

**INFLUENCE OF GOVERNMENT SUPPORT AND RISK COGNITION
ON TEA PLANTERS' PURCHASING OF PLANTING INSURANCE:
THE MEDIATING ROLE OF PERCEIVED VALUE AND
ENVIRONMENTAL CONCERN**



**A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF
THE REQUIRMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY
IN INDUSTRIAL BUSINESS ADMINISTRATION**

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Dissertation Title	Influence of Government Support and Risk Cognition on Tea Planters' Purchasing of Planting Insurance: the Mediating Role of Perceived Value and Environmental Concern
Student Name	Zhenhua Xu
Student ID	65106053
Degree	Doctor of Philosophy in Industrial Business Administration
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Dissertation Advisor	Asst. Prof. Dr. Nuttawut Rojniruttikul

ABSTRACT

This study explores the influence of government support and risk cognition on tea planters' purchasing behavior regarding planting insurance, with a particular emphasis on the mediating roles of perceived value and environmental concern. With the increasing uncertainty and frequency of natural disasters due to climate change, agricultural risk management has become a critical component of sustainable rural development. In China, tea is not only an important agricultural product but also a source of income for millions of smallholder farmers, particularly in mountainous and economically disadvantaged regions like Guizhou Province. Despite the availability of agricultural insurance policies, the uptake rate among tea farmers remains relatively low. This research attempts to address this gap by examining the psychological and contextual factors that shape tea planters' decisions to participate in planting insurance.

Data were collected from 550 tea planters in Guizhou Province using a structured questionnaire and convenience sampling method. The questionnaire was designed based on validated scales from previous studies, covering constructs such as government support, risk cognition, perceived value, environmental concern, and purchase intention. The sample was representative in terms of key demographic and farming characteristics. Confirmatory factor analysis (CFA) and structural equation modeling (SEM) were conducted using AMOS 28.0 to analyze the relationships between variables. The reliability and validity of the measurement model were confirmed through appropriate statistical tests, including Cronbach's alpha, composite reliability, average variance extracted (AVE), and model fit indices such as RMSEA, CFI, and TLI.

The empirical findings reveal that both government support and risk cognition significantly and positively impact the perceived value of planting insurance, which in turn strongly predicts farmers' purchase intention. Furthermore, environmental concern plays a

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partially mediating role, suggesting that farmers who are more aware of ecological risks are more likely to recognize the benefits of risk mitigation tools such as insurance. This highlights the complex interplay between economic rationale and environmental awareness in shaping agricultural decision-making.

Government support, as measured in the study, includes not only financial subsidies but also policy guidance, training programs, and the availability of insurance products tailored to local conditions. When farmers perceive active and consistent support from the government, they are more likely to develop trust in the insurance system and believe that participating in such schemes is both beneficial and necessary. Risk cognition, referring to farmers' awareness and understanding of agricultural risks such as weather variability, pests, and market fluctuations, also contributes positively to their motivation to seek protective mechanisms.

The practical implications of this study are significant. To promote the uptake of planting insurance among tea farmers, government agencies should strengthen policy advocacy, enhance communication strategies, and provide business guidance. Educational campaigns can raise farmers' risk awareness and improve their understanding of insurance benefits. Customized training programs that emphasize the long-term economic and environmental value of insurance can help overcome psychological and informational barriers. In addition, insurance providers should consider collaborating with local cooperatives and agricultural extension services to build trust and accessibility in rural areas.

From a theoretical perspective, this study contributes to the literature by integrating the concepts of perceived value and environmental concern into the analysis of agricultural insurance adoption. It extends the application of behavioral intention theories to the context of risk management in tea production. The mediating role of perceived value provides a nuanced understanding of how external support and internal cognition translate into actionable decisions.

In conclusion, this study enhances the understanding of how government support and risk cognition can facilitate the adoption of planting insurance among tea farmers. It provides evidence-based recommendations for policymakers, insurance companies, and rural development practitioners aiming to improve the resilience of agricultural communities. The findings also suggest that future research should consider longitudinal data and comparative studies across different crop types and regions to further validate and generalize the proposed model.

Keywords: Planting insurance, Government support, Risk cognition, purchasing behavior.

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Time flies. It has been 20 years since I first stepped onto a university campus in 2005 as an undergraduate student. From earning my bachelor's and master's degrees to now nearing the completion of my Ph.D. studies, this journey has spanned two decades and three important academic institutions—Taiyuan University of Technology, Southwest University in China, and King Mongkut's Institute of Technology Ladkrabang (KMITL) in Thailand.

As someone born in Henan Province, I have traveled from northern to southwestern China, and eventually to the vibrant city of Bangkok, Thailand, in pursuit of knowledge. I am deeply grateful for the three universities that have shaped me and for the city of Bangkok, with its openness and inclusivity. I love my beautiful hometown, and I love my alma maters that have endowed me with knowledge and wisdom.

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CHAPTER 1

INTRODUCTION

1.1 Background

The global tea industry has experienced sustained growth over the past decade, driven by increasing consumer demand and expanding production capacities across major producing regions. According to the International Trade Centre (ITC, 2024), global tea production is projected to reach approximately five million metric tons in 2023, representing a 10% increase compared to 2018. Asia remains the dominant force in tea cultivation, accounting for more than 70% of the world's total output. Among these, China stands out as the largest producer, with an estimated yield of three million metric tons in 2023, contributing nearly 60% of global production. Other key players include India, Kenya, and Sri Lanka, each playing a significant role in shaping international tea markets.

China's tea sector has undergone continuous expansion since 2014, reflecting both policy support and growing economic incentives for smallholder and commercial farmers alike. By 2024, the total cultivated area dedicated to tea had reached an expected 52.50 million acres, with 45.3989 million acres already under active production—up from 39.09 million acres in 2013 (The China Tea Circulation Association, 2023). This steady growth trajectory underscores the importance of tea as a strategic agricultural commodity, not only for domestic rural economies but also for international trade and export revenue. However, despite its economic significance, tea cultivation remains highly susceptible to natural climatic risks such as frost, drought, and extreme rainfall events. These environmental uncertainties pose substantial threats to crop yields and farmer livelihoods, thereby necessitating robust risk management mechanisms.

In response to these challenges, planting insurance has emerged as a critical tool for mitigating agricultural losses and enhancing resilience among tea growers. Planting insurance, a specialized form of agricultural insurance tailored to cash crops, offers financial protection against various natural hazards that threaten production stability. It is characterized by its multifaceted risk coverage, relatively high government support, and widespread adoption among tea farmers (Mei & Zhang, 2018). As a market-oriented instrument, it aligns with broader national efforts to modernize rural risk management systems and promote sustainable agricultural development. Moreover, the success of tea planting insurance can serve as a model for extending similar insurance frameworks to other economically valuable crops,

livestock, and aquaculture products, thereby broadening the scope of agricultural risk mitigation strategies.

Despite its potential benefits, the adoption and effectiveness of planting insurance remain constrained by several structural and behavioral barriers. Studies have identified key challenges including high premium costs, limited understanding of insurance mechanisms, inadequate coverage levels, and inefficiencies in subsidy distribution (Wang, 2018; Zhang, 2019). These issues contribute to low participation rates among farmers, particularly smallholders who are most vulnerable to climate-induced shocks. Furthermore, while government subsidies have played a pivotal role in promoting insurance uptake, research indicates that their impact may be subject to diminishing returns, often referred to as the "ceiling effect" (Zhang, 2019). Thus, there is a growing consensus that reliance on price-based interventions alone is insufficient to drive long-term engagement with insurance programs.

To address these limitations, scholars and policymakers have called for a more comprehensive approach to supporting agricultural insurance. This includes improving product design to better meet the needs of diverse farming communities, enhancing information dissemination through targeted educational campaigns, strengthening regulatory oversight to ensure transparency and fairness, and implementing targeted assistance measures beyond premium subsidies (Tuo, 2023). Such a multi-dimensional strategy aims to foster a more resilient and inclusive insurance ecosystem that supports sustainable agricultural development. However, empirical studies examining the effectiveness of these integrated support mechanisms remain limited, highlighting a significant gap in current literature.

A crucial factor influencing farmers' decisions to participate in insurance schemes is their perception of risk and the value they associate with such financial instruments. Risk cognition, encompassing both intuitive and analytical assessments of potential threats, plays a central role in shaping behavior toward risk management tools like insurance (Slovic & Peters, 2006). In practice, however, many farmers exhibit bounded rationality due to limited access to information, education, and technical knowledge (Simon, 1957). Misconceptions about insurance terms, uncertainty regarding claims procedures, and confusion between insurance and other forms of social welfare further hinder informed decision-making (Akter et al., 2016). The findings of the China Agricultural Insurance Market Demand Survey Report reveal that less than 15% of farmers possess a basic understanding of insurance terminology (Zhang & Fan, 2016), underscoring the urgent need for improved financial literacy and risk education initiatives.

Given the complex interplay of environmental, cognitive, and institutional factors that influence insurance adoption, there is a pressing need to explore the mediating roles of perceived value and environmental concern in shaping farmers' purchasing behavior. While

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previous studies have examined the direct effects of government support and risk perception on insurance participation, few have investigated how these relationships are influenced by internal psychological constructs such as perceived value or ecological awareness. Understanding these dynamics is essential for designing effective policy interventions that resonate with farmers' motivations and behavioral tendencies. Consequently, this study seeks to fill this research gap by examining the influence of government support and risk cognition on tea planters' purchasing decisions, with particular emphasis on the mediating roles of perceived value and environmental concern.

By focusing on tea planting insurance as a representative case, this research contributes to a deeper understanding of the drivers behind agricultural insurance adoption in high-value cash crop sectors. Its findings hold broader implications for informing policy design, enhancing insurance outreach, and promoting sustainable risk management practices across diverse agricultural contexts.

1.2 Research Questions

Building upon the research background and theoretical considerations, this study seeks to deepen our understanding of the decision-making mechanisms underlying tea planters' purchasing behavior regarding planting insurance. Specifically, it investigates how cognitive, emotional, and institutional factors interact to shape farmers' willingness and actual participation in agricultural insurance schemes. Guided by these objectives, the following research questions are formulated:

RQ1: What are the key determinants influencing tea planters' purchasing decisions regarding planting insurance?

This question aims to identify and examine the primary factors that influence tea farmers' behavioral intentions and actual choices to purchase planting insurance. It provides a foundational understanding of the multi-dimensional drivers behind insurance adoption, including both internal psychological variables (e.g., risk perception, perceived value) and external environmental factors (e.g., government support, policy awareness).

RQ2: How does perceived value mediate the relationship between government support and risk cognition on the one hand, and tea planters' purchasing behavior on the other?

This question explores the mediating role of perceived value in linking structural policy interventions (i.e., government support) and individual cognitive processes (i.e., risk cognition) with behavioral outcomes. It examines whether and to what extent farmers' subjective evaluation of the usefulness and worth of planting insurance serves as a psychological mechanism through which external stimuli translate into action.

RQ3: How does environmental concern moderate or mediate the impact of government support and risk cognition on tea planters' purchasing behavior?

This question investigates the role of environmental consciousness as a moderating or mediating variable in the relationship between policy incentives, risk perceptions, and insurance uptake. It considers whether tea farmers who exhibit higher levels of ecological awareness are more responsive to government interventions and more likely to perceive insurance as a valuable tool for managing climate-related risks.

RQ4: How can a behavioral promotion model be developed to effectively encourage tea planters' participation in planting insurance?

This final question addresses the practical implications of the research by proposing a theoretically grounded and empirically validated behavioral model aimed at enhancing insurance adoption. The model integrates insights from behavioral economics, risk perception theory, and public policy design to offer actionable strategies for policymakers and practitioners seeking to improve insurance penetration among smallholder farmers.

These interrelated research questions collectively form a comprehensive analytical framework that not only advances theoretical knowledge but also informs evidence-based policy development in the domain of agricultural risk management, particularly within the context of high-value cash crop production such as tea cultivation in Guizhou Province.

1.3 Research Objectives

This study aims to advance theoretical and practical understanding of the behavioral mechanisms that influence tea planters' participation in planting insurance, with a specific focus on the roles of government support, risk cognition, perceived value, and environmental concern. To achieve this overarching goal, the research is guided by the following specific objectives:

Objective 1: To empirically examine the influence of government support, risk cognition, perceived value, and environmental concern on tea planters' purchasing behavior regarding planting insurance.

This objective focuses on identifying and quantifying the extent to which these four key constructs—government support, farmers' cognitive assessment of agricultural risks, their subjective evaluation of insurance value, and ecological awareness—individually and collectively shape the decision-making process related to insurance adoption.

Objective 2: To investigate the mediating role of perceived value in the relationship between government support, risk cognition, and tea planters' purchase behavior.

This objective seeks to uncover the psychological mechanism through which policy interventions and individual risk perceptions translate into behavioral outcomes. Specifically,

it explores whether perceived value acts as an intermediary variable that explains how external stimuli (e.g., subsidies, policy information) and internal cognitive processes (e.g., risk appraisal) influence farmers' willingness to adopt planting insurance.

Objective 3: To assess the mediating or moderating role of environmental concern in shaping the impact of government support and risk cognition on tea planters' insurance purchasing decisions.

This objective examines whether and how farmers' level of environmental consciousness influences their responsiveness to policy incentives and their perception of agricultural risks. It also investigates whether environmental concern serves as a boundary condition that conditions the strength of relationships among the studied variables.

Objective 4: To develop a theoretically grounded and empirically validated behavioral promotion model aimed at enhancing tea planters' engagement with planting insurance.

Building upon the findings from the previous objectives, this objective focuses on synthesizing insights into a comprehensive behavioral framework that integrates psychological, social, and institutional factors. The proposed model is intended to provide actionable guidance for policymakers and practitioners seeking to design more effective strategies to improve insurance uptake among smallholder tea farmers.

These objectives collectively contribute to both academic knowledge and policy practice by offering a nuanced understanding of the cognitive, affective, and contextual drivers behind agricultural insurance adoption in the context of high-value cash crops such as tea in Guizhou Province.

1.4 Research Hypothesis

This study proposes a series of hypotheses based on the theoretical framework and conceptual relationships among the key constructs: government support, risk cognition, perceived value, environmental concern, and planting insurance purchasing behavior. These hypotheses are formulated to test both direct effects and mediating mechanisms that influence tea planters' decision-making processes regarding agricultural insurance adoption.

H1: Government support has a positive impact on tea planters' planting insurance purchasing behavior.

H2: Government support has a positive impact on the perceived value of tea planters.

H3: Government support has a positive impact on tea planters' environmental concern.

H4: Risk cognition has a positive impact on tea planters' planting insurance purchasing behavior.

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H5: Risk cognition has a positive impact on the perceived value of tea planters.

H6: Risk cognition has a positive impact on tea planters' environmental concern.

H7: Perceived value has a positive impact on tea planters' planting insurance purchasing behavior.

H8: Environmental concern has a positive impact on tea planters' planting insurance purchasing behavior.

H9: Perceived value plays a mediating role in the impact of government support on tea planters' planting insurance purchasing behavior.

H10: Perceived value plays a mediating role in the impact of risk cognition on tea planters' planting insurance purchasing behavior.

H11: Environmental concern plays a mediating role in the impact of government support on tea planters' planting insurance purchasing behavior.

H12: Environmental concern plays a mediating role in the impact of risk cognition on tea planters' planting insurance purchasing behavior.

H13: Perceived value has a positive impact on tea planters' environmental concern.

These hypotheses collectively form a comprehensive model that integrates behavioral, cognitive, and institutional perspectives to explain the decision-making process underlying planting insurance adoption among tea farmers. The empirical testing of these hypotheses will provide valuable insights into how policy interventions and individual perceptions jointly shape agricultural risk management behaviors.

1.5 Research Benefits

This study aims to extend the understanding of tea planters' insurance decision-making processes beyond the recognition of government support and risk perception by:

1. Developing a Detailed Analytical Framework

By systematically constructing specific measurement indicators for government support, risk cognition, perceived value, and environmental concern within the unique context of tea farming, this research offers a refined assessment tool that enhances the accuracy and depth of analysis. Utilizing micro-level perspectives from individual farmers, it integrates classic theories such as expected utility theory, agricultural insurance demand theory, cognitive theory, and the theory of planned behavior. This comprehensive approach facilitates a deeper exploration into the motivational factors driving farmers' participation in planting insurance, highlighting the pathways through which government support and risk cognition influence purchasing behavior.

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2. Unveiling Complex Influence Mechanisms

The investigation uncovers the intricate mechanisms and mediating roles played by perceived value and environmental concern in shaping tea planters' decisions on planting insurance. By assessing the depth and dimensions of government support from a farmer-centric perspective, the study constructs an indicator system to quantitatively evaluate the impact of various forms of government assistance on insurance uptake. This detailed examination not only elucidates how different aspects of government support affect insurance adoption but also demonstrates the critical role of perceived value and environmental awareness in this process. These insights offer practical guidance for enhancing the design and implementation of agricultural insurance policies.

3. Advancing Theoretical and Practical Frontiers

The findings contribute to expanding the theoretical framework surrounding government support for agricultural insurance, particularly within the specialized sector of tea farming. Demonstrating the interplay between governmental interventions, risk perception, and farmer behavior provides a more nuanced understanding of how these elements interact to influence insurance adoption. This research not only enriches academic discourse but also delivers actionable insights for policymakers and practitioners. Tailored specifically to the needs and perceptions of tea planters, these insights can inform the development of targeted support mechanisms aimed at optimizing insurance uptake, thereby fostering greater resilience and effective risk management practices within the tea farming community.

In summary, this study offers both theoretical advancements and practical applications, providing valuable knowledge that can guide policy formulation and implementation efforts designed to enhance the quality and efficiency of planting insurance programs. Through its rigorous analysis, it underscores the importance of considering farmers' perceptions and the multifaceted nature of their decision-making processes when designing supportive frameworks for agricultural insurance.

1.6 Scope of Research

This study uses the insurance demand theory, cognitive theory and the theory of planned behavior to illustrate that tea planters' decision-making on planting insurance purchase behavior is affected by government support and risk cognition factors. For the purpose of this study, the influencing factors that influence the purchase of planting insurance by tea planters are government support, risk cognition, perceived value and environmental concern variables. This study focuses on government support and risk cognition as the main influencing factors in an empirical investigation of the planting insurance purchase behavior of tea planters in Guizhou Province, China. The scope of the research is as follows:

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Variables: The variables used in this study can be divided into three categories, namely exogenous variables, endogenous variables, and mediating variables.

a) Exogenous latent variables consist of observed variables

Government support, three observed variables;

Risk cognition, four observed variables;

b) The mediating latent variable consists of perceived value and purchase intention

Perceived value, has four observed variables;

Environmental concern has two observed variable;

c) The endogenous latent variable consists of the observed variable purchasing behavior, and there are two observed variable.

Population scope: This study targets approximately 5,800 tea planters, all members of the Guizhou Tea Association (Guizhou Tea Association, 2024). This specific population was chosen for several reasons:

Focused Geographic Scope: Selecting the main tea-planting areas as the research scope maximizes relevance to the research topic. Tea planters in these areas represent the core population impacted by government support and risk perception regarding planting insurance.

Mature Insurance Market: Focusing on areas with longer experience with agricultural insurance provides a richer dataset. Established insurance programs facilitate more reliable data collection and offer valuable insights into long-term trends and impact.

Accessibility and Representation: Utilizing the Guizhou Tea Association membership offers efficient access to a large and representative sample of tea planters. This association membership ensures a diverse yet focused population, encompassing various farm sizes and locations within the major tea-growing counties of Guizhou province.

By focusing on this targeted population, the study aims to collect comprehensive data on government support, risk cognition, perceived value, environmental concern, purchase behavior related to planting insurance. This data will then be used to analyze the influence of these factors on insurance uptake and ultimately contribute to the development of more effective support strategies for the tea-planting sector.

1.7 Definition of Terms

1.7.1 Government Support

Government support in tea planting insurance refers to various policies and means to promote and protect the tea cultivation industry. This includes financial support, information and education, agricultural guidance, disaster relief, and regulatory measures.

1.7.2 Policy Support

Policy support refers to government promotion and regulation of the tea-growing insurance market through laws, regulations, and incentives, ensuring clarity of responsibilities and fair market practices.

1.7.3 Financial Support

Financial support refers to government budget allocation, subsidies, and financial assistance to develop tea-growing insurance. It includes direct subsidies, risk funds, and loans to ease the financial burden on farmers and insurance companies.

1.7.4 Business Support

Business support refers to practical assistance for implementing tea-growing insurance. This comprises information education, technical counseling, and marketing efforts to enhance awareness and adoption.

1.7.5 Risk Cognition

Risk cognition refers to the mental processes involved in perceiving, understanding, and evaluating risks. It encompasses how individuals perceive and interpret risks in their environment, make decisions regarding risky situations, and respond to potential threats. Risk cognition is influenced by various factors including personal experiences, cultural background, education level, and cognitive biases.

1.7.6 Tea Planter

Tea planter refers to individuals or entities engaged in the cultivation and management of tea plants, primarily for the production of tea leaves used in the manufacturing of tea products. This profession is particularly prominent in regions where tea cultivation is a significant industry, such as parts of Asia (e.g., China, India, Sri Lanka), Africa (e.g., Kenya, Tanzania), and South America (e.g., Argentina, Brazil).

1.7.7 Insurance Purchase Behaviour

Insurance purchase behavior refers to farmers' concrete actions in participating in cultivation insurance, such as signing contracts and paying costs. It results from a combination of factors like willingness, economic capacity, government policies, market conditions, or emergencies.

1.7.8 Mediating Role

Mediating role refers to the function of a variable that explains the relationship between two other variables. It helps to clarify the underlying mechanism or process through which one variable influences another.

1.7.9 Perceived Value

Perceived value refers to a subjective assessment of the balance between the benefits and costs of agricultural insurance. It influences farmers' willingness to participate, considering economic, social, and emotional dimensions.

1.7.10 Economic Value

Economic value refers to assessing the financial benefits of agricultural insurance, including risk mitigation, capital preservation, and cost-effectiveness .

1.7.11 Social Value

Social value refers to how agricultural insurance affects farmers' status in social networks, covering social security, recognition, and responsibility.

1.7.12 Emotional Value

Emotional values refers to individual emotional and psychological responses to agricultural insurance, including a sense of psychological security, satisfaction, and cognitive simplification.

1.7.13 Environmental Concern

Environmental concern refers to the degree to which individuals or societies care about and prioritize environmental issues. It encompasses attitudes, values, beliefs, and behaviors related to the environment and its protection. Environmental concern is crucial for fostering sustainable practices and addressing global environmental challenges such as climate change, biodiversity loss, pollution, and resource depletion.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This section presents the literature for this study. It combines a review of previous literature related to the topic of this study and builds on the theoretical foundation of this study. First, the concepts and theories involved in this study, such as government support, risk cognition, perceived value, purchase intention, and purchase behavior, are discussed. Next, the relationship between the structure and conclusion of the study will be discussed further by introducing the conceptual framework of the study.

2.2 Insurance Demand theory

Insurance demand refers to that under certain conditions of insurance rate and the circumstances of uncertain risk loss faced by farmers, Number of insurance goods and services that the policyholder is willing and able to purchase. From the perspective of economic human behavior, Insurance demand is that the policyholder chooses different insurance decisions in order to achieve the individual expected utility Maximize the behavior. In economics, the insurance demand theory has experienced from the traditional insurance demand theory to the modern insurance. The process of the theory.

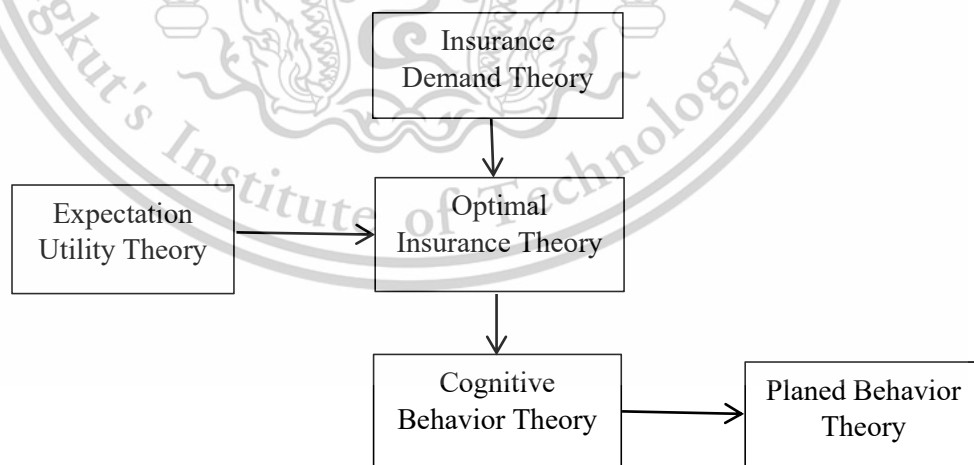


Figure2.1: The development logic of insurance demand theory

Source: Maslow, 1949; Ajzen, 2020.

The very foundation of agricultural insurance demand lies in farmers' urgent need to manage the inherent risks associated with their livelihood. While theoretically, any risk could necessitate insurance, this section focuses on the specific types and management approaches relevant to agriculture. Building upon this understanding, we'll delve into the key theoretical frameworks used to analyze farmers' insurance decisions: utility theory and optimal insurance theory.

