

ORGANIZATIONAL POWER AND THE INFORMATION SERVICES DEPARTMENT

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## ABSTRACT

A theory of intraorganizational power is discussed and applied to the information services department. The paper presents the results of a study of the power of five departments in 40 manufacturing plants. Hypotheses about the levels of power of information processing are not supported by the findings, however the power theory in general does receive support. Reasons for the unexpected results that the information services department is perceived as having low levels of power and influence in the organization are discussed. The paper suggests several explanations for the findings and possible problems in the organization. Recommendations to senior management and to the information services department are offered.

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## ORGANIZATIONAL POWER AND THE INFORMATION SERVICES DEPARTMENT

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In the past two decades organizations have struggled to integrate information processing activities with their other operations. Many firms have established a new subunit for information processing, this information services department typically reports first to accounting or finance and then migrates to some type of administrative services area.

To a large extent the success of information processing in the firm is dependent on the information services department and its relationship to other departments, managers and users. As primarily a service unit, information processing has a difficult task that can easily lead to conflict and dissatisfied users. Since the information services department-user relationship is a reciprocal one, that is, each group depends on the other, lack of cooperation can be disastrous for the organization.

### INTRAORGANIZATIONAL POWER

Hickson et al. (1971) have developed a theory of intradepartmental power which helps explain why relations among departments become strained. Unequal power relationships can lead to highly dysfunctional behavior and a lack of cooperation which in turn reduces the effectiveness of each subunit and, ultimately, the organization.

Theory

Power can be thought of as the ability to influence the behavior of another. Hickson et al. hypothesize four conditions which lead to a department achieving high levels of power:

1. High coping with uncertainty. Organizations must deal with uncertainty; a unit that helps absorb uncertainty and control it should have high levels of power.
2. Low substitutability. If it is easy to substitute for a department, then it will be not be powerful. For example, if outside legal counsel can provide all of the services of an internal staff at an acceptable cost, then the internal legal department is not likely to be powerful.
3. High workflow pervasiveness and immediacy. Pervasiveness is the extent to which a department is connected to other departments; a larger number of connections makes a unit more central to the organization and more powerful. Immediacy refers to how quickly the rest of the organization would be affected if the output of a department ceased; a department with high immediacy is central to the organization and should be powerful.
4. High interdependence. A department that is depended upon by one or more other departments is likely to be powerful; it will control outcomes for the units that depend on it.

Evidence

Hinings et al. (1974) tested the theory of intraorganizational power described above with data from four subunits in each of seven manufacturing firms. The findings suggest that the most important condition for power is high coping with uncertainty followed by immediacy, nonsubstitutability and pervasiveness.

However, it appears that high coping alone is not a sufficient condition for high levels of power. Rather high or moderate levels on more than one variable are likely to be associated with high power. For example, immediacy has its greatest impact when the immediate activity serves to reduce uncertainty for others.

## INFORMATION SERVICES DEPARTMENT

Lucas (1982) applied the power theory above to the relationship between information services and other departments in the organization.

Uncertainty

The information services department copes with a great deal of uncertainty for user departments. When a new system is designed, the user often yields some control over an operation to the information services subunit. A department that used to prepare budget statements manually, but has just converted to a computer system, is a good example.

Before the computer application, the manager of the budget department had complete control; he or she could arrange overtime or hire temporary help to see that the task was completed on schedule. Now, the manager must cope with a computer system; there is added uncertainty about whether the information services department will complete processing on time and with acceptable accuracy. The development of this system has created additional uncertainty for the user, uncertainty with which only the information services department can cope.

#### Substitutability

There are few alternatives to a mature information services department. Dissatisfied company management could hire an entirely new computer staff, but such an approach would create chaos during the transition. Also, the computer staff usually documents systems so poorly that it would be very difficult to completely replace its members.

