

CHAPTER 10
COMBINED EFFECT OF FACTORS
ON INFORMATION FLOWS

Introduction

The previous chapter looked at each of the eight FP SCORES variables and their effects on Information Flow individually. This chapter investigates how they related to each other and to Information Flow when taken as a group. Because of problems with the *a priori* Synergy index, I used a single question from this index to measure Timeliness. The final *S* in FP SCORES thus becomes a *T*, making an infelicitous acronym even more so: FP SCORET.

I first discuss the correlations among the FP SCORET variables. Ideally for multiple regression analysis, these correlations should be low. This is not likely given the probable relationships among the concepts I attempted to measure. I go on to summarize how the eight indices differed among the four source types and three institutions surveyed. The remainder of the chapter is devoted to an analysis of the effects of the eight variables, taken as a group, on Information Flow.

Correlations among FP SCORET indices

Despite attempts to reduce multicollinearity, several of the FP SCORET indices were significantly correlated with each other (Table 10.1). The overall mean correlation among the FP SCORET variables was $r = 0.22$.

Table 10.1 Correlations among FP SCORET indices.

	Familiarity	Proximity	Structure	Capacity	Openness
Familiarity	1.00				
Proximity	.24 **	1.00			
Structure	.23 **	-.09	1.00		
Capacity	.11	-.22 **	.43 **	1.00	
Openness	.17 *	.06	.22 **	.56 **	1.00
Reward	.14	.04	.10	.24 **	.16 *
Energy	.05	-.29 **	.26 **	.43 **	.15 *
Timeliness	.16	-.06	.18 *	.49 **	.55 **

	Reward	Energy	Timeliness
Reward	1.00		
Energy	-.05	1.00	
Timeliness	.24 **	.23 **	1.00

^a Data from questions IS5, 7 and 8. Minimum $n = 260$. Significance: * $p = .01$; ** $p = .001$ Coefficients greater than 0.4 are in **boldface**.

Familiarity

Familiarity was significantly correlated with three other indices: Proximity ($r = .24^{**}$), Structure ($r = .23^{**}$), and Openness ($r = .17^*$). These relationships are easily understood: we get to know well sources that are close by (Proximity), we have a duty to use (Structure), and that are easily understood (Openness).

Proximity

Proximity was significantly associated with Familiarity (see above), Capacity ($r = -.22^{**}$) and Energy ($r = -.29^{**}$). The negative correlations with the latter two variables are probably because of the nature of AARD publications: these have high Capacity (Table 9.14), and respondents devote a lot of Energy to obtain information from them (Table 9.20), but they are generally located far away (Table 9.10).

Structure

Structure was correlated with Familiarity (see above), Capacity ($r = .43^{**}$), Openness ($r = .22^{**}$), Energy ($r = .26^{**}$), and Timeliness ($r = .18^*$). The strong correlations with Capacity and Energy show that respondents think that the sources they have a duty to use (i.e., AARD publications, Table 9.12) are also the most complete and credible (Table 9.14) and they devote most effort to using them (Table 9.20).

Capacity

Capacity was significantly correlated with all but one (Familiarity) of the other FP SCORET indices. The more complete and credible a source, the higher its Structure score (see above), Openness ($r = .56^{**}$), Reward ($r = .24^{**}$), Energy ($r = .43^{**}$) and Timeliness ($r = .49^{**}$). Proximity declined with higher Capacity (see above).

The correlations of Capacity with Openness and Timeliness imply that the more easily understood and timely a source is, the complete and credible it is seen to be. And information that is complete (Capacity) is likely to be more ready to use (Openness) than information that is incomplete. The correlations among these three variables thus suggest circular causation among them.

The correlation between Capacity and Energy implies that SMSs strive to obtain information from complete, credible sources. It is reflected by the high scores of AARD publications for both variables (Table 9.14 and Table 9.20).

It is difficult to discern a cause for the moderate correlation between Capacity and Reward by comparing Table 9.18 and Table 9.14. Nevertheless, we might expect such a relationship intuitively: people may judge relevant sources as being credible, and vice-versa.

