Communication skills importance and proficiency: perception differences between IS staff and IS users

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Abstract

Communication between information system (IS) professionals and IS users must be effective in order develop successful systems. Users have a set of expectations of communication skills and a perception of how well the IS professionals exhibit the skills during interactions. IS professionals have different views of the importance of communication and of their own performance. This communication gap is tested with a matched sample of IS users and IS professionals. A gap is found in the importance the different groups place on communication skills and a larger gap is found in the perceived presence of the skills in the IS professionals. The study indicates a need on the part of the IS professional to understand the preferred methods of communication in addition to the information requirements of the organization.
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1. Introduction

Experts claim that the greatest threat to the success of any information system (IS) project is a failure to communicate (Cronan & Means, 1984; Lee, Trauth, & Farwell, 1995; Schwalbe, 2000). System implementation outcomes can be largely determined by the degree of how well IS staff and IS users work together (Barki & Hartwick, 1994; Jiang, Klein, & Balloun, 1997). The relationship between the IS staff and IS users could translate directly into the success or failure of major IS development projects (Ives & Olson, 1984) and indirectly into the IS staff member's job-related performance evaluation (Jiang, Sobol, & Klein, 2000). Effective communication between IS staff and IS users, thus, are critical to the successful development of an IS (Klein & Jiang, 2001).

User involvement and user participation in the design and operation of IS have several positive results (Ives & Olson, 1984). Incorporating the user's knowledge and expertise leads to better solutions; however, IS users often take a very narrow and limited view of the problem to be solved and overlook the innovative ways to apply information technology. On the other hand, IS professionals often have a highly technical orientation to problem solving and overlook the human information needs (Jiang, Klein, & Means, 1999). The outcome would most likely be inferior if the IS staff tried to design systems entirely on its own (Markus & Keil, 1994). Unfortunately, communication between users and IS staff is hindered because the two groups tend to have different backgrounds, interests, expectations, and priorities (Jiang et al., 2000).

The IS literature has recognized these differences, which are referred to as the "user-designer communication gap" (Laudon & Laudon, 1996). This communication gap can be a tremendous barrier to achieving a final system that meets the needs of an organization. This barrier presents a problem as researchers have shown that a difference in skill importance between users and IS professionals can lead to the failure of a system under development (Ginzberg, 1981; Linberg, 1999). So it is important to know if IS staff and IS users are in agreement on the essential written and oral communication skills for IS staff members. If they are not, the gap between the two can be very costly in terms of system failure (Klein & Jiang, 2001). When the IS staff begins to align with the expectations of the users, the consonance necessary for success is more likely achieved. Such a consonance will be reflected in the similar perception of the importance of various skills (Lee et al., 1995); so the questions become, what are the communications skill requirements as perceived by both IS users and IS staff, do the IS staff meet the expectations of the IS users, and do the IS users converge on their perceptions of required communication skills? These are examined by constructing hypotheses using group type as independent variables and the importance and perception of skill levels as the dependent variables. Exploration of the data will serve to examine specific group differences.

Communication effectiveness is not only affected by the choice of communication methods among the participants but also their proficiency levels. Researchers have identified some factors (e.g., work settings) that may influence the choice of communication methods, but how IS professionals have demonstrated their communication skill proficiency as perceived by IS users is not reported in the literature (Belanger, 1999). A perceived proficiency gap between IS professionals and IS users indicates a problem of communication. In fact, a communication gap between IS users and IS professionals has been identified as a factor in system failure—leading to misunderstanding user requirements and lower levels of user satisfaction (Cronan & Means, 1984; Lee et al., 1995). Additionally, false impressions of self-performance may lead to career

derailment on the part of the IS professional (London & Smith, 1995). Thus, a performance gap has detrimental implications to the system, the user, and the IS professional.

Although, communication skill importance has long been recognized in the IS literature, the differences between IS staff and IS users perceptions of the proficiency and importance of various communication skills has never been examined. The purpose of this study is to explore the differences in perception, if they exist, by examining the written and oral communication skill importance and proficiency as evaluated separately by the IS staff and IS users in an IS project. IS staff in this study are limited to the non-managerial IS employees working on a development project, most often various rank of analyst. IS users are those involved in the development, but do not have a managerial role. Locating areas of differences between these groups will serve to identify weaknesses to address. Thus, we seek to form a picture of the congruency of communication between IS staff and IS users.

