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Farmer attitude formation toward extension services and its influence on advisory seeking behavior

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Abstract

Extension services can be well funded, adequately staffed, and technically sound and still fail if farmers choose not to engage with them. Farmer attitudes toward extension shape whether advisory services are sought, trusted, and acted upon, yet attitude formation processes remain poorly understood in most extension contexts. This research examined how farmer attitudes toward extension services form and how those attitudes influence advisory seeking behavior in Bhutan. A structured survey of 284 farming households across four dzongkhags (districts) was conducted between March and September 2023. Attitude was measured using a 21-item scale capturing cognitive, affective, and behavioral dimensions. Results showed that past extension experience ($\beta=0.41$) and perceived agent credibility ($\beta=0.36$) were the strongest predictors of attitude formation. Farmers in the most positive attitude quartile sought advisory contact 3.7 times more frequently than those in the most negative quartile. Attitude explained 42.3% of variance in advisory seeking behavior after controlling for socioeconomic factors. Technology adoption rates followed a parallel pattern, rising from 14.3% in the lowest attitude quartile to 57.6% in the highest. The findings indicate that extension systems wishing to increase farmer engagement should invest in building positive first impressions and sustained agent credibility rather than simply expanding service availability.

Keywords: Farmer attitudes, extension services, advisory seeking behavior, attitude formation, agent credibility, technology adoption, farmer engagement, agricultural advisory, Bhutan

Introduction

A farmer in Punakha Valley may live within walking distance of an extension office and still never walk through the door. Another farmer in a remote Haa district village might travel hours to attend a training session organized by the same service. The difference between these two farmers isn't distance or opportunity it's attitude ^[1]. How farmers feel about extension services determines whether they seek advisory contact, and those feelings are shaped by accumulated experiences, social signals, and perceptions of service quality that extension planners rarely measure or manage ^[2].

Attitude, in the psychological sense, refers to a learned predisposition to respond consistently favorably or unfavorably toward an object, person, or institution ^[3]. In extension contexts, farmer attitude encompasses beliefs about whether advisory services offer useful information (cognitive component), feelings about the experience of interacting with extension agents (affective component), and readiness to actively seek out or avoid advisory contact (behavioral component) ^[4]. These three dimensions together determine the farmer's overall orientation toward the extension system.

Research on extension effectiveness has overwhelmingly focused on supply-side factors agent training, technology packages, delivery methods while treating farmer demand as relatively passive ^[5]. The assumption that farmers will engage with extension if services are made available

underlies most extension reform programs. But availability and utilization are different things, and the gap between them is largely an attitudinal gap ^[6].

This research investigated how attitudes toward extension form among Bhutanese farmers and how strongly those attitudes predict actual advisory seeking behavior and technology adoption outcomes ^[7, 8].

Theoretical framework: The research drew on Ajzen's Theory of Planned Behavior, which positions attitude as a primary predictor of behavioral intention alongside subjective norms and perceived behavioral control ^[9]. In extension contexts, attitude toward extension services functions as the evaluative lens through which farmers judge whether seeking advisory contact is worth the effort. The framework was extended with Petty and Cacioppo's Elaboration Likelihood Model, which distinguishes between central and peripheral routes to attitude formation ^[10]. Central processing occurs when farmers evaluate extension based on direct experience with service quality, while peripheral processing involves relying on social cues like neighbor opinions or agent appearance. This dual-route model helps explain why some attitude antecedents (direct experience) carry more predictive weight than others (social influence).

Material and Methods

Field research design: A cross-sectional survey design was implemented across four dzongkhags in western and central

Bhutan: Punakha, Wangdue Phodrang, Trongsa, and Bumthang. These districts were selected to represent varied agroecological zones from subtropical rice-growing valleys in Punakha (1,200m elevation) to temperate buckwheat and potato zones in Bumthang (2,600m). The four districts also differ in extension service density, with Punakha having the highest agent-to-farmer ratio (1:380) and Bumthang the lowest (1:720). Respondents were selected using stratified random sampling with gewogs (sub-district blocks) as primary sampling units and farming households as secondary units ^[7].

