In the Eyes of the Beholder: Formulation and Test of a Theoretical Model of How Information Centers Are Evaluated by Users and MIS Managers

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ABSTRACT

This study proposes a theoretical model to explain what factors contribute to the evaluation of Information Centers by their two main constituencies, the MIS Department and the end users. The model is then tested with a national random sample of Fortune 500 companies through data obtained from structured interviews with end users, MIS and IC managers, and using causal path analysis. The results obtained indicated that IC evaluation was influenced, as proposed in the model, by the outcome expectancies held by MIS users, their beliefs on how the IC would impact the balance of power in end-user computing, their normative role expectations for the IC staff, and by the contextual factors.

INTRODUCTION

What explains how Information Centers are evaluated by two diverse constituencies — end users and MIS professionals — each having a direct stake in the IC's performance? This is the question that the present study addresses. Drawing from role, expectancy and political theory, it presents a theoretical model and applies it to the study of Information Center evaluation in a random sample of Fortune 500 companies.

The relevance of the research question addressed here becomes especially clear if one considers that during the 1990s end-user computing is expected to consume the majority of computing resources in organizations. For such commitment of resources to result in improved organizational effectiveness and efficiency, it is necessary that end-user computing be adequately supported. The development of an end-user computing support theory has lagged far behind progress in technology, however, and the IC is an important part of this puzzle.

More than 80 percent of the billion-dollar companies have ICs [2], most of them founded in the 1980s. They typically report to a MIS department and may be in charge of all or some activities related to managing end-user computing.

The literature on ICs [7,8,12,25,27] has built a descriptive basis that allows research to now move one step further toward understanding the causal mechanisms behind the differentials in IC performance across organizational contexts.

The knowledge of the factors explaining how IC performance is perceived by its various constituents (MIS, users) may have profound practical implications for continued funding for the IC, for future careers of IC professionals, and for their ability to interact with users and MIS departments to carry out mandates of supporting end-user computing.

A THEORETICAL MODEL OF IC EVALUATION

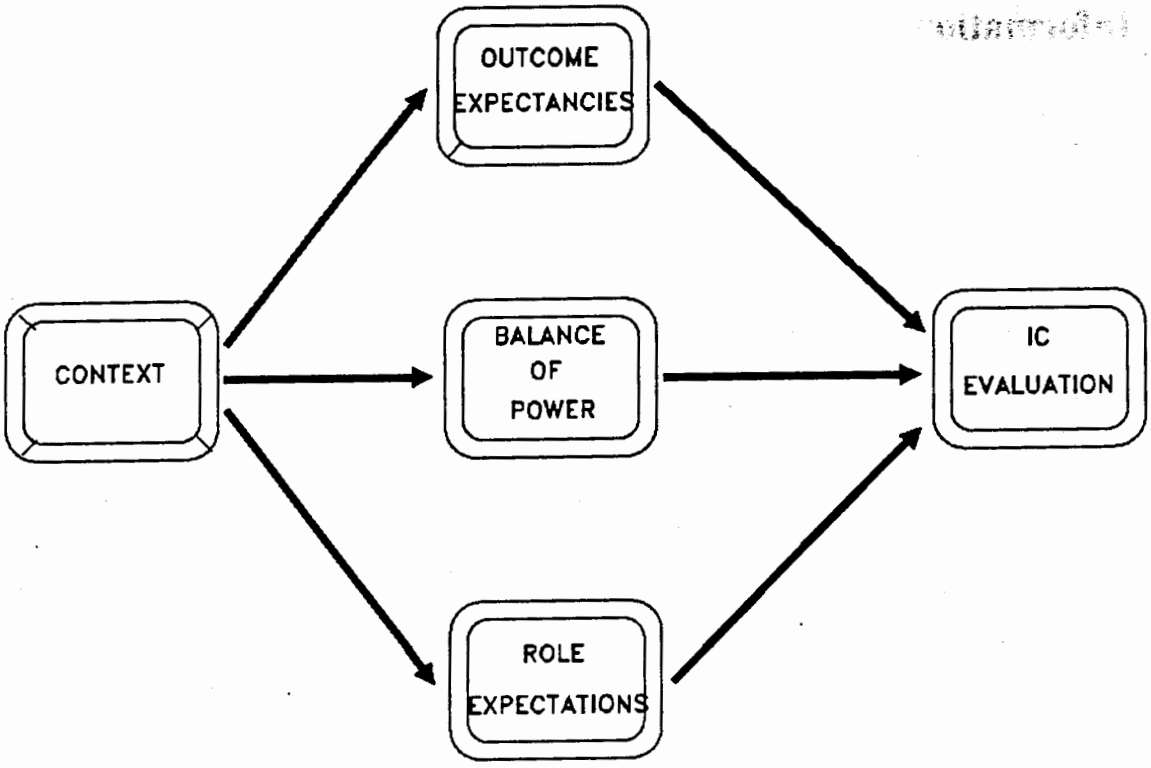
The theoretical model in Figure 1 portrays the evaluation of IC performance as being influenced by four sets of variables: a) the expectancies held by users and MIS professionals regarding the effect of the IC on end-user computing; b) the impact of the IC on the balance of power between users and MIS; c) the expectations of both groups of stakeholders in regard to the role that should be played by the IC staff; and d) the context where the interactions of the IC with users and MIS take place.