A number of firms have drastically altered their information processing staffs over a period of several years by hiring new managers and providing a charter to expand and improve the quality of the department. One can also view the high level of interest of users in distributed processing, local minicomputers and personal computers as an attempt to substitute local control for what is viewed as an unresponsive and even incompetent information services function.

#### Pervasiveness and Immediacy

The mature information services unit is probably highly connected to various other departments in the organization. The degree of pervasiveness will depend on the types of applications that have been undertaken. An early complaint about information services units that reported to an accounting

department was that there were few applications outside of accounting! Information processing is very pervasive in a number of organizations.

The immediacy of computer systems also depends on the type of application. The impact of an on-line control system for production scheduling and tracking or for reservations processing is significant; the organization suffers very quickly if the system is interrupted. Monthly batch applications, on the other hand, have low immediacy.

#### Interdependence

The information services department and user departments are mutually dependent upon each other. Whether considering on-line or batch applications, both the development and operation of systems requires cooperation.

During design, users should be heavily involved in requirements analysis and should also play a role in the creation of the design for a new system. Users, in turn, depend on the expertise of the information services department to actually convert a design into a set of manual and computer procedures for a new application.

During operations, the information services department provides a service to users. However, users of a system must be motivated to provide adequate, accurate input and use the output. There are numerous examples in the literature of systems that have failed completely, or have failed to achieve their potential because of technical problems in the information services areas or motivational and organizational problems with users.

## Hypotheses

The analysis above suggests three hypotheses which will be explored in the study reported in the remainder of this paper.

1. The information services department will be rated as having high levels of power when compared with other departments in the organization.
2. High levels of power for information services (and other departments) will be associated with
  - a. High levels of coping with uncertainty.
  - b. Low substitutability.
  - c. High levels of workflow pervasiveness and immediacy.
  - d. High levels of dependence.
3. The information services department will also be rated more highly than other departments in the organization on the four conditions for power above.



## RESEARCH DESIGN

Sample

The study reported here was conducted in a sample of domestic manufacturing plants of three large, multi-national firms. The first firm manufactures industrial containers and has a number of divisions: 41 managers in 12 plants participated in the study. The second firm is a manufacturer of electronic equipment; here, 63 managers in 19 plants were involved. The last company is a chemicals firm in which 32 managers in 9 plants participated.

A questionnaire for department managers was constructed based on the work of Hinings et al. (1974) and the past studies of Lucas (1975). The questionnaire was designed to measure independent variables hypothesized to be associated with influence and power; the instrument also contained questions about the quality of information services.

A researcher visited each plant as a part of a larger data collection project. Five department managers completed the instrument (generally in the presence of the researcher) including accounting, engineering, marketing, production and information services. Not all five departments are represented at each plant because of organizational differences, for example, some plants shared a central marketing organization. Managers at the plant could answer questions about marketing, but there was no marketing manager at the plant to complete a questionnaire.

## Variables

The questionnaire was analyzed using correlation and factor analytic techniques to combine related items into scaled variables. The final variables used in the study are shown in Table 1. In plants with more than one department for the same function or coequal managers leading a single department, individuals' responses were averaged to yield a composite department manager for that plant.

There are two dependent variables in the study, the department managers' ratings of a department's influence and power. Influence is a scaled variable which averages the respondent's perceptions of the influence a department has on decisions like the development of new marketing strategies, pricing, introducing new products, obtaining equipment, production planning, capital budgeting and non-capital budgeting. Power is an average of questions on the power each department has from its contribution to profits, preventing disruptions, formal position and solving problems.

Table 2 contains the correlation of influence and power for each of the departments in the study; the correlations are sufficiently low that the variables can be treated as distinct for the purposes of analysis.

Coping with uncertainty in general is a three item scale which asks the extent to which the department helps the respondent's department cope with uncertainty by reducing variability of inputs, providing information to forewarn of problems and by reducing output variability.