Material: The Royal University of Bhutan College of Natural Resources Research Ethics Committee approved all protocols (Ref: CNR-REC/2023-014, February 2023). Data collection ran from March to September 2023. The survey instrument contained three sections: a 21-item Extension Attitude Scale (EAS) measuring cognitive (8 items), affective (7 items), and behavioral (6 items) attitude dimensions on 5-point Likert scales; an advisory seeking behavior module recording frequency and type of extension contacts over the preceding 12 months; and a

sociodemographic profile covering age, education, farm size, household composition, and farming experience. Technology adoption was assessed through a checklist of 12 recommended practices promoted by the Department of Agriculture ^[11].

Methods

Surveys were administered face-to-face to 284 farming households (Punakha: 82, Wangdue Phodrang: 74, Trongsa: 68, Bumthang: 60). Multiple regression analysis modeled attitude formation with past extension experience, social influence, perceived agent credibility, and service accessibility as predictors. A second regression examined attitude as a predictor of advisory seeking frequency, controlling for age, education, farm size, and district. Respondents were divided into attitude quartiles for descriptive comparison of seeking behavior and adoption outcomes. Structural equation modeling tested the full conceptual pathway from attitude antecedents through attitude to behavioral outcomes using AMOS 26 ^[12].

Results

Table 1: Predictors of farmer attitude toward extension services (multiple regression)

Predictor	B	SE	β	t	p	VIF
Past extension experience	0.38	0.06	0.41	6.33	<.001	1.24
Perceived agent credibility	0.34	0.07	0.36	4.86	<.001	1.31
Social influence	0.19	0.06	0.21	3.17	.002	1.18
Service accessibility	0.14	0.07	0.16	2.00	.047	1.22

Model: $R^2=0.487$, Adjusted $R^2=0.479$, $F(4,279)=66.34$, $p<.001$

Past extension experience and perceived agent credibility emerged as the two strongest predictors, together accounting for most of the explained variance. Social influence

contributed modestly while service accessibility the factor most commonly targeted by extension reforms was the weakest predictor.

Table 2: Advisory seeking behavior and adoption outcomes by attitude quartile

Indicator	Q1 (Low)	Q2	Q3	Q4 (HIGH)
n	71	71	71	71
Mean attitude score	2.14	2.89	3.56	4.31
Contacts/season	1.24	2.13	3.47	4.62
Adoption rate (%)	14.3	26.8	41.2	57.6
Satisfaction (1-5)	2.08	2.84	3.67	4.38

A clear dose-response pattern emerged: advisory seeking frequency increased nearly fourfold from the lowest to highest attitude quartile. Adoption rates followed a parallel

trajectory, with Q4 farmers four times more likely to adopt recommended practices than Q1 farmers.

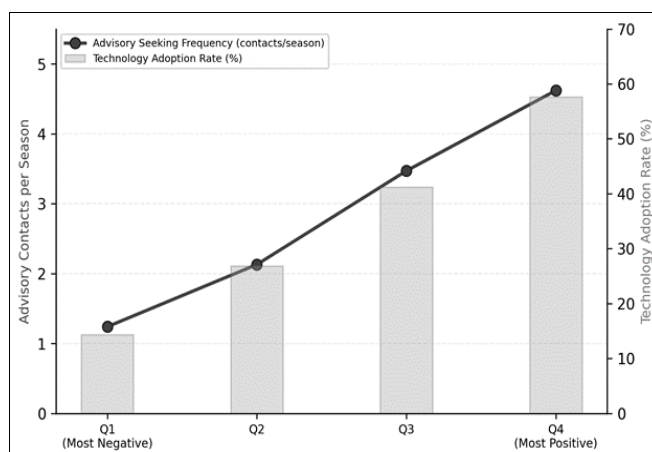


Fig 1: Advisory seeking frequency and technology adoption rate across farmer attitude quartiles

Both advisory seeking contacts and adoption rates showed steep, near-linear increases from the most negative to most positive attitude quartiles, demonstrating the strong

behavioral influence of farmer attitudes on extension engagement.