Outcome Expectancies

Information Centers, by the nature of their tasks and typical reporting relationships, have to respond to two "masters": end users and MIS. Each of these constituencies hold particular beliefs regarding the likelihood and desirability of possible outcomes of IC performance.

The valence models of expectancy-value literature [20,26] suggest that a constituent's evaluation of performance (valence of performance) is a function of the degree to which the constituent sees that performance as conducive to certain second order outcomes (instrumentality of performance) and how much the constituent cares about each of these outcomes (valence of impacts of performance).

Figure 1
Theoretical model of Information Center evaluation



Therefore, the model in Figure 1 proposes that the evaluation of the Information Center staff by end users and MIS professionals is a function of whether each constituency perceives the IC performance as leading toward the attainment of valued outcomes. This translates into the following hypothesis:

H1: The evaluation of the IC staff by a given constituence (MIS or users) varies directly with that constituency's perception of the likelihood that the IC will be instrumental for the attainment of outcomes desired by that group.

According to this hypothesis, a given IC performance will be evaluated by end users to the degree that they perceive it as enabling them to reach their goals in end-user computing (e.g., making users more effective and efficient in their jobs, making those jobs more interesting, etc.). By the same token, MIS professionals will evaluate the IC better if they see it as instrumental — rather than irrelevant, or detrimental — to bringing about or maintaining a desirable state of affairs in end-user computing (e.g., in terms of data security, compatibility of hardware and software throughout the organization, adequate development and documentation of end-user systems, etc.)

Balance of Power

A "what's in it for me" assessment is unlikely to be restricted to just the objective features of end-user computing management. Emerging literature on the political aspects of end-user computing suggests that the Information Center can tip the balance of power either way between MIS departments and end users [10,17]. In some organizations, Information Centers play pivotal roles in MIS efforts to bring end-user computing under control; in others, they are seen as champions in the end users' efforts to liberate themselves from the monopoly of MIS over computing activities [7,12]. The model thus proposes that the IC impact on a balance of power between end users and MIS professionals influences the evaluation of IC performance by these two constituencies. The second hypothesis can thus be formulated as follows:

H2: The evaluation of the IC staff by MIS and end users will vary directly with each constituency's perception that the IC tilts the balance of power in its favor.

If we assume that people prefer gaining over losing power, this means that better evaluations from users (and worse evaluations from MIS) can be expected when a balance of power over end-user computing favors end users; conversely, when a balance favors MIS, the IC will be more favorably seen by MIS professionals, and less favorably by end users.

Role Expectations

An evaluation of the IC is likely to depend on more than just being perceived as leading to the "right" results — whether these results are of an objective or a political nature. Evaluation may be influenced not only by the results attained, but also by beliefs on *how* these results should be achieved [1,6,11,16,19,24].

This is in line with classic tenets from role literature, where evaluation of role performance is seen as being influenced by normative expectations regarding behaviors that should, and should not, be typically displayed by those who occupy the role. Accordingly, the model in Figure 1 proposes that role expectations held by end users and MIS professionals influence their evaluation of IC performance.

These expectations may be described as falling into two basic categories. In the first, constituents believe that the IC staff should solve the end users' problems, develop the applications they need and directly provide different sorts of services — "Doer expectations" [5]. In the second, constituents believe that the IC should, instead, foster the end users' problem-solving skills, by providing just enough assistance to keep them going on their own — "Facilitator expectations" [5].

One can hypothesize different possible ways in which these role expectations might influence evaluation. The first, and more obvious, is the perceived conformity between role expectation and role behavior: The IC will be rated more favorably to the degree that its staff seems to behave generally as expected by the rater (i.e., higher evaluations in situations where Doer expectations were met by Doer behaviors and Facilitator expectations with Facilitator behaviors, rather than mixed combinations).

Indeed, many models in role literature show the evaluation of role performance as directly dependent on the consistency between role behaviors and expectations [6,11,16]. The operation of this mechanism would lead to the following formulation of a third hypothesis:

> **H3-a: The higher the conformity of the role behaviors of the IC staff to the normative expectations of MIS and users, the better will be the evaluation of IC performance.**

It is also possible, however, that a second type of causal dynamic might link normative expectations and performance evaluation, thus leading to an alternative prediction. In a prior in-depth study of Information Centers [5], it was found that constituents with Facilitator expectations for the IC tended to evaluate it more favorably overall than those who held Doer expectations — regardless of whether the actual role behaviors conformed, or not, to their expectations.

A possible explanation for this finding is that the IC staff's role is not defined in isolation, but in relation to the user's role. Doer expectations imply a passive role for the client and more control for the IC over the outcomes of service provision. Facilitator expectations, in contrast, imply a more active and autonomous role for the user, leaving the IC with less control over outcomes.

In the social psychology literature, a player's perceived control over a situation has been shown to affect evaluation in studies of willingness to help [15,22]. If we extrapolate these findings, it makes sense that when constituents expect an IC member to behave as Facilitator — thereby having less control over the outcomes of user interaction — they will tend to evaluate any given outcome in a more lenient way than when expectations are for a Doer role — with more control over outcomes, and therefore, more responsibility. The overall effect would be for Facilitator role expectations to lead to better evaluations than Doer expectations, regardless of the actual behavior.

