

# CONCERNS OF COLLEGE FACULTY ABOUT THE DATA PROCESSING MANAGEMENT ASSOCIATION'S MODEL CURRICULUM

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*ABSTRACT: The rapid changes that are currently occurring in the information technology field are challenging our educational institutions as they have never been challenged before. A common complaint heard from business leaders is that computer courses offered in educational institutions are not relevant to the needs of business. The Data Processing Management Association (DPMA) has attempted to bridge this computer education gap by developing a national model computer curriculum for the education of business computer students. However, faculty familiarity with the DPMA model in adopting institutions was uncertain. Therefore, a survey of computer systems faculty in institutions that adopted the model curriculum was undertaken. The results of the survey indicate that certain variables are related to the degree of computer faculty familiarity with the model curriculum. These variables are discussed in this study.*

**KEYWORDS:** Model Curriculum, Data Processing Management Association (DPMA), Computer Information Systems (CIS), Concerns Based Adoption Model (CSAB), Stages of Concern (SoC)

## INTRODUCTION

Almost 20 years ago Drucker [3] argued that we have to learn to make existing organizations capable of rapid and continuing innovation. Nowhere is this statement more true today than in our educational institutions as the gap widens between what courses are taught to students and the knowledge and skills needed by these students as they enter the work force.

However, one effort to bridge this gap between business and education has been successful as a result of the development of a four-year national model curriculum for the education of business computer students in colleges and universities in the United States. [1] To insure the model's successful adoption and implementation, the developers of this model curriculum,

the Data Processing Management Association, (an organization of business computer professionals and academic personnel), need an understanding of the feelings or concerns that the users of the curriculum, namely CIS faculty members, are experiencing.

The purpose of this inquiry was to study variations that exist in the concerns of CIS college faculty about the DPMA Model Curriculum, therefore determining their level of familiarity with the model. The intent of the study was to relate certain department and institutional variables to the faculty concerns data in order to determine those factors that had an effect on the degree of faculty concerns. As a result of this study, some differences were noted in the means of the Stages of Concern at different levels of the independent variables.

## FACULTY CONCERNS WITH THE DPMA MODEL CURRICULUM

In order to determine the level of familiarity that CIS faculty in adopting institutions have with the model curriculum, as evidenced by their degree of concern about the model curriculum, a national survey was undertaken. Two questionnaires were used in the study. The first, sent to CIS faculty members in institutions reported to have adopted the model curriculum, measured their degree of concern on the seven hypothesized Stages of Concern that individuals move through as they become more familiar and adept in the use of an innovation. This survey instrument was developed by Gene Hall and others at the University of Texas at Austin. [4] The second survey instrument, developed by the researcher, was sent to CIS department chairs, and was designed to collect

department and institutional data that were thought to relate to faculty concerns about their use of the model curriculum.

A total of 328 four-year colleges and universities in the United States were reported to have adopted the DPMA Model Curriculum since its release in 1981. [2] Six faculty questionnaires and one department chair questionnaire were sent to each institution. Of the institutions surveyed, 86 provided complete responses representing 26.2% of the total. An average of 3.1 faculty responded per institution.

### THE CONCERNS BASED ADOPTION MODEL (CBAM)

The Concerns-Based Adoption Model [4] was developed in order to describe the process involved when educational institutions adopt innovations. The model is a result of a three and one-half year study of innovation adoption in educational institutions. The CBAM views the adopting institutions as a User System composed of individuals, each of whom has his own

set of concerns, problems, skills, agendas, and needs. In combination, these individuals represent the institution and its functionings. CBAM views the change process within formal organizations as entailing individuals moving through seven

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identifiable Stages of Concern About the Innovation and eight Levels of Use of the innovation. However, in the current study, the focus will be on describing the characteristics of the Stages of Concern, one of the basic dimensions of the CBAM. These stages are identified in Figure 1.

The developers of the Stages of Concern dimension of the CBAM hypothesized

that concerns change as users become more familiar with and adept in the use of an innovation. Early concerns of the user are with self, followed by task-related concerns; and finally concerns about the impact of the innovation on others. It appears that it is necessary for early stage concerns to either be resolved or at least reduced in intensity before later, more mature concerns, can emerge or increase in intensity.