Utility theory: Farmers make decisions to maximize their expected utility, balancing potential gains and losses associated with different risk management strategies, including purchasing insurance.

Optimal insurance theory: This framework examines how farmers can choose the level of insurance coverage that optimizes their expected utility, considering factors like insurance costs, risk aversion, and potential losses.

Understanding these theoretical underpinnings is crucial for designing effective agricultural insurance programs that cater to farmers' diverse needs and risk profiles. By aligning insurance options with farmers' risk management strategies and optimal insurance choices, we can create a more resilient and sustainable agricultural sector.

2.2.1 Agricultural risks

Agricultural risk is a central concern in the context of farming, and it plays a key role in shaping farmers' interest in agricultural insurance. Farming, by its very nature, is exposed to numerous uncertainties—both environmental and economic—that can result in significant losses. Farmers are well aware of these risks and often make decisions based on how they perceive and manage them. As a result, the types of risks they face, along with their severity, directly influence the extent to which they seek insurance protection (Hanson, Hendrickson & Archer, 2008).

It's also important to recognize that the kinds of risks faced by farmers—and how seriously they affect them—can differ widely depending on where they are located. Climate, policy environment, market access, and technological development all play a part in shaping local risk profiles. For agricultural insurance to be effective, it must be designed with these regional differences in mind. A one-size-fits-all approach rarely works when it comes to protecting farmers from unpredictable events.

Understanding the different types of agricultural risks helps not only in designing better insurance products but also in formulating policies that support sustainable rural development. The following section outlines four major categories of agricultural risk: institutional, natural, technical, and market-related.

1. Types of Agricultural Risks

(1) Institutional Risk

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Institutional risk refers to uncertainty caused by changes in the systems and structures that govern agricultural production. These include shifts in land ownership policies, governance arrangements, and broader economic reforms. For instance, as smallholder farming gives way to more industrialized models, management structures change, sometimes leading to instability. Similarly, when larger enterprises take over land previously farmed by individuals, this alters traditional market dynamics and can create confusion about rights and responsibilities.

While such changes may bring long-term benefits, they often introduce short-term uncertainty. This can make it difficult for farmers to plan ahead or invest confidently in their operations. Managing institutional risk therefore requires careful policy design and transitional support to help farmers adapt without suffering undue hardship.

(2) Natural Risk

Natural risks stem from environmental conditions that affect agricultural productivity. Weather patterns, soil quality, water availability, and pest outbreaks all contribute to the vulnerability of farming systems. In China, the frequency of extreme weather events—such as floods, droughts, typhoons, and pest infestations—makes agriculture particularly prone to natural shocks (Chen et al., 2012). These events not only reduce crop yields but also threaten the livelihoods of millions of small-scale farmers.

Given the high dependence of agriculture on climate conditions, natural risks remain a persistent challenge. One way to address this is through the development of climate-resilient practices and risk transfer mechanisms like crop insurance, which can help stabilize farm incomes during adverse conditions.

(3) Technical Risk

The transition from traditional farming methods to modern, technology-driven approaches introduces what is known as technical risk. While new technologies—such as precision agriculture tools, improved seed varieties, and automated machinery—offer opportunities for increased efficiency and yield, they also come with challenges.

Farmers may lack the knowledge or training to use new equipment effectively. Access to necessary infrastructure or financial resources may be unevenly distributed. Moreover, many farmers are naturally cautious about adopting unfamiliar techniques, especially if doing so could lead to financial loss.

These factors can slow down the adoption of innovations that might otherwise improve productivity and sustainability. To overcome technical risk, it's essential to provide adequate training, expand access to extension services, and offer incentives that reduce the perceived costs of trying something new.

(4) Market Risk

Market risk, sometimes referred to as price risk, relates to fluctuations in supply, demand, and prices of agricultural commodities. It often becomes apparent after harvest, when farmers bring their produce to market. For example, even a successful harvest can lead to losses if too much of the same crop hits the market at once, causing prices to drop sharply.

Another issue contributing to market risk is information asymmetry. Many farmers do not have access to timely or accurate market data, which makes it hard to anticipate trends or adjust planting decisions accordingly. As a result, they may end up producing crops that don't sell well or at prices that don't cover costs (Schuh, 1975).

Addressing market risk involves improving access to market information, strengthening rural marketing systems, and exploring tools such as forward contracts or index-based insurance to protect against price volatility.

2. Agricultural risk management

Agricultural insurance has long been recognized as a vital mechanism for mitigating the uncertainties inherent in farming activities. However, its uptake and effectiveness are not solely determined by the design of the insurance product itself, but also by the broader set of risk management strategies that farmers employ to cope with uncertainty. These strategies shape how farmers perceive and respond to risk, and consequently influence their willingness and ability to engage with formal insurance mechanisms.

Two key dimensions through which risk management practices affect agricultural insurance demand can be identified: the interplay between substitution and complementarity, and the formation of an effective level of demand.

Substitution and Complementarity. Farmers often rely on a variety of tools to manage risk, some of which may serve as substitutes for insurance, while others may function in a complementary manner. For instance, diversifying crop portfolios or income sources can reduce exposure to specific types of production or market risk, potentially lessening the perceived need for insurance coverage against those risks. On the other hand, certain investments—such as irrigation systems or improved storage facilities—can enhance the value of insurance by reducing the severity of losses when adverse events occur. In this sense, these measures do not replace insurance but rather support its role within a broader risk mitigation framework.

This duality underscores the importance of understanding not only what strategies farmers use, but also how they combine them to construct their own risk management portfolios.

Effective Level of Demand. An overreliance on any single strategy may leave farmers exposed to unanticipated shocks and could result in suboptimal outcomes. A more resilient approach involves integrating multiple strategies tailored to the specific risks faced by individual producers. This diversified risk management behavior contributes to a more stable

and sustained demand for agricultural insurance products. Thus, examining the decision-making processes behind farmers' choices of risk management strategies becomes essential for designing and promoting insurance schemes that align with actual farmer behavior and needs.

As noted by Just (1980), the extent to which farmers adopt formal insurance is closely linked to the array of informal and formal risk management tools already in place (Chambers & Just, 1980). Understanding this relationship provides valuable insight into how policy and program design can better support farmers in navigating agricultural uncertainty.

(1) Concept of Agricultural Risk Management

Agricultural risk management refers to the process by which individuals, organizations, or institutions identify, assess, and respond to various sources of risk in agricultural production with the aim of minimizing potential losses and enhancing stability. According to Penson Jr. (1985), it encompasses a series of economic decisions aimed at achieving the greatest possible protection for agricultural producers at the lowest feasible cost.

It is not merely a technical concern, but also a structural component influencing both agricultural development and broader economic performance. Its dual purpose lies in (1) reducing the likelihood of adverse events occurring and (2) limiting the negative consequences should such events materialize.

From a governance perspective, agricultural risk management can be differentiated into three levels: micro-level, involving individual farm households; meso-level, referring to cooperative structures and local institutions; and macro-level, encompassing national policies and regulatory frameworks (Harrison & Wolf, 2008). The actors involved range from smallholder farmers to state institutions. Successful implementation requires coordinated engagement across all levels of society and governance (Du & Hennessy, 2012).

(2) Approaches to Agricultural Risk Management

Drawing on Zilberman (2004), agricultural risk management strategies can be grouped into four broad categories:

Risk Prevention. This includes actions taken to reduce the probability or severity of losses before they occur. Such measures may involve engineering interventions—like constructing flood control systems—or adopting diversified planting and breeding practices to spread risk across different outputs. Additionally, maintaining financial reserves enables farmers to respond more effectively to unforeseen circumstances (Fuglie & Walker, 2001).

Private Risk Assumption: Under this model, farmers choose to bear certain risks themselves based on personal judgment, experience, and capacity. This approach is typically employed for risks that are perceived as low in both probability and impact, where external instruments like insurance may be deemed unnecessary or economically inefficient.

Risk Transfer. This involves shifting part or all of the risk burden to another party through contractual or institutional arrangements. Common methods include purchasing agricultural insurance, participating in futures markets, or engaging in land leasing agreements. Of these, insurance remains one of the most widely used and institutionally supported forms of risk transfer (Gardner, 1992).

Relief and Disaster Assistance. When the costs of preventive measures outweigh the expected benefits, public or community-based relief efforts become a practical response. These usually take the form of emergency aid or compensation provided after a major disaster. While reactive in nature, such measures play a crucial role in safeguarding livelihoods during catastrophic events (Adapted from Gardner, 1992; Fuglie & Walker, 2001; Zilberman, 2004).

Tea cultivation, as a climate-sensitive agricultural activity, is inherently exposed to multiple sources of risk, including extreme weather events, pest outbreaks, and price volatility in both domestic and international markets. These uncertainties pose significant threats to the income stability and long-term sustainability of tea farmers' livelihoods. In response, effective risk management has become a critical component in enhancing the resilience of tea production systems. Among the various instruments available, crop insurance serves as a core mechanism within modern agricultural risk management frameworks, offering financial protection against yield losses and market disruptions (Zilberman, 2004).

However, the adoption of formal insurance products among smallholder tea farmers remains limited, influenced not only by product design and accessibility but also by farmers' subjective perceptions of risk and the extent of government support (Just, 1980; Chambers & Just, 1980). Empirical studies suggest that farmers often employ a combination of informal and formal risk mitigation strategies, such as income diversification, asset accumulation, and participation in public or subsidized insurance schemes (Gardner, 1992; Du & Hennessy, 2012). Yet, the decision to purchase crop insurance is deeply embedded in both cognitive and institutional contexts — particularly shaped by how farmers perceive the likelihood and severity of potential losses, and how policy interventions, such as premium subsidies, outreach programs, and claims processing efficiency, influence their trust and willingness to engage with formal risk transfer mechanisms.

Building upon this theoretical foundation, this dissertation investigates the interplay between governmental policy support and farmers' risk perception in shaping the purchase behavior of tea crop insurance. Focusing on major tea-producing regions in China, the study explores how policy instruments interact with individual-level cognitive factors to affect insurance uptake. By analyzing these dynamics through a multidimensional lens—including risk prevention, self-insurance, risk transfer, and post-disaster relief—this research aims to contribute new insights into the behavioral and institutional drivers of agricultural insurance

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adoption, offering practical implications for the design of more inclusive and sustainable agricultural risk management policies.

2.2.2 Agricultural insurance

1. Concept of Agricultural Insurance

Insurance, as an institutional mechanism, emerges in response to uncertainty. It functions both as a risk transfer system and as a means of economic compensation. By pooling premiums and applying probabilistic models, insurance establishes a financial reserve that enables the contractual transfer of risk from the insured to the insurer (Zhou & Liu, 2023). This function becomes particularly critical in high-risk sectors such as agriculture.

Agricultural insurance specifically refers to insurance instruments designed to protect against losses caused by natural disasters or accidents during agricultural production and operations (Schuh, 1975; Robles, 2021). In this study, the focus is on crop insurance within the context of planting agriculture. It serves as a structured mechanism through which risks borne by farmers are redistributed via insurance contracts, offering timely financial compensation following adverse events in order to stabilize income and enhance resilience.

2. Classification of Agricultural Insurance

Agricultural insurance can be classified according to multiple criteria, reflecting the heterogeneous nature of agricultural systems and the diversity of associated risks:

a) By Production Object

Crop Insurance: Covers field crops and forest plantations.

Livestock Insurance: Includes insurance for cattle, poultry, and aquaculture (Cole & Xiong, 2017).

b) By Risk Coverage

Single-Risk Insurance: Designed to cover specific perils such as hail or floods.

Multi-Risk Insurance: Offers protection against a defined set of hazards.

All-Risks Insurance: Provides comprehensive coverage for nearly all conceivable losses, recognizing the interrelated nature of agricultural risks (Hennessy, 2012).

c) By Participation Type

Voluntary Insurance: Based on individual choice.

Mandatory Insurance: Enforced by law or policy (Hess, Hazell, & Kuhn, 2016).

The debate over voluntary versus mandatory participation remains ongoing. While purely voluntary schemes may suffer from low uptake and adverse selection, compulsory approaches can provoke resistance due to perceived infringement on autonomy. An effective policy must strike a balance between these two extremes to ensure both efficiency and broader social welfare. Policy designs vary across countries: the United States primarily relies on voluntary participation, whereas Japan mandates insurance for certain types of crops and

livestock. A well-structured classification system enhances analytical precision and supports targeted policy formulation.

3. Particularities of Agricultural Insurance

Although agricultural insurance shares foundational principles with general insurance, it exhibits distinct characteristics that stem from the unique risks and systemic importance of the agricultural sector. As a specialized form of insurance, it addresses idiosyncratic production risks—such as climate variability, pests, and natural disasters—while also fulfilling broader societal and developmental objectives (Barrett, Reardon, Swinnen, & Zilberman, 2022). These include enhancing rural livelihoods, stabilizing food production, and supporting national food security. Unlike traditional commercial insurance, agricultural insurance must balance market efficiency with public policy goals, often requiring institutional support to ensure sustainability and broad participation.

The key features of agricultural insurance include mutual aid, contractual structure, economic function, and scientific underpinning. Mutual aid is reflected in the pooling of premiums to create a collective fund used for compensating losses and offering subsidies during crises. The contractual nature of insurance ensures that formal agreements define the rights and obligations of both insurers and insured parties. Economically, agricultural insurance transforms uncertain future losses into predictable costs—premiums—thereby providing financial stability to farmers. Its design and pricing are grounded in actuarial science, probability theory, and statistical modeling. Guiding principles such as comprehensiveness, indemnification, and state support further shape its implementation. In particular, public intervention in the form of premium subsidies or government-backed reinsurance is often necessary to maintain affordability and long-term viability. As such, agricultural insurance functions at the intersection of market mechanisms and public policy, serving both as a risk management tool for individual farmers and as a strategic instrument for national agricultural development.

4. Differences Between Agricultural Insurance and General Commercial Insurance (Garrido & Zilberman, 2007)

Agricultural insurance fundamentally differs from general commercial insurance due to the unique nature of agricultural production and its broader socioeconomic implications. One key distinction is regional heterogeneity—variations in climate, soil conditions, and farming practices result in localized risk profiles that necessitate region-specific insurance designs. Additionally, the seasonal and cyclical nature of agricultural activities demands insurance products tailored to biological growth stages and seasonal risks, unlike the more stable and predictable risk patterns found in general insurance. Moreover, agricultural insurance faces high-risk exposure, as losses are often subject to extreme variability. Catastrophic events such as floods or droughts can cause widespread claims simultaneously,

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increasing the risk of insurer insolvency, which is why government-backed reinsurance is frequently required.

Another set of distinguishing features pertains to the public policy dimension of agricultural insurance. For instance, multi-peril or comprehensive agricultural insurance often exhibits quasi-public goods characteristics, including non-excludability and shared benefits across society. This is closely linked to the positive externalities it generates—such as enhanced food security, rural development, and social stability—which extend beyond individual farmers to the broader population (Iturrioz, 2009). Furthermore, the capital-intensive nature of underwriting agricultural risks, especially at scale, tends to result in natural monopoly tendencies and economies of scale, leading to limited market competition and a small number of dominant insurers. These structural and functional differences underscore the need for specialized regulatory frameworks and public sector involvement in the design and implementation of agricultural insurance programs.

These distinctions underscore the need for tailored regulatory frameworks and policy interventions to ensure the viability and effectiveness of agricultural insurance programs, distinguishing them from traditional commercial insurance models.

The conceptual and structural understanding of agricultural insurance, as outlined in this section, provides a critical foundation for examining the determinants of insurance adoption behavior—particularly in the context of tea crop production. Given the inherently high-risk nature of agricultural activities such as tea cultivation, which are subject to climatic variability, pest infestations, and market fluctuations, farmers must rely on both formal and informal mechanisms to manage uncertainty. Among these, agricultural insurance has emerged as a key policy instrument to enhance resilience and stabilize farm income. However, its effectiveness hinges not only on institutional design but also on two interrelated factors: government support and individual risk perception. While public interventions—such as premium subsidies, outreach programs, and claims facilitation—can significantly lower participation barriers, farmers' subjective evaluation of risks ultimately shapes their willingness to adopt such instruments. This study builds upon the established framework of agricultural insurance, integrating insights from behavioral economics and public policy analysis to investigate how institutional incentives and cognitive factors jointly influence the decision-making process of tea farmers regarding insurance purchase. By doing so, it contributes to a deeper understanding of the behavioral underpinnings of agricultural risk management and informs the development of more effective and context-sensitive insurance policies.

2.2.3 Demand for agricultural insurance

1. Concept of agricultural insurance demand

From an insurance standpoint, insurance demand represents people's desire for insurance goods within a specific timeframe and at a particular price level (Just, 1980). Building on the general characteristics and principles of insurance discussed in previous work, this paper defines agricultural insurance demand as people's desire for agricultural insurance commodities within a specific period and price level (Hennessy, 2012).

Agricultural insurance demand can be categorized into narrow and broad scopes based on its primary scope. In the narrow scope, it pertains to the inherent natural demand for agricultural insurance products among agricultural producers seeking to mitigate normal risks. In the broad scope, it encompasses agricultural insurance demand from national and social enterprises contributing to long-term stability and national economic development. This paper primarily focuses on the narrow scope of agricultural insurance demand.

Based on realization status, agricultural insurance demand is classified as either real or potential. Real agricultural insurance demand corresponds to the purchased amount of agricultural insurance products realized in the market by farmers. Real demand necessitates both the desire to buy and the financial capability (Ghosh, Gupta, Singh, & Ward, 2021), offering vital insights into the current state of agricultural insurance demand and identifying existing issues.

On the other hand, potential agricultural insurance demand refers to farmers with the financial ability but no intention to buy, or vice versa. Under specific conditions, potential demand can be converted into real demand, forming a crucial foundation for forecasting agricultural insurance demand, expanding the market, and fostering market development (Zilberman, 2004).

This paper primarily scrutinizes the actual presence of effective demand in the agricultural insurance market, considering the purchase intention from an insurance perspective. The term "agricultural insurance demand" subsequently refers to the level of effective demand in the agricultural insurance market, excluding potential demand levels. In essence, it denotes the effective agricultural insurance demand level.

2.Characteristics of agricultural insurance demand (Wolf, 2008; Hennessy, 2012)

1) Existence of Agricultural Insurance Demand with Low Levels

Throughout Chinese history, farmers have grappled with agricultural risks such as floods, droughts, and frosts. The intensity of these risks has at times triggered institutional and social changes. Agricultural risk, being a natural and historical norm, naturally prompts a demand for insurance among agricultural producers and the broader society as an effective means of risk avoidance.

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Despite this inherent demand, several factors contribute to the generally low level of agricultural insurance demand. Firstly, the elevated loss rates and associated high costs of agricultural products lead farmers to develop a practical preference for risk. Moreover, agricultural insurance faces challenges related to risk dispersion, and its contribution to the overall agricultural income remains relatively modest. These factors contribute to a nominal demand for agricultural insurance that is larger than its effective demand.

Secondly, the nature of agricultural insurance as quasi-public goods and its non-exclusive consumption characteristics inevitably diminish effective demand. This aspect further contributes to a low overall demand for agricultural insurance.

2) It needs government support to effectively improve

Commercial insurance demand naturally forms and adjusts through market mechanisms, achieving a balance between supply and demand driven by market prices (Storm, Heckeley, & Mittelhammer, 2016). In contrast, agricultural insurance demand lacks the self-adjusting capabilities of the market to reach a supply-demand equilibrium. Experience has shown that without government support, agricultural insurance faces a glaring insufficiency in demand, leading to unsustainable insurance operations and the eventual contraction or disappearance of the agricultural insurance market.

The enhancement of agricultural insurance demand hinges on robust government support. Policymakers can implement various subsidies for agricultural insurance, encompassing premium support for farmers, management subsidies for insurance companies, and compensation for losses. These subsidies serve to offset the external social costs associated with agricultural insurance—bridging the gap between farmers' purchasing power and the operating costs of insurance companies. Consequently, this support effectively elevates the actual level of agricultural insurance demand. Financial subsidies not only cover external costs but also foster the simultaneous growth of both effective supply and demand for agricultural insurance.

3) Agricultural insurance demand is different from that of commercial insurance demand

The demand for agricultural insurance differs from that of general insurance, reflecting distinctions between the two (Sheahan, Liu, Barrett, & Narayanan, 2018).

① Demand Variation Under Regional Differences

China's vast and diverse landscape, marked by varying natural conditions across different regions, leads to regional disparities in agricultural insurance needs. Consequently, farmers exhibit distinct demands for various agricultural insurance products, reflecting regional characteristics.

② Positive Externality Impacting Demand

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The positive externality associated with agricultural insurance contributes to income not only for individual farmers but also for the broader society. This positive externality results in lower individual income and higher social income. In the event of a risk occurrence, both farmers and society benefit. However, if no risk materializes, only the farmers suffer actual losses, while the interests of society remain intact. In major agricultural disasters, governments worldwide use disaster relief to mitigate farmers' losses. Paradoxically, this leads to a reduction in the demand for agricultural insurance. Uninsured farmers often benefit from government relief, while insured farmers may experience reduced insurance compensation due to government aid. This phenomenon contributes to a decline in the level of agricultural insurance demand and participation (Cai, De Janvry, & Sadoulet, 2020).

③ Non-Exclusive Consumption Impacting Demand

The non-exclusive consumption nature of agricultural insurance means that farmers can benefit from agricultural insurance services, whether they are insured or not. Consequently, insured farmers may gradually choose to withdraw from the agricultural insurance market, diminishing the overall level of agricultural insurance demand.

Agricultural insurance demand, as discussed in the preceding section, is shaped by a complex interplay of economic, institutional, and behavioral factors. Its unique characteristics—such as low effective demand levels, reliance on government support, regional heterogeneity, and positive externalities—highlight the challenges inherent in promoting widespread adoption. These features are particularly salient in the context of tea crop production, where long growth cycles, climate sensitivity, and high-value output create a distinct risk profile. Despite the frequent occurrence of natural hazards such as frost, drought, and pest infestations, tea farmers often exhibit limited engagement with formal insurance mechanisms, suggesting a gap between objective risk exposure and subjective risk awareness.

Moreover, the quasi-public good nature of agricultural insurance underscores the necessity of policy intervention to correct market failures and stimulate demand. Government support—through premium subsidies, outreach programs, and claims facilitation—plays a crucial role in reducing financial barriers and enhancing trust in insurance systems. However, even with institutional backing, individual participation ultimately depends on farmers' perceptions of risk and their evaluation of insurance as a viable risk management tool. Empirical evidence indicates that cognitive biases, past experiences, and socio-economic contexts significantly influence risk perception, which in turn affects decision-making behavior. Therefore, understanding how institutional incentives interact with personal risk cognition is essential to explaining variations in insurance uptake among tea growers.

Building upon this conceptual foundation, this study focuses specifically on the dual influence of government support and risk perception on the purchase behavior of tea crop

insurance. By integrating insights from agricultural economics, behavioral science, and public policy, it seeks to uncover the mechanisms through which these two factors jointly shape farmers' decisions, thereby contributing to both academic knowledge and practical policy design in the field of specialty crop insurance.

2.2.4 Theory of Utility Expectancy

In his expected utility hypothesis, Bernoulli (1954) pointed out that two people facing the same lottery might value it differently due to differences in their psychology. These differences can be represented by the concept of utility, which is a subjective measure of satisfaction for a given individual. This concept was contrary to the idea at that time, which was that the value of a lottery, for all individuals, should equal its mathematical expectation (Eeckhoudt, Gollier, & Schlesinger, 2005).

2.2.5 Optimal insurance theory

The optimal insurance theory, grounded in the expected utility theory, has been a pivotal framework for examining agricultural insurance demand. Borch (1962) pioneered the integration of expected utility theory into the realm of insurance demand, establishing a classic and widely adopted foundation.

The core assumption of optimal insurance theory posits a risk-averse, rational economic actor with complete information. Under this assumption, the theory explores the decision-making behavior of the economic agent, considering certain wealth constraints. The primary focus is on determining how the actor can make optimal insurance decisions to maximize expected utility (Sung, Yam, Yung, & Zhou, 2011). This involves finding the optimal risk-sharing arrangement between the actor and the insurer.

In essence, optimal insurance theory delves into the strategies that risk-averse individuals employ when faced with uncertainty. It seeks to identify the optimal balance between self-insurance and transferring risk to an insurer, considering the individual's preferences, risk aversion tendencies, and the available information. As a fundamental framework, optimal insurance theory contributes significantly to understanding the dynamics of agricultural insurance demand and decision-making processes in the face of inherent risks.

The optimal insurance theory holds that farmers' participation in agricultural insurance is that only if the expected utility of the insured is not lower than that of the uninsured, farmers will choose to participate in the insurance.

1. Wealth-Dependent Risk Aversion (Mossin, 1968)

Mossin's work builds on the premise of a risk-averse actor, with decreasing risk aversion as wealth increases. The study delves into determining the optimal insurance proportion for the actor facing wealth-related risks. The key insight is that, when the actor

faces a single wealth-related risk, full insurance is optimal when the premium equals the pure premium. However, the “Mossin theorem” asserts that optimal coverage involves purchasing less than full insurance when the actual premium exceeds the pure premium.