2. Hypotheses development

Researchers and business professionals have long realized the importance of communication skills to system success. Communication research found that the greatest discrepancy between communication expectations and communication skill performance occurred when writing (Junge, Daniels, & Karmos, 1984). Likewise, oral communication skills continue to rank as a serious need of IS staff members (Buckley, Peach, & Weitzel, 1989). These findings indicate that oral communication skills have become more important as the economy has moved toward technology-enhanced and information-oriented business. For these reasons, elements of both written and oral communication skills are considered in this study.

However, the IS skill literature has traditionally examined the "importance" of various skills for IS professionals. In general, the literature recognizes the importance of a broad set of skills for IS professionals including communication skills, but not the differences between IS users and IS staffs for both importance and perception of communication skills. Based on limited evidence in the literature, there is not only a need to agree on the communication skill "importance" but also the perceived "proficiency" (Klein & Jiang, 2001). The IS staff may not deliver a level of proficiency as expected by the IS users. Success may be dependent on both (Linberg, 1999). Certain theory, described below, provide a background as to why this may be expected at the global level.

In spite of the recognized need for communication consonance, individual backgrounds tend to cause differences in preferred communication structure (Belanger, 1999). Social perception theory suggests that people develop their own schema—a cognitive framework for understanding the external world (Baron & Byrne, 1991). A schema develops gradually, out of our experiences and education. Once such a schema has developed, it plays an important part in a person's understanding and interpretation of information, coworkers, other groups, friends, supervisors, and any other individuals he or she encounters. The theory suggests that different working environments influence a person's schema development; therefore, people perceive things differently. In other words, unless two individuals have a similar schema, their perceptions of importance will differ. Empirical support for this theory has been noted in the IS literature in terms of fundamental differences between IS users and IS staff in problem-solving orientations,

experiences, and work environments (Jiang et al., 2000). Another factor which impacts the interpretation of messages is communication style.

Communication styles are patterns of communication behaviors that others can observe. Communication style theory indicates that, first, individual differences on communication style (e.g., length of eye contact, use of gestures, speech patterns, facial expression, and degrees of assertiveness people) exist (Zemke, 1976). Behavioral science research findings indicate that these factors form a unique image of the communicator that others perceive. The Tubbs Communication Model suggests that the meanings of words are *not* in the words; they are in us (Tubbs & Moss, 1994). Humans are dependent not only on their own experiences for information, but on words that are heard, used, and assumed to have certain meanings. These words, in the form of oral and written communication, provide the foundation for one's semantic environment, the unique way each individual puts symbols together for meaning. So when expressing the perceived importance of written and oral communication skills between IS staff and IS users, differences in importance should be expected (Suchan & Dulek, 1998). Likewise, these same perceptual formations should result in a different perception of performance.

Thus, based upon the literature, communication theory, and social perception theory, our expectations are:

H1. IS staff and IS users will differ in the *perceived importance* of factors relating to IS staff communication skills.

H2. IS staff and IS users will differ in their *perceived proficiency* with IS staff communication skills.

A study of these hypotheses is critical to the improvement of the relationships between IS staff and IS users, and thus, system success. Only when the IS staff and IS users can communicate effectively, can system goals be agreed upon and understood by all parties, thus achieving consonance in system development. But because individuals may respond differently to communications, the importance of various communication issues need to be agreed upon by both groups.

3. Methodology

3.1. Subjects

Perception gaps between IS staff and IS users on communication importance and performance during project development was the focus of this study. Therefore, for each observation, two people who had worked on a system development project together (a member of the IS staff and a matched user) were asked to complete the survey instruments. This pairing within projects will serve to control differences that might have existed due to system or organizational factors. Initial contact with participants was made by contacting IS managers in convenience sample of 28 organizations. Those IS managers who agreed to participate were asked to distribute survey instruments to an IS staff member at the analyst (not management) level and an IS user who had recently worked with that IS staff member on the same project. Managers were asked to do this

for several of their recent projects. Seventeen of the 28 IS managers who were contacted agreed to participate in the study. Respondents were assured that their answers would be kept confidential; self-addressed return envelopes were provided. Participants were drawn primarily from Texas, Louisiana, and Arkansas. Data collection occurred from August 1998 to March 2000. A total of 108 matching observations were acquired (108 IS users and 108 IS staff).