Openness

Openness was significantly correlated with six other variables: Familiarity, Structure and Capacity (see above), Reward ($r = .16^*$), Energy ($r = .15^*$), and Timeliness ($r = .55^{**}$). The relationships with Reward and Energy are weak but are supported by common sense: we associate ease of understanding with relevance, and devote more effort to using sources we understand.

The correlation with Timeliness may be because the most timely sources -- the agricultural press (Table 9.22) -- are written in a popular style. Comparing Table 9.16 and Table 9.22 seems to confirm this: the agricultural press scored highest on both Openness and Timeliness among both province and AIC personnel.

Reward

Reward was related to Capacity and Openness (see above) and to Timeliness ($r = .24^{**}$). The last relationship indicates that timely sources are seen as relevant to user needs.

Energy

Energy was associated with Structure, Capacity, Openness, and Reward (see above), and Timeliness ($r = .23^{**}$). The last reflects that SMSs strive to obtain information from sources they see as timely.

Timeliness

Timeliness was significantly correlated with Structure, Capacity, Openness, Reward, and Energy. All these relationships have been discussed above.

Summary

With few exceptions, the correlations among the FP SCORET variables were intuitive. Most of the exceptions can be explained by inspecting the breakdowns of index scores by source type and institution. All correlations were in the expected direction.

The highest correlations involved Openness, Capacity and Timeliness. Component items in these three indices fell into the same factor in the factor analysis (Table 9.4). Nevertheless, these relationships did not lead to serious multicollinearity problems (see below).

Comparison among source types and institutions

Comparison of the Information Flow and FP SCORET indices among the various source types and institutions is complicated because one cell is missing: AIC specialists were not questioned about publications their own institutions or they themselves produced. The absence of these data biases mean scores that would normally include this cell (such as the Information Flow score for AIC publications or for AIC specialists). For this reason it is necessary to break down each of the Information Flow and FP SCORET indices by both source type and institution to discover any differences due to these two variables. This is done in Table 9.6 and similar tables. Summaries by source type and institution separately are presented in Table 10.2 and Table 10.3.

Table 10.2 Information flow and FP SCORET index scores by source type^a.

Index	AIC public- ations	Agri-cultural press	AARD public-ations	Other special-ists	Overall
Information flow	3.84 a	4.97 c	3.65 a	4.43 b	4.26
Familiarity	<i>5.21</i> a	5.63 a	5.63 a	6.56 b	5.79
Proximity	4.65 a	6.14 b	4.95 a	5.96 b	5.49
Structure	4.71 a	4.97 a	6.09 b	4.63 a	5.14
Capacity	3.57 b	3.56 b	4.53 c	2.94 a	3.68
Openness	4.99 c	4.75 bc	4.35 ab	3.98 a	4.50
Reward	4.19 a	<i>4.15</i> a	4.50 a	5.11 b	4.49
Energy	3.22 a	3.44 a	4.15 b	2.88 a	3.45
Timeliness	4.29	4.83	4.37	<i>4.18</i>	4.45
<i>n range</i> ^b	50-52	78-80	72-75	64-71	267-277

^a Data from questions IS5, 7 and 8. Scale range from 1 (low) to 7 (high). Figures in a row followed by the same letter are not significantly different at $p = 0.05$ by Student-Newman-Keul's test. Highest scores in a row are in **boldface**; lowest scores are *italicized*.^b *n* differs among variables because of missing data.

Comparison among source types

Table 10.2 repeats the overall Information Flow and FP SCORET measures by source type (i.e., it summarizes the rightmost columns in Table 9.6 to Table 9.22). Because of the lack of data on AIC specialists' views of AIC publications, the multiple range tests reported in this table must be treated with caution if AIC publications or specialists are being compared. It should also be remembered that two variables, Proximity and Openness, had significant interactions between source type and institution.

Of the nine indices, all except Timeliness differed significantly among the four source types. The highest Information Flow score was for the agricultural press, while the lowest was for AARD publications. Among the FP SCORET variables, AIC publications scored highest on Openness, the agricultural press on Proximity and Timeliness, AARD publications on Structure, Capacity and Energy, and other specialists on Familiarity and Reward.