This can be expressed in a reformulation of the prior hypothesis that hinges not on the conformity of role behavior to role expectations, but on the nature of the role expectations themselves:

> **H3-b: The performance evaluation of the IC staff will be more positive when role expectations are for a Facilitator role than when expectations are for a Doer role.**

Context

Finally, the model in Figure 1 proposes that outcome expectancies, IC impact on the balance of power, and role expectations may all be influenced by the context in which the IC is immersed. Different elements of the context may affect evaluation:

1) **External environment** — awareness of IC impacts on end-user computing in other organizations of the same industry may influence users' and MIS managers' outcome expectancies; also, different industries may require more emphasis on predictability or on flexibility of behavior, thereby possibly influencing the balance of power between MIS and users, or shaping normative expectations for Doers or Facilitators;

2) **Organizational characteristics** — for example, size (large organizations tend to have more specialization which may tilt the balance of power to favor MIS rather than

users); and organizational climate (mechanistic organizations value predictability and specialization, which may lead to more Doer expectations);

3) **Characteristics of MIS and user environments** — the size and level of expertise of the user population may affect the quality and intensity of user contacts with the IC, thus influencing their outcome expectancies, relative power, rile expectations, and perception of IC performance; by the same token, the scope and level of sophistication of the MIS function in the organization may affect its control over end-user computing and the opportunities and constraints faced by the IC;

4) **Characteristics of the IC** — large ICs are physically more able to cope with the burden of doing things for end users than smaller ICs, thus being more susceptible to Doer expectations; the scope and nature of the services rendered by the IC may lead to more or less ambitious outcome expectancies; when the IC is headed by someone with a MIS background and serves only mainframe users, it is likely that role expectations will resemble those for MIS specialists, i.e., will be more toward Doers.

These possible effects of various contextual factors on IC evaluation are summarized in Hypothesis 4:

H4: The evaluation of the IC by those who have a stake in its performance is influenced by the context where it takes place, which affects outcome expectancies, the balance of power and role expectations.

METHODOLOGY

In the study described here, the hypotheses derived from the theoretical model were investigated in a cross-sectional national sample of 47 randomly selected Fortune 500 companies.

The data was collected through structured, micro-computer supported, telephone interviews. Three types of respondents were contacted in each organization, representing respectively the MIS department, the Information Center and the end users, resulting in a total of 119 completed interviews. The data collection design and procedures were done according to the "Total Design Method" [9].

The first stage of data analysis consisted of using factor analysis to identify the underlying dimensions of the data obtained from the questionnaires. The identified factors were then examined according to conceptual and reliability criteria, resulting in the definition of 22 variables (Table 1) and several multiple regressions were run in order to compute their partial correlation coefficients and Beta weights, following the recursive model structure. These, in turn, were used to perform two path analyses [3], as shown in Table 2 and Table 3, in order to explain IC evaluation by MIS managers (Figure 2) and end users (Figure 3).

The 22 variables utilized in the statistical analyses represented the five elements of the theoretical model in Figure 1: two were related to IC evaluation (EV1 and EV2), five to outcome expectancies (Ex1 to Ex5), five to balance of power P1 to P5), four to role expectations (R1 to R4) and six to context (C1 to C6), as follows:

a) Evaluation of Information Center Performance:

Evaluation of IC performance was measured in two ways: first, respondents were asked what basic criteria should be used to evaluate IC performance, and how they would rate the IC on each of these criteria (excellent, good, satisfactory, unsatisfactory, failure); second, respondents were asked what general "grade" (A=Excellent, B=Good, C=Satisfactory, D=Unsatisfactory and F=Failure) they would give the IC, if there were "report cards" for evaluating IC performance. Both types of measures formed the following variables:

"MIS evaluation of the IC" (**EV1**, alpha = 0.853): specific ratings and overall "grade" for IC performance, according to MIS managers;

"User evaluation of the IC" (**EV2**, alpha = 0.748): specific ratings and overall "grade" for IC performance, according to users.

b) Outcome Expectancies:

Outcome expectancies were measured in terms of what impact the respondents expected the IC to have over the next three years, in the following areas:

"End-user computing hygienics expectancy" (**EXP1**, alpha = 0.7525): expected change (get worse, stay the same, improve) in documentation of end-user systems, efficient use of resources and data security;

"Effectiveness expectancy" (**EXP2**, alpha = 0.7185): expected impact on effectiveness (decrease, stay the same, increase) for the organization in general — in terms of quality of products and services — and for the end users in particular — in terms of quality of job performance;

"Efficiency expectancy" (**EXP3**, alpha = 0.8863): expected impact on organizational efficiency (decrease, stay the same, increase) in terms of cost and quantity of products and services;

"Boundary mediation expectancy" (**EXP4**, alpha = 0.7667): expectancies regarding the effects of IC mediation in some typical areas of interaction across the boundaries between MIS departments and end users [17,23]: compatibility of end-user computing hardware and software across the organization (get worse, stay the same, improve); how computer systems affect the intrinsic interest of end users' jobs (decrease, stay the same, increase); systems development backlog (get worse, stay the same, improve);

"Growth expectancy" (**EXP5**, single item measure):

Table 1

Correlation matrix of all variables that resulted from factor and reliability analyses