Other items under coping are single-item questions, for example, the extent that circumstances do not change in a department and the extent the same work is done each day. Workflow questions are single items on how long if output

TABLE 1

VARIABLES IN THE STUDY

INF	Influence of accounting, engineering, marketing, production and information services departments
POWER	Power of accounting, engineering, marketing, production and information services department
COPE	Coping with uncertainty in general
ENV	Coping with environmental uncertainty
OPER	Coping with uncertainty from operations
CHG	Lack of changing circumstances
PROC	Following set procedures
SAME	Does not do the same work each day
REP	Substitutability: difficult to replace
	Pervasiveness and immediacy of work flow measured by:
TIME	Time of halted output to impact firm
LEN	Length of disruption
SEV	Severity of disruption
CONN	Dependence: few connections to this department
DEP	Depend on this department
	Information services:
INV	Involvement of users
POT	Managerial decision making potential of computers
OWN	Personal influence on new systems
SAT	Satisfaction with Information Services Department activities

TABLE 2

## CORRELATION OF INFLUENCE AND POWER

	<u>Accounting</u>	<u>Engineering</u>	<u>Marketing</u>	<u>Production</u>	<u>Information Services</u>
r	.52	.52	.37	.39	.52
n	134	134	129	134	130
sig	.001	.001	.001	.001	.001

terminated from a department it would take to impact the firm and how long and severe the disruption would be.

Dependence is measured by perceptions of the extent the department is connected to the respondent's own department and the extent to which one's own department depends on the department in question.

Four variables are included about the information services department; involvement is the extent the respondent has been involved in new applications development and the time spent on design. Potential is a rating of the computer's potential as a managerial decision making aid. One question asks about the respondent's personal influence on design and another requests a rating of overall satisfaction with information services department activities.

## RESULTS

The data were analyzed first to determine if there were significant differences on the mean responses for each variable among companies. Because there were differences in means, various analyses of relationships among variables were run on the entire sample and on each company alone. The results of this individual company analysis of relationships among variables do not differ substantially from the entire sample, so only the latter results are presented here.

It should be noted that the theory of intradepartmental power is stated in causal terms; high scores on the four conditions are expected to create high levels of power. The data on this study were all collected at one point in time making causal inferences difficult. Thus, one can say that the data support the model, but they do not necessarily demonstrate causality.

Power and Influence

Table 3 contains the mean values for influence and power by department. For influence, all means are significantly different from each other using pairwise t-tests, except for the difference between marketing and production. For power all means are significantly different from each other.

The data in Table 3 strongly refute the first hypothesis: the information services department is ranked lowest out of the five departments by a substantial amount on influence and power. In these manufacturing firms, production is ranked highest on these dependent variables. Second place is shared between marketing and engineering with accounting next to information services at the bottom of the rankings.

TABLE 3  
MEAN RESPONSES

		<u>Accounting</u>	<u>Engineering</u>	<u>Marketing</u>	<u>Production</u>	<u>Information Services</u>	<u>Numeric Rank Information Services</u>	<u>Implication</u>	<u>n sig*</u>
<u>INF</u>	Influence	4.19	4.64	4.95	4.97	2.97	5	Low influence	(9)
POWER	Power	3.86	5.10	4.71	5.70	3.43	5	Low power	(10)
COPE	Coping with uncertainty	3.70	3.69	3.16	4.69	4.01	2	High coping	(9)
ENV	Environmental uncertainty	3.48	4.65	5.84	4.72	3.29	5	Low uncertainty	(8)
OPER	Operational uncertainty	3.21	4.25	4.69	4.71	3.48	4	Low uncertainty	(9)
CHG	Circumstances seldom change	4.87	3.82	3.24	3.36	4.55	2	Few changes	(9)
PROC	Follow set procedures	5.99	4.42	3.81	4.61	5.29	2	Set procedures	(9)
SAME	Not the same work each day	2.85	4.32	4.27	3.39	3.33	4	Same work	(8)
REP	Difficult to replace	4.17	5.25	4.55	4.96	4.35	4	Easy to replace	(8)
TIME	Time to impact for disruption	3.38	3.97	3.73	1.58	3.19	4	Short time	(7)
LEN	Length of disruption	3.84	4.93	4.26	5.18	4.20	4	Short duration	(8)
SEV	Severity of disruption	4.26	5.31	5.06	6.53	4.68	4	Not severe	(9)
CONN	Few connections to this department	2.59	3.44	4.42	1.93	3.46	2	Few connections	(9)
								Median	(10)
DEP	Depend on this department	5.43	4.49	3.95	5.64	4.72	3		

