Information Search Strategies of Ohio Farmers

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Situation

The present study examines the parameters of farmers' information seeking behavior. Farm business literature has extensively documented the importance of publicly and privately available agricultural information for the financial success of farm businesses. Less effort has been dedicated to understanding farmers' information search strategies for making production, marketing, and financial decisions related to their farm business and the confidence in their actions.

The present study aims to fill this void with a survey of Ohio farmers. Our study builds on research on farmers' information seeking behavior that has indicated a variety of demographic and socio-economic factors to affect type, amount, and use of information sources. We extend this research by assessing farmers involvement in information acquisition and their confidence with respect to their marketplace decisions and behaviors as it is based on their information search.

Assessing Farmers' Information Seeking Behavior

Information Sources: Farmers' use of information sources for making production, marketing, & financial decisions related to their farm business.

Topics of Interest: Farmers' interest related to production agriculture, farm business & economics, environment & conservations, & home and family.

Farmers' Confidence: The extent to which farmers feel capable & assured with respect to decisions & behaviors related to information search.

1 Information Acquisition & Processing
Confidence in ability to obtain needed marketplace information & to process and understand that information.

2 Consideration Set Formation
Confidence in ability to identify acceptable choice alternatives.

3 Personal Outcomes
Confidence in ability to meet information search objectives such that choices generate positive outcomes for oneself.

4 Social Outcomes
Confidence in ability to meet information search objectives such that choices generate positive outcomes in the reaction of others.

5 Persuasion Knowledge
Confidence in ability to understand & manage tactics in the marketplace.

6 Market Interface
Confidence in ability to assert rights & expressing opinions when interacting with others in the marketplace.

Goals

The goal of the study was to contribute empirical evidence to inform the discussion about differences in farmers' information acquisition strategies regarding type, amount, & sources of information, & identify factors that explain the variation in farmers' information seeking behavior in farm businesses of different sizes & types.

Specifically, we aimed to:

- examine how intensively farmers search for information

- assess what motivates farmers to engage in information search for farming issues

- broaden the understanding of the current role of the university extension service in providing information to farmers

Objectives

In support of our goals, we collected data on:

1 **Farmers' use of information sources**
Print media, broadcast media, electronic media, interpersonal sources

2 **Farmers' topics of interest**
Crop & livestock production, farm business & economics, environment, home & family

3 **Farmers' confidence in information search**
Attitudes toward information search

4 **Characteristics of the farm operation**
Type & size of the farm

5 **Farmers' demographic information**
Age, education, gender, marital status, race, household income

Approach

- A mail survey of 3,000 farmers was conducted in spring 2007 to collect the data.

- The sample for the survey was provided by a private vendor & stratified by farm sales class to guarantee sufficient representation of larger farms. A weighting procedure was applied in the calculation of all statistics to return the numbers to a representative sample.

- Questionnaire design and administration followed best survey practices.

- Respondents were offered entry into lottery for three cash prices of $250, $100, & $50 as an incentive for participation.

- About 58% of questionnaires were returned, 608 responses entered the data analysis presented here.

Sample Distribution

- The average farm size was 178 acres.

- Almost 60% of farms were producing grain or oilseed crops & 48% raised livestock.

- The majority of operators (68%) were working off-farm during most time of the year.

- More than half of the farmers (59%) were using the Internet for their farm operations.

- On average, farmers were 55 years old & were farming for 28 years.

- Only 21% of farmers obtained a college education.

- 88% of farmers were male, 96% were white, & 81% were married.

- The majority of farmers (26%) had a household income between $50,000 & $75,000. About 11% reported a household income of less than $25,000 while the household income of nine percent of farmers exceeded $125,000.