	R1	R2	R3	R4	EXP1	EXP2	EXP3	EXP4	EXP5
R1	1.0000	.1140	-.0911	-.0803	-.2034	-.0060	-.2541	-.0664	-.4307
R2		1.0000	-.0580	.1367	-.1627	.1339	-.1673	.2059	.0920
R3			1.0000	.0416	.0910	-.0233	.1548	.2263	.0317
R4				1.0000	-.1030	.1348	-.0261	-.0656	-.1800
EXP1					1.0000	-.2459	.0997	.0174	.1047
EXP2						1.0000	.0773	-.1074	-.3907
EXP3							1.0000	.1618	.0466
EXP4								1.0000	.2862
EXP5									1.0000

	P1	P2	P3	P4	P5	C1	C2	C3	C4
R1	.1472	.0622	.1992	-.0939	-.0521	-.1631	.1921	.1237	.0548
R2	.1521	-.0219	-.2144	-.2562	.0671	.1580	-.0622	.3411	-.1760
R3	-.0470	.0527	-.1189	.1868	-.1353	.0678	.0154	-.1361	.2533
R4	.0879	-.1352	.0035	-.1541	-.1385	-.0859	.1954	-.1696	-.1754
EXP1	-.1065	-.0064	.1812	.0865	.0314	.1808	-.2677	.1777	.3786
EXP2	-.0330	-.2067	.1041	.0970	.2061	-.2695	-.1590	-.1560	.0206
EXP3	.0260	-.0088	.1846	-.0975	-.1317	-.0042	-.0197	-.0944	.1384
EXP4	.0777	.0299	-.1145	.1521	-.0147	.0739	.0300	.0156	-.0179
EXP5	-.1067	.2854	-.3998	-.0339	-.2355	.5433	.0280	-.0074	.0692
P1	1.0000	-.0816	.2559	-.0433	-.3357	.0252	.0156	-.1167	-.1827
P2		1.0000	-.2382	-.1578	-.1477	.2745	.1748	.1340	.2745
P3			1.0000	-.0728	-.1501	-.0820	.0952	-.0831	.2149
P4				1.0000	.1576	-.1647	.0084	.0360	-.0528
P5					1.0000	-.0286	-.2380	.0659	-.1831
C1						1.0000	.1639	-.0083	-.0585
C2							1.0000	-.0116	-.3998
C3								1.0000	.1840
C4									1.0000

	C5	C6	C7	EV2	EV1
R1	.1377	.2560	.3922	-.5860	-.2299
R2	.0443	-.1988	.0057	-.1126	-.0837
R3	.0134	-.1254	-.2742	.0468	.0685
R4	.0420	.2320	-.0587	-.1775	-.2054
EXP1	-.2039	-.1624	.1543	.1979	-.1244
EXP2	.1901	.2141	.0249	-.0672	-.0143
EXP3	-.1695	-.0858	-.1229	.2179	.2180
EXP4	-.2479	-.0347	-.0102	.0735	.1695
EXP5	-.1025	-.3734	-.1950	.5318	.3028
P1	-.1263	.1452	-.0336	-.2157	-.0020
P2	.0274	-.1381	.1551	-.0209	.0634
P3	-.1692	.1552	.2267	-.3058	-.0205
P4	-.2815	.1539	-.0126	.1260	-.1056
P5	-.1250	.1215	-.1098	.0204	-.3518
C1	-.1628	.0616	-.0562	-.1523	-.0156
C2	-.2039	.1353	-.2297	-.1810	.0994
C3	.2952	-.1106	.2383	.0349	.1079
C4	.1534	-.0820	.4424	.1393	.0278
C5	1.0000	-.1073	.1262	.0495	.2903
C6		1.0000	.3448	-.4938	-.3816
C7			1.0000	-.2877	-.2175
EV1				1.0000	.2281
EV2					1.0000

expected impact on the number of end users (stay as now, increase a little, increase a lot).

c) Balance of Power

The measurements of balance of power in end-user computing were based on two perspectives about sources of power — resource dependence [21] and uncertainty coping [13,14].

The following variables covering different types of user dependence, in terms of formal authority, informal influence and autonomy in end-user computing, were inspired by the resource dependence perspective:

"Technical resource dependence" (**P1**, alpha = 0.6): degree to which users are dependent on others for technical resources (end-user computing hardware, software, applications), in terms of positional power (who has the formal authority for decisions on hardware and software acquisition — MIS, IC, users) and of participation power (whether end user discretion in end-user systems development is limited, or not, by MIS-dictated policies);

"Formal authority over training and standards" (**P2**, alpha = 0.557): user dependence in regard to acquiring expertise and establishing standards in end-user computing, as reflected by positional power in these areas (who has the formal authority for decisions relative to training, definition and enforcement of standards in end-user computing);

"User influence on standards and policies" (**P3**, alpha = 0.855): degree of participation power, in terms of actual end user influence (none, some, great) on the choice of standards for end-user computing hardware and software, and on policies for end-user systems development;

"Information dependence" (**P4**, alpha = 0.5011): user dependence on others for their information resources, as reflected by end users' autonomy in accessing and manipulating corporate data (whether or not users can upload and download files; access, read and update corporate data bases; create, manipulate and restructure corporate data bases) as well as by users' influence on decisions regarding end-user computing training (none, some, great).