The respondents' demographic data are shown in Table 1. About 70% of the IS staff had undergraduate or graduate degrees and about 50% of the IS users had college or graduate degrees. About 70% of IS staff were male and about 45% of the IS users were male. The IS users had an average of 11 years of work experience, and the IS staff had worked an average of nine years in the IS field.

3.2. Constructs

A construct is an idea that can be defined conceptually; yet it cannot be measured directly (Hair, Anderson, Tatham, & Black, 1992). However, a construct (or factor) can be measured by

Table 1
Demographics

	IS Staff	IS Users
Gender		
Male	75	49
Female	32	56
No response	1	3
Total	108	108
Age		
< 30 years old	31	23
31–40	52	26
41–50	17	34
⩾51	3	13
No response	5	12
Total	108	108
Education		
Graduate degree	14	10
Bachelor degree	63	45
Some college/vocational school	28	49
No response	3	4
Total	108	108
Work experience		
<10 years	63	51
11–20	35	36
21–30	6	14
⩾31 years	2	5
No response	2	2
Total	108	108

an observed variable, which is sometimes called an indicator item. The following describes the indicator items used in this study to examine the IS staff's communication skills.

Written communication items were incorporated as proposed by Quible (1991). These 36 specific written skill items are listed in Table 2 with a "W" prefix. Oral communication skills (designated with an "O" prefix in Table 2) were measured using six items that were identified by a review of relevant communication literature and by using the opinions of experts in the field of communication (Olney & Bednar, 1989; Willmington, 1989). To identify the importance of each skill to the IS professionals' jobs, a scale was used that ranged from "unimportant" (1) to "very important" (5). All the written skill levels were anchored so that a higher score represented greater importance of the skill. Similarly, each skill proficiency used a scale ranging from "unsatisfied" (1) to "very satisfied" (5). All the skill satisfaction levels were anchored so that a higher score represented greater perceived proficiency.

A factor analysis was conducted on the importance measures to determine categories of communication recognized by the sample. Separate analyses were run on the IS users, the IS staff, and the entire sample. Differences were minor between the two analyses, so the results for the IS users are used in further analysis. Parallel analysis criteria indicated that five eignenvalues exceeded chance, indicating that five factors are likely present in the items (Lautenschlager, 1989). Five factors were then retained in a varimax rotated principal components analysis (PCA). Only an item with .45 or above loading in a factor and less than .35 in any other factors was considered. The results are shown in Table 2. Along with the oral communication factor, four writing skill factors were named basic writing skills, polishing skills, organizational writing skills, and psychological writing skills, respectively. Scores were computed as averages of the items in the factors. The internal consistency reliability of the construct is examined by the Cronbach alpha value—the alpha value will be high if the various items that constitute the construct are strongly correlated with one another. The Cronbach alpha values for all four factors exceed the recommended minimum of .70 (Nunnally, 1978).

4. Results

The mean responses to the instrument are presented in Table 3. All skill levels are rated highly ranging from a low of 3.19 for psychological writing by the IS Staff to a high of 4.34 for oral communication by the IS staff. The proficiency of the IS staff is rated relatively high by both groups. To determine if any of the demographics for the groups led to the differences experienced, a regression was conducted for each of the five communication skill areas. The regressions used the skill importance as the dependent variable and each demographic variable as an independent variable. Not one independent variable was significant at the .05 level for any of the regressions indicating the demographics did not influence the results.

The proposed research hypotheses suggest that IS staff and IS users will have different perceptions on the importance of IS staff communication skills (H1: written skills and H2:oral communication skills). To test these two hypotheses, the absolute difference between IS user and IS staff was first calculated for each of the four written skills and oral communication skills. A MANOVA was performed to determine whether the mean differences of the five factors