2. Moffet's Substitution Relationships (1977)

Expanding on Mossin's work, Moffet introduces the concept of mutual substitution relationships between insurance and both consumption and savings. This signifies that individuals make decisions considering the interplay between insurance, consumption choices, and savings.

3. Turnbull's Optimization with Multiple Risks (1983)

Turnbull extends the theory to address decision optimization in the presence of multiple risks. This contribution explores how actors can make optimal decisions when confronted with the simultaneous existence of various risks.

4. Doherty and Schlesinger's Background Risk (1983)

The introduction of background risk into the theory of agricultural insurance demand is attributed to Doherty and Schlesinger. This extension acknowledges that certain risks cannot be dispersed or transferred in the insurance market, leading to increased insurance demand for actors with decreasing absolute risk aversion when facing background risks.

These advancements in optimal insurance theory provide a nuanced understanding of decision-making in agricultural insurance demand, considering wealth dynamics, multiple risks, and the influence of background risks on actors' choices.

The nexus between expected utility theory and optimal insurance theory underscores farmers' engagement in agricultural insurance decisions to maximize expected utility. Analyzing the factors influencing farmers' expected utility within this framework allows the incorporation of government support. This entails a dual approach: government initiatives aimed at reducing farmers' premium costs and transaction expenses related to insurance, claims, and settlements. Simultaneously, regulatory measures ensure the standardized operation of the agricultural insurance market, mitigating moral hazard tendencies among insurance institutions and safeguarding policyholders' legitimate rights.

Government Support in Cost Reduction: Premium Costs: The government intervenes to alleviate the financial burden on farmers by reducing premium costs.

Transaction Costs: Initiatives target minimizing transaction expenses linked to insurance processes, including claims and settlements.

Regulatory Oversight for Market Stability: Supervision and Management: The government ensures the standardized functioning of the agricultural insurance market through oversight and management.

Moral Hazard Mitigation: Regulatory measures are implemented to curb moral hazard behaviors among agricultural insurance institutions, preserving the integrity of the insurance system.

By integrating government support into the analytical framework of agricultural insurance participation behavior, this approach aims to enhance the expected income of farmers engaging in agricultural insurance. The multifaceted strategy underscores the government's pivotal role in fostering a conducive environment for effective and ethical agricultural insurance practices, ultimately benefiting farmers and ensuring the sustainability of the agricultural insurance market.

Agricultural insurance demand, as discussed in the preceding section, is shaped by a complex interplay of economic, institutional, and behavioral factors. Its unique characteristics—such as low effective demand levels, reliance on government support, regional heterogeneity, and positive externalities—highlight the challenges inherent in promoting widespread adoption. These features are particularly salient in the context of tea crop production, where long growth cycles, climate sensitivity, and high-value output create a distinct risk profile. Despite the frequent occurrence of natural hazards such as frost, drought, and pest infestations, tea farmers often exhibit limited engagement with formal insurance mechanisms, suggesting a gap between objective risk exposure and subjective risk awareness.

Moreover, the quasi-public good nature of agricultural insurance underscores the necessity of policy intervention to correct market failures and stimulate demand. Government support—through premium subsidies, outreach programs, and claims facilitation—plays a crucial role in reducing financial barriers and enhancing trust in insurance systems. However, even with institutional backing, individual participation ultimately depends on farmers' perceptions of risk and their evaluation of insurance as a viable risk management tool. Empirical evidence indicates that cognitive biases, past experiences, and socio-economic contexts significantly influence risk perception, which in turn affects decision-making behavior. Therefore, understanding how institutional incentives interact with personal risk cognition is essential to explaining variations in insurance uptake among tea growers.

Building upon this conceptual foundation, this study focuses specifically on the dual influence of government support and risk perception on the purchase behavior of tea crop insurance. By integrating insights from agricultural economics, behavioral science, and public policy, it seeks to uncover the mechanisms through which these two factors jointly shape farmers' decisions, thereby contributing to both academic knowledge and practical policy design in the field of specialty crop insurance.

2.3 Cognitive behavior theory

A foundational premise of cognitive behavior theory lies in the conceptual distinction between cognitive activity and overt behavior. While some scholars, such as Watson (1924), have historically treated cognition as a subset of behavior—emphasizing observable responses over internal mental states—the perspective adopted in this study aligns more closely with the contemporary cognitive-behavioral framework. In this context, the term “cognitive” refers to covert behavior, encompassing internal processes such as thoughts, beliefs, mental images, and evaluative judgments. In contrast, “overt behavior” denotes externally observable actions and is used explicitly when it is necessary to distinguish such behaviors from their internal antecedents.

Beyond the three core assumptions articulated by Dobson and Dozois (2001), the cognitive-behavioral model incorporates additional theoretical postulates that are critical to its explanatory power. Central among these is the proposition that environmental influences, overt behavioral responses, and covert cognitive processes interact dynamically and reciprocally. This triadic model underpins the understanding of how individuals interpret their surroundings, process information, and generate behavioral outcomes.

Kendall (2006) offers a comprehensive articulation of the cognitive-behavioral approach, emphasizing its dual focus: first, on the mechanisms of learning and modeling within social contexts, and second, on the mediating role of individual differences in cognitive processing and emotional response. According to this view, human behavior arises not merely from external stimuli but from the complex interplay of learned experiences, cognitive appraisals, and affective reactions. Three key components emerge from this framework:

- (a) learning through direct personal experience;
- (b) social learning through observation and modeling;
- (c) the mediation of behavior through cognitive and emotional processes.

Both Kendall and Dozois (2001) underscore the significance of the mediational perspective, which posits that behavior is not a direct consequence of environmental input but rather the result of internal psychological interpretation. Individuals actively construct meaning from their experiences, filtering external events through subjective belief systems and emotional evaluations before acting.

As Hayes, Nelson, and Jarrett (1999) argue, a mature psychological theory must not only explain phenomena but also demonstrate utility in guiding intervention design, adapting strategies to novel problems, and organizing diverse practices into a coherent system. In this regard, cognitive behavior theory serves both as a robust explanatory framework and as a

practical guide for applied work, offering a structured yet flexible foundation for understanding and influencing human behavior.

2.3.1 Behavior Theory

The development of behavior theory was significantly shaped by a number of early contributors, among whom John B. Watson (1924) played a foundational role. His work Behaviorism represented one of the first systematic attempts to articulate a comprehensive behavioral framework. Building upon the ideas introduced in his earlier “behaviorist manifesto” (Watson, 1913), Watson (1924) argued that psychology should abandon its focus on consciousness and instead concentrate exclusively on observable behavior. In this view, the subject matter of psychology was not mental states but what organisms do—that is, their overt actions such as speaking, moving, or gesturing.

Importantly, Watson also included within the scope of behavior what might be considered covert forms of action, such as self-talk or thinking, which he conceptualized as subvocal speech. From this perspective, even internal cognitive processes were regarded as forms of behavior, albeit private and accessible primarily to the individual experiencing them. This marked a key distinction from psychodynamic approaches, which located the causes of human behavior largely within unconscious drives that were neither directly observable nor amenable to empirical analysis.

A central tenet of Watson’s behaviorism was the emphasis on external stimuli—both environmental and physiological—as determinants of observable responses. In his early writings, he identified a range of unlearned reflexive behaviors that did not require conditioning, particularly those essential to survival. However, he also demonstrated how these innate response patterns could be modified through experience. Ultimately, Watson concluded that much of human behavior results from classical conditioning processes.

Watson’s theoretical stance stood in contrast to the prevailing belief during the 1920s and 1930s that hereditary factors alone accounted for most aspects of human behavior. One of the most well-known illustrations of his conditioning approach was the study conducted with an 11-month-old infant known as Little Albert (Watson & Rayner, 1920). Through classical conditioning procedures, Watson and Rayner conditioned Albert to exhibit fear toward a previously neutral stimulus—a white rat—by repeatedly pairing it with a loud, startling noise. This fear response later generalized to other similar stimuli, such as fur coats and Santa Claus masks. Watson and his colleagues extended this model to various emotional behaviors, including what they described as “primary emotional reactions” such as rage, fear, and love. They also proposed practical applications, including participant modeling and in vivo desensitization techniques (Ollendick & King, 1998).

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In the decades following Watson, B.F. Skinner emerged as a major figure in the evolution of behavior theory. His extensive experimental research and theoretical contributions were grounded in the principles of operant conditioning. Unlike Watson, who focused on stimuli that elicit responses, Skinner emphasized the consequences that follow behavior as the primary mechanism of learning. He proposed that organisms are more likely to repeat behaviors that are followed by reinforcing events.

Skinner distinguished between two types of reinforcement: positive reinforcement, wherein behavior is strengthened by the addition of a desirable stimulus (e.g., praise, attention, tangible rewards), and negative reinforcement, whereby behavior increases due to the removal or avoidance of an aversive stimulus. In addition to mechanisms that strengthen behavior, Skinner's model also addressed processes that lead to the weakening or suppression of behavior. These include operant extinction, where behavior diminishes when reinforcement is no longer provided; negative punishment, involving the removal of a desirable stimulus; and positive punishment, which entails the presentation of an aversive stimulus to reduce the likelihood of a behavior recurring.

An important analytical tool in Skinner's system was the three-term contingency—a framework describing the functional relationship between antecedent stimuli (A), behavior (B), and consequences (C). Within this model, discriminative stimuli acquire control over behavior based on prior reinforcement histories. Moreover, Skinner acknowledged the influence of setting events—contextual variables that can alter the effectiveness of discriminative stimuli under specific conditions.

Skinner's contributions extended beyond theoretical formulations to include practical innovations in applied behavior analysis. He introduced concepts such as reinforcement schedules, shaping, fading, and functional analysis, which became cornerstones of behavior modification strategies. Following an initial phase of laboratory research primarily involving nonhuman subjects, Skinner's students and colleagues expanded the application of behavioral principles to human contexts, especially in child care, institutional settings, and education (see Bijou & Baer, 1961, for an early example). The systematic manipulation of antecedents and consequences remains a core feature of many empirically supported interventions for children and adolescents (Ollendick & King, 2000).

Applied behavior analysis has since flourished, particularly in the treatment of individuals with developmental disabilities, reflecting the enduring relevance of Skinner's work (see Chapter 8 for a detailed discussion). Like Watson, Skinner (1953, 1957) made deliberate efforts to incorporate cognition into his account of human behavior. He differentiated between private events—such as thoughts, images, sensations, and emotions—and public events, or overt behavior. Nevertheless, both were viewed as forms of behavior embedded within a broader causal chain shaped by environmental contingencies.

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In the late 1960s and early 1970s, Albert Bandura advanced a more integrative perspective through his formulation of social learning theory, which emphasized observational or vicarious learning. Bandura argued that individuals could acquire new behaviors by observing others, thereby avoiding the need to experience every outcome firsthand. While both Skinner and Bandura recognized the importance of verbal behavior, their perspectives diverged significantly. Skinner (1957) focused on the speaker and the environmental conditions that shape verbal responses, whereas Bandura placed greater emphasis on internal cognitive variables, particularly self-efficacy, which he assigned a causal role in a wide array of human activities.

This ongoing debate regarding the causal status of cognitions in relation to overt behavior continues to inform contemporary discussions in behavioral and cognitive-behavioral theory (Reitman & Drabman, 1997).

Behavioral theory offers a foundational perspective for understanding how individuals learn and respond to environmental stimuli, making it highly relevant to the study of agricultural decision-making, particularly in the context of insurance uptake. According to this theoretical framework, behavior is shaped by observable antecedents (such as policy incentives or climatic events) and consequences (such as financial compensation or loss), often through processes of classical and operant conditioning. In the case of tea farmers, repeated exposure to weather-related risks or government-supported insurance programs can lead to conditioned responses—either reinforcing trust in insurance mechanisms or fostering skepticism based on past negative experiences.

Skinner's concept of operant conditioning further highlights how reinforcement schedules—such as timely indemnity payments or consistent premium subsidies—can strengthen the likelihood of future insurance participation. Conversely, inadequate or inconsistent policy support may function as punishment or extinction cues, discouraging continued engagement. Bandura's extension of behavioral theory through social learning also plays a role, as farmers frequently observe and imitate peers, especially when evaluating risk management strategies like crop insurance. This suggests that both individual experience and vicarious learning significantly influence insurance purchase behavior.

Given these behavioral dynamics, it becomes evident that government interventions—ranging from direct financial incentives to educational outreach—serve not only as environmental stimuli but also as critical reinforcers that can either promote or inhibit insurance adoption. At the same time, farmers' risk perceptions, which are shaped by personal experience, media exposure, and community narratives, act as mediating variables that filter external information and determine behavioral outcomes. Therefore, integrating behavioral theory into the current study provides a robust explanatory framework for examining how

structured policy inputs and subjective cognitive evaluations jointly influence the decision-making behavior of tea farmers regarding crop insurance.

2.3.2 Cognitive Theory

Rational-Emotive Behavior Therapy (REBT), developed by Albert Ellis in the 1950s, initially named rational therapy, underwent name changes (to rational-emotive therapy and later rational-emotive behavior therapy) to distinguish it from similarly named approaches and to distance itself from the philosophical position of rationalism (Ellis, 1962, 1999). Acknowledged as an inclusive therapeutic approach, REBT incorporates elements of behavioral theory, making it challenging to differentiate many techniques from behavior therapy (A. Lazarus, 1989).

The core of Ellis's REBT is encapsulated in the acronym ABCDE (Dryden & Ellis, 2001; Ellis & Bernard, 1983). "A" signifies an event activating irrational thinking, "B" represents irrational beliefs, and "C" denotes emotional and behavioral consequences. Therapy focuses on beliefs rather than the event or its consequences. Ellis noted that emotional problems and behavioral dysfunctions often originate from grandiose demands on oneself, others, and environmental conditions. Therapists target irrational thinking to induce widespread changes in emotional and behavioral functioning. The final steps involve disputing irrational beliefs (D) and achieving a healthier emotional, behavioral, and cognitive state (E). Despite emphasizing a universally held irrational belief system, REBT, per Ellis's view, recognizes the primary domains of thought, emotion, and overt behavior in human existence (Ellis, 1962).

Ellis and Bernard (1983) note that people seldom experience pure thoughts, feelings, or actions. Ellis emphasizes the holistic nature of thoughts, emotions, and overt behavior, rejecting the idea that a single domain determines activity in others. In contrasting REBT with humanistic models, Ellis argues for challenging dysfunctional thoughts and overt behavior rather than prioritizing unconditional support as the primary goal in therapy (Ellis, 1962).

Aaron T. Beck, independently developing CBT, offered a detailed account of cognition's role in psychopathology (Beck, 1963). Early works focused on depression, where Beck identified a cognitive triad—negative beliefs about self, future, and world. He later described a shift from mature to primitive thinking in depression, with primitive thinking leading to negative affective consequences (Beck et al., 1979).

While Beck initially focused on depression, he later expanded cognitive theory's applicability to externalizing problems and anxiety (Beck, 1999; Beck et al., 2005). Both Ellis and Beck shared the hope that explicit focus on cognitions would efficiently alleviate negative affect (Beck et al., 1979).

A.Beck's early work (Beck et al., 1979) suggests different belief levels, evolving to include automatic thoughts, intermediate beliefs, and core beliefs. Automatic thoughts are specific and idiosyncratic, while intermediate beliefs are rules or assumptions (e.g., “Things never work out for me”), and core beliefs are global and fixed (e.g., “I am a failure”) (Judith Beck, 1995). Both Ellis and A.Beck recognize reciprocal relations between cognition, the social environment, and overt behavior.

In a social situation, a person prone to depression and/or social anxiety may have automatic thoughts like “She thinks I'm boring”, leading to intermediate beliefs like “Nobody wants to talk to a person like me”, and resulting in withdrawal. This withdrawal may reinforce the individual's intermediate belief. Depressed or anxious individuals often discount evidence contrary to distorted hypotheses, maintaining distorted thinking (A.Beck, 1979). The sequence illustrates the reciprocal nature of individual cognition, overt behavior, and social conditioning.

Ellis and A.Beck propose that irrational thinking contributes to maladaptive behaviors, but they don't consider it the sole cause of psychopathology. Both acknowledge biological and environmental influences as significant factors (A.Beck, 1979; Bernard & DiGiuseppe, 1989). A.Beck suggests genetics and childhood environment may initiate irrational thinking, leading to maladaptive behaviors. While most people navigate life with rational thinking, early-formed irrational thoughts can be triggered by stress, shifting the pattern to irrational thinking. The term "cognitive-behavioral therapy" often specifically refers to combining A.Beck's cognitive techniques with other behavioral techniques.

Cognitive theory, particularly as articulated through Rational-Emotive Behavior Therapy (REBT) and Cognitive Behavioral Therapy (CBT), provides a critical lens through which to examine how individuals interpret environmental stimuli and generate behavioral responses. At its core, this theoretical perspective posits that it is not the objective reality of an event, but rather the individual's interpretation and evaluation of that event, that determines emotional and behavioral outcomes (Ellis & Bernard, 1983; Beck et al., 1979). This insight is particularly relevant in understanding the decision-making processes of tea farmers when considering the purchase of crop insurance.

According to Ellis's ABCDE model, an activating event (A)—such as exposure to government-supported insurance programs or climatic uncertainty—is filtered through a system of underlying irrational beliefs (B), resulting in emotional and behavioral consequences (C). In the context of this study, these beliefs may include deeply held assumptions such as “Insurance will never benefit me” or “The government will not fulfill its promises,” which can significantly impede rational decision-making. The process of disputing such irrational beliefs (D) and replacing them with more adaptive cognitions (E) forms the

basis of cognitive intervention strategies aimed at modifying behavior—a principle that can be extended to educational and policy-based interventions targeting agricultural communities.

Similarly, Beck's cognitive model identifies a hierarchical structure of thought—including automatic thoughts, intermediate beliefs, and core schemas—that collectively shape an individual's worldview and behavioral tendencies. For example, a farmer who has experienced a previous crop failure without adequate compensation may develop the automatic thought "I will lose money again," which reinforces the intermediate belief "There is no point in investing in insurance," ultimately reinforcing a core belief such as "I am powerless against nature." These cognitive distortions can significantly influence risk perception and, consequently, the decision to adopt risk-mitigation tools like crop insurance.

Importantly, both Ellis and Beck emphasize the reciprocal relationship between cognition, environment, and behavior, suggesting that changes in one domain can lead to shifts in the others. Thus, government support mechanisms—such as premium subsidies, timely indemnity payments, or targeted awareness campaigns—can serve not only as environmental reinforcements but also as cognitive triggers that challenge existing negative beliefs about insurance efficacy. Over time, consistent positive experiences may facilitate the development of more adaptive belief systems, thereby increasing the likelihood of sustained insurance uptake.

By integrating cognitive theory into the present study, this research adopts a holistic approach to understanding how tea farmers process risk-related information, evaluate policy incentives, and make decisions that impact their long-term resilience. It positions cognitive appraisal as a mediating variable that bridges structural policy inputs and observable behavioral outcomes, offering a nuanced explanation for variations in insurance participation among farming households.

2.3.3 Further Integration of Behavioral and Cognitive Theories

While many theorists in the 1970s debated the strengths and weaknesses of behavioral and cognitive models, some argued for an integrationist perspective encompassing both theories. Cognitive therapists incorporated numerous behavioral techniques, and certain behaviorists focused more on covert behavior.

Many integrated theories fall under the broad label of "self-management," involving a variety of behavioral and cognitive approaches. When used broadly, "self-management" implies that a person's behavior is partly controlled by external and internal stimuli. Individuals are capable of manipulating these stimuli to achieve long-term goals (Rokke & Rehm, 2001).

Derived self-management (or self-control) therapies focus on teaching clients learning and cognitive principles for practical application in their lives. Self-management techniques include monitoring one's own overt and covert behavior (i.e., self-monitoring), efforts to alter or change one's external and internal antecedents to behavior (i.e., stimulus control), and the application of both external and internal consequences to one's behavior (i.e., self-reward and self-punishment; Mahoney & Arnkoff, 1978).

Some self-management theorists emphasize adults (e.g., Goldfried, Decenteceo, & Weinberg, 1974), while others focus more on children (Bandura, 1973; Meichenbaum, 1977). Theories of self-efficacy, problem-solving, and self-instruction align with the self-management model. Bandura (1997) significantly influenced behavioral theory by incorporating social learning. He continued shaping cognitive-behavioral theory with his self-efficacy model, emphasizing the beliefs of the individual. Bandura's research highlights the crucial role of consequences following a model's behavior in influencing the observer's behavior. Social learning theory increasingly emphasizes the importance of cognition in predicting behavior. Bandura's recent work focuses on outcome expectations and self-efficacy, describing four primary ways to develop self-efficacy. Reflecting his greater emphasis on the role of cognitions in influencing behavior, Bandura (2004) now uses the term "social cognitive theory" to describe his theoretical model.

Cognitive problem-solving is another model that emerged from the integrationist perspective. D'Zurilla and Goldfried (1971) present problem-solving as the "self-directed cognitive-behavioral process by which a person attempts to identify or discover effective or adaptive solutions for specific problems encountered in everyday living" (D'Zurilla & Nezu, 2001). Drawing largely from R. Lazarus's work (1966; R. Lazarus & Folkman, 1984), D'Zurilla and Nezu developed their "coping" or problem-solving model.

In this model, stress is defined as a relationship between a person and the environment in which the person's coping skills are strained. Stressors include life's major problems as well as daily hassles. Two types of coping responses are distinguished: problem-focused coping responses, used to change something about a situation (e.g., communication style), are best employed when the person has some control over the problem situation. Emotion-focused coping responses are attempts to change one's emotional response (e.g., relaxation techniques to decrease anxiety or anger) and are best used when the person does not have control over the problem situation.

Problem-solving involves identifying a situation requiring a coping response and then generating an adaptive cognitive coping response, a behavioral coping response, or both (D'Zurilla & Nezu, 2001). They distinguish between being oriented to a problem and solving it. Before generating effective solutions, one must recognize the problem, attribute it to normal life rather than an internal stable deficiency, see it as significant to well-being, be

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willing to invest time and effort, and have high self-efficacy and an expectancy for change. The problem-solving model is influenced by Bandura's work. Solving problems includes formulating the problem, generating possible solutions, choosing the best solution, implementing it, and evaluating its effectiveness. Formulation of the problem might involve cognitive and/or behavioral influences, and solutions might be cognitive and/or behavioral in nature.

Meichenbaum(1977) presents another integrationist perspective, explicitly positioning his book "Cognitive-Behavior Modification" as an attempt to "bridge the gap" between behavior therapy and the cognitively focused therapies of Ellis and A. Beck. He cites Luria (1959, 1961) and Vygotsky (1962) as important influences on his approach. Meichenbaum argues, based on Luria and Vygotsky, that the behavior of young children is initially directed by their parents' verbal behavior. Children then begin to direct their own behavior through overt speech, and finally, inner speech is developed to direct their own behavior. Meichenbaum hypothesizes that maladaptive child behavior is partly the result of deficits in inner speech, particularly in children with high rates of impulsive behavior.

Influenced by social learning theory and the problem-solving model, Meichenbaum extends Bandura's theory to include modeling inner speech, a form of covert behavior. Self-instruction training, developed by Meichenbaum, addresses deficits in inner speech by using "cognitive modeling," where adults model problem-solving skills by talking aloud while performing a task. The steps involve the child imitating the adult with overt speech, then whispered speech, and finally with inner speech. Meichenbaum also discusses integrating behavioral components, such as employing external reinforcers in addition to the use of self-praise.

Meichenbaum (1977) introduces distinctions between his theory and those of Ellis and A. Beck. He emphasizes the absence of adaptive thoughts, particularly in impulsive behavior, in contrast to the focus on maladaptive thoughts by Ellis and A. Beck. According to Meichenbaum, while some maladaptive thinking is normal, it's the degree of adaptive thinking that distinguishes normal from abnormal functioning. This distinction suggests that therapy should directly challenge maladaptive thoughts for some problems, while for others, the focus should be on teaching more adaptive thoughts.

Kendall and Hollon (1979) liken this distinction to behavioral excesses and deficits, while Kendall (2000) terms it as "cognitive distortions" and "cognitive deficiencies." In practical terms, this implies that therapy may need to address maladaptive thoughts directly for certain issues and focus on teaching more adaptive thoughts for others.

Meichenbaum's integrative theory also gave rise to stress inoculation training, a cognitive-behavioral approach. Stress inoculation training, akin to medical inoculation, aims to build coping skills as "psychological antibodies" to prevent psychological problems.

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Meichenbaum credits other investigators, like Goldfried et al. (1974), for independently developing similar ideas. Coping skill-based therapies teach clients both more adaptive social behavior and cognitive coping skills, including physiological relaxation and adaptive self-statements, practiced initially in nonstressful situations before applying them in more stressful ones (Meichenbaum, 1985).

Mahoney and Arnkoff (1978) categorized cognitive-behavioral interventions into three categories: cognitive restructuring, coping skills, and problem-solving. Cognitive restructuring, exemplified by the work of Ellis and A. Beck, focuses on replacing maladaptive cognitions with more adaptive ones, treating maladaptive thinking as the primary cause of distress. Coping skills interventions, including Meichenbaum's stress inoculation therapy, aim to enhance adaptive responses to external challenges by increasing coping skills, addressing both cognitive and behavioral aspects.