More than $250,000
4%

Less than $2,500
35%

$50,000-$249,999
13%

$10,000-$49,999
22%

$2,500-$9,999
26%
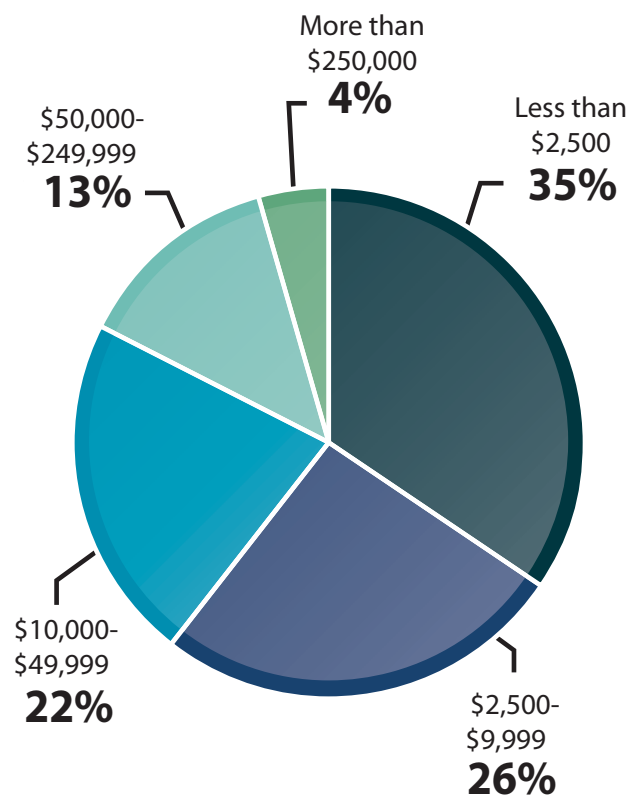
Farm Gross Sales ($)

Farmers' Search Typologies

Cluster Analysis

25 information sources
(Likert scale, 1=never, 7=always)

- 8 print media
- 2 broadcast media
- 5 electronic media
- 10 interpersonal sources

K-means clustering, multi-step process
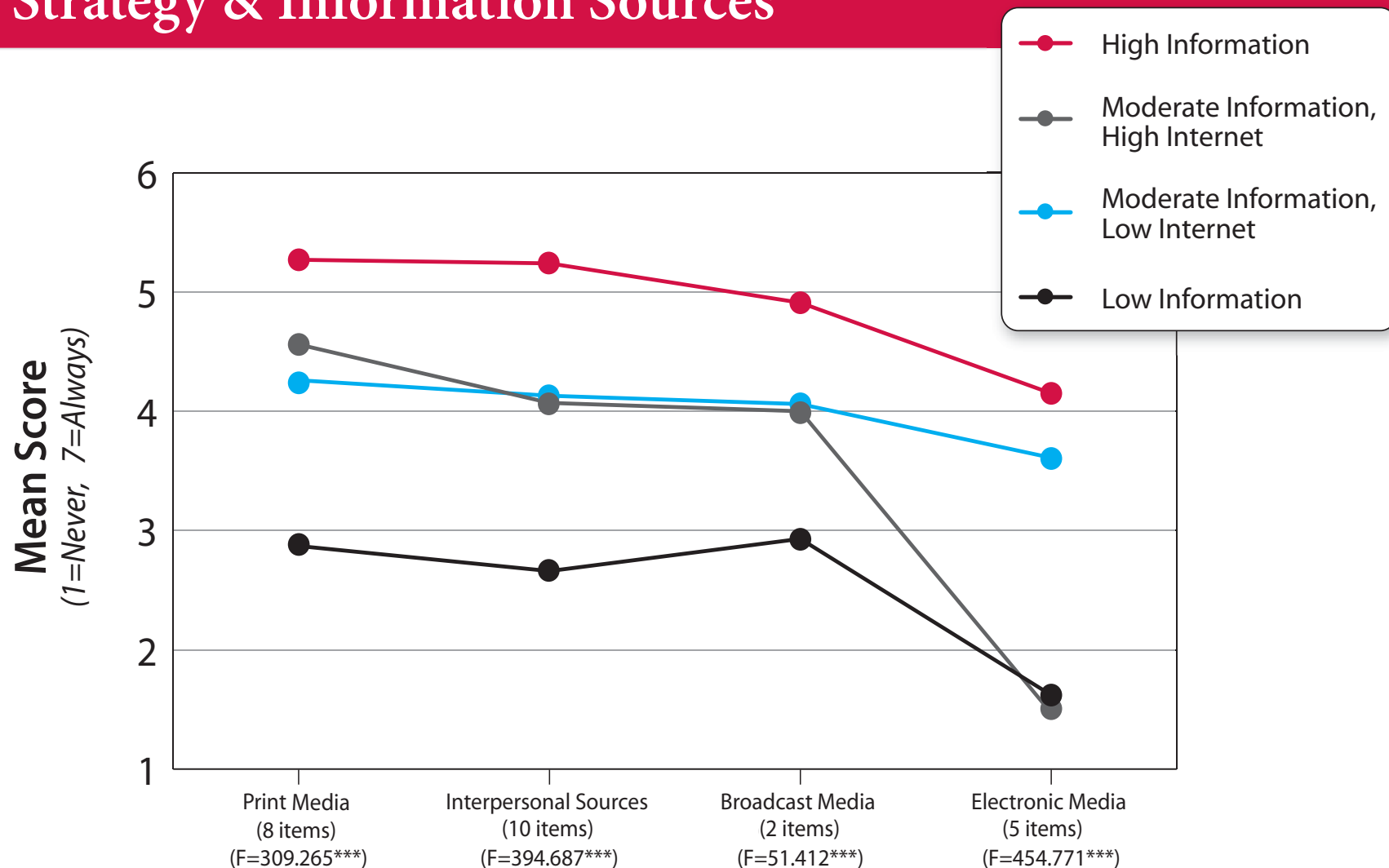
Mean information gathering scores:

- high information: 4.89 *(SD: 0.528)*
- moderate information, high internet: 4.02 *(SD: 0.540)*
- moderate information, low internet: 3.52 *(SD: 0.514)*
- low information: 2.52 *(SD: 0.567)*
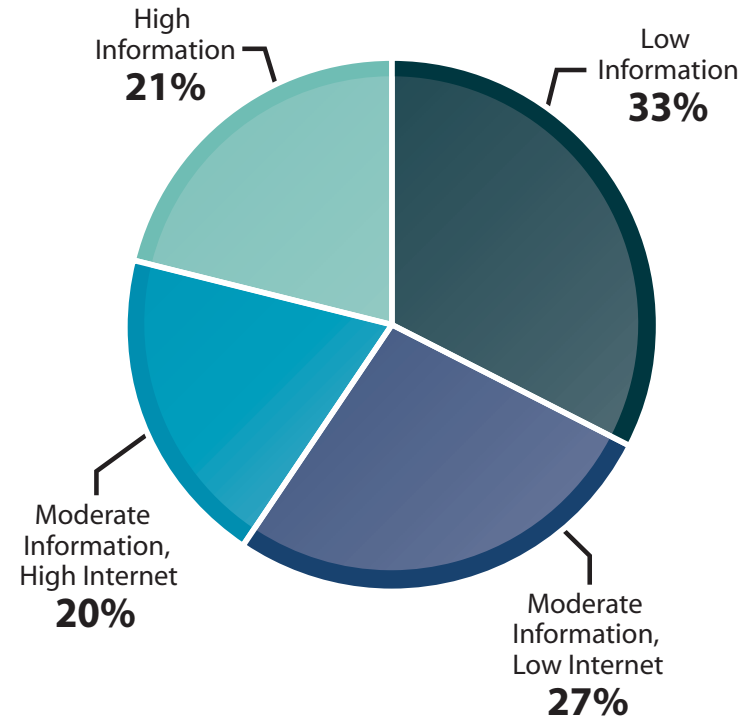
Pie chart:
- Low Information **33%**
- Moderate Information, Low Internet **27%**
- Moderate Information, High Internet **20%**
- High Information **21%**

Relationship Between Farmers' Information Strategy & Information Sources

Legend:
- High Information
- Moderate Information, High Internet
- Moderate Information, Low Internet
- Low Information