\* number of pairwise t-tests out of 10 significant at .10 level or better

Same size ranges from 90 to 133

All responses range from 1 to 7

Examining the other variables in Table 3, the information services department does rank high on coping with uncertainty in general, but low on coping with environmental and operational uncertainty. Its work environment is similar to that of accounting; department managers view information services relative to other departments as confronting few changes in its work, following set procedures and doing the same work each day.

Respondents rank information services as the second easiest department to replace after accounting. Perceptions are that it does not take long for a work stoppage in information services to impact the firm, but the impact of the disruption is not as severe as for other departments nor does it last as long.

Information services is ranked second lowest on number of connections with other departments and is at the median in rankings of the dependence of other departments on it.

The data in Table 3 are not very supportive of the third hypothesis: that the information services department ranks highly on the four variables associated with high levels of power in the organization. This department is ranked highly on coping with uncertainty in general and it takes a short time until termination of workflow in information services affects the firm. The other variable rankings indicate that department managers perceive information services as a fairly routine operation. The results suggest that other department managers do not feel heavily dependent on information services.

It is quite possible that the managers in the study did not differentiate between systems design and operational activities. It is hard to imagine someone knowledgeable about systems analysis and design providing the ratings in Table 3 on changing circumstances, routineness of work, etc. Users and managers



often have very little understanding of what is involved in the systems analysis and design process; the findings here are consistent with such a lack of knowledge.

The overall results in Table 3 suggest that department managers outside of information services do not feel highly dependent on it; they also do not rate it as a powerful or influential department in the organization. To what extent are these perceptions accurate? Are the ratings based on a lack of knowledge about the activities of information services, dissatisfaction with the performance of the department, or is the power theory wrong? These questions will be addressed later after an examination of the relationship between the hypothesized antecedent variables and the influence and power ratings.

#### Correlation Analysis

Table 4 contains Pearson correlations of influence and power with independent variables for each department. The correlations support the Hickson et al. (1971) theory of power. Coping with uncertainty has the strongest relation to influence and power, similar to the findings of Hinings et al. (1974). Coping with environmental and operational uncertainty are positively related to influence and power. Seldom changing circumstances and following set procedures are negatively associated with influence and power as expected; not doing the same work every day is positively correlated with influence and power variables.

Examining substitutability, the difficulty of replacing a department is associated with influence and power. Workflow pervasiveness and immediacy also show a positive relationship with the dependent variables; a longer time to impact the firm from a work stoppage shows a negative association. The

