

Adoption of woodland management practices by NIPF owners in Virginia

**by Maminaiaina S. Rasamoelina
James E. Johnson
R. Bruce Hull**

Outline

- Introduction
- Research objectives
- Methods
- Main Results
- Implications and conclusions

Introduction

▶ Why NIPFs?

- Because of their number
- Because of the area of forest land they control
- Because of the dynamism of their population

▶ Why NIPFs?

- 11.1 million NIPF owners controlling 50% of the 303 million ha nationwide
- 410,000 NIPF owners controlling 77% of the 5.3 million ha in Virginia
- Increasing number: 9.3- 11.1 million owners from 1993 to 2006
- 16.2 million ha nationwide in past 5 yrs (1.08 million new owners)

Research objectives

- Understand what factors are related to NIPF owners' adoption of woodland management practices.
- Determine whether there is any difference between primary (active) and secondary (less active) practices in terms of factors related to their adoption.

Methods

- Development of the Integrated Model of Behavior Adoption
- Mail survey for collecting data
 - Pilot test of the questionnaire
 - Focus group
 - Waves of mailings and reminder cards
- Data analysis
 - Use of multivariate analysis to develop the mathematical models (PCA and logistic regression)

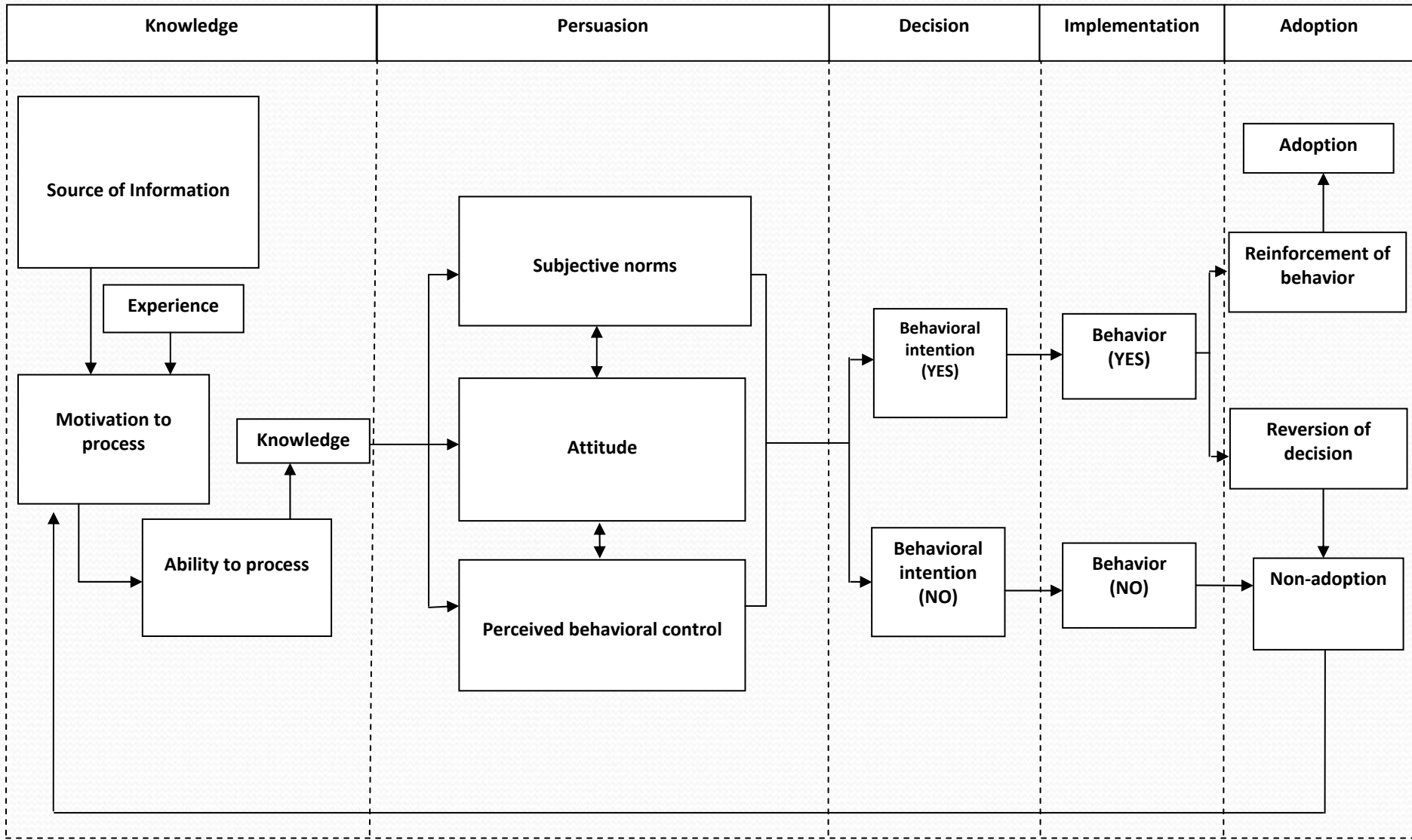


RESULTS

Theoretical model

- Value-Belief Norm Theory (Stern et al., 1999)
 - Worldview,
 - Awareness of consequences of behavior
 - Self-ascribed responsibility
- Theory of Planned Behavior (Ajzen, 1991)
 - Attitude
 - Subjective norms
 - Perceived control over behavior
- Innovation-Diffusion Process (Rogers, 2003)
 - Knowledge, persuasion, decision, implementation, adoption.
- Elaboration Likelihood Model (Petty, 1995)
 - Capacity to process
 - Motivation to process

Integrated Model of Behavior Adoption



Survey responses

- Total number of questionnaires mailed: 3435
- Total number of questionnaires delivered: 3120
- Response rate: 52%
- Adjusted response rate: 35%

Descriptives

- Our NIPF population was similar to other NIPF except :
 - Higher level of education (57% > bachelor degree)
 - More affluent (70% > 50K)
 - More inclined to use technical assistance (57%)
 - Used written management plan more (12%)
 - Attended educational programs more (53%)
- Motivated primarily by amenity values but economic benefits are always part of the goals.
- Preferred direct interaction with professionals as source of information.

Results of the PCA

10 factors derived from a series of 48 importance-scale questions :

- 16 questions about motivations for owning land.
- 12 questions about most useful sources of information for managing land.
- 20 questions about constraints to woodland management.

Motivation factors	Information factors	Constraint factors