An individual does not have concerns only at one stage but instead has concerns at a number of stages in varying degrees of intensity. Generally, concerns at one or two stages are most intense. Concerns plotted on an individual's seven stages of concerns would form an individual's concerns profile, with some concerns being recorded as lower than others and some concerns closer to the intensity of others. With experience and increased use of an innovation, the higher stages become more intense and the lower stages decrease in intensity.

Figure 1. Stages of Concern About the Innovation

0 Awareness: Little concern about or involvement with the innovation is indicated.

1 Informational: A general awareness of the innovation and interest in learning more detail about it is indicated. The person seems to be unworried about himself/herself in relation to the innovation. He/she is interested in substantive aspects of the innovation in a selfless manner such as general characteristics, effects, and requirements for use.

2 Personal: Individual is uncertain about the demands of the innovation, his or her inadequacy to meet those demands, and his/her role in relation to the reward structure of the organization, decision making, and consideration of potential conflicts with existing structures or personal commitment. Financial or status implications of the program for self and colleagues may also be reflected.

3 Management: Attention is focused on the processes and tasks of using the innovation and the best use of information and resources. Issues related to efficiency, organizing, managing, scheduling, and time demands are utmost.

4 Consequence: Attention focuses on impact of the innovation on students in his or her immediate sphere of influence. The focus is on relevance of the innovation for students, evaluation of student outcomes, including performance and competencies, and changes needed to increase student outcomes.

5 Collaboration: The focus is on coordination and cooperation with others regarding use of the innovation.

6 Refocusing: The focus is on exploration of more universal benefits from the innovation, including the possibility of major changes or replacement with a more powerful alternative. Individual has definite ideas about alternatives to the proposed or existing form of the innovation.

## COMPUTER CURRICULA IN HIGHER EDUCATION

A challenge for educational institutions is to keep pace with the rapid development of information technology. While some educational institutions have attempted to stay abreast of these developments, others have not. As early as the late 1960's, this educational lag was recognized by members of the academic community, the business community, and the vendors of computer hardware and software. In an effort to address this educational lag, the Data Processing Management Association (DPMA) has developed model curricula for computer students in institutions of higher education. Because of due regard given to the American Assembly of Collegiate Schools of Business (AACSB), the sole accrediting agency for baccalaureate and masters degree programs in business administration, this model curriculum offers a strong academic program along with the necessary computer courses for entry-level job requirements. Further, this program is a "living document" in that it is constantly being reviewed by this organization in order to insure the colleges that the courses students are taking are relevant to their careers.

## FINDINGS

The developers of the Concerns Based Adoption Model hypothesized that concerns change as users become increasingly familiar with and skilled in the use of an innovation. As users become more involved with an innovation, their concerns move to higher stages and their lower stage concerns decrease in intensity.

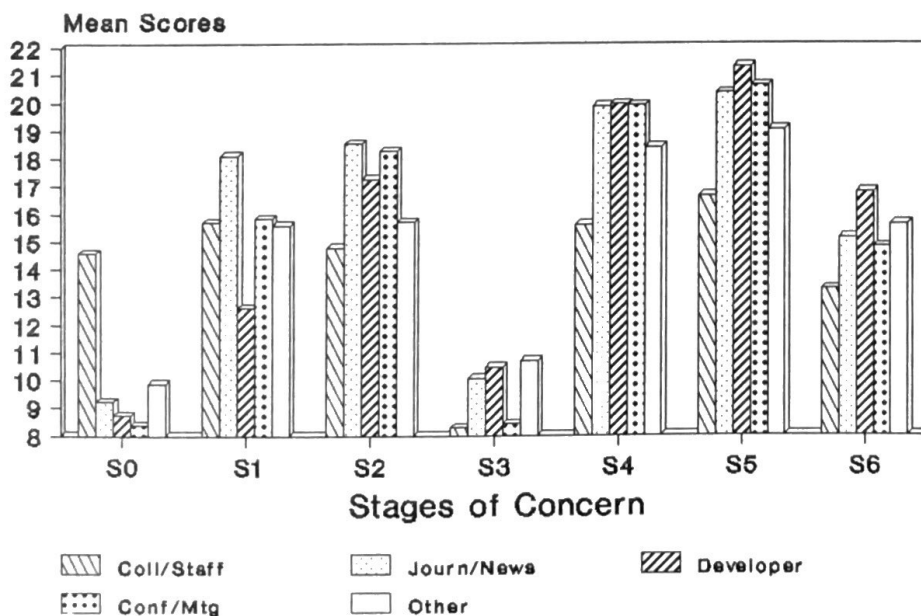
Through a statistical procedure called Multivariate Analysis of Variance (MANOVA), it was found that four variables have a significant relationship with faculty concerns about the model curriculum. These variables are: 1) Source of Adoption Information, 2) Type of Institution, 3) Size of CIS Faculty, and 4) DPMA Status of CIS Department Chair. It is interesting to note that three variables, thought to be related to faculty concerns about the model curriculum based on previous research but were not, were: 1) Year of Adoption, 2) Perceived Level of Implementation, and 3) Average Semesters of Use. In other words, the study did not show that institutions that had a longer period of adoption of the model curriculum had CIS faculty that were more familiar with the model than institutions with a