TABLE 4

## CORRELATIONS AMONG VARIABLES

	ACCOUNTING		ENGINEERING		MARKETING		PRODUCTION		INFORMATION SERVICES	
	INF	POWER	INF	POWER	INF	POWER	INF	POWER	INF	POWER
<u>COPE</u> Coping with uncertainty	.37***	.45***	.32***	.43***	.32***	.23***	.32***	.44***	.29***	.49***
<u>ENV</u> Environmental uncertainty	.13*	.14*	.27***	.25***	.07	.04	.23***	.07	.00	.20**
<u>OPER</u> Operational uncertainty	.06	.03	.12*	.19**	.19**	.03	.26***	.03	-.11	.07
<u>CHG</u> Circumstances seldom change	.04	-.24***	-.19**	-.28***	-.04	-.09	-.12*	-.06	.01	-.08
<u>PROC</u> Follow set procedures	-.05	-.21***	-.13*	-.19**	.05	.08	.00	-.01	.11	-.18**
<u>SAME</u> Not the same work each day	.19**	.23***	.07	.03	-.03	-.04	.12*	.09	.00	.23***
<u>REP</u> Difficult to replace	.12*	.32***	.21***	.32***	.06	.07	.13*	.19**	.26***	.31***
<u>TIME</u> Time to impact for disruption	.03	-.08	-.05	-.27***	.03	-.16**	-.01	-.18**	-.04	-.25***
<u>LEN</u> Length of disruption	.07	.19**	.16**	.28***	.00	.05	.22***	.21***	.11	.12*
<u>SEV</u> Severity of disruption	.10	.31***	.14**	.49***	.00	.14*	.08	.20**	.18**	.38***
<u>CONN</u> Few connections to this department	-.24***	-.26***	-.18**	-.20**	-.18**	-.18**	-.06	-.13*	-.13*	-.39***
<u>DEP</u> Depend on this department	.12	.19**	.09	.20**	.22**	.26***	.22***	.21***	.19**	.40**

\*  $p \leq .10$  \*\*  $p \leq .05$  \*\*\*  $p \leq .01$  n=108 to 135

length and severity of the disruption are positively correlated with influence and power.

Dependence is positively related and the presence of few connections with a department is negatively related to influence and power.

The correlation analysis supports the variables in the model; the results are generally consistent across departments for both dependent variables. Coping with uncertainty, the difficulty of substitution for a department, high workflow pervasiveness and immediacy and high dependence from others are associated with a department's influence and power in the organization.

#### Regression Analysis

To examine the relationship of several independent variables to the dependent variables, a stepwise regression analysis was run for each department. The stepwise algorithm was terminated when an incoming variable would no longer be significant at the .10 level. The results may be found in Table 5.

The regression results indicate that coping with uncertainty has the strongest relationship with influence and power across departments; coping is present in each of the equations and is significant in all but one. Difficulty of replacement is important in accounting and engineering while dependence appears in the equations for marketing and production. Time to impact from a stoppage and the severity of a disruption are related to power in most of the departments.

For the information services department, four additional variables rating this department appear in the equations. Involvement and own influence on systems are negatively associated with influence and power ratings respectively. Possibly an individual's own involvement and attempts at influence help reduce

TABLE 5

## REGRESSION RESULTS

	n	F	R <sup>2</sup> <sup>3</sup>
<u>ACCOUNTING</u>			
INF = .36 <sup>1</sup> COPE + .17 ENV + .21 SAME - .13 CONN (3.88)*** <sup>2</sup> (1.88)* (2.30)** (1.41)	96	11.46**	.23
POWER = .40 COPE - .12 PROC + .15 SAME + .12 REP + .15 SEV (4.32)*** (1.29) (1.75)* (1.27) (1.64)	96	9.78**	.32
<u>ENGINEERING</u>			
INF = .29 COPE + .17 REP - .19 DEP + .13 LEN (2.76)*** (1.64) (1.75)* (1.33)	96	3.31	.13
POWER = .30 COPE + .19 REP + .45 SEV (3.70)*** (5.30)*** (5.46)***	96	21.02***	.41
<u>MARKETING</u>			
INF = .24 COPE + .18 OPER + .15 DEP (1.49) (2.02)** (1.46)	108	11.66**	.14
POWER = .22 COPE - .16 TIME + .10 SEV + .27 CONN + .40 DEP (2.02)* (1.46) (.95) (1.93)* (2.74)***	108	5.37**	.17

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R<sup>2</sup><sup>3</sup>

PRODUCTION

INF = .24 COPE + .16 ENV + .25 OPER + .15 PROC + .28 LEN - .16 SEV + .16 DEP + .16 DEP  
 (3.59)\*\*\* (1.67)\* (2.59)\*\* (1.67)\* (2.89)\*\*\* (2.91)\*\*\* (3.00)\*\*\*