In the context of your research on insurance demand theory, it's essential to note that the expected utility theory, upon which the insurance demand theory is based, assumes complete rationality and information. However, Mahoney and Arnkoff highlight that individuals are not always fully rational and can be influenced by psychological factors such as emotion, attitude, and cognition. The deviation effect may occur due to estimation abilities, information biases, and psychological factors like “loss aversion,” leading decisions away from economic optimality. Additionally, incomplete information further complicates decision-making, as actors may lack key details necessary for optimal choices in insurance participation. The incorporation of behavioral economics, behavioral finance, cognitive behavior theory, and other related theories can help explain deviations from utility maximization in insurance decisions, considering psychological and behavioral factors.

2.3.4 Basic view of the theory of cognitive behavior

Cognitive behavior theory stems from the integration of behaviorism and cognitive theory. Behaviorism, rooted in Pavlov's conditioning, evolved through early and new behaviorism stages. Early behaviorism, represented by Watson, focused on “stimulus-response,” viewing behavior as a mechanical reflex to external stimuli. New behaviorism, represented by Skinner and Bandura, introduced intermediate variables like cognition in the “stimulus-cognition-response” model. Skinner distinguished between stimulus-related responsive reflex and stimulus-independent operant reflex, emphasizing reinforcement through reinforcers.

Bandura's “social cognitive behavior” theory posits an interaction among the external environment, cognition, and behavior, addressing early behaviorism's limitations and emphasizing cognition's role in behavior. Cognitive theory highlights cognitive processes—remembering, processing, and creating experience and information. Behavior,

seen as an external reflection of cognition, is not solely driven by stimulation and reinforcement but is influenced by cognitive processes. Non-adaptive and incorrect behaviors are attributed to distorted cognition, and correcting these cognitive distortions can lead to behavioral changes. The root cause of behavior lies in cognition, and modifying cognition can alter behavior in cognitive behavior theory.

Cognitive behavior theory integrates key aspects of behaviorism and cognitive theory, emphasizing the significant impact of cognition on behavior. The main tenets include:

1) Role of Cognition in Behavior: Cognitive behavior theory asserts that behavior results from the interplay of emotion, cognition, and action. Cognition serves as the intermediary and coordinator between the actor's emotions and behavior.

2) Influence of Automatic Thinking: The cognitive formation of individuals is shaped by "automatic thinking," reflecting unthinking and subconscious responses based on long-formed beliefs, attitudes, and cognition. Automated thinking contrasts with "rational thinking," and human cognition can be irrational, erroneous, absurd, or scattered, leading to distorted behavior.

3) Environmental Influence on Cognition: The theory underscores the impact and creation of both the external environment and internal cognition. External conditions can mold and affect an individual's internal cognition, and alterations in the environment eventually result in changes to personal cognition. Albert Ellis's "ABC Emotion Theory Framework" from the 1960s exemplifies this perspective.

Cognitive behavior theory recognizes the intricate relationship between cognition, emotion, and behavior, providing a framework to understand and address irrational or distorted behavior. The "ABC Emotion Theory Framework" proposed by Albert Ellis serves as a representative model within this theoretical framework.

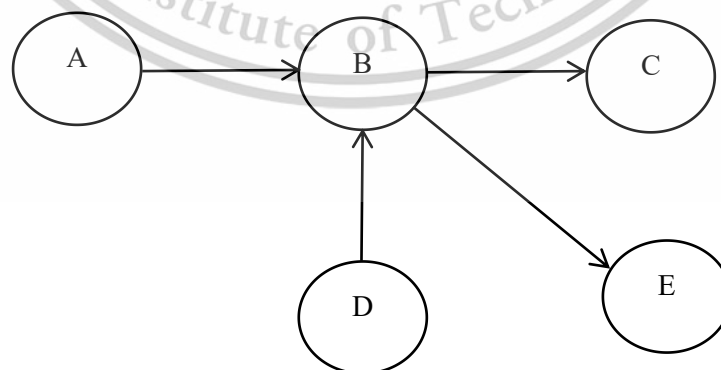


Figure 2.2: ABC emotion theory framework

Source: Albert Ellis, 1955.
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In the ABC Emotion Theory Framework, proposed by Albert Ellis, the model elucidates the interplay between activating events (A), beliefs (B), and consequences (C) in shaping an individual's behavior and emotions:

Activating Event (A): This signifies the triggering event or situation.

Belief (B): Represents the individual's cognitive appraisal or belief about the activating event. These beliefs can be accurate or distorted.

Consequence (C): Denotes the emotional or behavioral outcome resulting from the individual's beliefs about the activating event.

The model emphasizes that the activating event itself does not directly cause the emotional or behavioral consequence. Instead, it is the individual's beliefs about the event (B) that influence the emotional and behavioral outcomes (C). Intervening in this process involves challenging irrational beliefs (D), leading to the formation of new beliefs and, subsequently, new emotions or outcomes (E).

The ABC framework underscores that correcting irrational beliefs can positively impact behavior and emotions. It emphasizes the indirect influence of activating events on behavior, highlighting the pivotal role of cognition or beliefs in determining behavioral outcomes. This theory, commonly applied in behavior correction and treatment, asserts that changes in the external environment can modify an individual's cognition, thereby influencing decision-making and behavior.

Cognitive behavior theory highlights the intrinsic connection between an individual's behavior and cognition. In the context of analyzing farmers' participation in agricultural insurance, the theory suggests that farmers' cognitive perceptions play a crucial role in shaping their behavior. A clear, rational, and accurate understanding of agricultural insurance can prompt farmers to make informed and rational decisions regarding insurance participation. Conversely, if farmers hold fuzzy, distorted, or incorrect perceptions about agricultural insurance, it may lead to erroneous decision-making and unfavorable outcomes.

Applying cognitive behavior theory to the analysis of farmers' agricultural insurance participation behavior underscores the importance of cultivating accurate and clear cognitive frameworks. By enhancing farmers' understanding of agricultural insurance, interventions can be designed to correct misconceptions, providing a foundation for more informed and beneficial decision-making in the realm of agricultural insurance participation.

2.4 Theory of planned behavior

This paper will apply the theory of plan behavior to study the purchase decision behavior of tea planters' planting insurance. The theory of planned behavior belongs to

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behavioral economics, and its assumptions and analytical framework follow behavioral economics. The theory of planned behavior is developed based on the theory of rational decision behavior. Therefore, the research paradigm of behavioral economics in social psychology, the basic ideas and viewpoints of rational behavior theory and planned behavior theory will be used for the establishment of the analytical framework of this research.

2.4.1 Behavioral economics

1. Source and Core Content of Behavioral Economics

Behavioral economics originates from decision-making under uncertain conditions, encompassing heuristic judgment, the decision process influenced by factors such as perception, belief, and emotion, and the decision principle that economic subjects focus on "the relative change of wealth to a certain desire level" under uncertain conditions (Edwards, 1954; Simon, 1956). The convergence of research in cognitive psychology and economics led to the formal establishment of the new discipline of behavioral economics by Kahneman and Tversky in 1979.

The core tenet of behavioral economics is that economic phenomena stem from the behavior of the involved parties. While these parties strive to make rational decisions, the inherent limitation of reason becomes evident. Under the constraints of finite rationality, decision-making is not only reflected in the purpose but also in the process. Decision-making procedures and scenarios can interact with the psychology of the parties, influencing the outcomes. Changes in individual decision outcomes contribute to alterations in total outcomes, emphasizing that the understanding of economic aggregates stems from comprehending individual behavior.

Finite rationality and learning processes introduce biases in decisions and a stochastic nature to the resulting evolution path, leading to abnormal behavior. This abnormal behavior adds complexity to economic phenomena and enhances the constraints of finite reason (Daniel Kahneman and Amos Tversky, 1982; Richard Taylor, 1999; Cass Sunstein, 2008). Practical experience demonstrates that limited rationality is the true situation of actors and should be the consistent premise of the modern economic system.

2. Connotation, Causes, and Decision-Making of Limited Rationality

Traditional economics assumes complete rationality in individuals. This assumption implies that actors possess the ability to be "knowledgeable and omnipotent," enabling the optimization of their decision-making plans. The hypothesis of complete rationality demands actors to have a determinable effect function, a selection implementation process devoid of uncertainty, and selection results characterized by description invariance, program invariance, and relationship independence, ultimately maximizing utility under constraints.

Classical decision theory, rooted in the assumption of the "rational man," neglects factors like limited rationality, deterministic effects, and inconsistencies in preferences present in real-life situations. Consequently, it often fails to align with the actual behavior of decision-makers in practical applications. In reality, behavioral subjects face various constraints, and their actions are not solely driven by rational expectations but are also influenced by perceptual factors. So limited rationality can only be realized (Simon, 1957; Aumann, 1997; He, 2004; and Meng, 2011).

1) Limit the connotation of rationality

The concept of limited rationality, also known as bounded rationality, acknowledges that human decision-making is not always perfectly logical or optimal. Instead, it is constrained by several factors:

Information limitations: Individuals cannot access all relevant information during the decision-making process, often due to time constraints, resource limitations, or simply the vastness of available data (Simon, 1955).

Cognitive limitations: Even with complete information, our ability to process and analyze it is limited. Our cognitive resources, like memory and attention, restrict our ability to consider all possible options and their consequences meticulously.

Systematic biases: Human reasoning is prone to systematic biases, such as cognitive heuristics or overconfidence, which can distort our judgments and lead to suboptimal choices (Daniel Kahneman and Amos Tversky, 1979).

Due to these constraints, individuals do not strive for utility maximization as classical economic theory posits. Instead, they generally aim for satisficing: finding a solution that meets their minimum requirements rather than the absolute best one. This explains why people might opt for the first acceptable option they encounter instead of exhaustively researching all possibilities.

Limited rationality does not imply being entirely irrational or incapable of making good decisions. Instead, it emphasizes the bounded nature of human cognition and information processing. By acknowledging and understanding these limitations, we can develop more realistic models of human behavior and design better decision-making tools and systems.

2) The cause of finite rationality

a. Cognitive Limitations

Nobel Prize winner Herbert Simon argued that our inherent brain capacity restricts our reasoning and information processing. This internal constraint (Miller, 1956) limits how much information we can retain and use during decision-making, preventing us from achieving perfect rationality.

b. Dual-System Thinking

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Psychologist Daniel Kahneman (1993) proposed a two-system model of human decision-making. System 1 operates intuitively and quickly, relying on emotions and heuristics (mental shortcuts). System 2 engages in slower, deliberate reasoning. This model suggests that human choices often result from a blend of intuition and reason, leading to both rational and irrational outcomes depending on the specific context and which system takes the lead.

c. Mental Cost and Scarce Resources

Economist Charles Denzau (1993) pointed out that cognitive processes require mental resources, similar to any other scarce resource. Performing complex calculations and analysis comes at a cognitive "cost," which humans are naturally averse to. Therefore, we often opt for simpler, less rational but less mentally taxing solutions, reflecting the limitations of our mental resources.

3) Decisions under finite rationality

a. Simon's Satisficing Model

According to Herbert Simon (1955), decision-making involves a two-step "search and satisfy" process. Individuals first set a level of acceptable outcomes (aspiration level) based on their existing options and limitations. They then search for the first solution that meets or exceeds this level, rather than exhausting all possibilities to identify the absolute best one. This explains why people often make good-enough decisions instead of pursuing perfect optimization.

b. Kahneman's Heuristics and Biases Model

Daniel Kahneman and Amos Tversky (1979) proposed that our thinking operates through two systems: a fast, intuitive System 1 and a slower, deliberative System 2. Decision-making under limited rationality often relies on System 1's mental shortcuts (heuristics) to navigate complex situations. These heuristics, while efficient, can lead to systematic biases like overconfidence or anchoring, causing deviations from perfectly rational choices.

c. Schmitt's Bounded Cognition and Social Systems Model

Building on behavioral economics, Peter Schmitt (1994) argues that human behavior is shaped by two key features:

Bounded Cognition. Our brains have limited information processing capacity, leading to cognitive biases and simplifying strategies when making decisions.

Social Context. Faith, ideologies, and social systems provide frameworks for individuals to navigate uncertainty, stabilize expectations, and coordinate behavior.

Limited rationality, in Schmitt's view, results from the interplay of these factors. We rely on cognitive shortcuts and social structures to cope with uncertainty and complexity, even if they may not always lead to perfectly rational choices.

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Connecting to Tea Farmers. By acknowledging limited rationality, researchers like Simon, Kahneman, and Schmitt move beyond unrealistic assumptions of perfect optimization in human decision-making. This aligns better with the reality of tea farmers, who operate in complex and uncertain environments with constrained information and resources. Understanding their mental models, heuristics, and reliance on social norms can offer valuable insights for promoting informed decision-making and supporting their long-term success.

This theoretical perspective underscores that the decision to purchase tea crop insurance is not purely a function of economic incentives or objective risk levels, but is deeply embedded in the farmer's subjective interpretation of those factors—mediated by cognitive limitations, emotional responses, and social influences. Therefore, integrating behavioral economics into the present study allows for a more nuanced understanding of how structural policy inputs interact with psychological and contextual variables to shape insurance adoption behaviors among tea farmers.

By grounding the research in this well-established interdisciplinary framework, this dissertation contributes not only to the academic discourse on behavioral agricultural economics but also to the practical development of more effective, behaviorally informed policy interventions aimed at enhancing resilience in smallholder farming communities.

2.4.2 Theory of rational behavior

The theory of rational behavior delves into the impact of attitudes and norms on individual behavior, extending the related theory of attitude behavior. Numerous scholars have posited a close relationship between attitude and behavior (DeFleur & Westie, 1958; Festinger, 1964; Linn, 1965; McGuire, 1969; Warner & DeFleur, 1969; Wicker, 1969). Additionally, several studies (Bray, 1950; DeFleur & Westie, 1958; Linn, 1965; Rokeach & Mezei, 1966; Smith & Dixon, 1968) have established a general measurement method, observing the connection between attitude ratings towards stimuli and specific behavior.

However, contrary evidence challenging the assumption of a close relationship between attitudes and behavior has been presented by some scholars (Berg, 1966; Bray, 1950; Kutner, Wilkins & Yarrow, 1952; LaPiere, 1934). Further research on the attitude-behavior relationship has drawn attention to the multi-dimensional properties of attitudes, encompassing cognitive, emotional, and emotional components (Rosenberg & Hovland, 1960). While attitudes are a factor influencing behavior, they are not the sole determinant (Ehrlich, 1969; Triandis, 1967; Wicker, 1969). Social norms, habits, personal personality, and other factors also play a role in shaping behavior (Ehrlich, 1969; Wicker, 1969; Fishbein, 1973, et al.).

Many of these studies have solely focused on traditional attitudinal measures, leading to insufficient behavior prediction. The variables beyond attitudes have not been systematically considered as determinants of behavior, relegating these variables to sources of error affecting attitude prediction of behavior.

Fishbein (1967) expanded and extended Proposition Control Theory (Dulany, 1961; 1964; 1968), further applying this theory to the analysis of social behavior (Ajzen, 1971; Ajzen & Fishbein, 1969, 1970; Carlson, 1968; Fishbein, Ajzen, Landy & Anderson, 1970). The formulation theory of Fishbein, as concluded in Fishbein & Ajzen (1972), explores the relationship between behavioral attitudes and normative beliefs from family and friends, asserting their influence on individual behavior purposes. Motivational normative beliefs act as regulatory variables, influencing behavioral intentions.

In predicting behavioral intention, scholars examining attitudes and norms must consider the relationship between these variables and determine their respective weights. Fishbein & Ajzen (1973), through a comparative analysis of previous "prisoner's dilemma" experiments, delved into the effects of various variables. They emphasized the need to exclude additional factors such as time and environment. Extensions to the Fishbein model include the canonically appropriate "cognitive algebra" (Bettman, Capon & Lutz, 1975), the impact of normative change strategy (Ryan, 1977), effects of exogenous situational variables (Songer, 1976), simple specification composition development (Ryan, 1977; Glassman & Fitz-henry, 1976), and the weight of attitude self-assessment and norms (Lloyd, 1977).

These studies collectively contribute to the development of a knowledge system around the theoretical model of rational behavior, particularly focusing on factors influencing attitudes. However, there remains a need for further specification in the studies.

Fishbein & Ajzen acknowledge a notable limitation in the rational behavior theory model—specifically, the distinction between target intention and behavior intention. When applying the rational behavior theory model to certain behaviors, it solely considers behaviors under personal intention control, neglecting factors that influence these behaviors beyond the model's boundary conditions. In actuality, individuals often face multiple choices of behavior. The experimental environment, by controlling the choice of behavior, makes a critical error in demonstrating that the selection process of alternative behavior is not encompassed within the model (Fishbein & Ajzen, 1980).

During the execution of behavior, the selection process can significantly alter the nature of the intention formation process and the role of intention (Blair, 1988).

Building upon the theoretical model of rational behavior, we introduced perceptual behavior variables and developed the theoretical model of planned behavior, as proposed by Ajzen (1985; 1991). In the study of pirated software use behavior to predict unethical conduct, the planned behavior theory outperforms the rational behavior theory (Man Kit Chang, 1998).

The inclusion of perceptual behavior control in the planned behavior theory model proves crucial in predicting intention variables for the use of pirated software, supporting the conclusion that planning behavior theory enhances the predictive efficacy of behavioral intention (Ajzen, 1991) by using perceptual behavior control. However, it's essential to note that this finding contradicts the prediction of ethical decision-making in the medical profession (Randall, 1991), which observed that the added perceived behavioral control variables contributed minimally to predicting behavioral intention. This highlights the ongoing challenges even for an optimized theory of rational behavior. Ajzen (2006) emphasized that human behavior can be influenced by three factors: behavioral beliefs (evaluating possible outcomes), normative beliefs (motivation to comply with others' expectations), and control beliefs (perceiving factors that promote or hinder behavior execution). In essence, behavioral beliefs generate attitudes toward behavior, normative beliefs stem from perceived behavioral pressure or subjective norms, and control beliefs lead to perceived behavioral control. In summary, behavioral attitudes, subjective norms, and perceived behavioral control collectively contribute to the formation of behavioral intention. Consequently, the planned behavior theory proves to be a more effective tool for optimizing behavior prediction models.

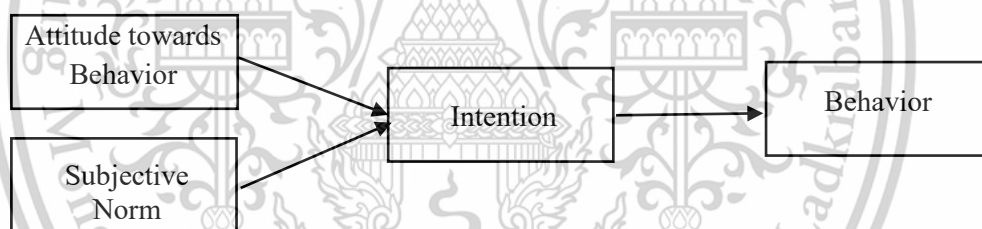


Figure 2.3: The model of boundary conditions

Source: Fishbein & Ajzen, 1980.

By situating the research within the TPB framework, this dissertation contributes to both theoretical development in behavioral agricultural economics and practical policy design aimed at enhancing farmer resilience through improved risk management tools.

2.4.3 Theory of planned behavior

The Theory of Planned Behavior (TPB) is a widely used social psychological framework for elucidating behavioral choices and understanding the psychosocial determinants of human social behavior (Ajzen, 1985, 1991). It has found application in various social science fields, including psychology, sociology, and marketing, making it one

of the most frequently utilized frameworks in the literature (Nosek et al., 2010; Ohtomo & Ohnuma, 2014; Ari & Yilmaz, 2016).

The TPB model has garnered approval through several studies on pro-environmental behavior (Ari & Yilmaz, 2016; Chen & Tung, 2014; Davis, 2009; Echegaray & Hansstein, 2017; Khan, 2019; Kumar, 2019; Ma et al., 2018; Moser, 2015). This theory posits that human actions stem from consciously controlled or deliberative decision-making processes. According to TPB, intention serves as the primary antecedent of behavior, reflecting the effort individuals are willing to invest in performing a specific behavior (De Groot, 2007). Furthermore, intention is predicted by attitudes toward behavior, subjective norms, and perceived behavioral control.

Attitude toward behavior refers to the extent to which a person holds a favorable or unfavorable evaluation of the behavior in question (Ajzen, 1991). It also encompasses judgments about whether the behavior is perceived as good or bad (Leonard, 2004). In the context of pro-environmental behavior, numerous studies have affirmed a positive relationship between attitude and intention (Khan, 2019; Kumar, 2019; Ma, 2018; Mostafa, 2007; Ohtomo & Ohnuma, 2014; Sun, 2017; Wang, 2018).

Subjective norm is defined as an individual's perception of social pressures from significant others, influencing whether to perform or not perform a specific behavior (Ajzen, 1991). It captures the individual's feelings about the social pressure experienced regarding a given behavior (Han et al., 2010; Taylor and Todd, 1995). Most studies have identified subjective norm as a crucial variable for behavioral intention (Dean et al., 2011; Teng et al., 2013; Chen & Tung, 2014; Han et al., 2010; Ohtomo & Ohnuma, 2014; Sun et al., 2017; Taufique & Vaithianathan, 2018), indicating a positive relationship between subjective norm and behavioral intention.

Perceived Behavioral Control refers to “the perceived ease or difficulty of performing the behavior” (Ajzen, 1991) or the degree of control an individual has over the action. Perceived behavioral control can impact behavior in two ways: it has implications on intention, and it can directly predict behavior (Ajzen, 1991, 2006). Pro-environmental studies have shown that PBC positively affects intention (Albayrak, 2013; Chen & Tung, 2014; Han, 2010; Thøgersen, 2007; Moser, 2015; Paul, 2016) and behavior (Ohtomo & Ohnuma, 2014; Wang, 2013; Wang, 2018; Ma, 2018).

Intention refers to individuals' determination of how hard they are willing to try, how much effort they are willing to exert, to perform the behavior (Ajzen, 1991, 2006). Intention is the direct predictive variable of behavior (Wang, 2016). Some studies have confirmed that intention can directly predict behaviors (Lee, 2014; Ohtomo & Ohnuma, 2014; Taufique & Vaithianathan, 2018; Wang, 2018).

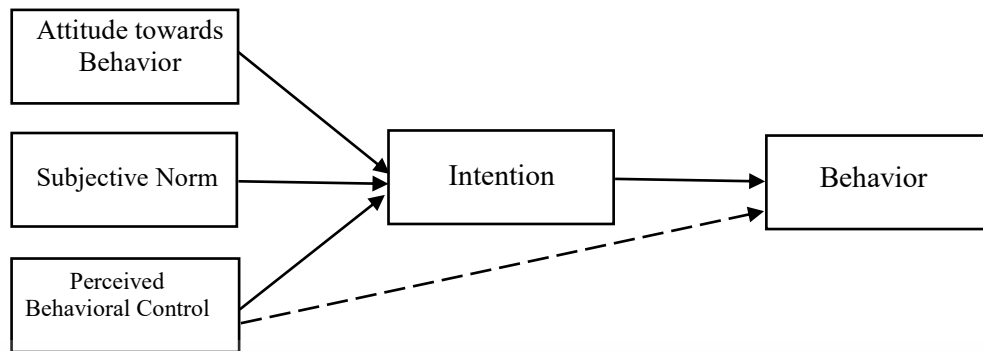


Figure2.4: The Theory of Reasoned Action

Source: Ajzen, 1985.

The theory of planned behavior is one of the most important theories about the generation process of individual behavior in the field of social psychology. It is also considered one of the typical theoretical models to explain and predict consumer purchasing intentions and behavior. Many scholars have confirmed its strong explanatory and predictive power for behavior (Singhal, 2017). The theory of planned behavior has also demonstrated good interpretation and prediction of Chinese consumers (Li Dongjin, 2008; Li Dongjin, 2009; Liu Jianhua and Yang Huixin, 2013; Hu Yuhua and Bai Xueshan, 2016; Zhang Yan and Li Xiaoyong, 2017; Cao Haiying, 2018; High Key, 2018; Sheng Guanghua, 2019). Therefore, the theory provides a solid basis for researching the formation mechanism of the purchase behavior of planting insurance.

Sparks and Donald (1995) used the theory of planned behavior as a theoretical model to explore consumers' attitudes toward the application of gene technology in the production of agricultural products. In the consumer world, the theory of planned behavior involves animal welfare (e.g., McEachem et al., 2007), environmental protection, and sustainability (e.g., Arbuthnot and Lingg, 1975; Kollmuss and Agyeman, 2002).

Based on the exploration of consumers' intentions to buy fair trade certified food on the theory of planned behavior. Used a structural equation model to analyze the action factors of fair trade food purchase intention, Their study of 1,472 British consumers confirmed the applicability of the planned behavior theory to food consumption (Shaw, 2000; Shaw and Shiu, 2003).

Vermeir and Verbeke (2006) conducted an empirical study on the purchasing behavior of food based on the theory of planned behavior, pointing out that food purchases can be increased by strengthening consumers' perceived effectiveness, participation, perceived availability, certainty, value, and social norms. They further noted that, in addition to having a positive attitude, responsibility, self-identification, perceived personal

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effectiveness, perceived social consequences, and other factors also play important roles in the formation process of consumption intention.