shorter period of adoption. Also, this length of time factor was not significant for faculty that had more semesters of experience with the model that faculty in institutions with less experience. Lastly, there was no significant difference in the familiarity of CIS faculty with the model curriculum in institutions where the department chairs' level of perception about the degree of implementation of the model was greater than that of other department chairs' perception level.

The following independent variables were used in the study - those that showed significant differences in their means at different levels are identified with an asterisk.

- \*1. Source of Adoption Information
2. Year of Curriculum Adoption
3. Most Influential in Adoption Decision
4. Perceived Level of Implementation
- \*5. Type of Institution
6. Size of Institution
- \*7. Size of Faculty (Full-Time CIS Faculty)
8. AACSB Affiliation
- \*9. DPMA Membership
10. Institutional Average of Years of College Teaching
11. Institutional Average of Semesters of Experience
12. Early/Late Survey Responses

Figure 2. Adoption Information Source



A series of graphs have been developed for the four significant independent variables in order to show a profile of the categories of each independent variable across all Stages of Concern. The graphs present a way of looking at the information analyzed in the MANOVA test. They depict the means of each level of the independent variables separately across all of the Stages of Concern. Thus, the graphs form a profile of faculty concerns for each level of the independent variables.

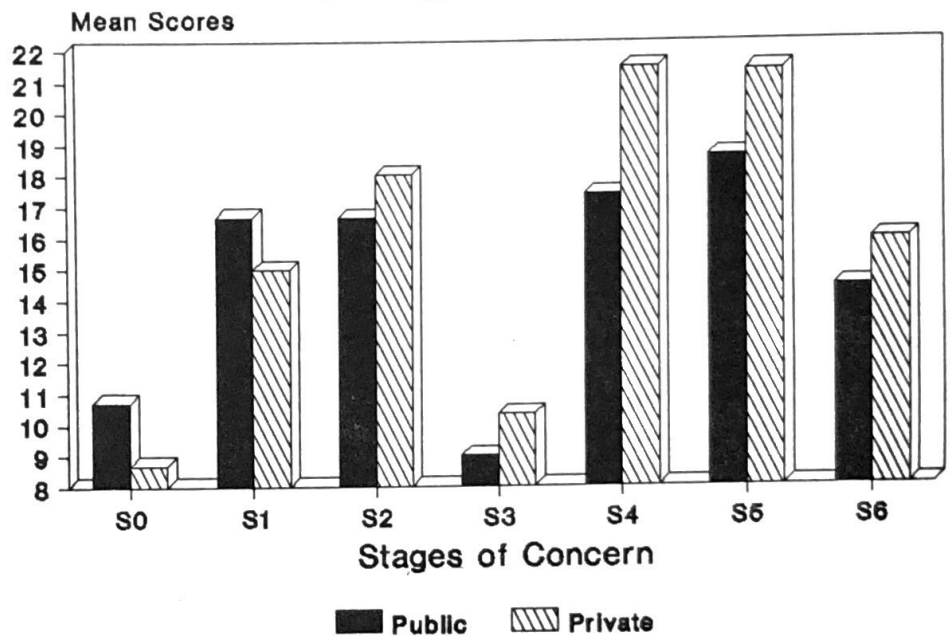
An examination of the Source of Adoption graph in Figure 2 indicates that the model curriculum has become somewhat institutionalized in those colleges and universities where the source of adoption