POWER = .29 COPE - .12 TIME + .15 LEN  
 (5.14)\*\*\* (1.41) (1.77)\*

F

n

106

6.36\*\*

.26

106 11.92\*\*\* .24

INFORMATION SERVICES

INF = .21 COPE - .13 OPER + .15 PROC + .19 REP - .21 INV + .14 POT  
 (2.03)\*\* (1.28) (1.44) (1.87)\* (2.09)\*\* (1.44)

POWER = .34 COPE + .22 ENV + .23 SEV - .26 OWN + .26 SAT  
 (3.33)\*\*\* (2.64)\*\*\* (2.44)\*\* (2.85)\*\*\* (2.44)\*\*

94

3.37

.13

94

11.51\*\*\*

.36

1 weight; a the importance in standard deviation units on the dependent variable of a change of one standard deviation unit in the independent variable

2 t value

3 adjusted R<sup>2</sup> Percentage of variance in the dependent variable accounted for by the independent variables

\* p ≤ .10

\*\* p ≤ .05

\*\*\* p ≤ .01

some of the power which the user transfers to the information services department when new systems are designed (Lucas, 1975).

The regression analysis and the correlations support the second hypothesis; the variables predicted by the theory are associated with influence and power in the direction predicted for each department.

#### DISCUSSION

The lack of influence of the information services department is consistent with the frequent complaints of the manager of this department that information processing is not involved in corporate planning or decision making. Rarely does information services become involved in key decisions on new products, equipment or budgets. Yet information processing can contribute analysis and decision support in these situations. Also information technology can be a part of a new product or service. However, in these manufacturing companies, information services does not appear to play a significant role in key decisions.

Power in this study consists of rankings of a department's contribution to profits, prevention of disruptions, formal position and contribution to problem solving. Information services can contribute to profits; cost savings are often used to justify systems. Possibly these savings are never realized; also, the respondents did not appear to think of cost savings as contributing to profits. Information services can also generate revenue, but this is more difficult in a manufacturing environment than a financial or services industry. There are examples, however, of manufacturing firms such as those in the aerospace industry generating profits by offering computer services to other firms. Information services certainly solves problems, but its historic lack of responsiveness to users may overshadow its performance; information services

departments have a reputation of taking a long time and requiring a large commitment of resources to solve problems.

### The Power Model

Information services does rank highly on coping with uncertainty in general, but it is not highly rated on most of the other antecedents of power. Hinings et al. (1974) suggest that a high score on one variable is not sufficient to lead to high levels of power; rather, it is the combination of variables that is important. The results of the present study support this observation. In general, the results also provide support for the power theory; coping with uncertainty, low substitutability, high workflow pervasiveness and immediacy and high dependence by other departments are associated with a department's influence and power in the organization.

The results of this study, however, do suggest the need for an additional variable in the power model. The data generally show that production (combined with engineering or marketing) has the highest levels of power while information services ranks near the bottom with accounting. These findings are similar to those of Hinings et al. (1974); in their study production had the highest power and accounting the lowest.

These results indicate a possible omission from the theory: subunit centrality. A department whose activities are closely related to the mission of the organization should be powerful. In manufacturing companies, it is the production department that generates added value. In the firms in the study information services generally provides transactions processing; there were few decision support systems nor were there significant systems which were sold to other firms. As a result information services is not viewed as central to the mission of the firm. It is noticed when something goes wrong, that is, when

workflow ceases in the department.

The importance of this new variable, centrality, could be tested in a sample of firms from different industries controlling for the level of technology employed. One would predict that information processing would be more powerful in financial and services industries than manufacturing due to its greater centrality to the mission of the organization.

In addition to the lack of centrality, there are a combination of factors that operate to both conceal and reduce the power of the information services department.

#### Concealment

The power of the information services department tends to be concealed by the lack of knowledge that other department managers and users have of its activities. Frequently, the manager of the information services subunit does not realize the extent to which other departments depend on information technology.