McEachern (2007) discussed free food, brand, and purchasing behavior using the theory of planned behavior. Vermier and Verbeke (2008) took 456 young Belgian consumers as the research object, adding personal value variables to the theory of planned behavior to study the role factors of agricultural products' purchase intention. The results showed that the three variables of attitude, subjective norms, and perceived behavior control explained the intention by up to 50%. Among them, attitude is the most important explanatory variable for intention. However, positive attitudes do not always lead to strong intentions because subjective norms and perceived behavior control also influence food purchase decisions.

Honkanen and Young (2014) surveyed 755 consumers in the UK, confirming the applicability of planned behavior theory in the field of seafood purchase. Hametal (2015), including 411 consumers in eastern and southern Europe, confirmed significant positive associations between attitudes, perceived behavioral control, and subjective norms and green food purchase intention. Analyzed the theory of planned behavior as the main framework of daily green buying behavior. The results showed that intention is the indicator with the greatest effect on green buying behavior, followed by group norms, while the influence of attitude is minimal (Moser, 2015).

Singhal studied the theory of planned behavior on the theoretical basis of consumers' organic food purchasing behavior and confirmed the regulatory role of health awareness (Singhal, 2017). Maja Hosta and Vesna Zabkar (2019) discussed environmental protection and social responsibility consumption behavior.

Given its strong theoretical grounding and empirical validation across multiple cultural and behavioral domains—including within the Chinese context (Li Dongjin, 2008, 2009; Zhang Yan & Li Xiaoyong, 2017)—the TPB serves as a well-suited theoretical foundation for this dissertation. It enables a systematic investigation into the psychological and social mechanisms underlying tea farmers' purchase decisions regarding crop insurance, while accounting for both internal dispositions and external constraints. In doing so, this study contributes to the growing body of literature applying behavioral theory to agricultural economics and offers insights for designing more effective, behaviorally informed policy interventions aimed at enhancing resilience in rural farming communities.

2.5 Theoretical Concept of Government Support

2.5.1 Government Support

The role of government support in the development of agricultural insurance has become increasingly prominent as countries seek to enhance the resilience of their agricultural sectors against natural and economic risks. In both developed and developing economies, public intervention—through financial subsidies, policy formulation, legal frameworks, and institutional support—has played a pivotal role in shaping the structure and effectiveness of agricultural risk management systems. Particularly in emerging markets such as China and India, government-backed insurance programs have not only expanded market access for smallholder farmers but also contributed significantly to national food security and rural development objectives. The rationale for such intervention is grounded in the recognition of agricultural insurance as a quasi-public good, where market failures, information asymmetries, and high systemic risks necessitate state involvement to ensure sustainable and equitable outcomes. This section examines the multifaceted dimensions of government support, including its theoretical underpinnings, functional mechanisms, and practical implications in promoting agricultural insurance adoption. By exploring empirical evidence and policy practices across different institutional contexts, this discussion provides a foundational understanding of how governmental actions influence insurance market dynamics and farmer behavior.

Government involvement in supporting commercial agricultural insurance programs is increasing in developing countries, as highlighted by the World Bank. Taking China as an exemplar, substantial backing from central and provincial governments, coupled with premium subsidies, has propelled the agricultural insurance market to swiftly become the world's second-largest (Charles Stutley, 2010). This support acts as a catalyst, providing financial protection for farmers and aiding them in mitigating economic shocks resulting from natural disasters (Danel Clarke; Felix Lung, 2015).

In the United States, private insurance companies manage policies under the federal crop insurance program, while the USDA Risk Management oversees premium rates, administers subsidies, approves and supports products, and provides reinsurance (U.S. Department of Agriculture, 2018). China, since the implementation of the central government's agricultural insurance subsidy policy in 2007, has witnessed substantial development in agricultural insurance due to ongoing policy promotion and robust government support (Hou; Wang, 2022).

Government support involves financial subsidies and policy promotion, fostering the rapid development of the agricultural insurance market. This not only facilitates market

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expansion but also offers essential economic support to farmers facing natural disasters. The government acts as a crucial catalyst for financial protection and economic resilience in the agricultural sector.

In essence, government support encompasses a series of measures, including financial subsidies, policy promotion, and system construction. Its objective is to foster the development of the agricultural insurance market, aiding farmers in managing price and yield risks by diversifying risks and providing financial protection. These measures not only facilitate the expansion of the agricultural insurance market but also offer crucial economic support when farmers encounter natural disasters.

Government support takes various forms, including economic, policy, and legal assistance to social departments, institutions, industries, or individuals. Its purpose is to guide and encourage behavior aligned with the country's overarching goals for social and economic development, promoting the healthy, coordinated, and sustainable development of society and individuals. Government support is instrumental in diverse areas such as scientific and technological progress (Wade, 2017), environmental protection, agricultural structural adjustment (Su and Wang, 2018), and the promotion of agricultural technology.

Scholars have extensively explored the role of government in the development of agricultural insurance, emphasizing key functions such as formulating laws and regulations, implementing development strategies, and market regulation (Huang, 2010). While direct government operation or substantial subsidies are crucial, the social benefit of premium subsidies is considered weak. To enhance government involvement, the focus should shift to improving information gaps, enhancing insurance company supervision, and reviewing insurance contracts (Hill, 2013).

Government support in agricultural insurance development spans economic, legal, and administrative aspects. It should include establishing and refining the legal and regulatory system, optimizing financial subsidy policies, reinforcing policy coordination, and encouraging the growth of public service organizations in agricultural insurance (Zhang, 2017). The central government sets the overall direction, policies, and strategies, while local governments maintain market order and norms, highlighting their responsibility for high-quality development in agricultural insurance (Tuo, 2021).

Government intervention is justified to ensure better and more targeted compensation for losses. Insurance, with its *ex ante* contractual basis and technical approach to valuing losses, provides a structured mechanism. While disaster relief and social insurance remain important, planning agricultural insurance, disaster risk reduction, and wider risk management can create a more organized approach to anticipate and address agricultural loss, moving away from *ad hoc* emergency interventions (Glauber, 2007).

In recent years, governments in developing countries, notably China, have increasingly supported commercial agricultural insurance programs, contributing to significant market growth. China, with backing and premium subsidies from central and provincial governments, became the world's second-largest agricultural insurance market by 2008 (Olivier Mahul and Charles Stutley, 2010). In India and Mexico, weather-based crop insurance has been extensively adopted to safeguard farmers against weather uncertainties, with other countries exploring and implementing pilot programs.

Government support in the context of agricultural insurance involves the use of public power by local governments to guide farmers' participation through policies, systems, specifications, and behaviors. This support encompasses three dimensions: government policy support, economic subsidies, and business assistance.

Theoretical research on the role of government in agricultural insurance development has focused on aspects such as the historical development and functional positioning of government functions. Scholars have analyzed the quasi-public nature of agricultural insurance as a product and the market failures within the agricultural insurance market (Zhang, 2017; Sun & Zhong, 2009).

To enhance the effectiveness of government support for the agricultural insurance market, the government should shift its focus to operational aspects. This involves improving the guidance mechanism for agricultural insurance, adjusting the intervention methods, and concentrating on legislation, market competition, supervision, fiscal subsidies, policy promotion, and advocacy services. The dynamic nature of government support requires continuous adjustments to optimize subsidy methods, tailor compensation proportions for different values and regions, and disseminate agricultural disaster compensation (National Pillar 2019; Yuan 2019; Financial Pillar 2018; Zheng and Zhang 2020).

Existing studies on government-supported agricultural insurance highlight common indicators, such as:

Formulation of Local Policies: Government support in creating local agricultural insurance policies, regulations, sound systems, and regulatory frameworks is crucial for market effectiveness.

Financial Subsidies: Financial support includes insurance premiums for farmers, operating cost subsidies for insurance companies, tax benefits, reinsurance subsidies, and disaster risk reserves. The size and nature of these subsidies are closely tied to farmers' actual interests.

Local Government Assistance: Grassroots local governments play a vital role in assisting insurance institutions with operations, especially in handling location-specific risks and swiftly adapting to changes in target values.

This study uses a multi-dimensional model, using the method of decomposition of elements, from the government's policy support for agricultural insurance, economic subsidy, business assistance and other three dimensions, to construct the government support measurement system for agriculture insurance.

Table 2.1. Definition of Government Support

Scholar	Time	Theoretical point of view
Xie Jiazhi Pu Linchang	2003	The government should withdraw from the direct operation and direct subsidy of agricultural insurance and establish the private insurance.
Huang Yingjun	2010	Government guidance mechanism: legislation; expand the scope of agricultural insurance; products and operations Technological innovation, establishment of catastrophe loss fund; implementation of regional agricultural insurance strategy; agricultural reinsurance; and cultivation of diversified market players.
Gray	2004	Direct government operation or a large amount of subsidies is essential to the development of agricultural insurance.
Goodwin	2001	The provision of agricultural insurance and subsidies by the government can solve the moral hazard and adverse selection of the policyholder and the high cost of the commercial insurance companies.
Hill	2013	The social benefits of government financial funds applied to information collection and insurance contract design exceed the social benefits of financial subsidies.
Fei Qing	2018	The government should give agriculture to the economy (financial subsidies, tax preferential treatment), law and administration Insurance support.
Sun Xiangyu	2008	The image of the grass-roots government, the credibility and stability of the policies, the relationship between the grass-roots cadres and cadres.

Table 2.1 (continue)

Scholar	Time	Theoretical point of view
Zhang Xiaoyun	2004	Regional and compulsory insurance policies; careful use of management subsidies and reinsurance and premium subsidies; strengthen the functions of insurance institutions and government organizations in information verification, organizing insurance and claim settlement.
Zhou Jianbo Liu Yuan	2010	Internal government positioning in the agricultural insurance market: agricultural insurance demanders; external positioning: institutional supporter
Wang Xinjun Zhu Shuilian	2008	Policy support, financial incentives, legal guarantee, and regulatory role.
Chen Xiaoran	2013	The government is playing a role in improving market development and institutional norms, and in reducing systemic risk, moral hazard, and adverse selection.
Tuo Guozhu	2019	Make clear the positioning of the government to support agriculture policy innovation of agricultural insurance, and the government function should be continuously deepened around the positioning.
Zhang Zurong	2017	We will establish a sound system of laws and regulations, optimize and improve fiscal subsidy policies, strengthen the coordination and implementation of supporting policies, and encourage the development of public service organizations for agricultural insurance. The government supports the development of agricultural insurance from the economic, legal and administrative aspects.

In summary, government support constitutes a critical driver in the development and sustainability of agricultural insurance systems. Through a combination of policy formulation, financial incentives, regulatory oversight, and institutional capacity-building, governments play an indispensable role in mitigating market imperfections and enhancing the accessibility and affordability of insurance products for farmers. Theoretical and empirical studies alike underscore the importance of strategic government intervention—not merely as a

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compensatory mechanism for market failure, but as a proactive force in shaping resilient agricultural economies. In the context of tea crop insurance, these insights are particularly relevant, as they inform the design of targeted policy instruments that align with farmers' behavioral tendencies and risk perceptions. Understanding the interplay between governmental support structures and individual decision-making processes lays the groundwork for more effective and inclusive agricultural risk management strategies, which will be further explored through the theoretical and methodological framework of this dissertation.

2.5.2 Policy Support

One argument for government policy intervention is to promote better and more targeted compensation for losses. Insurance provides ex-ante, a contractual basis, and a technical approach for measuring and valuing losses. The argument posits that governments could phase out ad-hoc, ex-post disaster compensation for agricultural losses. However, in reality, achieving this goal has often been challenging due to the political imperative to intervene and help farmers in emergency situations. The USA serves as an example of this challenge (Glauber, 2007).

In developing countries, disaster relief and social insurance are likely to continue playing essential roles. However, strategic planning of agricultural insurance, disaster risk reduction and management, and broader agricultural risk management can establish a more structured and planned mechanism to anticipate and address agricultural losses. This approach aims to enhance the efficiency and effectiveness of compensation measures and contribute to a more sustainable and resilient agricultural sector.

Governments in developing countries have increasingly supported commercial agricultural insurance programs. In China, for instance, substantial government backing, including premium subsidies, propelled the agricultural insurance market to become the world's second-largest in 2008, following the United States. India and Mexico have implemented large-scale weather-based crop insurance to shield farmers from weather-related risks. Several other countries have explored agricultural insurance feasibility, with some initiating pilot programs (Olivier Mahul and Charles Stutley, 2010).

In Nepal, the agricultural sector lacks protection, leading to a declining interest in agricultural occupations. Despite the sector's potential, farmers struggle due to a lack of knowledge and risk management practices (World Bank, 2009; Ghimire, 2014; Ghimire, 2016). To address this, insurance companies offer various plans to secure farmers' investments. The government has made agricultural insurance compulsory, sending insurance companies to villages in specific districts. Making insurance mandatory helps reduce adverse selection issues and ensures a more balanced agricultural insurance portfolio (FAO, 2011).

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The government sets premium rates and provides subsidies directly to private non-life insurance companies, fostering sustainability (Liang, 2014; Babcock, 2015). This approach aims to increase farmer enrollment and contribute to the long-term viability of agricultural insurance schemes.

Insurers classify products based on maturity stages for crops and factors like age, breed, and purpose for livestock and poultry. Insurance companies report thousands of premiums per year, highlighting the growing popularity of insurance policies and premiums.

The government's policies supporting agricultural development, as outlined in the article, encompass several key initiatives. These include the provision of significant volumes of agricultural credit at subsidized interest rates, technical assistance to farmers through extension services, and the implementation of price support mechanisms, which involve the purchase and storage of various agricultural products. These policies serve the dual purpose of facilitating the financing of imports and intervening in the domestic market for agricultural products (Santana & Nascimento, 2012). Public policies and agricultural investment in Brazil.

The provision of effective policy support constitutes a foundational element in the successful development and implementation of agricultural insurance programs. By integrating policy support into the broader analytical framework of this study, this research aims to uncover how governmental interventions shape farmers' perceptions, intentions, and ultimately, their decisions to adopt insurance products.

2.5.3 Economic Support

Research on government financial subsidies for agricultural insurance covers various dimensions, including the reasons behind such subsidies, the methodologies employed for providing these subsidies, and the resultant effects of government financial support on agricultural insurance. The literature on these aspects has been systematically compiled in this paper for a comprehensive understanding of the subject.

1. Reasons for Government Subsidies for Agricultural Insurance

Currently, there is a prevailing belief that the failure of the agricultural insurance market prompts government intervention to subsidize the agricultural insurance business. However, scholars offer diverse explanations for the reasons behind the market's shortcomings.

Firstly, agricultural insurance exhibits externalities. Government fiscal subsidies, targeting producer surplus and consumer surplus, are directed at agricultural insurance. Since agricultural insurance doesn't qualify as a public good, government subsidies alter the agricultural products supply curve, thereby reducing social welfare. Consequently, the government's focus should shift from subsidizing agricultural insurance businesses to supporting research activities in agricultural insurance (Siamwalla, Valdes, 1986).

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Agricultural insurance services, despite not being public goods, do not inherently suffer from market failure. However, the absence of a second market aspect, as noted by Officers and Soldiers in 2008, complicates the situation. In essence, while the market isn't inherently flawed, the missing "market two" aspect hinders its optimal functioning.

Critically evaluating the analyses of Siamwalla and Valdes, Mishra contends that their analysis is flawed. He points out that even when considering fully elastic demand, not all welfare loss can be attributed to the farmer. Mishra suggests that agricultural insurance possesses characteristics of a public good. Subsidies to agricultural insurance, according to Mishra (1996), not only benefit farmers but are also closely linked to the non-agricultural sector, warranting government support.

Guo Xiaohang (1986) argues that agricultural insurance should fall under policy-based insurance, emphasizing the need for government backing in adapting agricultural insurance. Highlighting the social benefits outweighing individual benefits and the existence of externality, Li Jun (1996) suggests that, given certain conditions such as paying insurance premiums, agricultural insurance qualifies as quasi-public goods, necessitating government intervention.

Due to its dual attributes of commodity and non-commodity, and the inability to provide products through market mechanisms, agricultural insurance requires government financial support, especially in developing countries with a weak agricultural sector and limited farmer income (Liu, 2000). Feng Wenli and Lin Baoqing (2003) as well as Sun Xiangyu and Zhong Funing (2008) elaborate on the "double positive externality" of agricultural insurance, indicating its social income benefits surpass individual gains. They argue that government subsidies for agricultural insurance enhance farmers' interests and overall social welfare, realizing its "potential welfare."

In evaluating cost-income dynamics, Wang Genfang and Tao Jianping (2012) assert that government subsidies, whether for premiums or operating costs, yield greater benefits than costs. From a cost-income perspective, they advocate for government subsidies to the agricultural insurance business.

Secondly, the efficacy of the agricultural insurance market needs improvement. Farmers often experience "perception failure" concerning agricultural risks, maintaining a belief that disasters will not affect them. This reluctance to acknowledge the possibility of disasters hinders the willingness to purchase agricultural insurance (Skees & Barnett, 1999). While farmers express a preference for multiple and income insurance, the cost constraints and low income levels result in an ineffective demand for agricultural insurance (Xie Ruilian, 2007). Research on the demand elasticity of agricultural insurance in the United States reveals a low demand elasticity (between -0.2 and -0.92), contributing to insufficient effective demand for agricultural insurance (Goodwin & Smith, 1995; Knight & Coble, 1997).

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Simultaneously, information asymmetry exacerbates the challenges in the agricultural insurance market. The presence of information asymmetry, common in insurance markets, is accentuated in agricultural insurance due to the unique characteristics of agricultural production. This asymmetry leads to issues such as moral hazard and adverse selection. In regions with high agricultural risk, farmers demonstrate a greater willingness to purchase agricultural insurance, while those in low-risk areas are more hesitant. This phenomenon constitutes adverse selection in agricultural insurance (Goodwin, 1993). Insured farmers tend to invest less in agricultural production, coupled with the high operating costs of agricultural insurance. Consequently, financial intervention by the government is deemed necessary to address these challenges (Smith & Goodwin, 1996).

2. Government research on the subsidy model of agricultural insurance

The selection of agricultural insurance subsidy models stands out as a crucial aspect in the execution of agricultural insurance plans. Based on the varying collaborations between insurance operating institutions and the government, the prevailing agricultural insurance models are typically categorized into three types: government-led, commercial operation, and government-supported commercial operation.

To delve into the liability of agricultural insurance subsidies, the United States employs a multi-stage approach, encompassing mixed operation, support, and agency collaboration between the government and insurance management entities. Currently, the Federal Crop Insurance Corporation (FCIC) and private insurance agencies manage agricultural insurance in the United States (Glauber & Keith, 2002). Similarly, Japan's agricultural insurance has transitioned from being "state-run" to "non-profit mutual aid institutions" (Yamauchi, 1986). Employing game theory to scrutinize the supply and demand dynamics of agricultural insurance, the optimal strategy suggests the government offering policy support, premium subsidies, and tax relief, while agricultural insurance engages in commercial operations (Wu, 2004).

China's policy-based agricultural insurance is stratified into two levels, with the first level addressing the relationship between the national economy and people's livelihood for crops and livestock. Here, the government simultaneously provides premium and production cost subsidies. For the remaining planting and breeding sectors, the government focuses on premium subsidies. Utilizing dynamic game theory, an analysis posits that the government must prioritize societal interests, supporting agricultural insurance through a blend of policy and commercial methods (Jiang & Qiao, 2007). The anticipated impact of agricultural insurance subsidies in China has been lower than expected, leading to substantial financial pressure. Recommendations include appropriate premium subsidies and improved cost subsidies for agricultural insurance operating institutions (Shi, 2008). A mathematical

planning approach was employed to analyze government financial subsidies in various scenarios, yielding a comprehensive form for government subsidies (Zou, Li, & Qu, 2010).

Refinement of Agricultural Insurance Subsidy Models: Proportion, Financial Dynamics, and Subsidy Objectives. Subsidy Proportion and Financial Dynamics. A pivotal aspect of policy-based agricultural insurance lies in the determination of the government subsidy proportion. This proportion must be tailored to the diverse nature of insurance operating institutions and insured farmers. Skees, Hazell, and Miranda (1999) emphasize that different institutions and farmers warrant distinct government operation and management expense subsidies. Research by Luz Maria Bassoco (1986) suggests that for effective participation rates, government subsidies should exceed two-thirds.

In China, a comprehensive study on the four main crops—rice, wheat, cotton, and corn—reveals a premium subsidy of 8.1 billion yuan. The government subsidy ratio hinges on policy targets, pure rate levels, and insurance standards. Tuo Guozhu and Wang Guojun (2002) stress that the financial pressure intensifies with varying insurance rates. For instance, at a 35% insurance rate, the annual subsidy is 20.796 billion yuan, escalating to 41.594 billion yuan at a 70% rate. At a 50% subsidy rate, the annual fiscal subsidy accounts for a mere 0.45% of total fiscal expenditure (Sun, 2004; Xing, 2004).

Research on the Object of Government Subsidies. The targeted recipients of government subsidies dictate the mode of agricultural insurance subsidies. For farmers, the focus is on premium subsidies, while agricultural insurance operating institutions receive subsidies for operating expenses, tax incentives, and reinsurance. Tuo Guozhu (2002) and Long Wenjun (2003) emphasize that subsidizing production management costs dilutes the responsibility of insurance management institutions, reducing the efficiency of subsidy funds. Hence, advocating for premium subsidies for farmers alone is recommended (Wang, 2005). Decision-making on subsidy methods should align with the risk zoning of different crops. While subsidies for insurance operators are deemed necessary, subsidizing production expense management is discouraged. The optimal approach involves "insurance" and tax incentives (Tuo & Zhu, 2007). Furthermore, insurance companies should judiciously set agricultural insurance premium rates and compensation levels, assuming a certain management liability for agricultural insurance compensation (Xing & Huang, 2007).

3. Research on the effect of agricultural insurance subsidies

Economic Impact of Agricultural Insurance Subsidies: Fostering Growth and Income Security. The commercialization of agricultural insurance is inherently challenging without government funding (Wright and Hewitt, 1994). Private insurance companies, devoid of government subsidies, find it impractical to engage in multiple risky agricultural insurance endeavors. Acknowledging this, Barnett and Skees (2000) stress the indispensable role of

government financial support in fostering agricultural insurance and consequent economic development.

Government subsidies play a pivotal role in elevating the expected income of farmers and mitigating income reduction risks (Kraft, 1996). By ensuring income stability, these subsidies contribute significantly to the overall well-being of farmers. The positive ripple effects extend beyond individual farmers, translating into increased personal income, amplified commercial sales, employment generation, and a boost to the Gross Domestic Product (GDP). Notably, due to the delayed implementation of policy-based agricultural insurance plans in China, corresponding literature on this subject has emerged more recently (Yang and Leatham, 1997).

In examining the dynamics of agricultural insurance supply, this paper delves into the impact of government financial subsidies. It posits that such subsidies not only bolster farmers' inclination to purchase agricultural insurance but also augment the readiness of insurance companies to provide coverage, effectively mitigating the supply-demand imbalance in the agricultural insurance market (Yu, 2009). The financial incentives ensure that farmers receive enhanced financial returns, fostering a more robust demand for insurance.

Beyond the economic benefits, the subsidies influence farmers' risk perception and behavior, fostering a more proactive approach to agricultural insurance. This shift in attitude contributes to harmonizing the supply-demand dynamics within the agricultural insurance market (Zhu, 2009).

However, it is crucial to acknowledge potential drawbacks associated with government subsidies. Concerns include the financial burden on the government, potential distortion of the intended functions of agricultural insurance, and the emergence of a "crowding-out effect" on private insurance initiatives (Jerry Skees, 1999). Notably, subsidies may inadvertently incentivize agricultural production in high-risk regions, disrupting established crop production mechanisms and posing challenges to resource utilization and environmental sustainability (Kesheng, 2001). Careful consideration and strategic planning are essential to harness the positive impact of subsidies while mitigating potential adverse effects.

The analysis of policy-based agricultural insurance plans involves multiple stakeholders, including governments, insurance management institutions, and insured farmers. Evaluating the effects of agricultural insurance subsidies necessitates an examination of the behavior of farmers within these plans, considering that farmers often exhibit a propensity for risk-taking (Moschini and Hennessy, 1999; Zhang, 2004; Wang, Song, 2008).

Agricultural insurance subsidies play a pivotal role in shaping farmers' behavior. While farmers inherently lean toward risk, government subsidies enhance their expected marginal net income, thereby increasing their inclination to participate in agricultural

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insurance. Risk aversion emerges as a secondary motivator for farmers to engage in insurance. The level of government subsidy directly influences farmers' willingness to insure, with higher subsidies correlating to heightened participation (Babcock and Hart, 2000; Glauber and Collin, 2001; Ning, 2006; Zhang, He, Shi, 2007; Li, Liu, Lu, 2008; Zeng, Chang, Jia, 2009; Li, Wang, 2010). Additionally, farmers' expectations of premium subsidies significantly impact their participation behavior, with lower expectations dampening the desire to purchase agricultural insurance (Hou, 2010).