information has come from Journals/ Newspapers, Conference/Meetings, Curriculum Developers, and to a lesser degree from the general category called Other, which generally was either some combination of the previous categories or from informal sources. All of these categories are characterized by relatively high intensity levels of faculty concerns on the higher Stages of Concern; Stages 4 and 5. These stages represent Consequence and Collaboration respectively. Consequence concerns focus on faculty deliberations about the relevance of the model curriculum to those students who are using it and on the evaluation of student performances and competencies as a result of using this curriculum. Collaboration concerns involve faculty attempts to increase the use of the model curriculum among other faculty members.

In those institutions where the source of information about the model curriculum came from College Faculty, the low level of intensity of concerns of college faculty on the advanced stages, as can be seen in Figure 2, indicates little familiarity with the model curriculum. Faculty concerns are most intense on Stage 0, indicating relatively little concern about the model curriculum, and least intense on Stages 2-6 indicating a lack of familiarity with the model curriculum when compared to all other categories of adoption information sources.

As observed in Figure 3, the Type of Institution graph shows that the model curriculum has become more institutionalized in private institutions than it has in public institutions. The graph for the Type of Institution variable shows that the most intense Stages of Concern are the Consequence and Collaboration stages. These are Stages 4 and 5 concerns respectively. It can be observed that faculty in private institution have more intense concerns at the higher Stages of Concern than do faculty in public institutions. It can also be observed that faculty in public institutions have more intense concerns focused toward the beginning stages (0 and 1) of use of the model curriculum indicating that early concerns about the

Figure 3. Type of Institution

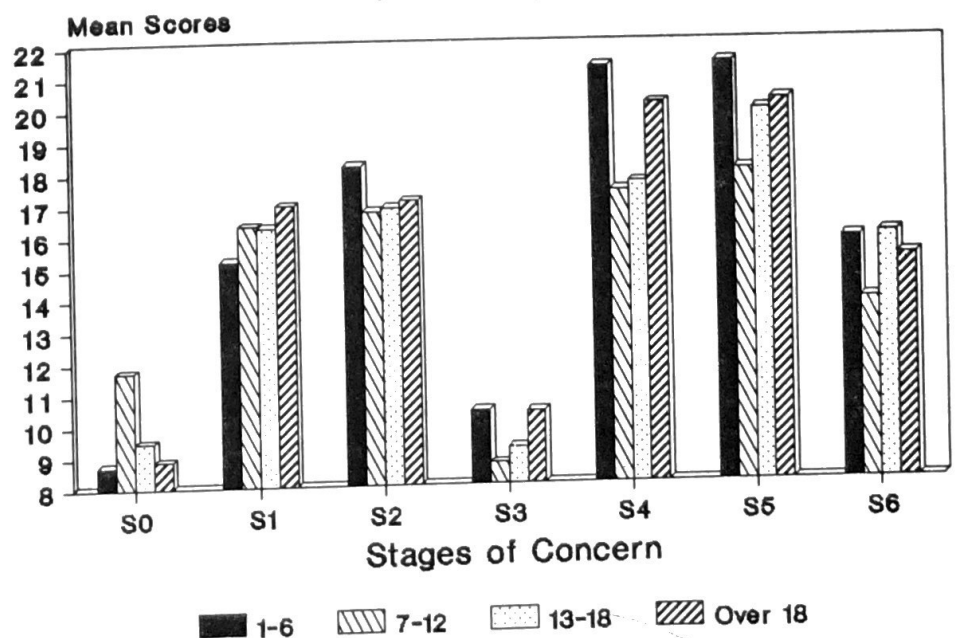


use of the model curriculum have still yet to be resolved. These results indicate less familiarity with the model curriculum in public institutions than in private institutions.