Managers and other users see a relatively small number of computer applications; the manager may not realize how much individuals in his or her department require computer processing to do their work. Also, if the firm has few online systems, its visibility in user departments will be low. The manager of the information services department often focuses on a single application that is providing problems or on a few large development projects; it is easy to forget about the large number of applications that operate on a routine basis throughout the company. Many of these applications are crucial to the continued operations of the firm, for example, production control and scheduling systems, inventory control, etc.



Managers and users also fail to understand or appreciate the nature of the work in information services departments. Because users and managers are often not involved in information processing, they do not understand the research and development nature of systems analysis and design. These individuals also do not understand the technology well enough to appreciate the problems of operating existing applications and performing maintenance on them.

A final factor that tends to conceal the power of information services is its domination of the design process. If users are not heavily involved in design they will not learn how information processing is accomplished. (On the other hand, information services will gain some power by controlling the design process itself, but this power can have negative consequences.)

#### Power Reduction

Several factors operate in the typical firm to reduce the actual power of information services. First, senior management does not regard information processing as essential, nor does it feel this unit can make a significant strategic contribution to the firm. As a result, information processing is omitted from key planning and decision making activities. Information services department managers frequently complain that they could do much for the firm if only management would reveal its plans. Also, few senior managers take the time to get involved in systems analysis and design. Due to the attitude and actions of top management, information processing is viewed as having a lack of influence and power on the important decisions made in the firm.

One reason for management's actions above is that information services has historically not performed well. While being a service organization is difficult, managers expect adequate levels of processing. Unfortunately, information services is often viewed as unresponsive to problems with existing

applications or to requests for new systems.

### Consequences

There are a number of consequences from the results of this research. First, other departments in the organization do depend on information processing; these departments need responsive service. The lack of good service from information services can lead to destructive conflict; there will be a lack of cooperation on the design of new systems and frequent incidents of criticism with no real progress being made in solving important problems.

A lack of realization of the power of and dependence on information processing by both users and the information services staff means that power transfers will not be recognized nor dealt with. Unless special steps are taken, each new application transfers power to the information services department.

Finally, there will be an inability to achieve the potential contribution of information processing to the organization due to management's perception of this department and the department's performance.

### Recommendations

There are actions that information services and management can take to alleviate some of the problems described above. The first need is for an educational program for senior managers and users. This program should stress the tasks in information services, the problems it has and the role of users and management in systems analysis and design. Education should also examine future trends and coming technology that can contribute to the organization.

Senior management needs to take an active part in the management of information services. As the technology becomes more persuasive information systems will play an increasingly central role in the firm. Management should include information processing in the planning process, become involved at the appropriate level in systems analysis and design, and should evaluate the information services department on a regular basis. For more details on a framework for managing information processing and the role of senior management, see Lucas (1982).

Finally, the information services unit needs to become more responsive to users; designers need to mitigate power transfers from users to the information processing department. Responsiveness can be enhanced through the use of nonprocedural languages, prototyping, packages and other techniques. The tools are not as important as is a philosophy that stresses user support and a rapid response to user requests for service.

The information services unit can also try to design applications with as much local control and processing as possible. The small amount of evidence to date indicates that users are far more comfortable if they feel they control information processing. Thus, for many firms, distributed hardware and processing will help to reduce power transfers to a separate information services unit.

Summary

This paper has presented a theory of intradepartmental power applied to the information services department. The results of the study are contrary to predictions: the perceived power of information services is much lower than the power of other departments in the firms in the sample.

Speculation about the reasons for the findings has led to several concrete suggestions for management and the information services department to manage power and influence in the firm. While power is only one variable in the organization, it is important in determining how different departments interrelate. In the future, information services can be expected to become even more powerful as the technology expands its role in the firm. A challenge for management is to learn how to recognize and deal with power and manage technological innovation in the organization.

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