While agricultural insurance subsidies contribute to social benefits, their efficacy is contingent on various factors. In instances of severe disasters, direct government subsidies for food may outperform direct subsidies for agricultural insurance (Feng, 2004). A comparative analysis suggests that intricately designed individual agricultural insurance is more effective in reducing income fluctuations among farmers than alternative risk diversification tools, such as catastrophe relief and regional agricultural insurance (Zhou, 2009). The intricate interplay of subsidy levels and farmer expectations underscores the nuanced dynamics of encouraging agricultural insurance participation.

Economic support, particularly through government financial subsidies, plays a foundational role in addressing market imperfections and enhancing the accessibility and sustainability of agricultural insurance programs. In the context of tea crop insurance, understanding the dynamics of economic support provides critical insights into how financial incentives influence farmers' decision-making processes. By integrating these perspectives into the broader analytical framework of this study, the research aims to elucidate how economic interventions interact with risk perception to shape insurance adoption behaviors among tea farmers.

2.5.4 Business Support

Numerous studies have delved into various facets of government-sponsored business support services in Western countries, as evidenced by research conducted by J. Berry, Sweating, & Gotu (2006), Colin & David (2002), Dyer & Ross (2008), Jay & Schaper (2003), Josee & Etienne (2007), Mole, Hart, Roper, & Saal (2009), Ramsden & Bennet (2005), and Watson (2003). Berry et al. (2006) identified two primary sources of support: government and private entities.

A business advisor, as articulated by Schaper & Vollery (2004), is an individual possessing expertise in a specific field and effectively communicates that knowledge to business owners. However, Stanger (2004) argues that support services can emanate not only from individuals but also from organizations. Moreover, these services predominantly target management and financial support. Considering both perspectives, it becomes evident that business support services span a wide array of disciplines.

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The International Labour Organization (ILO) (2001) provides a comprehensive depiction of business support services, defining them as “any non-financial service provided to businesses on either a formal or informal basis.” These services encompass activities related to tangible products, such as machinery repair, catering, or road transport, as well as intangible expertise like accountancy, market research, or management consultancy (Keeble, 1991).

In essence, support services, delivered by individuals or organizations, play a pivotal role in enhancing business performance and mentor business owners, actively contributing to the implementation of their business ideas (Berry, Sweeting, & Goto, 2006). A competent business advisor, crucially, assists SMEs in overcoming their weaknesses.

The literature underscores two primary sources of business support suppliers: government-sponsored support and private business support. Government-sponsored support, typically non-commercial, and private consultants, operating for commercial gain, offer a diverse range of services to aid small business owners (Hakimin, 2010). Berry and Sweeting's (2006) analysis classifies SME support sources into six functional areas: Professional specialist, professional generalist, market contact, social contact, business associates, and government agencies. Another categorization by Ramsden and Bennet (2005) groups support suppliers into three broad categories: private sectors, business associations, and the public sector. Services vary based on the type of support or client issues.

Private sector players, including accountants, banks, solicitors, business associations, and consultants, operate on a market-based model, while government-funded programs provide services at no cost (Schaper & Vollery, 2004). Table 1 illustrates the categorization of support providers by previous researchers, highlighting the diverse landscape of business support services.

Among these, accountants emerge as the most frequently chosen support source, followed closely by banks or solicitors, and business consultants or associations. These choices predominantly involve specialists with specific skills. In contrast, support service providers under government oversight hail from relevant ministries, agencies, government-linked corporations, and local authorities. Intriguingly, these government-affiliated sources are not the most favored. The landscape is dominated by private sector entities, particularly professional specialists and local associations, complemented by a blend of consultants.

Business support services, encompassing both governmental and private sector contributions, play a pivotal role in enhancing the capacity of agricultural stakeholders to manage risk and improve decision-making processes. Rooted in non-financial advisory and technical assistance, these services facilitate knowledge transfer, strengthen managerial capabilities, and foster informed engagement with complex financial instruments such as crop

insurance. For tea crop insurance programs, integrating robust business support systems into the broader framework of government interventions could significantly enhance the effectiveness of policy implementation and influence farmers' perceptions and behaviors toward insurance adoption. This perspective contributes to a more comprehensive understanding of how institutional support structures interact with individual decision-making in the context of agricultural risk management.

2.6 Risk Cognition

2.6.1 Definition of risk cognition

Rooted in psychology, risk cognition encompasses an individual's emotions and comprehension of objective risks. Bauer (1960) underscores the pivotal role of subjective perception in shaping consumer purchasing behavior. This underscores that even with accurate risk assessments, subjective perceptions significantly sway decisions. Slovic's psychometric paradigm model provides a quantitative framework for assessing dimensions of risk cognition, drawing on extensive individual data. Individual risk cognition is intricately linked to experiences, social networks, and cultural influences (Douglas & Wildavsky, 1984). It mirrors values, social constructions, history, and ideology (Weiflstein, 1990).

In the realm of agricultural insurance, risk cognition poses significant challenges, giving rise to moral hazard and adverse selection issues. Notably, insured farmers, as evidenced in a Kansas study, may curtail input use, such as fertilizers, indicating the presence of moral hazard effects (Smith & Goodwin, 1996). Adverse selection surfaces when insured farmers anticipate higher compensation, leading them to opt for riskier lands (Quiggin, 1994). Proposed remedies encompass government subsidies (Ahsan, Ali & Kurian, 1982), augmented government investments in information and contract design (Nelson & Loehman, 1987), and the implementation of compulsory insurance to mitigate adverse selection (Shaik & Atwood, 2002). However, the enforcement of compulsory insurance may encounter political hurdles due to potential welfare losses for low-risk farmers (Appel, 1999; Glauber & Collins, 2001).

Efficient risk management hinges on a nuanced understanding of factors influencing farmers' risk cognition. Psychological, social, institutional, and cultural factors all contribute to risk perception, aligning with the psychological measurement paradigm (Slovic, 1987). The social milieu both shapes and is shaped by individual risk behavior, underscoring the amplification effect of risk cognition (Kasperson, 1988).

Farmers' risk cognition plays a pivotal role in shaping the selection and efficacy of risk management strategies. Unlike risk attitudes, risk cognition is subjective, exhibiting

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variations among farmers facing similar objective risks. Existing studies on risk cognition yield inconclusive findings regarding influencing factors. Some scholars associate risk cognition with socioeconomic factors such as age, gender, education, and family income. For example, older farmers may demonstrate increased caution due to heightened sensitivity to risks (Otani, 1992). Livelihood assets significantly influence environmental risk cognition among pig farmers, as illustrated in a multi-province study (Tang, 2014).

Factors Influencing Farmers' Risk Cognition Based on Production Characteristics:

Farmers' risk awareness is intricately linked to their production characteristics, exerting a profound impact on risk cognition. Several factors, including production scale, type, variety selection, and sales channels, contribute to shaping farmers' risk cognition.

1. Production Scale

Small-scale farmers generally exhibit lower risk awareness due to their limited production scales. Their losses in accidents are relatively modest, facilitating easier management of contributions (MAFF, 2001).

2. Production Type

Farmers engaged in large-scale production, such as dairy cattle and sheep, experience less income fluctuation. In contrast, pig and poultry farmers encounter greater income fluctuations (MAFF, 2001).

3. Conventional Production

A study in Norway revealed that organic dairy farmers display lower risk aversion compared to conventional farmers. This difference in risk cognition can be attributed to variations in production methods, systems, and the non-economic goals of organic dairy farmers (Flaten, 2003; Offermann and Nierberg, 2000; Ola Flaten, 2004).

Market Risks: Farmers, irrespective of their scale, perceive market risks with distinct nuances. The impact of market risks is notably more pronounced among small-scale farmers compared to their larger counterparts (Qu, 2007).

In essence, risk cognition constitutes an individual's subjective comprehension of potential risks and uncertainties. This overarching concept encompasses the cognitive processes involved in assessing, and understanding potential threats and losses. In the context of tea planters, risk cognition encompasses the subjective evaluations and judgments pertaining to the risks posed by meteorological disasters that could impact tea production.

Agricultural risk cognition serves as the linchpin for effective risk management, with agricultural insurance emerging as a pivotal method for risk transfer. The relationship between farmers' risk perception and decision-making has been substantiated both theoretically and empirically (Cox, 1967; Taylor, 1974; Brug, 2004; Cava, 2005; Fielding, 2005; Bares, 2007).

Table 2.2. Definition of Risk Cognition

Scholar	Time	Theoretical point of view
Bauer	1960	emphasizes the role of subjective cognition in consumer purchasing behavior
Douglas Wildavsky	1984	Individual risk cognition relies on experience, social networks, and cultural influences
Slovic	1987	Psychological, social, institutional, and cultural factors contribute to risk cognition
Kasperson	1988	emphasizing the amplification effect of risk cognition
Weiflstein	1990	reflecting values, social constructions, history, and ideology
Smith Goodwin	1996	risk cognition contributes to moral hazard and adverse selection challenges
MAFF	2001	Small-scale farmers generally have lower risk awareness
Flaten	2003	The difference in risk cognition can be attributed to variations in production methods, systems, and the non-economic goals of organic dairy farmers
Offermann	2000	
Nierberg	2000	
Flaten	2004	
Qu Xiaobo	2007	Market risks have a greater impact on small-scale farmers than on large-scale farmers
Tang Suyu	2014	Livelihood assets significantly impact environmental risk cognition among pig farmers

Risk Management Strategies: In response to heightened subjective risk levels, farmers are inclined to adopt evasive measures to mitigate potential losses (Cooper, 2001). This risk management approach, grounded in personal experiences of risk factors and agricultural accidents, involves identifying, estimating, and evaluating risks. Through an optimized combination of various risk management methods, the overarching goal is to maximize risk dispersion, ensuring safety and minimizing losses. According to the rational man hypothesis, farmers are expected to implement specific risk management measures to both reduce the probability of risks and minimize potential losses.

Three Prongs of Agricultural Risk Management:

Risk Prevention: This involves analyzing conditions and potential causes of agricultural risk accidents to implement measures that reduce or avert risks or mitigate their
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impact. Examples include investing in irrigation and water conservation to preserve soil and water, diversifying agricultural planting to minimize the impact of single crop failure, and pursuing non-agricultural income sources to reduce dependence on agriculture.

Risk Transfer: To counter uncertainties resulting from the failure of risk avoidance measures, risk management entities consciously transfer losses. This is achieved through two primary forms: agricultural insurance, where risk is transferred through financial means by paying the cost of insurance to obtain coverage post-disaster, and insurance transfer, where risk is transferred through ownership or management right changes, such as purchasing futures, transfer, subcontracting, or subleasing.

Post-Disaster Relief: After a disaster, the government or social entities may provide economic compensation to affected farmers or agricultural production. This serves as a crucial element in the comprehensive framework of agricultural risk management.

The stance of decision-makers towards risk significantly influences their risk management behavior. Risk attitude, characterized by the choice orientation, preference, or response style of decision-makers in uncertain situations, plays a pivotal role in shaping their actions (Bernd, 2002; David Hillson, 2003; Weber, 2002).

Generally categorized into risk preference, risk neutrality, and risk aversion (Arrow, 2007; Gao, 2013), scholars have identified additional dimensions, such as rational, risk aversion, risk pursuit, and complex, based on utility function curves (Li, 1998). Farmers, concerning agricultural technology application, are often classified as conservative, risk-taking, or intermediate (Yu, 2012). Scholars have proposed various methods to measure risk attitude. These include the abstract model method, comprising abstract rationality and irrational selection functions (Xie, 2009 ; Zhou, 2010). Another approach is the experimental economics method, with the multiple price list method designed by Holt (Holt and Laury, 2002; Ding, Sun, 2009) being widely utilized. Lastly, the scenario simulation method involves measuring individual risk attitudes based on hypothetical investment problems, which is simpler and more widely adopted, especially in the context of farmers' understanding (Yu, 2012). Risk-averse farmers typically employ pre-avoidance strategies based on their production experience. This risk management approach, intertwined with post-financing methods, is influenced by both risk cognition and risk attitude. For instance, farmers may diversify operations or alter production activities to stabilize family income in the face of potential disasters or distress (Ding & Chen, 2001).

While farmers may utilize informal mechanisms like social networks and financing lending to spread risks, reliance on formal risk diversification mechanisms, including agricultural insurance, may be less pronounced. Farmers tend to rely on self-help, government relief, and agricultural insurance to transfer and share losses (Xie & Pu, 2003). In the planting industry, where drought and diseases pose significant risks, risk cognition aligns with

insurance liability, influencing the demand for insurance. Empirical evidence suggests a weak positive correlation between risk awareness and insurance purchases (Xie, 2011). In summary, risk cognition emerges as a crucial explanatory variable for agricultural insurance consumption decisions (Mitchell, 1999), with insurance willingness serving as a prerequisite for agricultural insurance consumption behavior (Sherrick, 2003). Theoretically, a higher degree of risk cognition strengthens the willingness to engage in insurance (Ye, 2012).

The research paradigm for risk perception encompasses several key approaches: the psychometric paradigm, socio-cultural paradigm, cognitive paradigm, and the social amplification research paradigm of risk.

The psychometric paradigm is grounded in the idea of “different risk responses in various environments” (Paul, 1978). This paradigm assumes that individual differences in risk perception stem from the inherent characteristic structure of the risk itself. The perception level is influenced by psychological traits, characteristics, and institutional cultural factors. This approach allows quantification, with scholars like Slovic (2005) using traditional questionnaires to gather individual risk perception information in specific risk environments. In the domestic context, researchers have applied the psychometric paradigm to study public risk characteristics, risk perception, and individual risk perception in earthquake disasters (Xie, 2003; Li, 2009).

The socio-cultural paradigm delves into “cross-culture” and “cross-groups” public risk perception and differences (Sloberg, 2006; Duan, 2009). It explores the impact of social norms, personal value systems, and cultural characteristics on risk perception (Douglas, 1982; Renn, 1992). The cognitive paradigm investigates how individuals, due to limited rationality, display cognitive biases when faced with uncertain risks. Influenced by heuristic principles, cognitive biases result from internal factors like personality characteristics, knowledge, and experience, as well as external factors such as risk nature, size, and control (Kahneman, 1979). The social amplification research paradigm posits that psychological, social, institutional, and cultural factors are intertwined with risk events, and risks are magnified through various media, creating a “ripple effect” (Kasperson, 1988; Renn, 1992). This theory primarily focuses on understanding how risk cognition evolves under the influence of the social and cultural environment within specific risk characteristics. For instance, it examines how public environmental risk perception is amplified by the broader environmental and systemic influences (Li, 2008; Wang, 2015).

2.6.2 Research model of risk cognition

The introduction of the concept of consumer risk cognition has significantly impacted research in consumer behavior, eliciting substantial interest from scholars. The advancement of consumer risk cognition theory has been propelled through extensive research, resulting in the formulation of various theoretical models. Key models include the two-factor model, multi-dimensional model, inherent risk-operational risk model, and comprehensive risk cognition model.

Two-Factor Model. Cunningham's Proposal (1967): Also known as the two-component model, it posits that risk cognition consists of the uncertainty of the event and the degree of adverse consequences caused by the action.

Peter and Ryan (1976): Defines risk cognition as the negative consequences of the event and the perceived likelihood of these negative consequences occurring, expressed as $PR=f(p.L)$, where PR is risk cognition, P is subjective probability, and L is perceived loss.

Multi-Dimensional Model. Cox's Model (1967): Advocates for risk cognition as comprising multiple dimensions, including consequences and uncertainties resulting from consumer actions, product effects, and psychological states induced by shopping.

Inherent Risk-Operational Risk Model. Bettman's Proposition (1973): Distinguishes between inherent risk (latent risk in a product category) and operational risk (risk associated with choosing a specific brand within a category). Operational risk can be mitigated by acquiring information about the product.

Comprehensive Risk Cognition Model. Dowling and Staeling's Model (1994): Offers an inductive understanding of consumer risk cognition, defining risk perception as the “uncertainty,” “discomfort,” and “psychological discomfort” post-shopping. It includes product category risk (PCR) and product-specific risk (SR), influenced by attributes, negative outcomes, purchase goals, shopping situations, and acceptable risk.

While the theory of consumer risk cognition establishes a general framework, challenges exist in its application to specific fields like cosmetics, services, and online shopping, lacking comprehensive theoretical recognition and specific measurement tools. This paper aims to address these limitations in further developing consumer risk cognition theory and empirical research.

2.6.3 Dimension of risk cognition

Consumer-perceived risk measurement relies on theoretical models and operational definitions. Building upon Jacoby and Kaplan's five-dimensional model (1972), numerous researchers have provided operational definitions for multi-dimensional perceived risk. In the examination of consumer behavior in online shopping, researchers have frequently employed

measurement dimensions derived from Jacoby and Kaplan's model. The key dimensions are outlined as follows:

Table 2.3. Type of Risk Cognition

scholar	Time	Risk cognition dimension
Cox,D.F.	1967	Economic loss; social psychology
Cunningham Scott	1967	Social consequences; fund loss; physical injury; time loss; product effect, etc.
Roselius,T.R.	1971	Loss of time; risk of physical harm; loss of self; loss of money
Jacoby,Jan Kaplan L.	1972	Financial risk; product effect; psychological risk; physical injury risk; social risk.
Bettman, J.R	1973	Inherent risks: potential risks to consumers in the context of the product category; treatment risks: the risks arising when a brand is selected from the product category in its usual purchasing environment
Kaplan , Szybillo & Jacoby	1974	Financial risk; social risk; functional risk; physical risk; time risk; psychological risk
Peter. J.P. , Tarpey, LX.	1975	Financial risk; product effect; psychological risk; physical injury risk; social risk; time risk
Jacoby	1976	Financial risk; performance risk; health risk; social risk; psychological risk
Derbaix	1983	Financial risk; psychological risk; risk of physical injury; time risk
Dunn, Murphy& Skelly	1986	Financial risk; social risk; time risk
Murray, Keith B. Schlacter, John L.	1990	Financial risk; product effect risk; psychological risk; social risk; time risk.
Mowen John C.	1990	Financial risk; product effect risk; psychological risk; social risk; time risk; physical risk; opportunity cost risk.
Stone & Gronhaug	1993	Financial risk; social risk; functional risk; physical risk; time risk; psychological risk

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Table 2.3(continue)

scholar	Time	Risk cognition dimension
Jarvenpaa S.L.P.A. Todd	1997	Financial risk; product effect risk; social risk; personal risk; privacy risk.
Sweeney , Soutar & Johnson	1999	Financial risk; functional risk
Bansal & Voyer	2000	Financial risk; social risk; functional risk; physical risk; time risk; psychological risk
Anne-Sophie Cases	2002	Product effect risk; time risk; financial risk; transportation risk; social risk; privacy risk; payment risk; website source risk.
Sandra M Forsythe and Bo Shi	2003	Financial risk; product effect risk; psychological risk; time risk; convenient loss risk.
Juliet et al	2007	Financial risk; social risk; functional risk; physical risk; time risk; psychological risk
Peng Liming	2011	The cognition of risk events; risk source cognition, risk consequences cognition; risk responsibility cognition
Zhang Jinrong, Liu Yan, Zhang Wenxia	2013	Personal risk; social risk; time risk;
Guo Xin, Liu Taowei, Zhang Weixian,ect.	2020	Financial risk; performance risk; physical risk; time risk; privacy risk; social risk; psychological risk
Shu-ting liu	2022	Product risk, time risk, service risk, social risk
Li Yina	2023	Self-imposed risk; environmental risk

The initial method employed for gauging risk perception levels was Magnitude Estimation, later augmented by personality theory, incorporating subjective human factors for study. Psychologists, utilizing anchors, preference reversals, and self-framework effects in laboratory settings, transitioned to questionnaires and experiments. With statistical acumen, scholars like Slovic delved into people's risk perception, deriving dimensions through two primary methods: by risk content and risk characteristics.

Investigated across six dimensions: financial, functional, functional and economic, physical, psychological, and social risks (Woodside, 1968; Roselius, 1971; Jacoby, 1972; Peter et al., 1975; Campbell, 2001).

Examined from nine perspectives: worry, unknown, controllability, influence speed, outcome severity, willingness, awareness (Fischhoff, 1978; Slovic, 1987). Emotional, novelty, unknown, and fatal factors also constitute dimensions (Milne, 2000; Brun, 1992; Slovic, 1982). Domestic scholars primarily explore risk perception through event cognition, controllability, familiarity, worry, and temporality (Xu, 2007; Yang, 2010; Peng, 2011).

In the realm of consumer risk perception, descriptive dimensions encompass capital loss, product effect, personal privacy, social, psychological, personal injury, time loss, opportunity cost, inherent product type, and specific product brand risks. These operational definitions are foundational for measuring consumer risk perception. Focusing on planting insurance purchase behavior, this study centers on financial, social, functional, and time risks within the realm of planting insurance risk cognition.

2.7 Perceived Value

2.7.1 Concept of Perceived Value

The lack of agreement related to the definition and conceptualization of perceived value among the scholars have indicated that perceived value can be described as the complex construct (Lapierre, 2000). The differences of opinions can be seen from two major perspective or view of perceived value; those are as unidimensional construct and multi-dimensional construct (Sanchez-Fernandez and Iniesta-Bonillo, 2007). Although the majority of the researchers agree that perceived value should be considered as multi-dimensional construct. The critics among the researchers have contended that multidimensional construct are conceptually ambiguous, the dimensions explained are less variance and the relationships between the dimensions and other construct somehow are confound (Sanchez-Fernandez & Iniesta-Bonillo, 2007). However this lack of agreement does not mean to have no consensus at all in conceptualizing perceived value. The general concept that can be understood is that perceived value involves the relationship between customer and the product (Holbrook, 1996) which is strongly related to the utility or benefits the customer get in return for the money or any other cost they spend (Zeithaml, 1988) including both cognitive and affective aspect Holbrook and Hirschman (1982). As defined by Zeithaml (1988) that perceived value is “the consumer is overall assessment of the utility of a product based on cognitions of what is received and what is given”. The receive components can be referred to the benefits get from using the product while the given component can be referred to the customer sacrifice in acquiring the product including monetary and non-monetary aspect. In this regard, Zeithaml (1988) described value in four different ways: (1) value as low

price, (2) value as whatever the consumer wants in a product, (3) value as the quality get from the price the customer pay, and (4) value as what is get for what is given.

Table 2.4. Definition of Perceived value

Scholar	Time	Theoretical point of view
Zeithaml	1988	Perceived value is the comprehensive evaluation of products and services obtained by consumers after measuring perceived gains in the process of obtaining products and services
Kent	1991	The ratio of perceived vested and lost possession
James C. Anderson	2000	In the process of consumption, consumers will form satisfaction with the value of products and services, which will then affect consumers' perception of value. Enterprises that obtain higher satisfaction are more likely to win competitive advantages
A. Parasuraman	2000	The difference between perceived benefits and perceived costs, and depends on the individual consumer difference characteristics
Philip Kotler	2003	Customer transfer value: the difference between the customer's perceived total benefit and the total cost
Sanchez-Fernandez	2007	perceived value should be considered as multi-dimensional construct
Y. Hu	2011	perceived value was a precursor of purchase intention
Uddin	2013	Perceived value is the state of fulfilment of what they expect from an electronics household product or its associated service and what they ultimately gain
Zameer et al.	2015	Perceived value is considered as a vital factor in marketing and for marketers
Kotler & Armstrong	2016	the perceived value was the sum that purchasers paid to get the benefits of having or utilizing the product/service
Pan & Kang	2017	the value was an overall evaluation of a target of subjective judgment with the attention of evaluation criteria
Muzakir & Damrus	2018	Prior research showed that perceived value was a crucial antecedent of brand preference

2.7.2 Characteristics of perceived value

Through comprehensive analysis and synthesis of diverse interpretations of customer perceived value, scholars identify several key characteristics:

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1. Subjectivity

The value that enterprises and their products hold for customers is perceived subjectively by the customers themselves, rather than being dictated or provided by the enterprise. True value lies in what customers perceive. Notably, there can be disparities or variations in the perceptions of enterprises and customers. Different individuals or organizations may place distinct emphasis on the value of the same product or service. Generally, customers tend to maximize their individual perceived value (Zeithaml, 1985). Customer perceived value formation is influenced by the attributes and experiences of the perceiver, ultimately leading to cognitive preferences and evaluations within specific usage scenarios. For instance, the same TV might be evaluated differently by people who prioritize factors such as service life, appearance, or brand (Schifman, 1997). Factors contributing to customers' divergent judgments on the same product include: (1) varying life experiences, cultural backgrounds, and aesthetic preferences; (2) differences in economic capacity and living standards; (3) distinct intended purposes and outcomes. However, generally, within a similar customer group, the cognition of key aspects of a product's value and the weighting of these aspects should align, allowing for minor variations. Enterprises can analyze and target customer groups with shared value needs, defining the value elements for these target groups, and subsequently crafting, creating, and delivering products and services aligned with customer requirements (Holbrook, 1996; Woodruff, 1997).