Turning to the lowest scores, AIC publications scored worst on Familiarity and Proximity; the agricultural press had the lowest Reward score; and other specialists fared

poorest on the remaining indices.

Examining the values in Table 10.2 for each source type gives us a clue as to which FP SCORET variables are likely to affect Information Flow. Despite high Openness, AIC publications had low Information Flow, probably because of their poor Familiarity, Proximity, Reward and Timeliness values.

AARD publications show a similar pattern, with low Information Flow although specialists think it important to obtain information from these publications (high Structure), their claim to devote a large amount of effort to doing so (high Energy), and their opinion that AARD publications are being generally the most complete of the four source types (high Capacity). AARD publications' relatively low Proximity and Timeliness as well as their limited Familiarity and Reward seem to be related to their low Information Flow score.

The low scores on Structure, Capacity, Openness, Energy and Timeliness for other specialists indicate that respondents see their colleagues as not particularly knowledgeable (low Capacity), as in possession of outdated information (low Timeliness), and unable or unwilling to provide information in an easy-to-use form (low Openness). Furthermore, they do not regard obtaining information from their colleagues as an important part of their job (low Structure), and they devote little Energy to doing so. But these low scores were offset by specialists' familiarity with the source (high Familiarity), its closeness (high Proximity), and local relevance (high Reward).

The highest Information Flow score was for the agricultural press. This source has high Proximity and Timeliness, which appear to more than compensate for the low Reward and medium levels of other variables. This implies that specialists use the (poor) information that is immediately accessible to them rather than the better quality information that is more difficult to obtain.

Overall, Table 10.2 leads us to suspect that Familiarity and Proximity will be the most important determinants of Information Flow. This will be tested further by regression analysis later in this chapter.

Comparison among institutions

Table 10.3 compares scores on the Information Flow and FP SCORET indices for respondents at the three institutions surveyed (i.e., it repeats values in the bottom lines of Table 9.6 and similar tables). Similar caveats to those above are applicable for the validity of multiple range tests comparing AIC publications or specialists and for the interactions for Proximity and Openness.

Table 10.3 Information flow and FP SCORET index scores by institution type^a.

	Province	District	AIC	Overall
Information flow	4.21 x	<i>4.12</i> x	4.65 y	4.26
Familiarity	5.71 x	<i>5.61</i> x	6.29 y	5.79
Proximity	5.91 y	<i>4.90</i> x	6.45 z	5.49
Structure	<i>5.09</i>	<i>5.09</i>	5.31	5.14
Capacity	3.51	3.87	<i>3.42</i>	3.68
Openness	4.50 xy	4.65 y	<i>4.14</i> x	4.50
Reward	4.59	<i>4.45</i>	4.46	4.49
Energy	<i>2.97</i>	3.62	3.56	3.45
Timeliness	4.48	4.54	<i>4.18</i>	4.45
<i>n</i> range ^b	64-67	142-148	57-62	267-277

^a Data from questions IS5, 7 and 8. Scale range from 1 (low) to 7 (high). Figures in a row followed by the same letter are not significantly different at $p = 0.05$ by Scheffé's test. Highest scores in a row are in **boldface**; lowest scores are *italicized*.^b *n* differs among variables because of missing data.

The respondents' institution was generally less strongly related to the nine indices than was the source type. Only four indices were significantly affected by institution: Information Flow, Familiarity, Proximity, and Openness. On all these measures except Openness, AIC specialists scored highest and district specialists lowest, with provincial specialists in between. For Openness, the reverse was the case. Given the importance of Familiarity and Proximity revealed above in Table 10.2, we would expect AIC specialists to have the highest Information Flow score. Table 10.3 shows that this was indeed the case.

Effect of FP SCORET on Information Flow

Source type and institution account for significant differences in Information Flow and FP SCORET (Table 10.2 and Table 10.3). Controlling for source and institution will therefore decrease the amount of variance in Information Flow explained by FP SCORET. In order to gauge their effect, I ran regressions with and without controlling for institution and source type. I concentrate here on the effect of source type, since this was more important than that of institution.