The uncertainty coping perspective inspired a set of questions based on the strategic contingencies theory, assessing the degree to which the IC copes with *uncertainty* for the end users, the extent to which these coping abilities were *substitutable* and the *centrality* of the IC to the organization's work flow [13,14], as captured in the following variable:

"Strategic dependence" (**P5**, alpha = 0.8573): end users' dependence on the IC for coping with strategic contingencies, as reflected by the users' assessment of how important the IC services were for them (not important, important, critically important) and what impact there would be on the way most users do their jobs if the IC suddenly ceased to exist (minimal impact, significant impact, very big impact).

d) Role Expectations

Role expectation questions sought to identify MIS managers' and users' normative expectations regarding the behaviors Information Center staffs typically have in a variety of situations: doing tasks for the end users (a Doer role) or helping the users do those tasks by themselves (a Facilitator role), as well as IC managers' beliefs in regard to roles actually performed by their staff.

The situations were chosen on the basis of what the literature [4,8,17,27] considers basic services provided by Information Centers: application development, consulting, data base queries and reports, end-user training (needs assessment and choice of training programs), hardware and software (evaluation and choice). These questions generated the following variables:

"Normative expectations for role in application development" (**R1**, alpha = 0.639): MIS managers' and end users' beliefs in the appropriate role for the IC staff in application development issues (develop application for users vs. help users do their own application development);

"Self-attributed actual role" (**R2**, alpha = 0.5218): IC managers' perceptions of the roles their staff actually performs in regard to application development, consulting, accessing and manipulating data bases, selecting and purchasing hardware and software (doing each of these tasks vs. helping the users perform them);

"MIS normative expectations" (**R3**, alpha = 0.477): MIS managers' role expectations for the IC in all areas other than application development: consulting, accessing and manipulating data bases, selecting and purchasing hardware and software (doing vs. helping users do tasks in each of these areas);

"Users' normative expectations" (**R4**, alpha = 0.5133): end users' role expectations for the IC staff in consulting (solve problems for end users vs. help users solve the problems themselves) and data base issues (do data base queries and reports for users vs. help users do the queries and reports on their own).

e) Context

The questionnaires addressed several elements of the context in which IC performance and evaluation take place including characteristics of the external environment, the organization, the MIS and user environments, and the IC itself. The following variables were identified according to theoretical considerations, factor and reliability analyses:

"Differentiation" (**C1**, alpha = 0.92): reflected the link [18] between the uncertainty of the external environment (industry) and the degree of internal differentiation across functions and departmental levels in the organization, as

indicated by internal boundaries that are clear and difficult to cross, or fuzzy and easy to disregard;

"Size" (**C2**, alpha = 0.72): total number of employees, number of full-time MIS and IC staff, number of end users supported;

"Job scope" (C3, alpha = 0.88): degree of job specialization (typical jobs in the organization requiring specialist vs. generalist skills) and definition of job responsibilities (clear and explicit vs. broadly outlined);

"Reward criteria" (**C4**, single item measure): objectivity of criteria for reward decisions such as salaries and promotions (strictly reflecting job performance vs. being affected by many other factors);

"Information technology availability" (**C5**, alpha = 0.5916): tools available for end users to access and process information (percentage of files organized with systems such as IMS, TOTAL, etc.; percentage of mainframe machine time used for languages such as FOCUS, RAMSIS, NOMAD, etc.); mechanisms for structuring the availability of information (many vs. few rules and procedures; official and impersonal vs. informal and personal communications);

"User contacts with the IC" (**C6**, alpha = 0.6213): level of contact between the users and the IC in terms of: sophistication of contacts (as indicated by the level of end user expertise [23]: menu, command, programming, expert functional support levels); frequency of interaction (sporadic vs. frequent use of IC services); and length of relationship (number of years of use of IC services);

"IC roots" (**C7**, alpha = 0.8129): whether the IC roots are in the traditional MIS turf (IC serving needs of mainframe users, IC manager coming from a MIS background, hiring decisions based on clearly defined, objective criteria), or in the end-user computing environment (IC serving microcomputer users, IC manager coming from a non-MIS background, hiring decisions following broader, more subjective criteria).

RESULTS

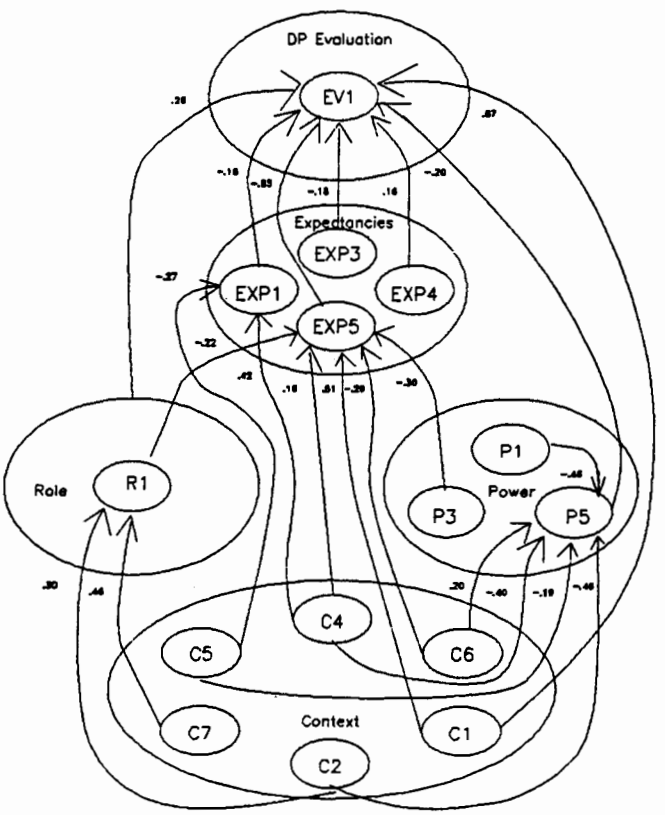
The theoretical model in Figure 1 was found to have a very good explanatory power for MIS managers' evaluation of the IC (Adjusted R Square: 0.70; p = 0.00001), as shown in the MIS path analysis depicted in Figure 2. It was also supported, although to a lesser degree, by the End-User Path analysis shown in Figure 3 (Adjusted R Square = 0.31, p = 0.02).