2. Hierarchy

Customer perceived value exhibits a hierarchical nature and establishes a model organized by levels, positing that customers construct expected value through a "means-purpose" framework (Woodruff, 1997). Progressing from the foundational level to the pinnacle are the values at the attribute level, the result level, and the ultimate goal level. At the base level, specific attributes contribute to the performance required to achieve desired results, forming expectations of ultimate goals. The relative importance and effectiveness of these attributes are crucial considerations. Customer value is categorized into four levels: basic value, expected value, demand value, and unexpected value, with each level corresponding to distinct aspects of customer value (Weingand, 1997). In the process of supply and demand transactions, enterprises and customers should:

(1) Enterprises must comprehend customers to understand and anticipate their needs, preferences, and evolving trends. This understanding is essential for designing, developing, producing, and providing products and services aligned with customer requirements.

(2) Customers must evaluate enterprises, considering factors such as image, reputation, service attitude, and product expertise, to decide whether to purchase from the enterprise.

(3) To facilitate customer purchases, enterprises actively engage with customers through consultation, advertising, promotions, and other means, deepening customer awareness and understanding of the enterprise and its products. Each interaction point between an enterprise and its customers significantly influences customer perceptions, impacting their purchase decisions. Therefore, enterprises should consistently foster positive interactions with customers throughout marketing, sales, and service activities, ensuring customers perceive the value of enterprise products, leading to satisfaction, enhanced customer loyalty, and positive word-of-mouth communication.

3. Dynamics

The dynamism inherent in customer perceived value is initially evidenced by the variability in a customer's perception of a product at different times. It is posited that the anticipated value of a product fluctuates not only among different customers but also within the same customer over time (Vratrappen, 1992). Customers exhibit distinct value perceptions at various stages of the purchasing journey, experiencing the value during interactions (Gardial, Clemns, Woodruff, Schumann, and Burns, 1994). Research by A. Parasuraman (1997) suggests that as a customer transitions from the initial purchase to short-term and long-term relationships, their criteria for evaluating value may become more comprehensive and abstract.

Secondly, customers' perceived value can be influenced by different usage environments. Significant situations or times may alter product elements, subsequently shaping customers' judgments of value (Flint, 1997). Key factors contributing to changes in customer perceived value include transformations in the customer, the product itself, product suppliers, competitive landscapes, and other environmental factors. Furthermore, the value perception of the same product or service may vary across different usage or consumption scenarios. Enterprises must tailor value elements to specific target customers in diverse use scenarios and different touchpoints with their products and services to cultivate lasting trust and support. The subjectivity, interactivity, and dynamics of customer value are intricately connected and mutually influential. Customers' subjective understanding of enterprise products and services evolves through interactions with the enterprise. The interaction process and its content directly impact customers' subjective views and evaluations of the enterprise and its offerings. The dynamic nature of customer value underscores that customers' subjective perceptions of the enterprise and its products and services are not static; they evolve during the course of interaction.

2.7.3 Drivers of perceived value

In the course of advancing research, the factors influencing the formation and transmission of customers' perceived value have emerged as a central focus for scholars. In

the current landscape of product homogeneity competition, customers, well-versed in product characteristics, place significance on accurately pinpointing and crafting the key elements of customer perception value. Employing effective marketing strategies and channels to communicate these values not only shapes customer perceptions but also establishes a core competitive advantage for the enterprise. Such an advantage proves instrumental in distinguishing companies amidst intense competition.

In the initial phases of customer perceived value research, product quality and price were primarily regarded as the primary drivers of customer value. Product quality represented the primary component of "gain," while price constituted the main element of "profit" (Zeithaml, 1988). Zeithaml's customer perception value model, rooted in these two factors, delineates value into "gains" and "profit." The gains encompass internal attributes, external attributes, perceived quality, and other abstract concepts related to higher levels (such as corporate image and reputation). On the other hand, profit elements include monetary price and non-monetary costs (such as time, energy, and effort).

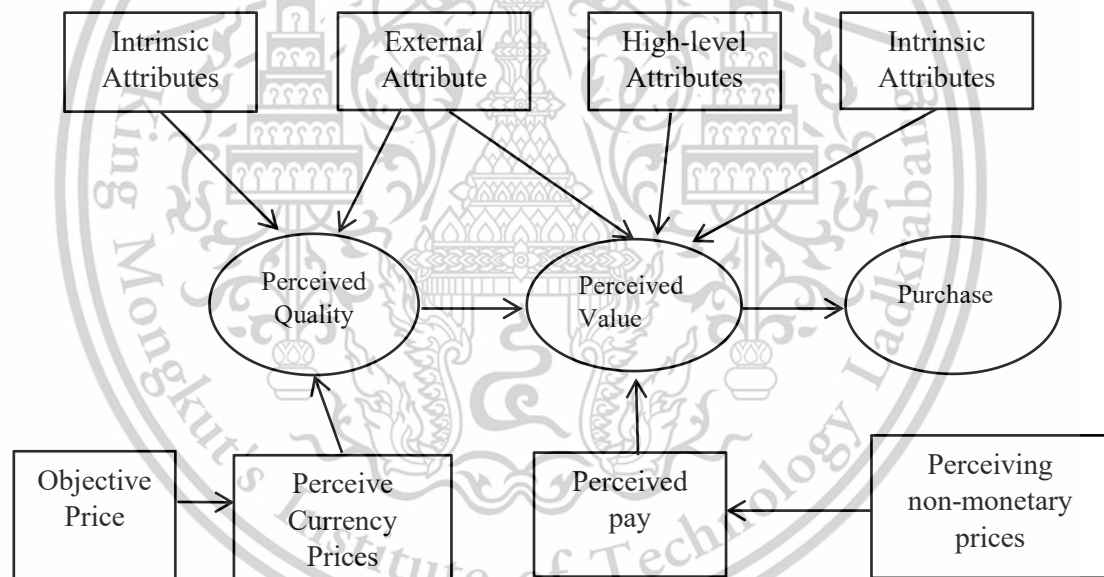


Figure 2.5: Customer-Perceived Value Model

Source:Zeithmal, 1988.

To secure a lasting competitive advantage in the market, enterprises must move beyond reliance solely on quality products and reasonable pricing. Providing unparalleled service quality, challenging for competitors to imitate, stands as a fundamental determinant ensuring sustained positive market performance (Berry, 2000). In contemporary research on the drivers of customer perceived value, viewed through the lens of profit gain and loss,

scholars predominantly identify product quality, service quality, and pricing as the primary driving forces (Naumann, 1995; Parasuraman, 1997).

While product quality, service quality, and price remain pivotal, the convergence of these three factors alone no longer suffices to establish differentiated customer value perceptions. Research has broadened its scope to include additional driving factors. Kotler (1996), operating within the framework of “perception” and “perceived”, expands the categories to delve into “perceived profit” and “perception.” Within “perceived value,” personnel value and image value are introduced, and within “perception,” non-monetary value is emphasized, elucidating components like time cost, energy cost, and psychological cost.

Examining Ikea as a research subject, it is evident that the enhancement of product value stems from a diverse and aesthetically pleasing product range. Service value is augmented through discreet service and self-service options. Image value is fortified by improving the brand image. Monetary costs are reduced through low prices, significant order rewards to suppliers, and flat packaging. Additionally, time costs are mitigated through strategic store locations and market layouts (Shi, 2006).

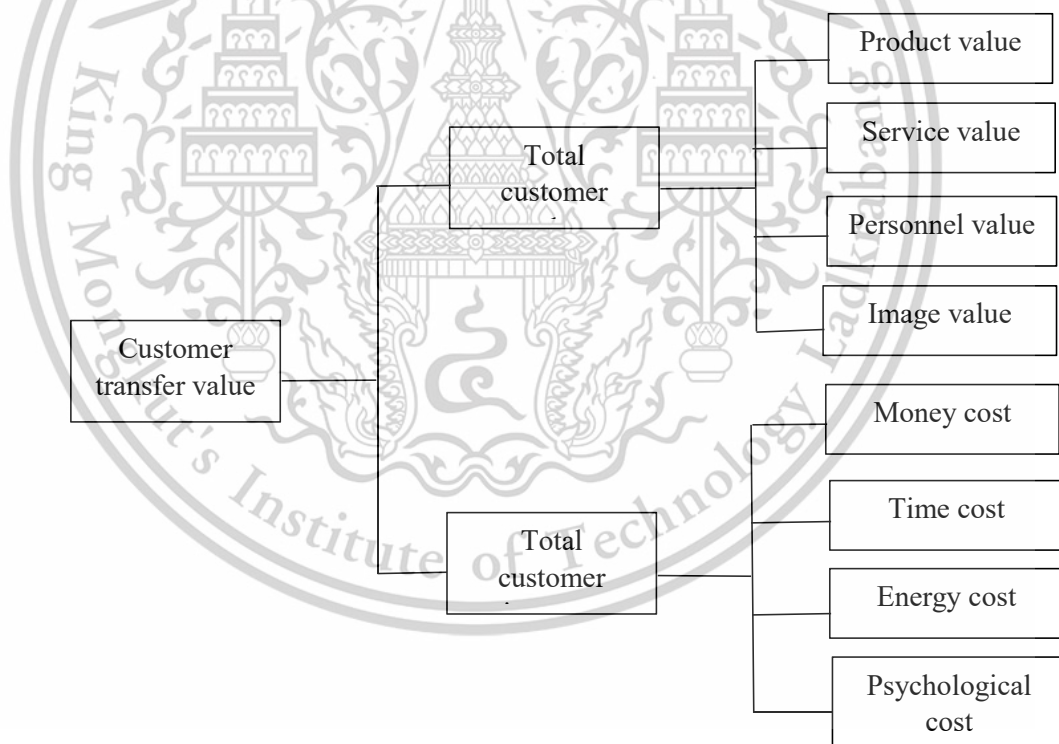


Figure 2.6: Value theory model can be transferred

Source: Kotler, 1996.

The trio of pivotal factors steering customer value encompasses product-related characteristics, service-related attributes, and promotion-related facets, thus substantiating the

influential role of products, services, and promotional activities on customer value (Holbrook, 1996). Product-related characteristics span product quality, the array of products offered, and the ease of product utilization. Service-related attributes encompass the dependability and swiftness of supply during the sales process, technical assistance, and the provision of technical information to buyers. Promotion-related features encompass the communication methods employed by enterprises, such as public relations initiatives, corporate image, and reputation (Lapierre, 2000).

Taking the IT industry in Canada as a case in point, Lapierre (2000) scrutinized three service departments—distribution, finance, and information, communication, and entertainment (ICE). The analysis identified 13 driving factors influencing customers' perceived value. Empirical evidence indicates that the “gain” in the IT industry service sector drivers in Canada encompasses both product and service value and relationship value, while the “profit loss” encompasses price factors and non-price factors.

Table 2.5. Drivers of Customer-Perceived Value in IT Industry Services, Canada

	product	service	relationship
Perceived Gains	product quality	alternative scheme	Image and credibility
	Product customization	flexibility	Unity with customers
	alternative scheme	stabilization	Trust
		technical competence	
Perceived gains and losses		price	Time / effort / energy conflict

Source: Lapierre, 2000.

Ulaga & Chacour (2001) took the German food industry (manufacturing) as the research object, and identified 16 driving factors of customer perceived value from three aspects: product, service and promotion related (promotion related).

On the basis of organizing and summarizing the driving factors of customers' perceived value, many scholars further expand the research perspective and further enrich the research conclusions according to the differences in products or services. Zheng Liming (2003) proposed 22 driving factors, including related value elements, product related value elements and brand and image; in 2004, he simplified the three elements to 8 driving factors.

Other scholars have conducted empirical research on the driving factors of customer

perceived value from different industries such as telecommunications and mobile phone, and summarized 12 key factors of customer perceived value from satisfaction factors, trust factors, conversion factors and maintenance factors (Yan Haoren, Jia Shenghua, 2004; Bai Lin, 2007).

Table 2.6. Drivers of customer-perceived value in the German food industry

	product	service	relationship
Perceived Gains	product features	product innovation	Image and credibility
	Product type	Fast service and response	personal relationship
	Product consistency	technical support	PR relationship
	Use convenience	Technical information provision	Upstream integration
		Delivery speed and reliability	Company reliability
			ISO9001 Certification
Perceived gains and losses		price	

Source: Ulaga & Chacour, 2001.

2.7.4 Measurement and dimension of perceived value

In subsequent research endeavors aiming to quantitatively measure customer perceived value, scholars have proffered diverse constituent dimensions and measurement models stemming from their unique research perspectives. Notable among these are some widely employed dimensional theories of customer perceived value:

Five-Dimensional Theory: Originating from Sheth, Newman, and Gross (1991), this theory measures customer perceived value across five dimensions—functional, emotional, social, cognitive, and situational. Notably, it elucidates consumer choices concerning specific products, product types, and brands, proving applicable across various product categories and aligning well with furniture products' value (Burnsed, 2009).

Four-Dimensional Theory: Sheth (1991) research theory, applied to durable consumer goods, led to the PERVAL model. Comprising 19 indicators across functional value price, functional value quality, emotional value, and social value, this model effectively considers rational factors (functional value quality and functional value price) and perceptual factors

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(emotional value and social value). However, it overlooks non-monetary costs, crucial for high-value durable goods influencing customer perceived value (Sweeney, 1999; Soutar, 2001).

Three-Dimensional Theory: Holbrook's (1999) model introduces interest value, experiential value, and symbolic value. Interest value aligns with functional benefits, experiential value mirrors emotional interests, and symbolic value relates to identity or self-image promotion. This model comprehensively considers customer “gain” but neglects customer “loss,” which is essential for large-value durable goods where both monetary and non-monetary costs significantly impact perceived value.

Economic, Functional, and Psychological Value: Gupta (2015) categorize customer-perceived value into economic, functional, and psychological value. Economic and functional values focus on tangible benefits, while psychological value delves into intangible aspects like brand image. This framework analyzes products' cost-effectiveness and tangible benefits, enriched by psychological aspects linked to customers' feelings about the brand image.

Adaptations and Expansions: In response to the monetary value research gap in Sweeney & Soutar's (1999) four-dimensional model, Wang(2004) introduce the "perception pay" dimension, encompassing monetary and non-monetary costs like time, effort, and energy. Additional adaptations include the introduction of green value for environmentally conscious products (Zhou, 2006), the incorporation of “perceived risk” for laptops (Liu, 2007), and dimensions like psychological value for mobile phones (Jiang, 2010) and perceived profit loss for furniture (Zheng, 2012; Gao, 2012).

Dynamic Perspective: Yoo and Park (2016) categorize perceived value into four types—acquisition, transaction, use, and redemption—offering a dynamic lens on how customers perceive value across different stages of their interaction with a product or service.

These nuanced approaches to measuring customer perceived value cater to diverse product categories, ensuring a more comprehensive understanding of the multidimensional nature of perceived value in consumer decision-making.

Table 2.7. The dimension of perceived value

scholar	time	The dimension of perceived value
Sheth & Gross	1991	Functional value, emotional value, social value, cognitive value, situational value
Sheth, Newman & Gross	1992	Functional value, social value, emotional value, knowledge value, situational value
Bruns	1993	Product value, use value, possessive value, all value

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Table 2.7(continue)

scholar	time	The dimension of perceived value
Woodruff	1997	Actual value, expected value
Sweeney & Soutar	1999	Functional value, emotional value and social value
Jolibert	2000	Symbol value, health value, benefit value
Sweeney & Soutar	2001	Quality value, price value, emotional value and social value
Petrick	2002	Quality dimension, emotional value, monetary cost, non-monetary cost, and brand value
Wang et al	2004	Functional value, emotional value, social value, perceptual pay
Wang Xiqiu	2005	Economic value, physical value, psychological value
Zhou Yijin	2006	Functional value, emotional value, social value, perceived pay, green value
Jiang Liang	2010	Functional value, psychological value, social value and economic value
Vignerson & Johnson	2011	The customer-perceived value of luxury goods: show-off value, unique value, social value, emotional value and quality value
Gupta	2015	Economic value, functional value and psychological value
Yoo & Park	2016	Acquire value, transaction value, use value, redemption value

Based on the research results of the dimension of perceived value, combined with the research theme of the purchase behavior of planting insurance in this paper, focusing on the dimensions of Sweeney & Soutar (2001) and Jiang Liang (2010), the perceived value is divided into four dimensions, namely functional value, emotional value, social value and economic value.

2.8 Environmental concern

Environmental concerns denote a favorable disposition toward sustainability, reflecting the degree of apprehension about environmental issues and potential remedies (Bickart and Ruth, 2012). These concerns encompass not only specific environmental facets (e.g., attitudes towards waste disposal) but also broad, universal considerations regarding the human-environment relationship (Yue, 2020). Generally, individuals with heightened environmental concerns exhibit a greater likelihood of reacting positively to environmental

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issues and proactively engaging in actions (Stojanova, 2021). Numerous studies substantiate the positive impact of environmental concerns on consumers' pro-environmental behaviors, including energy conservation, recycling, and the purchase of eco-friendly products (Barr, 2003; Padel and Foster, 2005; White, 2019). This alignment is partially attributed to the common association people make between green information and environmentally friendly production processes (Makatouni, 2002). Additionally, the robust correlation between environmental concerns and individual moral obligations or personal norms plays a pivotal role (Doran, 2009).

Research indicates that consumers' inherent moral obligations or personal norms tied to environmental well-being facilitate a transition from attitudes to behaviors (Joshi and Rahman, 2015). Marketing information emphasizing the environmental impact of purchasing eco-friendly products serves to prompt consumers to consider the environment as a crucial reference point, fostering heightened environmental awareness. Consequently, consumers' internal environmental obligations contribute to the strengthening of personal norms, thereby elevating their preference for eco-friendly products and fortifying their intent to make environmentally conscious purchases.

Environmental sustainability issues, inherently abstract and psychologically distant, pose as challenges that resonate with human nature (Reczek, 2018). Individuals with a heightened level of interpretation inherently pay more attention to the environment (O'Connor and Keil, 2017). Their willingness to purchase environmentally friendly products remains high even without external informational interventions. Conversely, consumers with a lower level of interpretation exhibit diminished environmental awareness. Personal information centered on short-term interests fails to elevate their attention to environmental concerns. However, abstract and psychologically distant environmental information redirects their focus to issues they tend to overlook, fostering heightened environmental attention.

Consumers with a high level of interpretation excel in perceiving abstract, remote concepts, such as environmental interests (Trope and Liberman, 2010). They employ a high-level interpretation model to decipher information content (Reczek, 2018). This allows personal or environmental information to awaken their awareness of distant consequences and responsibilities, maintaining their personal norms at a relatively stable and elevated state. Conversely, consumers with a low level of interpretation tend to prioritize specific information over relevant, long-distance information related to environmental sustainability (Yan and Sengupta, 2011). This hinders their awareness of their relationship and responsibilities with the environment, keeping their personal norms at a relatively lower level.

Environmental concerns have garnered substantial attention over recent centuries (Albayrak, 2013). The surge in social concerns about environmental pollution and energy conservation began in the 1960s (Bang, 2000), and heightened consumer environmental

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awareness emerged following the oil crisis of the 1970s (Hartmann & Apaolaza-Ibáñez, 2012). With the industrial revolution contributing to environmental pollution and climate changes, these concerns persisted into the 21st century, triggering transformative movements in corporate operations and consumer behavior. Eco-friendly corporate initiatives took root in the 1970s, with a focus on environmentally conscious manufacturing and marketing practices emerging in the 1980s (Sarkis, Zhu, & Lai, 2011). Bang (2000) argue that these environmental concerns paved the way for energy-saving practices among consumers and the adoption of renewable and green energy sources by businesses. Such shifts are expected to drive corporate investments in eco-friendly production methods to secure a competitive advantage.

Amidst the growing environmental concerns, the production of environmentally harmful goods is diminishing. Consumers are increasingly seeking eco-friendly alternatives, reflecting a shift towards companies prioritizing environmental responsibility (Thieme, 2015). Hartmann (2012) contend that consumers' environmental concerns decisively influence the purchase of green products. Research by Czap (2010) suggests that consumers with heightened environmental concerns are more inclined towards eco-friendly activities and the purchase of green products. This underscores environmental concern as a pivotal factor shaping consumer behavior, influencing decisions regarding environmental protection and economic growth.

Nielsen's 2019 global consumer survey underscores the rising importance of sustainability in purchasing behavior. A notable 73% expressed willingness to alter spending habits to avoid environmental harm, demonstrating a readiness to pay for products with recycled packaging and other eco-friendly features (Nielsen, 2019). Carter and Rogers (2008) found that heightened environmental concerns among buyers and suppliers lead to socially responsible activities, reducing waste and energy consumption. This not only trims operating expenses but also fosters positive stakeholder relationships. Environmental concerns thus wield a significant impact on both consumers and companies, intertwining with changes in perception, behavior, and business operations. This transformative landscape suggests that addressing environmental issues can provide avenues for sustainable management and a competitive advantage in the future.

Consumer Environmental Concern:

Widespread environmental concern influences various eco-friendly consumer behaviors. Research indicates a positive correlation between consumers' environmental concern and their willingness to pay for renewable energy, purchase environmentally friendly products, and engage in ecologically conscious behavior (Bang, 2000; Kalafatis, 1999; Abeliotis, 2010; Kim and Choi, 2005). However, there's a nuanced relationship, as the willingness to pay may not always translate to changes in actual buying behavior, and

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heightened concern does not necessarily equate to greater knowledge about environmentally friendly practices (Kalafatis, 1999; Abeliotis, 2010).

Kim and Choi (2005) observe a direct positive link between environmental concern and green purchasing behavior. Conversely, De Groot and Steg (2007) find that environmental concern is related to attitudes but not necessarily to intentions to use environmentally friendly practices. Mediation analysis by De Groot and Steg (2007) suggests that attitudes do not significantly mediate environmental concern's impact on behavioral intentions. Bamberg (2003) concludes that high environmental concern strengthens beliefs specific to green behaviors, influencing the likelihood of engagement in environmentally friendly practices. Overall, the complex interplay between environmental concern and consumer behavior underscores the multifaceted nature of this relationship.

Consumer environmental knowledge encompasses individuals' understanding of environmental issues, influencing their views and contributing to ecological impacts. However, its impact extends beyond factual understanding, shaping a holistic system view and fostering joint responsibilities crucial for sustainable development (Mostafa, 2007).

This knowledge dichotomy is classified into objective and perceived knowledge, with objective knowledge further delineated into environmental reasons (abstract/factual knowledge) and concrete actions to counteract issues (procedural/action-related knowledge). Research by Mostafa (2007) asserts a positive correlation between environmental knowledge and green purchasing behavior. Notably, concrete knowledge about specific environmentally friendly actions also aligns with green purchasing behavior (Tanner, Kaiser, & Kast, 2004; Tanner & Kast, 2003).

While Ellen (1994) emphasizes the impact of subjective knowledge on green consumption, Stern (1992) suggests that environmental knowledge correlates with active engagement with the environment. Lack of knowledge acts as a barrier to green consumption (Schultz, 2002; Simmons & Widmar, 1990). Bang (2000) highlight that knowledge about renewable energy enhances consumers' willingness to pay for sustainable sources, emphasizing its role as a mediator between environmental concern and positive beliefs/actions.

Tilikidou and Delistavrou (2006a) found that objective environmental knowledge directly influences pro-environmental purchasing behavior. They report that consumers with high environmental knowledge are more willing to pay a premium for green products (Amyx, 1994, Mostafa, 2007). Interestingly, subjective knowledge's broader impact on green consumption behaviors is emphasized in past research (Ellen, 1994), emphasizing the importance of perceived understanding in driving active engagement in eco-friendly behaviors. It reflects that consumers will pay more and more attention to environmental issues in the consumption process.

In summary, this study focuses on consumers' subjective specific knowledge about the environmental impact of tea planting, which is consistent with the premise that perceived knowledge strongly affects cultivation insurance consumption behavior, even in the absence of objective understanding. This distinction emphasizes that people's trust in their decision-making abilities is not necessarily related to objective knowledge.

Table 2.8. The definition of environmental concern

Author	Year	Main point
Dietz, T., Stern, P. C., & Guagnano, G. A.	2000	There is a significant positive correlation between environmental concern and environmental behavior.
Stern, P. C.	2001	Environmental concern is a key factor influencing people's environmental behavior.
Clayton, S., & Opatow, S.	2002	Environmental concern is a multidimensional concept, including cognitive, affective, and behavioral dimensions.
Dunlap, R. E., & Jones, R. E.	2003	Environmental concern is on the rise globally.
Schultz, P. W.	2004	The relationship between environmental concern and environmental behavior is influenced by a variety of factors, including personal characteristics, social environment, and policy environment.
Gifford, R., & Nilsson, A.	2005	Environmental education can increase people's environmental concern levels.
Steg, L., & Vlek, C.	2006	Pro-environmental behavior is influenced by a variety of factors, including personal, social, and environmental factors.
Stern, P. C., Dietz, T., Abel, T., Guagnano, G. A., & Kalof, L.	2007	The relationship between environmental concern and environmental behavior varies depending on the type of environmental issue.
Arvola, A., Latvala, S., & Lähteenmäki, L.	2008	There is a significant positive correlation between environmental concern and willingness to buy organic food.
Gifford, R.	2009	The relationship between environmental concerns and environmental behavior is influenced by many factors, including personal characteristics and social environment

Table 2.8(continue)

Author	Year	Main point
Schultz, P. W., Nolan, J. M., Cialdini, R. B., Goldstein, N. J., & Griskevicius, V.	2010	Social normative effect of environmental behavior.
Maibach, E. W., Nisbet, M. C., & Raymond, G. A.	2011	Cognitive and behavioral studies of climate change.
Gifford, R., & Comeau, L. J.	2012	Structure and function of environmental cognition.
Steg, L., & Vlek, C.	2013	Understanding and promoting environmentally friendly behaviors requires consideration of multiple factors such as individual, society and environment.
Stern, P. C., & Dietz, T.	2014	The relationship between environmental concerns and environmental behavior is influenced by factors such as the severity of environmental problems, personal environmental values and environmental responsibility.
Poortinga, W., Steg, L., & Vlek, C.	2015	Environmental values are an important factor affecting people's environmental behavior.
Gifford, R.	2016	Environmental cognition, emotion, and behavior influence each other.
Steg, L., & De Groot, J.	2017	Environmental-friendly behaviors can promote people's environmental cognition and emotions.
Schultz, P. W.	2018	Environmental-friendly behaviors can improve people's quality of life.
Xie, Y., Fang, Y., & Zhang, G.	2019	Psychological mechanism of environmentally friendly behavior.
Zhang, Y., & Zhang, J.	2020	Cost-benefit study of environment-friendly behaviour.
Li, X., & Wang, Y.	2021	Social identity studies of environmentally friendly behaviors.
Wang, X., & Liu, J.	2022	Study on the policy impact of environmentally friendly behaviors.
Chen, Y., & Sun, Y.	2023	Digital study of environmentally friendly behavior.