As can be seen in Figure 4, the major contrasts in the concerns of college faculty about their use of the model curriculum is

reflected in the categories of faculty sizes 1-6 and 7-12. The model curriculum is more familiar to faculty in institutions that have a CIS faculty of 1-6 members than any other size category. The least familiar with the model curriculum are those institutions that have a CIS faculty of 7-12 faculty members. As the graph indicates, institutions with a CIS faculty

Figure 4. Faculty Size



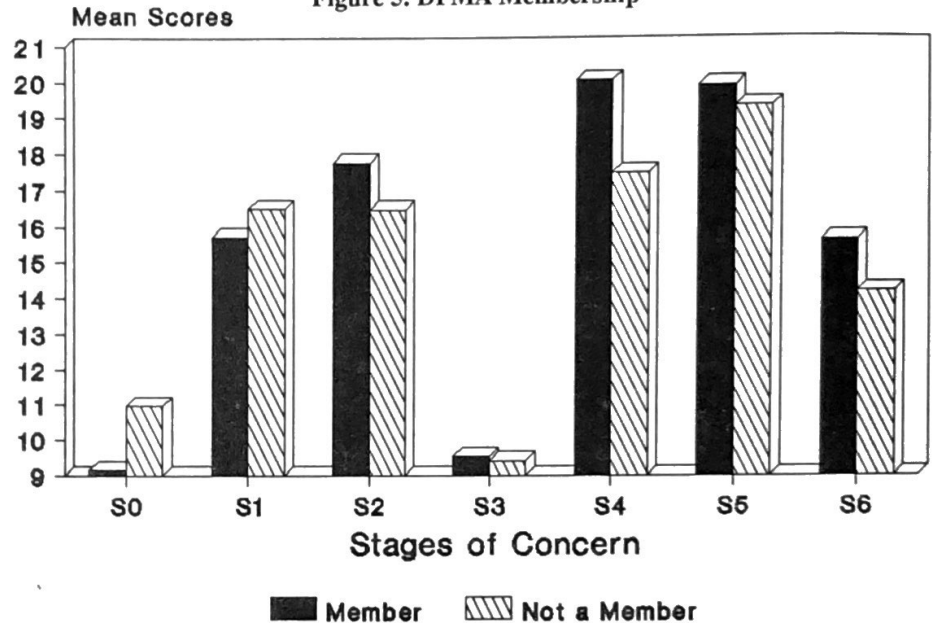
size of 1-6 members have intense concerns on Stages 4 and 5, which represent advanced stages of the model curriculum. Conversely, institutions with a CIS faculty size of 7-12 have more intense concerns at Stage 0 and less intense concerns at Stages 2-6 than all other faculty size categories, indicating less familiarity with the model curriculum.

In Figure 5, a difference in the degree of familiarity with the model curriculum between the two categories of DPMA status is observed. In those institutions where the CIS department chair is a member of the DPMA, faculty familiarity with the model curriculum is greater than is the case of those institutions where the CIS department chair is not a member of the DPMA. An examination of the graph shows more intense Stages 4-6 concerns for the DPMA category over the Non-DPMA category. On the lower end of the Stages of Concern it is observed that low stage concerns (0 and 1) are most intense for the Non-DPMA category.

### SUMMARY

Several inferences can be drawn from the results of the study. From the analysis of the data presented, it is observed that Stage 3 concerns (Management) are consistently low relative to all other Stages of Concern. This low stage score is an indication of the lack of intense concerns about the management, time, and logistical aspects of the curriculum's use. Many of the studies of innovation adoption have not focused upon innovation adoption in colleges and it is possible that management concerns may not be a significant factor in the study of faculty concerns about an innovation or it may be that management concerns simply were not a factor for this particular innovation. Also, Stage 6 concerns were never most intense for any levels of independent variables presented in the graphs. Intense concerns on this stage would indicate the desire for either making major alterations to the model curriculum or for seeking viable alternatives to it. This lack of most intense concerns on Stage 6 in some graphs may be an indication of the newness of the model

Figure 5. DPMA Membership



curriculum whereby faculty have not used the model to the degree necessary to reach most intense concerns at this stage. The last point to be made is that, in accordance with concerns theory, most of the graphs lend support to the hypothesis that the most intense Stage of Concern score will be accompanied by the second most intense score immediately beside it.