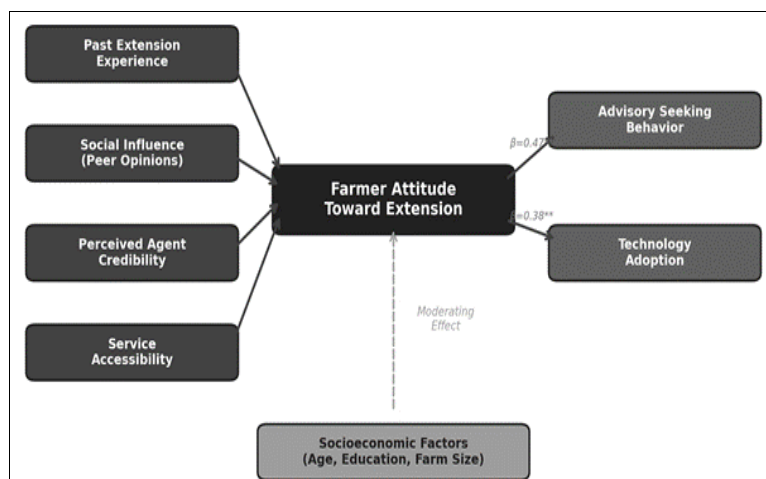


Fig 2: Conceptual model of attitude formation and its influence on advisory seeking and technology adoption

The model shows four antecedents feeding into farmer attitude, which in turn predicts advisory seeking behavior ($\beta=0.47$) and technology adoption ($\beta=0.38$), moderated by socioeconomic factors.

Discussion

The finding that past extension experience dominates attitude formation ($\beta=0.41$) carries a practical warning: first impressions matter enormously. A farmer whose initial encounters with extension were unhelpful, condescending, or irrelevant develops negative attitudes that subsequently reduce the likelihood of future engagement^[1, 4]. This creates a self-reinforcing cycle where dissatisfied farmers disengage, receive less service, and develop increasingly negative attitudes a pattern difficult to break once established.

Perceived agent credibility ($\beta=0.36$) as the second-strongest predictor aligns with communication research showing that source credibility shapes message reception more powerfully than message content^[10]. Farmers assess whether an agent knows what they're talking about and whether they can be trusted, and these judgments form quickly and persist stubbornly. Extension systems that invest in agent competence and interpersonal skills may therefore generate larger returns in farmer engagement than systems that focus primarily on expanding geographic coverage^[13].

The relatively weak effect of service accessibility ($\beta=0.16$) challenges the assumption underlying many extension reform programs that making services more available will automatically increase farmer uptake. Accessibility matters, but it matters less than the quality of the experience farmers encounter when they do make contact. Extension planners in Bhutan and similar contexts may be directing resources toward the wrong bottleneck^[6, 14].

Limitations

The cross-sectional design captures associations but cannot confirm causal direction positive attitudes may cause advisory seeking, but advisory seeking may also reinforce positive attitudes. Self-reported extension contact is subject

to recall bias. Four districts in western and central Bhutan may not represent the distinct cultural and agricultural conditions of eastern dzongkhags. The retrospective measurement of past experience relies on selective memory that may overweight recent encounters. Longitudinal panel designs tracking attitude change over multiple seasons would strengthen causal inference, and inclusion of eastern districts would improve generalizability.

Conclusions

This research demonstrated that farmer attitudes toward extension services powerfully predict advisory seeking behavior and technology adoption in Bhutan. Past experience and agent credibility shape attitudes more strongly than service accessibility or social influence, suggesting that quality of engagement matters more than quantity of opportunities. Extension systems seeking to increase farmer participation should prioritize positive early interactions and sustained agent credibility rather than simply expanding the number of access points. Attitude measurement should become a routine monitoring indicator alongside conventional metrics of extension coverage and technology transfer.

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