I first describe the results of regression analysis of responses for all respondents, with and without using dummy variables to control for source type and institution. I then discuss the results of similar regression models using subsets of respondents classified

according to source type and institution. Both simple and multiple regressions are reported for each group.

All respondents

Effect of FP SCORET indices in isolation The first column in Table 10.4 gives simple standardized regression coefficients (betas, = r_s) for source type, institution, and each of the FP SCORET indices as predictors of Information Flow. (The order of the FP SCORET variables has been changed to ease the construction of the table.) These reflect the effect of each index on Information Flow when considered in isolation of any other factors. Five of the eight indices were significant predictors in the simple regression models: Timeliness and Familiarity each accounted for about 10% of variance in Information Flow, while Reward, Openness and Proximity each accounted for 4% to 6% of variance. Capacity, Energy and Structure were not significant.

Table 10.4 Standardized regression coefficients (betas) for predictors of Information Flow in simple and multiple regression^a.

Variable	Simple regression		Multiple regression ^b	
	No controls	Controlling for source ^c	No controls	With controls
Source type^d				
AARD publs	-.31 **	-.31 **		-.15 *
AIC publs	-.20 **	-.20 **		-.02
Ag press	.22 **	.22 **		.31 **
Institution^d				
Prov specs	.03			-.04
AIC specs	.20 **			.07
FP SCORET indices				
Proximity	.38 **	.23 **	.35 **	.19 **
Familiarity	.31 **	.30 **	.18 **	.22 **
Timeliness	.25 **	.21 **	.22 **	.14 **
Reward	.23 **	.26 **	.13 *	.21 **
Openness	.24 **	.24 **		
Capacity	.07	.23 **		
Energy	-.06	.00		
Structure	.02	.13 *		
R^2			.28	.41
F			24.30 **	19.33 **

^a Data from questions IS5, 7 and 8. Minimum $n = 260$. ^b Multiple regression model used forced entry of dummy variables (in model with controls) and stepwise forward entry of FP SCORET variables. Coefficients are not given for variables not included in the models. ^c Regression model of each FP SCORET variable individually (similar to simple regression), but after controlling for source type using dummy variables. ^d Dummy variables were entered as a block into equations.

Effect of source type Taken as a group, the source type dummy variables alone accounted for 23% of variance, more than any of the FP SCORET indices. The institution dummy variables alone accounted for 4% of variance, indicating that while where the specialist worked was a significant influence on information obtained from the various sources, it was not nearly as important as the nature of the source itself.

Effect of FP SCORET indices, controlling for source type The second column in Table 10.4 shows the beta values for the FP SCORET indices when source type was included in the equation using dummy variables. These figures represent the effect of each index, considered in isolation of other factors, but after the effect of the source types had been removed. Seven of the eight indices were significant, the exception being Energy. Capacity and Structure are significant in this column but not in the first.

The differences between the first two columns in the table are due to the differences among the four sources. The plots of Structure and Capacity against Information Flow (Figure 9.3 and Figure 9.4) show that the four means for the source types were distributed from top left to bottom right: source scoring lower on Structure and Capacity had generally higher Information Flow scores, while those scoring higher on these indices had lower flows. This counteracts the positive slopes of the regression lines for individual sources, yielding an almost flat overall regression line.

Controlling for source type overcomes this difficulty. Doing so gives us a better picture of the effects of Structure and Capacity on Information Flow -- positive in both cases, as hypothesized.

Controlling for source type has no effect on Energy, however. All the regression lines in Figure 9.7 are flat, so removing the differences among them has no effect. We are forced to conclude that the amount of Energy a specialist expends on using a source has no (direct) effect on the amount of information gained. This does not mean that Energy is not important, however, as discussed in the next chapter.