Y-axis: **Mean Score** (1=Never, 7=Always)

X-axis categories:
- Print Media (8 items) (F=309.265***)
- Interpersonal Sources (10 items) (F=394.687***)
- Broadcast Media (2 items) (F=51.412***)
- Electronic Media (5 items) (F=454.771***)

Relationship Between Farmers' Information Strategy & Their Topics of Interest

Legend:
- High Information
- Moderate Information, High Internet
- Moderate Information, Low Internet
- Low Information

Mean Score (1=Not Important, 7=Very Important)

X-axis categories:
- Crops (6 items) (F=39.683***)
- Economics (8 items) (F=60.943***)
- Environment (4 items) (F=16.919***)
- Livestock (3 items) (F=12.076***)
- Family (6 items) (F=13.007***)
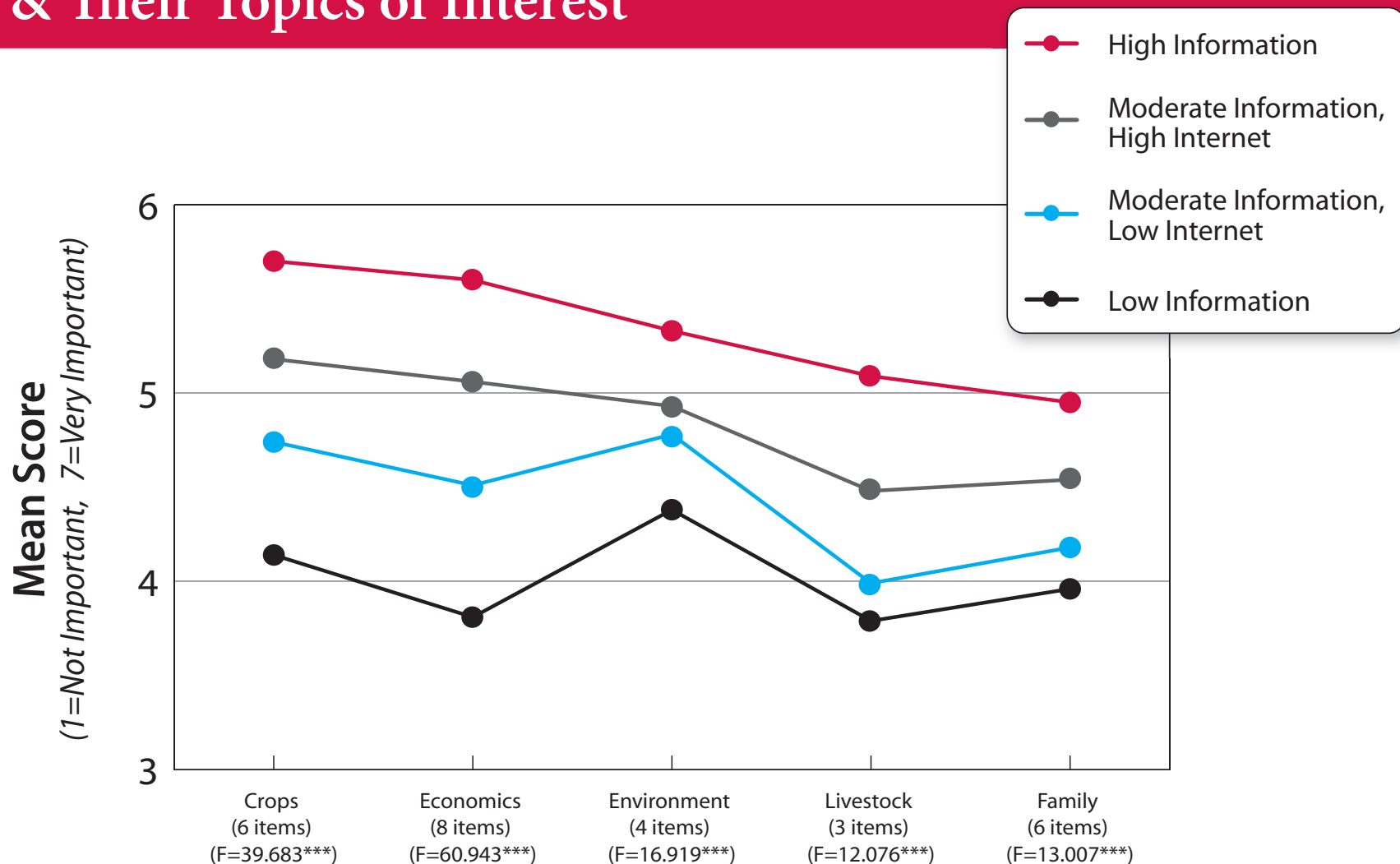
Relationship Between Farmers' Information Strategy & Information Search Confidence