a) MIS evaluation of the IC

As predicted in Hypothesis 1, the MIS evaluation of the IC was indeed affected by the first element in the theoretical model — outcome expectancies. In the MIS path analysis (Figure 2), evaluation of the IC (EV1) was higher in organizations where it was expected that end-user computing hygienics (EXP1, path coeff. = -0.15877) would remain stable, organizational efficiency (EXP3, path coeff. = 0.14660) would improve, boundary mediation (EXP4, path coeff. = 0.16220) would favor MIS interests (improvements in the systems development backlog and in the compatibility of hardware and software throughout the organization) and end-user computing growth (EXP5, path coeff. = -0.85438) would be limited. In other words, MIS managers tended to evaluate IC performance better in organizations where it was expected that outcomes relevant for MIS would be attained.

Hypothesis 2 predicted that MIS evaluation of the IC would be influenced by the second element in the theoretical model, the IC's perceived impact on the balance of power in end-user computing. The results support this prediction: MIS evaluation of the IC was found to be affected by balance of power. The direction of the relationship, however, was different from what had been predicted. According to the data, MIS evaluations of the IC were more favorable in organizations where users were less (rather than more) dependent on the IC's expertise.

Figure 2
Model of MIS Manager's evaluation of the Information Center staff with path coefficients



The MIS path analysis (Figure 2) showed that MIS evaluation of the IC was directly, and negatively influenced (path coeff. = -0.20089) by the degree to which users depended on the IC to deal with strategic contingencies (variable P5, "Strategic Dependence," comprising the IC importance for the users and the magnitude of impact if the IC services suddenly became unavailable). MIS evaluation of the IC was better in organizations where users were less elf-sufficient in coping with uncertainty, i.e., where users attached more importance to the IC and expected higher impacts if its services had to be suddenly interrupted.

Table 2
Decomposition Table for Path Analysis 1
(MIS Managers' evaluation of the IC)

Independent variables	Effect on EV1 (MIS eval. of IC) Direct	Indirect	Total
R1 - Norm. role expectations (application development)	0.25787	Through EXP5: .18968 (-0.22201) x (-0.85438)	0.44755
EXP1 - EUC hygienics expectancy	-0.15877		-0.15877
EXP3 - Efficiency expectancy	-0.14660		-0.14660
EXP4 - Boundary mediation expcy.	0.16220		0.16220
EXP5 - EUC growth expectancy	-0.85438		-0.85438
P5 - Users' Uncert. Coping Capab.	-0.20089		-0.20089
C1 - Differentiation	0.66887	Through EXP5:-0.43488 (0.50900) x (-0.8543843)	0.23399

The third element of the theoretical model indicated that IC evaluation should be influenced by normative role expectations, i.e., the constituents' beliefs about the appropriate role for the IC staff — Doers or Facilitators. In terms of the two possible directions this relationship could take, the results seem to favor Hypothesis 3-b over Hypothesis 3-a.

Contrary to what Hypothesis 3-a would predict, the conformity of actual behavior to normative expectations (Variable R2) was not found to have any influence on MIS evaluation of the IC. But, as predicted in Hypothesis 3-b, MIS evaluation of IC performance was more favorable in organizations where MIS managers and end users believed IC staff should act as Facilitators in application development, rather than as Doers (R1, "Normative Expectations for Role in Application Development"; path coeff. = 0.25787).

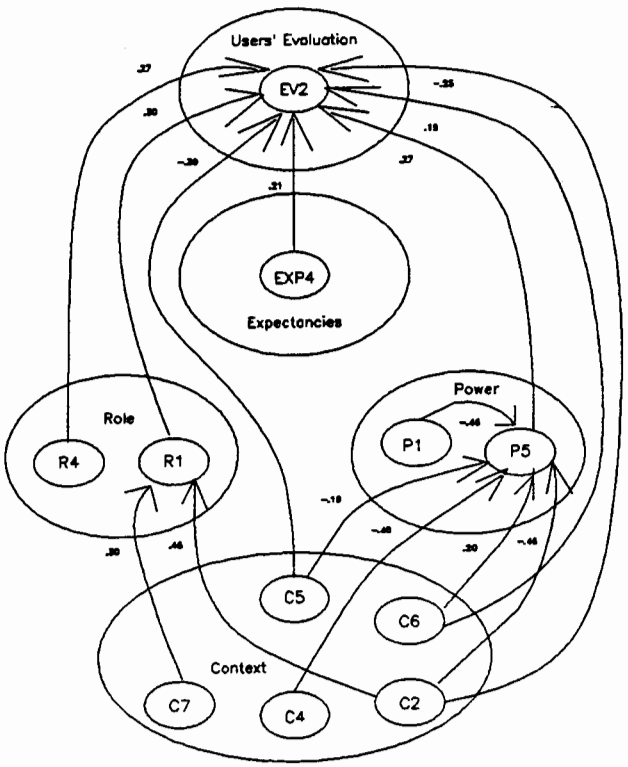
Finally, the theoretical model shows MIS evaluation of the IC as being influenced by the context in which the IC performs (Hypothesis 4). This is supported by the MIS Path Analysis (Figure 2), which shows MIS evaluation of IC performance to be directly affected by contextual factors: MIS evaluation varied across industries and tended to be more favorable in organizations where the boundaries between functions and departmental levels are fuzzier and easier to disregard (variable C1, path coeff. = 0.66887).