The second column in Table 10.4 indicates Familiarity (beta = .30) as the most important influence on Information Flow overall, accounting for about 8% of variance in the dependent variable (compared to 23% for the source types taken as a group). Second is Reward (beta = .26, accounting for 6% of variance), followed by Openness (beta = .23, 5% of variance), Proximity (beta = .23, 4% of variance) and Capacity (beta = .23, 4% of variance) and Timeliness (beta = .21, 4% of variance).

Removing the variance due to source type had little effect on Familiarity, Reward, Openness, and Timeliness. It had a major effect on Proximity, however, reducing its beta to .23 from .38 when it was considered in isolation (first column in the table). Inspecting Figure 9.2 shows us why: the means of the source types trend along the line of the regressions, from bottom left to top right. Removing the effect of the sources will tend to thus diminish the influence of Proximity -- in contrast to the situation with Structure and Capacity discussed above, where it increased their influence.

Joint effect of FP SCORET indices without controls The third column in Table 10.4 show the results of a stepwise multiple regression with all the FP SCORET variables included but excluding the source and institution dummy variables. Four of the five FP SCORET indices significant in simple regression entered this model. The best predictor was Proximity (beta = 0.35), followed by Timeliness (beta = 0.22), Familiarity, and Reward. With a beta value slightly below the required significance level (beta = .12, $t = 1.84^{ns}$), Openness did not enter the equation, probably because of its relatively high correlation with Timeliness ($r = 0.55$, Table 10.1).

When the remaining FP SCORET variables were force-entered into the model, Openness did join the other four variables as a significant predictor of Information Flow (beta = 0.18, $t = 2.08^*$) (results not shown).

Joint effect of FP SCORET indices, controlling for source type and institution The final column in Table 10.4 shows the regression model that included the source and institution dummy variables as controls. The same four variables -- Proximity, Timeliness, Familiarity and Reward -- though in a different order, entered this model. The dummy variables alone accounted for 27% of variance in Information Flow. Familiarity was the best FP SCORET predictor, followed closely by Reward and then by Timeliness and Proximity. The final form of the equation accounted for 41% of variance in the dependent variable.

Including all eight FP SCORET variables in the model failed to raise R^2 above 42%, but caused the Timeliness beta value to drop below the significance level (results not shown).

Despite the correlations among the FP SCORET indices (Table 10.1), there was little evidence of serious multicollinearity in the models. The mean variance inflation factor (VIF) for the model reported in the last column of Table 10.4 was 1.50, and the maximum value was 1.79 -- well below the critical value of 10 suggested by Neter et al. (1983:392). Even when all the FP SCORET variables were included in the model, the mean VIF was 1.77 and the maximum only 2.60. Other signs of multicollinearity, such as changed signs of betas when new variables were added to the model, were absent.

Summary Both Proximity and Reward were identified earlier through the analysis of variance by source type and institution as being probable influences on Information Flow (Table 10.2). The regression models confirm this and show that Timeliness and Reward, likewise associated with high Information Flow levels in some of the earlier analyses, also influence Information Flow.

There is some evidence that Openness may also be related to Information Flow. However, its correlation with other variables (Table 10.1) means that any effect is masked when these other variables are taken into consideration.

Structure and Capacity were associated with Information Flow for individual sources, but differences among the sources masked their effect when all the sources were pooled. However, these indices failed to enter the final multiple regression equations,

presumably because they were correlated with other variables already in the model.

Table 10.5 Regression of Information Flow on source type, institution, and significant FP SCORET indices (by source types)^a.

Variables	AIC publications		Agricultural press	
	<i>r</i>	Beta	<i>r</i>	Beta
Institution^b				
Province		-.05		.15
AIC				.09
FP SCORET indices				
Proximity	.07		.12	
Familiarity	.48 **	.46 **	.25 *	
Timeliness	.37 **		.22 *	
Reward	.35 **	.31 *	.32 **	.23 *
Openness	.46 **		.30 **	
Capacity	.40 **		.28 *	
Energy	.13		.10	
Structure	.15		.35 **	.27 *
<i>n</i>	49		76	
<i>R</i> ²	.34		.20	
<i>F</i>	7.62 **		4.40 **	

(Continued)

Only Energy was not a significant predictor in any of the models tested. It is possible that other measures of this concept would reveal relationships between it and Information Flow; however, it is not possible to test this using the data available.