Mean Score *(1=Strongly Disagree 7=Strongly Agree)*

Legend:
- High Information
- Moderate Information, High Internet
- Moderate Information, Low Internet
- Low Information

X-axis categories:
- Marketplace Interface (4 items) (F=36.747***)
- Personal Outcome (2 items) (F=7.755***)
- Persuasion Knowledge (2 items) (F=46.049***)
- Social Outcome (4 items) (F=23.170***)
- Information Acquisition (3 items) (F=46.615***)
- Consideration Set Formation (8 items) (F=9.615***)

What Variables Predict Farmers' Information Strategy?

	Low Information	Moderate Information, Low Internet	Moderate Information, High Internet	High Information
	Beta	Beta	Beta	Beta
Constant	17.684***	-2.353†	-5.710***	-16.855***
Demographics & Farm Characteristics				
Age	-0.052**	n.s.	0.042**	n.s.
Education	0.888*	-1.160**	n.s.	n.s.
Household Income	-0.253**	n.s.	n.s.	0.155†
Farm Sales	-0.333**	0.296**	0.284**	-0.243*
Years Farming	-0.070***	0.045***	-0.048***	0.042**
Grain Farming	n.s.	n.s.	-1.041**	1.083**
Livestock Farming	-0.740†	1.925***	n.s.	-1.255**
Total Acres	n.s.	n.s.	-0.001†	n.s.
Off-Farm Work	-0.960*	0.792*	n.s.	n.s.
Internet Access	-0.525†	-1.745***	1.502***	1.414***
Topics				
Crops	n.s.	n.s.	0.316*	n.s.
Livestock	n.s.	-0.391***	n.s.	0.444***
Environment	-0.400**	0.348**	n.s.	n.s.
Economics	-0.409*	n.s.	n.s.	0.787***
Family	n.s.	-0.266**	n.s.	
Confidence				
Consideration Set Formation	n.s.	n.s.	-0.215†	n.s.
Personal Outcome	0.402*	0.225†	-0.385**	n.s.
Social Outcome	-0.286†		0.289†	n.s.
Persuasion Knowledge	n.s.	-0.502***	n.s.	0.653***
Marketplace Interface	-0.882**	0.577**	n.s.	n.s.
Model Fit				
-2 Log Likelihood	388.864***	479.628***	467.816***	367.408***
Chi-Square	377.825***	230.819***	130.727***	258.059***
Nagelkerke	.646	.458	.309	.538