Table 2
Communication skills

	Factor 1 (Basic writing)	Factor 2 (Psychological)	Factor 3 (Polishing)	Factor 4 (Organizational)	Factor 5 (Oral)
W1: Write coherently	.97				
W2: Spell words correctly	.78				
W3: Use grammar correctly	.92				
W4: Write decisively	.93				
W5: Sell ideas well in writing		.47			
W6: Use words correctly					
W7: Construct effective sentences	.65				
W8: Write concisely	.61				
W9: Use effective arrangement of ideas			.40		
W10: Use punctuation correctly			.65		
W11: Have good proofreading skills			.83		
W12: Adapt material to the reader			.54		
W13: Write concretely	.66				
W14: Focus on reader rather than writer	.47				
W15: Organize material well			.51		
W16: Avoid redundancies in writing				.54	
W17: Write under pressure		.52			
W18: Construct effective paragraphs	.43				
W19: Use effective syntax			.58		
W20: Have effective revising skill			.80		
W21: Have effective editing skills			.83		
W22: Be knowledgeable of writing process			.48		
W23: Know appropriate business letter content				.67	
W24: Use effective planning procedures				.73	
W25: Use transition effectively	.61				
W26: Is aware of unity in writing	.69				
W27: Paraphrase effectively	.84				
W28: Show courtesy toward reader	.55				
W29: Perform effective audience analysis					
W30: Use correct letter format	.46				
W31: Prepare effective graphic aids					
W32: Write extemporaneously	.70				
W33: Know psychological aspects of writing	.87				
W34: Use ideas subordination effectively	.77				
W35: Avoid use of jargon	.63				
W36: Write effective thesis statements	.89				
O37: Have effective oral communication skill					.87
O38: Ask appropriate questions					.81
O39: Use a clear, distinct, pleasant voice					.75
O40: Use correct grammar					.81
O41: Organize idea effectively					.88
O42: Have good presentation skills					.89
Cronbach Alpha	.95	.96	.95	.86	.91

Note: Items loading into more than 2 factors (i.e., .40 above in one factor and .35 above in other factors) were not included.

Table 3
Mean of perceived importance (perceived proficiency) of communication skills

	Overall communication	Oral	Basic writing	Psychological writing	Polishing skill	Organizational skill
Skill importance						
IS users	3.89	4.17	4.03	3.61	3.91	3.67
IS staff	3.80	4.32	4.01	3.35	3.80	3.55
Skill proficiency						
IS users	3.67	3.80	3.64	3.60	3.72	3.63
IS staff	3.82	4.00	3.93	3.60	3.84	3.70

Table 4
Mean absolute differences between IS users and IS staff (importance)

	Overall communication	Oral	Basic writing	Psychological writing	Polishing skill	Organizational skill
Mean	.72	.61	.77	.92	.83	.61
Median	.55	.50	.67	.78	.67	.67

Table 5
Mean absolute differences between IS users and IS staff (proficiency)

	Overall communication	Oral	Basic writing	Psychological writing	Polishing skill	Organizational skill
Mean	.76	.83	.77	.84	.80	.86
Median	.72	.83	.77	.75	.78	.67

significantly differ. The mean difference scores are shown in Table 4. The MANOVA results were significant at the $p < .0001$ level, which indicated that the mean difference scores were significantly different from zero. Thus, there was support for H1, indicating a lack of consonance in expectations.

This study also predicts that there are perception differences between IS users and IS staff on IS staff's communication skills proficiency (H2). First, each skill proficiency difference between IS user and IS staff within the same project was calculated. A MANOVA was performed to determine whether the mean difference scores of the five factors were significantly different from zero. The mean difference scores are shown in Table 5. The MANOVA was significant at the $p < .0001$ level. Thus, the mean proficiency gap scores were significantly different from zero, supporting H2. Thus, it is concluded that a difference in perception of IS staff abilities existed.

Table 6
Discriminant analysis between IS users and staff

Independent variables	Coefficients	The most critical
Oral skill importance	−.87	[4]
Basic writing importance[a]	.12	
Psychological writing importance	1.04	[3]
Polishing skill importance[a]	−.20	
Organizational skill importance[a]	.00	
Oral skill proficiency[a]	−.11	
Basic writing proficiency	−1.67	[1]
Psychological writing proficiency[a]	−.09	
Polishing skill proficiency	1.09	[2]
Organizational skill proficiency	.48	[5]

[a]Indicates that one might consider dropping those variables from the predicting function.

To further explore the differences that most define the individual groups in this study, a discriminant analysis was conducted with the dependent variable being the group (IS staff or IS user) and the independent variables being the importance and perception variables for the five communication categories. The results of the analysis appear in Table 6. The table presents the coefficients determined by the analysis as well as a ranking of the more critical factors as determined by magnitude of coefficient. Only those coefficients found to be significant at the .05 level are ranked. Every skill factor is significant in either the importance rating or the perception of differences in skill levels present.