It is possible that a different set of variables are important predictors for various subsets of the specialist population (for instance, for specialists at district offices) or for certain source types (such as AARD publications). I test this possibility next.

By source types

Table 10.5 gives the simple correlations of the FP SCORET variables with Information Flow, broken down by the four source types tested. It also gives standardized multiple regression coefficients for the FP SCORET variables obtained in stepwise regression controlling for institution type. (These are equivalent to the first and fourth columns of Table 10.4.) Because correlation coefficients and beta scores are equivalent, these figures can be compared directly: the r value indicates the effect of the individual FP SCORET variables alone on Information Flow, while the beta value reflects its effect when all other significant FP SCORET variables have been taken into account.

Table 10.5 Regression of Information Flow on source type, institution and significant FP SCORET indices (by source types) (continued).

Variables	AARD publications		Other specialists	
	<i>r</i>	Beta	<i>r</i>	Beta
Institution^b				
Province		.36 **		.00
AIC		-.04		.07
FP SCORET indices				
Proximity	.33 **		.45 **	.30 *
Familiarity	.39 **	.31 **	.17	
Timeliness	.13	.26 *	.21	
Reward	.22		.23	
Openness	.08		.37 **	.39 **
Capacity	.14		.21	
Energy	-.02		-.22	-.26 *
Structure	.10		-.11	
<i>n</i>	70		61	
<i>R</i> ²	.30		.34	
<i>F</i>	6.88 **		5.73 **	

^a Data from questions IS5, 7 and 8. Multiple regression model used forced entry of dummy variables and stepwise forward entry of FP SCORET variables. Coefficients are not given for variables not included in the models. Significance: ** $p = .01$, * $p = .05$.^b Dummy variables included in model with controls.

The importance of the FP SCORET variables appears to vary from source to source (Table 10.6). For AIC publications, five variables (Familiarity, Timeliness, Reward, Openness, and Capacity) all were related to Information Flow in simple correlations. For the agricultural press, Reward, Openness, Capacity, and Structure had significant simple correlations, while for AARD publications, Proximity and Familiarity were significantly correlated. For other specialists, Proximity and Openness were most closely correlated with Information Flow.

This variation among sources is paralleled in the multiple regressions by sources. Beta values were significant for Proximity (other specialists), Familiarity (AIC and AARD publications), Timeliness (AARD publications), Reward (AIC publications and agricultural

press), Openness and Energy (other specialists) and Structure (agricultural press). Of the eight FP SCORET variables, only Energy failed to enter one of the four stepwise regression models.

The first four FP SCORET variables listed in Table 10.6 (Proximity to Reward) were significant predictors of Information Flow in the overall regression (last column of Table 10.4). The mean of the simple correlations reported in Table 10.6 for these variables was 0.27, compared to 0.17 for the last four variables (Openness to Structure) (0.13 if Openness is excluded). In addition, six of the nine beta values in the table are for the first four variables. In general, therefore, the first four variables are better predictors than the last four.

Table 10.6 Regression of Information Flow on source type, institution, and significant FP SCORET indices (by institution)^a.

Vari-able	Province specialists		District specialists		AICspecialists	
	<i>r</i>	Beta	<i>r</i>	Beta	<i>r</i>	Beta
Source type^b						
AIC publs		-.28 *		.07		
Ag press		.35 **		.43 **		.11
AARD publs		-.39 **		-.13		-.18
FP SCORET indices						
Prox-imity	.29		.37 **		.49 **	.44 **
Famil-iar-ity	.28	.22 *	.33 **	.31 **	.12	
Time-liness	.24		.25 **		.39 **	.24 *
Reward	.11		.30 **	.33 **	.16	
Open-ness	.23		.25 **		.38 **	
Capacity	.01		.14		.06	
Energy	.15		-.16 *		.08	
Structure	.11		.00		-.13	
<i>n</i>		63		139		54
<i>R</i> ²		.51		.40		.40
<i>F</i>		15.21 **		7.53 **		8.25 **

^a Data from questions IS5, 7 and 8. Multiple regression model used forced entry of dummy variables and stepwise forward entry of FP SCORET variables. Coefficients are not given for variables not included in the models. Significance: ** $p = .01$, * $p = .05$.^b Dummy variables included in model with controls.