Logistic Regression Analysis

Only significant predictors shown

† Significant at p<0.100

* Significant at p<0.050

** Significant at p<0.010

*** Significant at p<0.001

n.s. not significant

N=608

Thumbnail Sketches of Farmers' Information Strategies

Cluster 1 (Low-Information Strategy)	Cluster 2 (Moderate-Information Strategy, Low Internet)
• Younger • College educated • Disposing lower household income • Lower farm sales • Less experience in farming • Less likely to work off-farm • Less interested in farm business and economic topics • Less interested in environmental topics • Less concerned with the marketplace interface • Display less information acquisition efforts • Concerned with personal outcomes	• Less likely college educated • Higher farm sales • More experience in farming • Livestock • Work off-farm • Less likely having Internet access • Less interested in family topics • Interested in environmental topics • Less interested in livestock topics • Concerned with marketplace interface • Higher information acquisition efforts • Lower persuasion knowledge
Cluster 3 (Moderate-Information Strategy, High Internet)	**Cluster 4** (High-Information Strategy)
• Older • Higher farm sales • Less experience in farming • Less likely to produce grain crops • Internet access • Interested in crop topics • Display information acquisition efforts • Less concerned with personal outcomes	• Lower farm sales • More experience in farming • Produce grain crops • Less likely to raise livestock • Internet access • Interested in farm business and economics topics • Interested in livestock topics • Display information acquisition efforts • Higher persuasion knowledge

How Do Farmers' Information Strategies Compare?

	Moderate Information, Low Internet	Moderate Information, High Internet	High Information
	Beta	Beta	Beta
Intercept	-15.413***	-20.935***	-30.392***
Demographics & Farm Characteristics			
Age	n.s.	0.087***	0.051*
College	-1.473**	n.s.	n.s.
Marital Status	-0.706†	-0.807†	n.s.
Household Income	n.s.	0.326**	0.368**
Farm Sales	0.421**	0.439**	n.s.
Years Farming	0.086***	n.s.	0.075***
Livestock Farming	1.854***	n.s.	n.s.
Off-Farm Work	1.379**	1.068*	0.933†
Internet Access	-0.665†	1.896***	1.789***
Topics	n.s.	n.s.	n.s.
Livestock	-0.209†	n.s.	0.405**
Economics	n.s.	0.496*	1.003***
Environment	0.531**	n.s.	n.s.
Family	-0.254*	n.s.	n.s.
Confidence			
Information Acquisition	1.058***	1.407***	1.624***
Personal Outcome	n.s.	-0.654**	-0.600**
Social Outcome	n.s.	0.497*	n.s.
Persuasion Knowledge	n.s.	n.s.	0.678**
Marketplace Interface	0.934***	0.543*	0.700*
N	165	118	128