Information obtained concerning the level of faculty familiarity with the model curriculum revealed significant differences in familiarity associated with four independent variables used in the study. The first of the four significant findings involved the Source of Adoption variable. The category of this variable that was significantly different from the others was College Faculty. When the faculty was the source of adoption information for the DPMA Model Curriculum, faculty members in those institutions showed the lowest level of familiarity with the model curriculum. From an analysis of the stage mean scores of all categories of the Source of Adoption variable, no discernable pattern could be uncovered. It would appear that unless the institution learned about the existence of the model curriculum either through involvement in the model's development or through conferences or publications, the amount of encouragement

for its use may have been limited, thus resulting in a low level of faculty familiarity with the model curriculum.

The second independent variable found to be associated with faculty familiarity with the model curriculum was the Type of Institution variable. CIS faculty in private institutions are more familiar with the model curriculum than are their counterparts in public institutions. This contrast in faculty familiarity levels suggests that there may be some inherent differences between public and private institutions which are affecting the degree of faculty familiarity with either adopted innovations in general or the DPMA Model Curriculum in particular. These differences could affect the rate at which an innovation becomes institutionalized. It would seem that further research into those factors that are influencing faculty familiarity levels with the model curriculum is necessary for a fuller characterization of adopting institutions.

The third variable found to be significant was Faculty Size. For institutions where the CIS faculty size was 1-6 members, the level of familiarity with the model curriculum for those faculty was greater than any other faculty size category. It may well be that smaller faculty groups

are more similar and able to resolve their early Stages of Concerns about the model curriculum and progress to advanced stages faster than those institutions with a larger CIS faculty. Institutions with a faculty size of 7-12 members showed the lowest level of familiarity with the model curriculum. Why the 7-12 category showed less familiarity with the model curriculum than smaller and larger size faculty cannot be determined based on the information available in this study.

The fourth and final significant finding involved DPMA Membership. In those institutions where the CIS department chair was a member of the DPMA, the model curriculum was more familiar to faculty than it was in institutions where the department chair was not a DPMA member. A possible reason for this difference is the potential involvement of a department chair in the numerous activities of this organization. For example, there are chapter meetings, regional and national conferences, seminars, and committee service opportunities. A department chair with DPMA membership has the opportunity to be more aware of the DPMA mission than a CIS department chair that is not a DPMA member. Thus, if the department chair was an advocate of an innovation such as the DPMA Model Curriculum, this support could potentially lead to greater faculty interest in using this innovation.

#### CLOSING REMARKS

As a result of the study, certain questions

have been raised regarding the DPMA Model Curriculum. Why are private institutions more familiar with the model curriculum than public ones? Has this phenomena to do with faculty size, institutional organization, financial resources, some combination of these, or other factors? Further research is necessary if we are to understand why the model curriculum is supported, in order to develop strategies to obtain a fuller characterization of adopting institutions.

Also, an effort should be made to encourage a greater number of CIS department chairs to maintain DPMA membership. The evidence clearly shows that in those institutions where the CIS department chair is a DPMA member, faculty familiarity with the model curriculum is greater than in those institutions where the CIS department chair is not a DPMA member.

Finally, the information sources about the model curriculum or its latest developments would be more likely to come from a department chair that is a member of the DPMA than one who is not. By virtue of this membership, the department chair is in an excellent position to be aware of the latest curriculum developments. Acting in the role of an opinion leader, the chair is thus in a strong position to influence opinion regarding the adoption of model curricula.

The DPMA has spent a considerable amount of time and effort in the development of their national model

curriculum. The time has now come for research efforts investigating the acceptance of the model curriculum in educational institutions and into the factors that have and will continue to influence its acceptance.

#### REFERENCES

1. Adams, D.R. & Athey, T.H. (1981)(Eds.), DPMA Model Curriculum for Undergraduate Computer Systems Education. Prepared by the DPMA Education Foundation Committee on Curriculum Development. Park Ridge, Illinois.
2. Data Processing Management Association. (1985, September). DPMA Model Curriculum Directory for Undergraduate CIS Education. Adopting Colleges and Universities. Funded by DPMA Education Foundation, Park Ridge, IL.
3. Drucker, P.F. (1970). Technology, Management, & Society. New York: Harper & Row.
4. Hall, G.E., Wallace, R.C. & Dossett, W.A. (1973). A Developmental Conceptualization of the Adoption Process Within Educational Institutions. Austin: Research and Development Center for Teacher Education, The University of Texas.

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