While some variation is to be expected among the sources due to chance and the relatively small *ns*, the lack of consistency is surprising. While Proximity, Familiarity, Timeliness and Reward are generally more important than the other variables, it seems that individual sources may vary considerably from this pattern:

- Specialists tended to use AIC publications they were familiar with (Familiarity), and that they found easy to use (Openness), complete and credible (Capacity), timely (Timeliness), and locally relevant (Reward).
- Specialists got information from the agricultural press if they thought it their job to do so (Structure), and if they found the press stories relevant (Reward), easy to use (Openness), and complete and credible (Capacity).
- They used AARD publications that they were familiar with (Familiarity), that were accessible (Proximity), and that were timely (Timeliness).
- They obtained information from other specialists who were close by (Proximity) and who provided information in an easy to use form.

These differences mean that it is not enough to attempt to increase the FP SCORET characteristics across the board for all sources in order to improve Information Flow. Rather, a more selective approach is needed, adjusting the characteristics of each type of source according to what is effective for that source. For instance, the data show it makes little sense to exhort SMSs to devote more effort to using the various sources (i.e., to increase Energy), since this will have negligible (or even a negative!) effect on Information Flow ($r = -.02$). It makes considerably more sense to focus on variables that are significant in Table 10.5 for these publications.

The paragraph above assumes that the direction of causality is from the FP SCORET variables to Information Flow rather than the reverse -- in other words, that specialists use sources because they are Familiar with them, rather than they become Familiar with them because they use them. I discuss the problems of causality and possibilities for increasing Information Flow for each of the sources in the next chapter.

By institutions

Table 10.6 shows there was considerably less variation among the respondents at the different institutions than among the source types. In simple regressions, Proximity, Familiarity, Timeliness, Reward, and Openness were all significant predictors of Information Flow for the district specialists, who constituted the largest subset of respondents. These five indices accounted for all the significant predictors for province and AIC specialists, though not all were significant for these respondent subsets. The lack of significance may in part be due to the smaller sample *n*'s for the province and AIC specialists, though the simple correlations are also somewhat lower for province specialists.

This similarity means that SMSs at different institutions appear to behave in similar ways toward the various sources. This has two implications:

- The three subsets can be combined in subsequent discussion. Improving the Proximity of a source, for instance, should be about as effective in serving the needs of AIC specialists as of province or district specialists.
- From a practical point of view, it is *not* necessary to treat SMSs at the different institutions as different audiences, to be served with different media. A source that effectively reaches one group has the potential to reach the others also.

Summary

This chapter has investigated factors affecting the flow of information from four sources to extension specialists at three types of institutions. The four sources were Agricultural Information Center publications, the agricultural press, Agency for Agricultural Research and Development publications, and other specialists. The three institutions were province- and district-level agricultural offices and provincial Agricultural Information Centers.

Eight factors were tested for their influence on information flows. Overall, specialists obtained large amounts of information from a source if:

- The source was nearby (Proximity).
- They knew the source well (Familiarity).
- The source provided information in a timely manner (Timeliness).
- The source provided information that was locally relevant (Reward).

There was some evidence that they obtained much information if:

- The source was easy to understand and use (Openness).
- The source was seen as especially complete or credible (Capacity).
- They saw it as their job to obtain information from the source (Structure).

It made little or no difference overall whether:

- They devoted a large amount of effort to obtain information from the source (Energy).

There were few differences among the specialists at the three types of institutions. However, the influence of the various factors varied considerably among the four source types. This means that any strategy for improving information flows to extension personnel must consider the characteristics of the sources and channels and extensionists' likely usage of these. This is discussed further in the next chapter.