Multinominal Regression Analysis

Reference Category: Low information

Model Fit:
Chi-square: 747.969***
Nagelkerke: 0.757

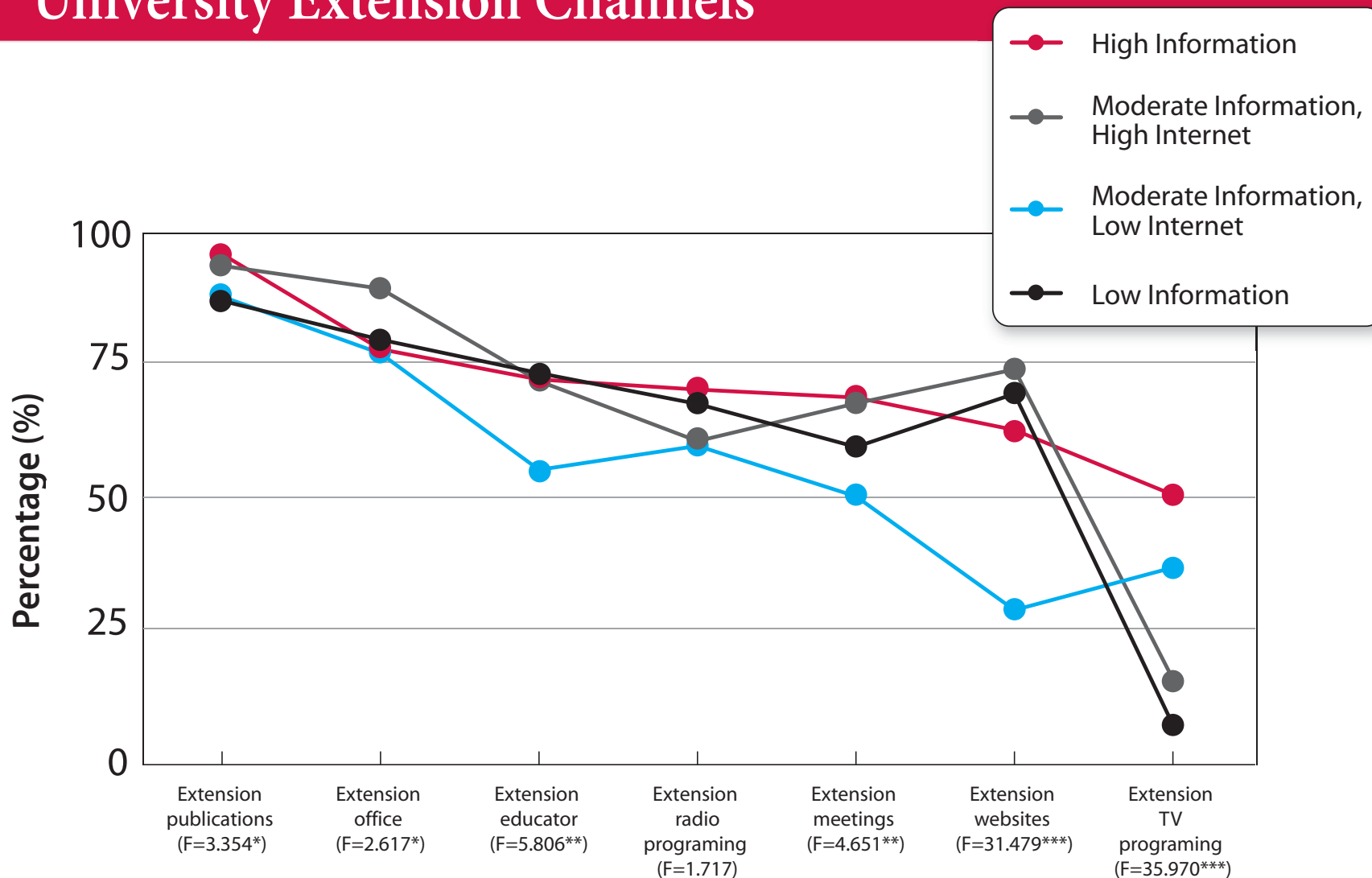Only significant predictors shown

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* Significant at p<0.050

** Significant at p<0.010

*** Significant at p<0.001

n.s. not significant

Relationship Between Information Strategy & Use of University Extension Channels

What Predicts Farmers' Usage of University Extension Communication Channels?

	Publications	Radio	TV	Websites	Educator	Meetings	Office
	Beta	Beta	Beta	Beta	Beta	Beta	Beta
Demographics & Farm Characteristics							
Gender	n.s.	n.s.	n.s.	n.s.	-0.637†	n.s.	-4.320***
Race	1.763**	n.s.	n.s.	n.s.	-1.556*	n.s.	n.s.
Age	-0.066**	-0.040**	-0.051***	-0.020†	n.s.	-0.037**	n.s.
Education	n.s.	-0.698**	-0.584†	-0.605*	-0.562*	n.s.	n.s.
Marital Status	n.s.	-1.195***	n.s.	n.s.	n.s.	n.s.	n.s.
Household Income	n.s.	n.s.	0.114†	n.s.	n.s.	-0.165*	0.144†
Farm Sales	n.s.	n.s.	n.s.	n.s.	0.266**	0.166*	n.s.
Years Farming	n.s.	n.s.	0.034**	n.s.	-0.034**	n.s.	-0.020†
Grain Farming	n.s.	0.732**	n.s.	0.745**	n.s.	0.855**	n.s.
Livestock Farming	-2.008**	n.s.	n.s.	n.s.	-0.637*	-0.619*	n.s.
Off-Farm Work	n.s.	0.638*	n.s.	n.s.	n.s.	n.s.	n.s.
Internet Access	n.s.	-0.750**	-0.762**	n.s.	n.s.	n.s.	n.s.
Private Consultant	-1.307**	n.s.	n.s.	n.s.	-0.478†	-0.528*	n.s.
Topics							
Livestock	0.481**	n.s.	n.s.	n.s.	0.149†	n.s.	n.s.
Economics	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	-0.333*
Environment	0.557**	0.395***	n.s.	0.183†	0.205†	0.399***	0.401**
Family	-0.432**	-0.188*	n.s.	n.s.	n.s.	-0.318***	n.s.