Amenity	Direct professional info.	Human-related
Economic	Self-learning info.	Scale-related
Recreation		Financial
Farm-related		Time/labor

List of woodland management practices

Primary practices
Road/ trails building
Tree planting
Tree thinning
Use of chemicals/fertilizers
Site preparation
Tree pruning
Exotic species control
Prescribed burning
Fuel reduction
Fire lanes construction

Secondary practices
Land posting
Roads/culverts maintenance
Gates put up
Boundary lines survey
Boundary lines painting
Cultural features protection

Models retained

- Number of practices implemented (cut-off point).
- Value of the R-square: higher values preferred.
- Percent of correct classification of cases using the model.
- Number of significant predictors included in the model.

Logistic regression models developed

Primary practices	Coef.
Technical assistance	1.218
Management plan	.866
Economic motivations	.768
Total household income	.516
Scale-related constraints	-.442
Educational program	.097
Constant	-3.924

Secondary practices	Coef.
Financial assistance	1.919
Recreation motivations	.844
Economic motivations	.495
Scale-related constraints	-.472
Total household income	-.408
Amenity motivations	.346
Constant	3.334

Probability of adoption of primary practices

Technical assistance	Yes		No	
Management plan	Yes	No	Yes	No
Economic motivations				
Low	.18	.09	.06	.03
Medium	.44	.25	.19	.09
High	.70	.50	.41	.23

Probability of adoption of secondary practices

Financial assistance	Yes			No		
Recreation motivation	High	Medium	Low	High	Medium	Low
Economic motivations						
Low	.99	.96	.88	.94	.79	.51
Medium	.99	.98	.94	.97	.89	.70
High	.99	.99	.97	.99	.94	.83

Probability of adoption of primary practices

Technical assistance	Yes				No			
Management plan	Yes		No		Yes		No	
Educational programs	Yes	No	Yes	No	Yes	No	Yes	No
Economic motivations								
Low	.18	.17	.09	.08	.06	.06	.03	.02
Med.	.44	.42	.25	.23	.19	.17	.09	.08
High	.70	.68	.50	.48	.41	.39	.23	.21

IMPLICATIONS AND CONCLUSIONS

- For sustainable woodland mgt, the study confirmed the necessity of
 - Technical assistance
 - Use of a written management plan
 - Educational programs
- “Economic interests” is desirable prior for technical assistance and use of a WMP for them to be more effective in increasing adoption rate.
- Approach should follow a sequence:
 - Educational programs => develop interests (eco and non-eco).
 - Technical assistance => develop trust/sense of control .
 - Use of WMP => consolidation of the behavioral choice.
- Economic and amenity interests are not necessarily mutually exclusive (highlighted by secondary practices model)
- Financial assistance is more effective for more passive practices, thus should not be too much emphasized for active ones.

Thank you