The perceived difference in basic writing proficiency is the largest gap between the two groups. This surfaces in spite of the fact that both groups view the importance of this skill equally at the mean (Table 3). This is an interesting situation where the targets are similar, but the delivery perception is quite different. In this case, as in all cases where there is a difference in perceived proficiency, the IS staff rate themselves more proficient than do the IS users. Organizational skills are least powerful in explaining the differences between the groups, which may be due to the often brief nature of written communications. The other three factors fall in between, sometimes in the importance dimension, sometimes in the proficiency dimension. Overall, from all the tables, it is interesting to note that the IS staff rate oral skills more important than do the IS users, and the IS users rate written skills more highly than the IS staff. This could be due to many factors, especially differences in training and practice, but clearly indicate that more attention to the written skills is needed by IS staff and their managers.

5. Conclusions

The more the agreement on matters of importance to various stakeholders, the greater the success measures for the delivered IS project. Unfortunately, recent studies (Jiang et al., 2000; Klein & Jiang, 2001) indicate that many differences between IS users and IS staff exist. Communication skills are no exception, yet they are critical to reaching understanding and

agreement on specifications critical to the delivery of any system project. According to communication theory and social perception theory, differences will exist between IS staff and IS users on "how" information is understood and delivered; and these differences play important roles in communication.

The purpose of this study was to explore the extent of the differences between IS users and IS staff on perceptions of communication importance and performance. Initially, two questions were asked: (1) Do IS users and IS staff perceive the importance of written communication skills and oral communication skills differently? (2) Do IS users and IS staff perceive proficiency of the IS staff's written and oral communication skills differently? If the answer to these questions is yes, then it becomes necessary to determine the threat to system success these differences cause and to identify methodologies to overcome them. The results reported indicate differences exist between IS users' and IS staff members' perceptions on the importance of written and oral communication skills. Also there were perceived differences between the IS users and the IS staff members' proficiency levels with regards to the staff members' written and oral communication skills.

The perceived differences in the communication skills between users and IS professionals implies there are potential communication problems. Apparently, IS users prefer a different mode or mechanism. The question of how to close the gap is not addressed in this study, but the application of standard techniques described below might be a start. However, this study does provide a first step in determining how to close the gaps by looking at the presence of the communication gap from identifiable components of the communication process. Thus, this study has several important implications to management and IS researchers. Besides finding that the communication perception gaps exist in project development, it suggests that IS management should identify what their stakeholders' information expectations are to achieve system consonance and understand how to communicate effectively. Because differing expectations can cause communication breakdown, it is important to close the gaps. Even though 100% accuracy at all times is impossible, actions can be taken to increase the possibility of accurate, effective communication. Communication needs might also vary by organizational culture and even stages of the system development life cycle, so organizational assessment at various times would be critical in the evaluation of effectiveness.

One possible remedy among many is training in the communication skills identified as weak in an organization's IS professionals. IS staff are often trained in the current technical skills important to their position. Communication skills should be treated similarly. Training should involve several major thrusts including interpersonal skills, writing skills, listening skills and presentation skills. Further, training should be conducted on the standard practices of communication employed by the organization including communication practices and document requirements. A certain amount of these latter requirements should include cultural awareness appropriate to the individual organization.

Project managers should realize that there are actions they can take to enhance the communication environment even before selecting a project team. For example, in a project situation, for the IS user to be satisfied with the oral and communication skills of the IS staff, the staff member must have communication skills that meet or exceed the expectations of the user. Thus, a project leader or manager must establish expectations and ensure that the written and oral

communication skill level(s) of the IS staff member(s) assigned to that project exceed the expectations of the IS user(s). Thus, by assigning appropriate communication-qualified staff members, the manager can eliminate part of a communication challenge of a project. This approach, while lessening the communication challenge of a project, demands the IS staff members have strong written and oral communication skills. However, ensuring an adequate supply of communication proficient IS professionals may prove an organizational burden.

This research has only introduced the problems and some common solutions to differences in perceived communication skills. To provide a more comprehensive set of recommendations will require further research into the exact skills that are lacking and expand on the two skills considered by incorporating interviewing, non-verbal, and other specific skills. This may best be done at the organizational or even project level to confine the considerations to particular groups and cultures. An organizational view may also examine the lack of skills in the users and perception of user skills on the part of the ISD professionals to determine if the organization has the sufficient communication capital to implement IS projects. Researchers can also use the framework as a lead into studying the impact of communication gaps on system success by examining the gaps and comparing them to measures of system performance for matched projects. Communications researchers can examine particular procedures and determine if the techniques are effective at closing the gaps in perception. Closing gaps from either side can help in achieving a consonant environment.

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