Logistic Regression Analysis

Dependent variable = 1 if frequency of contact > 0

Only significant predictors shown

† Significant at p<0.100

* Significant at p<0.050

** Significant at p<0.010

*** Significant at p<0.001

n.s. not significant

N=608

What Predicts Farmers' Usage of University Extension Communication Channels?

	Publications	Radio	TV	Websites	Educator	Meetings	Office
	Beta	Beta	Beta	Beta	Beta	Beta	Beta
Information Strategy							
Low Information	n.s.	-0.718†	-2.913***	n.s.	n.s.	-1.011**	0.906*
Moderate Information, Low Internet	n.s.	-0.938**	-0.920**	-1.435***	-0.859*	-1.003**	n.s.
Moderate Information, High Internet	n.s.	n.s.	-1.586***	0.739*	n.s.	n.s.	1.069*
Confidence							
Consideration Set Formation	n.s.	0.321**	n.s.	n.s.	0.437***	0.330**	n.s.
Personal Outcome	n.s.	0.326**	-0.212†	n.s.	0.215*	0.271**	n.s.
Social Outcome	0.350†	n.s.	n.s.	n.s.	n.s.	0.314**	n.s.
Persuasion Knowledge	n.s.	-0.206†	n.s.	n.s.	n.s.	n.s.	n.s.
Marketplace Interface	n.s.	-0.297*	n.s.	0.277*	n.s.	-0.347*	0.367*
Constant	n.s.	3.436*	3.363*	n.s.	3.799*	3.000*	n.s.
Chi-Square	100.373***	143.465***	160.353***	150.228***	137.203***	125.031***	108.680***
Nagelkerke	.329	.289	.339	.295	.283	.252	.262

Logistic Regression Analysis

Dependent variable = 1 if frequency of contact > 0

Only significant predictors shown

† Significant at $p<0.100$

* Significant at $p<0.050$

** Significant at $p<0.010$

*** Significant at $p<0.001$

n.s. not significant

N=608

Key Findings

Key findings of the univariate analyses include:

- 4 distinct search typologies practicing 3 information strategies.

- Print media present most important information source; electronic media was lowest in use.

- Crops information is of highest interest, followed by farm business & economics, environment & conservation, livestock, & home & family issues.

- Farmers reported highest scores for their confidence in the marketplace interface & their satisfaction with personal outcomes of their search. Scores for information acquisition & consideration set formation were lowest.

- Highest interest in university extension publications & office services.

Key findings of the multivariate analyses include:

- Demographic & farm-business metrics prevail as the most significant predictors of information strategy; farmers interests & farmer confidence follow.

- *High vs. low-information strategies:* Interest in farm business & economics & a higher household income despite similar educational background, farm sales, & off-farm employment.

- *Internet-savvy vs. low-information strategies:* Higher sales, more off-farm work, & a higher household income; they are older; high scores in information acquisition are linked with satisfactory social outcomes but unsatisfactory personal results.

- *Traditionalists vs. low-information strategies*: Lower education, but balance it with more years in farming, higher farm sales, off-farm work & livestock, a particular interest in environmental topics, information acquisition, & behavior in the marketplace.

- Determinants of university extension usage highly specific for each medium.

Conclusions

Our study provides insight in the information strategies of farmers by taking into account their information interest, confidence in searching for information, farm business, & farmer demographic characteristics.

Our study confirms an "information gap" between groups of farmers, which is only partly attributable to information availability or accessibility.

Our findings speak to the utility of targeted information packaging & information delivery to improve farmers' access to relevant and meaningful information.

To reduce the "information gap", we suggest that public & private agricultural information providers develop targeted market research & communication strategies by taking into account the specific characteristics of farmers information strategies.

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