaviors
may be a significant key to successfully dealing with the organiza-
tional problems of office automation. Policies addressed item by
item to the multitude of social-psychological factors may be "missing
the forest for the trees". Policy approaches which attack the problem
through influencing the system at a macro-dynamic level are presented.
It is hoped that such approaches might be illuminating to management
strategists facing the prospect of major organizational change as a
result of office automation.