b) End user evaluation of the IC

End users' evaluation of the IC was found to be directly influenced (end User Path Analysis, Figure 3) by one type of outcome expectancy, relative to boundary mediation (EXP4, path coeff. = -0.21036). Users' evaluation was higher in organizations where MIS managers *did not* expect improvements in the systems development backlog or in the compatibility of hardware and software throughout the organization, but users *did* expect their jobs to become more interesting as a result of the way end-user computing was being managed — all of which were outcomes favored by users.

The direction of influence of boundary mediation expectancies on End User Evaluation (negative) is opposite to the one found for MIS Evaluation (positive), suggesting that MIS and users have different preferences regarding how the IC mediates transactions across the expertise boundary. Each constituency tended to look more favorably on IC performance when it believed that the IC's mediation in the typical areas of border skirmishes would further its own interests (in the case, MISS managers preferred to see end-user computing more under control, and users were concerned instead with how end-user computing affected their jobs). Therefore, even though the direction of the effect was different for each of the

Figure 3
Model of Users' evaluation of the Information Center staff with path coefficients



path analyses, the fact that the valence of the outcomes also was different makes it justifiable to assert that, in both cases, the data supported the predictions of Hypothesis 1.

The theoretical model also proposed that end user evaluation of the IC would be influenced by the IC's perceived impact on the balance of power in end-user computing. The results support this relationship, but its direction was the opposite of what had been predicted in Hypothesis 2.

End users' evaluations of the IC were directly, and positively, influenced by the degree to which users were dependent on the IC for dealing with strategic contingencies (P5, "Users' Strategic Dependence"): end users evaluated the IC more positively in organizations where they were more dependent on it for coping with strategic contingencies (path coeff. = 0.27167), i.e., when they thought the IC services were important and would produce a great impact on their jobs if suddenly discontinued.

Comparing the effects that Strategic Dependence (P5) had on each constituency's evaluation of the IC, we arrive at the following picture: MIS evaluation of the IC tended to be better in organizations where users were *less* dependent on the IC for dealing with strategic contingencies; in contrast, end users' evaluation of the IC tended to be better in organizations where users were *more* dependent on the IC for dealing with strategic contingencies.

This may seem counter-intuitive, as one might expect each constituency to be happier with the IC in situations

Table 3
Decomposition Table for Path Analysis 2
(Users' evaluation of the IC)

Independent variables	Effect on EV2 (User eval. of IC) Direct	Indirect	Total
R1 - Norm. role expectations (application development)	0.30438		0.30438
R4- Users'expect.- consult, dbase	0.27380		0.27380
EXP4 - Boundary mediation expcy.	-0.21036		-0.21036
P5 - Users' Uncert. Coping Capab.	0.27167		0.27167
C2 - Size	-0.24612	Through R1: 0.09069 (0.29796) x (0.30438) Through P5: -0.12445 (-0.45811) x (0.27167) Total: -0.03376	-0.27988
C5- Information Availability	-0.39158	Through P5: -0.05241 (-0.19293) x (0.27167)	-0.44399
C6- User contacts with IC	0.19115	Through P5: 0.05320 (0.19581) x (0.27167)	0.24435

where the balance of power favors that constituency. From a classic political perspective, MIS would be happier where end users are dependent on the IC, over which MIS typically has formal authority; in contrast, end users would be happier where they are self-sufficient, and thus more powerful.

There might be, however, alternative explanations for the findings that would not violate the assumption that people like to have power. MIS managers' favorable evaluation of the IC in situations where end users are less dependent when facing strategic contingencies may simply reflect the fact that MIS does not believe it is losing ground in the balance of power.

By the same token, the fact that users seem to like the Information Center better in organizations where they depend on it to cope with strategic contingencies may indicate that they perceive the IC as instrumental for helping overcome their present lack of power. In these organizations, end-user computing technology may not have provided enough momentum to move the balance of power toward end users and they expect the IC to provide the extra push that may eventually change the status quo. The present study was not explicitly designed to test this line of reasoning, which should be verified in a future study.

In terms of the third element in the theoretical model, role expectations, end users tended to rate better the IC performance in organizations where MID and users had Facilitator expectations in application development (R1, path coeff. = 0.30438) and where users have Facilitator expectations in consulting and data base support (R4, "Normative expectations for consulting and data base support"; path coeff. = 0.27380). Again, as in the case of MIS evaluation, these results support Hypothesis 3-b (better evaluations associated with Facilitator role expectations), and not Hypothesis 3-a (no effect for R2, conformity of role behavior to expectations).

The results of the end user path analysis showed three contextual factors to directly affect evaluation (Hypothesis 4): "Size" (C2), "Information Technology Availability" (C5) and "User Contacts With the IC" (C6).

Users' evaluation of the IC tended to be better in smaller organizations, with smaller MIS departments and smaller IC staffs and clienteles (C2, path coeff. = 0.246115); where users reported lower distance from the IC, in terms of technical sophistication, frequency and length of relationship (C6, path coeff. = 0.19115); and where there are more obstacles to information technology availability, in the form of rules and rigid communication flows, as well as a lack of data base management systems and fourth-generation languages (C5, path coeff. = -0.39158).

It might seem puzzling to some, that users think more highly of the IC in situations where there are more obstacles, not less, for them to access and manipulate information. The answer to this apparent paradox may be similar to what was proposed in the case of the intriguing relationship between good evaluation and the powerlessness of the evaluator: users may perceive the IC as instrumental in helping circumvent these obstacles, rather than causing or perpetuating problems in information availability.

CONCLUSION

The results obtained in this study have several important implications. First, the evaluation of the IC does not seem to result from an objective, detached assessment of performance. Rather, success seems to be very much in the eyes of the beholder: there was no significant association between MIS and users' views of the same ICs, making it all the more important to consider how the "soft," subjective types of factors analyzed here (role expectations, outcome expectancies, power balance, context) affect each group's evaluation of the IC.

Second, the results suggest that what MIS managers and end users think of the IC depends on these groups' expectancies regarding what the future holds for them. The MIS managers in the sample tended to have better evaluations of the IC when they expected end-user computing to enter a more stable phase (less growth, no further improvements in end-user computing) and to contribute to organizational efficiency. MIS managers also tended to evaluate the IC better when they believed that it would mediate the traditional areas of boundary conflict between MIS and users in the directions desired by MIS (alleviating the systems develop backlog and improving the compatibility of hardware and software throughout the organization).

By the same token, end users had better evaluations of the IC when they believed this boundary mediation would further their own interests (in terms of how end-user computing would affect their jobs).

In the case of evaluation criteria, it seems of strategic importance for IC managers to correctly identify their constituency's anticipation regarding these future outcomes in order to decide how to position the IC along possibly conflicting expectations. Besides these actions at the reality level, it may also help the evaluation of the Center if the IC manager, in the meantime, tries to actively manage such expectancies through acts, words or symbols that enable the fruits of these future outcomes to start being reaped today.

Third, the results suggest that ICs are more favorably evaluated by end users when these are lower in the balance of power, and more dependent on the IC, possibly because they expect the IC to be the influence that will tip the balance in their favor. The fact that MIS evaluation of the IC is better when users are less dependent on the IC for dealing with strategic contingencies is in line with the official mandate of ICs, and suggests that MIS does not see this state of affairs as

tilting the balance of power against its interests.

Here again, it is important for the IC manager to be aware of the real and perceived political implications of different IC actions and policies. This, in order to take into consideration what different decisions may imply in terms of gaining or losing support from each group of stakeholders.

Fourth, normative role expectations — not role behavior — were found to significantly affect evaluation, which reinforces the feeling that beliefs are at least as important as reality in explaining the evaluation of the IC staff. Regardless of what the IC staff actually did, both MIS managers and end users tended to evaluate the IC better when they held Facilitator expectations regarding application development (i.e., when they expected the IC staff to help end users develop their own applications) than when they believed the IC staff should act as Doers (directly doing application development for the users).

This suggests that at least part of the energy IC managers typically spend trying to decide what policies to have regarding application development might be more profitably applied to changing or reinforcing expectations toward Facilitator roles.

Finally, IC managers should realize that the evaluation of the IC can also be affected by contextual factors over which they have little or no direct control — such as organizational size and climate. It is no less important, however, to understand these contextual influences: even when the IC managers can do nothing about these factors, at least it may be helpful to know whether the context is increasing or decreasing the IC's chances of being perceived successful.

This practical implication of the results, as all the previous ones, must naturally be taken with some caution. Even though good "significance levels" were obtained and the sample was randomly drawn, budgetary constraints restricted external validity by reducing the sample and limiting the number of respondents in each organization. Moreover, survey research has natural limitations in terms of differentiating reality as it is (if such a thing is ever accessible to a researcher) and as it is reported.

The results must be strengthened and expanded by further studies before their practical implications can be proclaimed with more fervor. For example, in-depth studies need to be conducted to compare normative role expectations and behaviors as they are expressed through daily interactions, by commission or omission, not just as they are perceived or reported by the actors themselves. The full appreciation of the effects of outcome expectancies and the balance of power on IC evaluations requires both in-depth and longitudinal studies that can throw some light on how the ebb and flow of expectancies and power affect perception of the IC. In addition, some assumptions were left unchecked in this study regarding the actual relevance of the expected outcomes and exactly how the different constituencies believe the IC can alter their position in a balance of power. Moreover, the measurements of contextual factors that were done here must be replaced by the fuller pictures that can be obtained through carefully coordinated studies.

A fuller understanding of the dynamics behind the IC evaluation by its constituencies will require a variety of methodological approaches to the problem: experiments that allow manipulation of variables such as role expectations, outcome expectancies, balance of power and context (then an examination of their individual and combined effects on evaluation); network analyses that provide more information on the web of relationships between MIS, IC and users with different levels of expertise; in-depth participant observations that throw light on the nature of these relationships; longitudinal field studies that reveal how the relationships evolve over time.

The accumulation of such studies — each building on the weaknesses and strengths of the others — may not only lead to a full-fledged theory of expert service provision, but also may have a practical impact on the effectiveness and efficiency of end-user computing.

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