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2.9 Purchase behavior

2.9.1 Purchase intention

1. The concept of purchase intention

Purchase intention represents the maximum probability that consumers will purchase a certain product (Fishbein & Ajzen, 1975). Consumer purchase intention can be positive or negative. Positive intention means that the consumer has a favorable impression of a certain product, which will increase the probability of purchase. It is pointed out that purchase intention is divided into two levels. One is the consumer's intention to purchase a product or service. Superior cognition and attitude, and the second is the probability of being willing to make a decision to purchase the product or service (Monroe, 1992). Consumers' purchase intention is a strong desire formed by external factors (such as brand or product combination). The strength of this strong desire is the consumer's recognition of the product (Dodds, 1991). Before consumers determine whether to purchase goods, they must have prior purchase intention, and even random purchases are based on the purchase intention that occurs (Ajzen, Driver, 1991). It can be seen that purchase intention, as a consumer's tendency, is the consumer's psychological activity when purchasing a product. According to the value and added value of the product, there will be different intensity of purchases. Whether consumers choose the rupee shopping method or the rupee consumption method, consumers Purchasing intention is the probability of purchasing a product or service and weighing it.

The purchase intention studied in this paper refers to the possibility that consumers tend to purchase an insurance product based on the external factors and their subjective attitude. This paper chose to use insurance purchase intention to reflect the farmers' demand for agricultural insurance, because this study is based on the micro survey data of farmers, before the farmers survey, it may have taken corresponding agricultural risk response management measures, which cannot judge the government financial subsidies, risk information supply and farmers' risk cognition factors will affect farmers agricultural insurance demand, in order to reduce the deviation of the time dislocation, can ask the future of agricultural insurance purchase intention to explore the influence of the main factors on the agricultural insurance demand.

2. Influence of purchase intention

Since consumers' purchase intention can reasonably predict consumers' purchase behavior, scholars pay high attention to the research on consumers' purchase intention. Scholars' studies on the influencing factors of purchase intention are summarized as follows:

Table 2.9. Definition of Purchasing intention

Scholar	Time	Theoretical point of view
Robert B. Cialdini	1984	Persuasion strategies have a positive impact on purchase intentions, such as reciprocity, commitment, and consistency principles
Raymond P. Fisk	1992	Brand loyalty has a strong impact on purchase intention
Deborah J. MacInnis	2001	Cultural factors have an influence on purchase decisions and purchase intention
Janet Painter	2005	Emotion and motivation affect consumers' purchase intention to some extent
Leon G. Schiffman	2010	The willingness to buy in the online shopping environment is influenced by the perceived value
John E. O'Brien	2002	Product pricing and promotion strategies have a great impact on purchase intention
Graham D. Williams	2014	Brand attitude and consumers' trust in the brand have an influence on the purchase intention
Lopez, C. & Diamantopoulos, A	2019	Consumers have different intentions to buy for different types of goods and shopping environments
Parente, M. & Marteau, M	2020	Price promotion can increase consumers' purchase intention, but this effect will be affected by consumers' price sensitivity
Bajpai, P., Rana, N., & Jain, S	2021	Brand reputation has a positive impact on purchase intentions
Meng, X., Zhang, Y	2022	Social media advertising can effectively increase consumers' willingness to buy
Fernandez, E., Ruiz, S., & Castillo, J	2023	Consumers' willingness to buy sustainable products is influenced by their perceptions and attitudes towards sustainability

1) Consumer demographic graphics

The demographic characteristics of consumers are an important basis for consumer segmentation. Different demographic characteristics of consumers show different purchasing intentions and behaviors. Scholars generally consider demographic characteristics that include: age, gender, educational level, occupation, income, place of origin, etc.

2) Environmental and atmosphere factors

The study found that one of the key factors in the success of retailers and service providers is providing a pleasant shopping environment for customers (Pan and Zinkhan,

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2006). Kotler In the 1973 research, it was pointed out that efforts to design a shopping environment can help consumers produce specific emotional effects and then increase the probability of buying. Scholars have conducted research on shopping environment design, and found that good environment design can stimulate consumers' senses and increase their shopping experience, thus bringing greater sales revenue to merchants (Douce and Janssens, 2013; Sullivan and Baker, 2002). Academic considerations in environmental design include music, smell, and color in the environment (Bellizzi and Hite, 1992; Mattila and Wirtz, 2001; Sayin, 2015). Shama The 1994 study found that the store environment, layout, and the service attitude of the store staff are all important parts of the overall atmosphere, and these factors have a direct impact on the willingness of consumers to buy. Bitner In the 1992 research, it was found that when consumers buy goods or experience services in the store, they will evaluate the environment of the store, which will eventually have an impact on their own purchase intention and consumption behavior. Roschk (2017) sorted out the influence of music, color, smell and other elements on consumers in the environment over the past 30 years, meta-analyzed 66 related studies and 135 effects, and demonstrated the mechanism of the influence of environmental atmosphere on consumers' behavior and willingness. It can be seen that the situational atmosphere of the shopping environment has an important impact on consumers' purchase intention. Color in the environment is an important part of it, which plays a key role in influencing the purchase intention of consumers, which is also reflected in previous studies, which is also the focus of this paper.

3) Product features

Scholars' research on product characteristics mainly starts from two aspects. On the one hand, the external clues of the product, including product attraction, color, packaging, brand, price, country of origin, etc. (Szybillo and Jacoby, 1974; Xin, 2017; Wang, 2015). Due to the information asymmetry between consumers and the merchants in the shopping process, the buyer cannot obtain all the information related to the product they wants to buy, so he needs to evaluate the external clues of the product to reduce the purchase risk (Wang Lifang, 2005). On the other hand, the internal clues of the product, including general information about the appearance, composition, traits, and use duration of the product. Changing the external clues of the product will not cause changes in the physical attributes of the product, but the change in the internal attributes of the product will cause changes in the physical attributes of the product (Szybillo and Jacoby, 1974). Babin In the study of 1999, it was pointed out that the attributes of the product itself are the most important driving force for whether consumers to adopt the purchasing behavior, and the evaluation of the product attributes is the most direct and main factor for consumers 'purchasing intention. Both the external clues of the product and the internal clues of the product have an important influence on consumers' shopping willingness.

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4) Perceived value

It is found that in the process of consumers' purchase decision, whether the purchase intention arises depends on the perceived difference between the benefits and the cost of buying a certain product or service. Under the established cost premise, the greater the perceived value, the higher the profit of purchasing the product or service, and the stronger the purchase intention. Otherwise, the lower the income, the weaker the purchase intention (Dodds, 1991). Scholars further demonstrate the evidence on the influence of perceived value on consumers' purchase intention. Chen Xinyue and Yang Deli (2003) further used the influence of quantitative analysis to verify the purchasing decision mechanism based on the perceived value. Lee Chong Wei (2017) demonstrated the positive effect of consumers' perceived value on the purchase intention in the main situation. It can be seen that scholars' research on the impact of consumers' perceived value on the purchase intention has been relatively mature.

3. Measurement of purchase intention

When measuring the purchasing possibility of consumers, two items are used to measure the purchase willingness of consumers (Keller & Aaker, 1992). In the study, it was found that consumers were affected by the influence of the brand and store name discount price on consumers, so the items to measure the purchase intention were designed as three: "Will buy or will not buy; this price will buy; this price is more likely to buy" (Grewal, 1998).

In the study, three items: "high or low; likely or impossible; likely or unlikely" (Lim & Darley, 2009). In their 2014 study, domestic scholars Shen Zongqi and Su Fangqiang drew on the definition and measurement of the purchase intention by Dodds (1991) and Zeithaml (1988), and developed a scale to measure the purchase intention, including three items: "I may buy the product if the budget permits; I am willing to buy the product if the budget permits; I will consider buying the product if the budget permits." The willingness to buy includes four items: "I have a good impression of the brand; I think the brand meets my needs; I like the product" (Ajzen & Fishbein, 1980). On this basis, the scale is further developed with five items: "the possibility of purchase; at this price, I will consider purchasing this model; at this price; consider the possibility of purchasing the product; willingness to purchase the product" (Dodds, 1991). There are three measurement items based on price and personal preference, namely: I will purchase the item; I will consider purchasing the item at the price; I will consider the possibility of purchasing the item (Grewal, 1998). According to our purchase and recommend others, we further proposed the possibility of purchase from ourselves and recommending others, the possibility of consumers to buy products to purchase, and the possibility of recommending others to buy products (Biswas, 2009; Zhong, 2013; Wu, 2014; Zheng, 2015). Schiffman (2010) The measurement of purchase intention includes the following five items: I will definitely buy, I may buy, I am not

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sure I will buy, I may not buy, I will never buy. Liu Fengjun developed the purchase intention scale according to the budget, including three items: (1) I may purchase the promotional product under the budget license; (2) I am willing to purchase the promotional product under the budget license; and (3) I will consider purchasing the promotional product under the budget license (Liu, 2020).

In conclusion, the present study applied the scale of purchase willingness used in the study, which not only considered consumer purchases (Moon, 2017).

2.9.2 Purchase behavior

1. The concept of purchase behavior

American psychologists and behavioral scientists, including Hawkins, introduced the Consumer Decision Process Model, which examines consumer purchasing behavior by focusing on internal factors. This model forms the essential framework for understanding the stages of consumer decision-making, encompassing motivation to collect information, the purchase decision, post-purchase evaluation, and product disposal (Hawkins, Coney, 1980).

Table 2.10. Definition of Purchase behavior

scholar	time	Theoretical point of view
Hawkins Coney Best	1980	consumer decision-making, encompassing motivation to collect information, the purchase decision, post-purchase evaluation, and product disposal
Strahilevitz, M Myers, L	2013	Consumers will be affected by a variety of factors in the purchasing decision process, including personal characteristics, product characteristics, environmental factors, etc.
Pavlou, P. A Fygenson, M	2014	Consumers' trust and evaluation of their websites can also affect their purchase behavior
Kim, K. H Lee, A. Y	2015	Consumers' trust and satisfaction with the brand will affect their purchasing behavior
Lopez-Fernandez, M Sanchez-Vega, M Bernal-Delgado, E	2016	Advertising information has an important influence on consumers' purchasing behavior
Vermeir, I. Devlieger, P. Vanhamme, J	2017	The in-store environment has an important impact on consumers' purchasing behavior, especially the in-store atmosphere, product display and in-store services

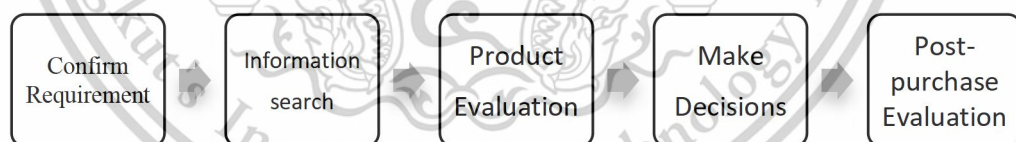
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Table 2.10(continue)

scholar	time	Theoretical point of view
Chiu, H. & Guo, L	2018	Product information disclosure has an important impact on consumers' purchasing behavior, especially the composition, function and safety of products
Li, Y., Zhang, Y. Wang, H	2019	Brand image has an important impact on consumers 'purchasing behavior, especially the brand's reputation, quality and values
Mishra, A., Suri, S Karahanna, T	2020	Digital marketing strategies have an important impact on consumers' purchasing behavior
Rios-Aguilar, C Fernandez-Sanchez, M Vargas-Lopez, D	2021	Product price promotion has an important impact on consumers' purchase behavior, especially price discount, full discount and gifts
Kashyap, R; Joshi, A. Saxena, A	2022	Consumers' personal characteristics and needs can also influence their perception and purchasing decisions about online shopping platforms

Building upon Hawkins' Consumer Decision Process Model, an extended psychological process has been incorporated. This additional framework emphasizes the consumer's active analysis of product information, comparing and evaluating alternative products. This expanded model delineates five sequential stages: demand confirmation, information search, product evaluation, decision-making, and post-purchase evaluation (Armstrong, 2004).

**Figure 2.7:** Consumer purchase behavior model

Source: Armstrong, 2004.

Blackwell's consumer purchase behavior model combines the stages of purchase behavior with influencing factors. The influencing factors are categorized into environmental impact (culture, situation, etc.) and individual differences (consumer resources, lifestyle, etc.). Blackwell emphasizes that environmental factors primarily shape the initial three stages of the consumer purchase behavior process, which include confirming demand, conducting information searches, and product evaluation. On the other hand, individual differences predominantly influence the stages of confirming demand, purchase decision, and product

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consumption. Additionally, environmental factors play a regulatory role in the relationship between individual differences and confirming demand.

Expanding upon Roger D. Blackwell's foundational work, the consumer behavior model has developed into a comprehensive seven-stage process. This extended model introduces additional stages, specifically “purchase after consumption” and “disposal,” offering a more nuanced perspective on consumer purchase behavior (Blackwell, 2009).

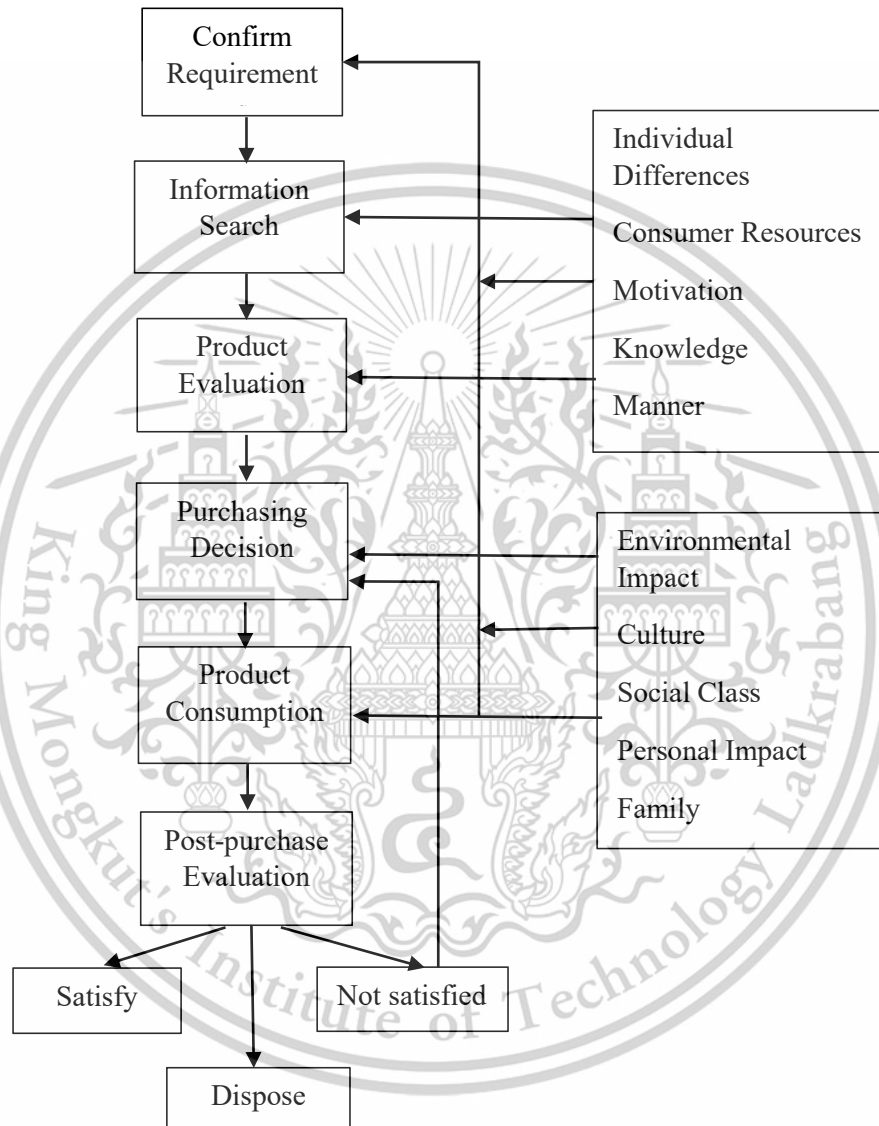


Figure 2.8: Consumer purchase behavior model(Bla

Source: Blackwell, 2009.

The Howard-Says model:

Howard focused on understanding how changes in psychological activity influence consumer purchasing decisions (Howard, 1963). In the 1960s, Howard initially proposed the analysis model, and in collaboration with Sess, published a monograph titled “The Theory of

Purchase Behavior.” The Howard-Sess model is grounded in the “stimulus-reaction” concept, primarily exploring consumer purchase behavior through four aspects: stimulus factors, external factors, internal factors, and reaction factors. The core focus is on studying how stimulus and external factors impact the consumer's psychological activity process, leading to the formation of purchasing decisions (Howard, Sess, 1969).

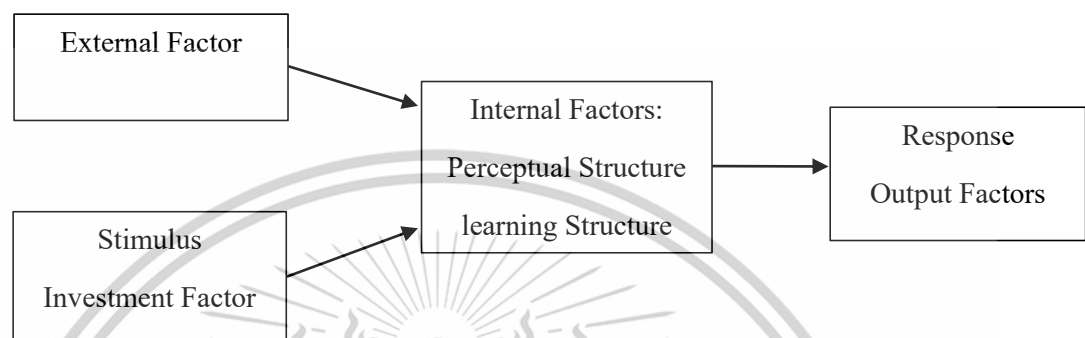


Figure 2.9: Howard-Sheath Model

Source: Howard, 1963.

Purchase intention, also known as buying intention, refers to an individual's subjective likelihood of engaging in a specific behavior, reflecting their willingness to execute that behavior. Ajzen asserts that, under conditions of sufficient actual control, purchase intention can directly determine the actual purchase behavior (Ajzen, 1975).

American scholar Engel classifies consumer purchase behavior into three types based on the effort consumers invest in searching and evaluating required product information during the purchasing process: comprehensive problem purchase behavior, limited problem purchase behavior, and habitual/loyal purchase behavior (Engel, 1968).

Purchase behavior is defined as the follows: The positive tendencies and actual steps taken by tea farmers towards planting insurance are designed to translate their purchase intentions into actual purchase actions. This includes the process of tea farmers' willingness to plant insurance and whether they will actually buy the insurance under the influence of factors such as government support and perceived value. The concept of purchasing behavior emphasizes here highlights the practical actions of tea farmers in the decision-making process and the impact of government support and perceived value on this process. The understanding of this concept helps to reveal the dynamic process of agricultural insurance engagement, thus providing useful insights into policy making and farmer engagement.

2.9.3 Constructing an Effective Cooperative Model Between Supply and Demand Entities in Tea Planting Insurance

1. Identification of an Effective Cooperative Model

(1) Social Utility Analysis in a Two-Party Model

This section examines a two-party model of tea planting insurance, wherein farmers constitute the demand side and commercial insurance companies represent the supply side. Figure 5.1 illustrates the social utility dynamics within this framework. To facilitate analysis, the following assumptions are made:

Both insurance companies and farmers act to maximize their respective utilities.

The interaction between the two parties is modeled as a zero-sum game, implying that one party's gain equates to the other's loss .

In Figure 2.10, point op represents the utility accrued by farmers, while point oi denotes the utility obtained by insurance companies. The inverse relationship between these utilities indicates that an increase in farmers' utility corresponds to a decrease in insurers' utility, and vice versa. The maximum attainable utilities for farmers and insurers are represented by points ob and oa , respectively. The plane defined by points oab illustrates the set of possible social utility outcomes arising from the interactions between the two parties.

The curve u represents a social utility indifference curve, depicting combinations of utilities that yield the same level of overall social welfare. According to utility theory, the line segment ab signifies the optimal combinations of utilities for both parties. The point at which line ab is tangent to the indifference curve u denotes the maximum total social utility, indicating an efficient allocation of resources between farmers and insurers .

This analysis underscores the inherent trade-offs in a two-party insurance model and highlights the potential benefits of cooperative strategies that move beyond zero-sum interactions.

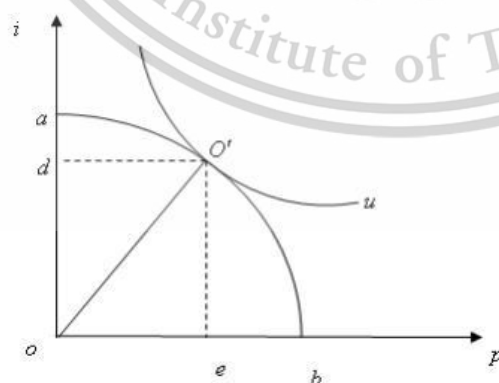


Figure 2.10: Social Utility under the Two-Party Model

Figure 2.10 illustrates a two-party model of tea planting insurance, where farmers represent the demand side and commercial insurance companies constitute the supply side. In this framework, both parties are assumed to act rationally, aiming to maximize their respective utilities. The interaction between the two parties is modeled as a zero-sum game, implying that one party's gain equates to the other's loss.

In the diagram, point O represents the tangency between curve ab and the social utility indifference curve u , indicating the optimal point of social utility. The area oeO,d denotes the total social utility, with od and oe representing the utilities of the insurance company and the farmer, respectively. The segment oO reflects the combined utility derived by both parties.

The ideal outcome in this game-theoretic context is to minimize the disparity between oe and od , striving for a balanced utility distribution. A significant imbalance, where one party's utility substantially exceeds or falls short of the other's, leads to a contraction of oO , thereby reducing overall social utility. Such a scenario is considered Pareto inefficient, as it is possible to reallocate resources to make at least one party better off without making the other worse off.

This analysis underscores the necessity for both insurance companies and farmers to derive tangible benefits from the insurance arrangement to achieve maximum social utility. However, in practice, this equilibrium is challenging to attain. The high risk and claim rates associated with tea planting insurance compel commercial insurers to set high premiums to maintain profitability in the absence of government intervention. Consequently, many farmers find the insurance unaffordable, failing to realize its intended utility. Conversely, if insurers lower premiums to accommodate farmers, they risk insufficient returns, leading to diminished utility on their part.

(2) Social Utility Analysis under the Three-Party Model

Introducing government participation transforms the model into a three-party framework, encompassing commercial insurance companies, farmers, and the government. Figure 5.2 depicts the social utility dynamics within this expanded system. To streamline the analysis, the following assumptions are made:

The government operates as a non-profit entity, aiming solely to maximize social utility.

The interaction among the three parties constitutes a variable-sum game, allowing for the possibility of mutual gains.

Government fiscal support is finite and subject to budgetary constraints.

In the figure, go represents the amount of government subsidy allocated to policy-based agricultural insurance. Points oi and op denote the utilities received by insurance companies and farmers, respectively. As the government subsidy go increases, the total utility

for both parties correspondingly rises. The maximum utilities attainable by insurance companies and farmers from the subsidy are represented by oe and od , respectively. The three-dimensional space $obcao$ encapsulates the total social utility resulting from the interplay among the three entities.

Curves u_1 , u_2 , and u_3 illustrate the government's social utility indifference curves under varying subsidy levels. According to utility theory, surface abc denotes the optimal combination set of social utilities. The point at which the government's indifference curves are tangent to surface abc signifies the attainment of maximum total social utility.

This three-party model highlights the pivotal role of government intervention in rectifying market inefficiencies inherent in the two-party system. By providing targeted subsidies, the government can alleviate the financial burden on farmers and enhance the profitability for insurers, thereby fostering a more balanced and efficient allocation of resources.

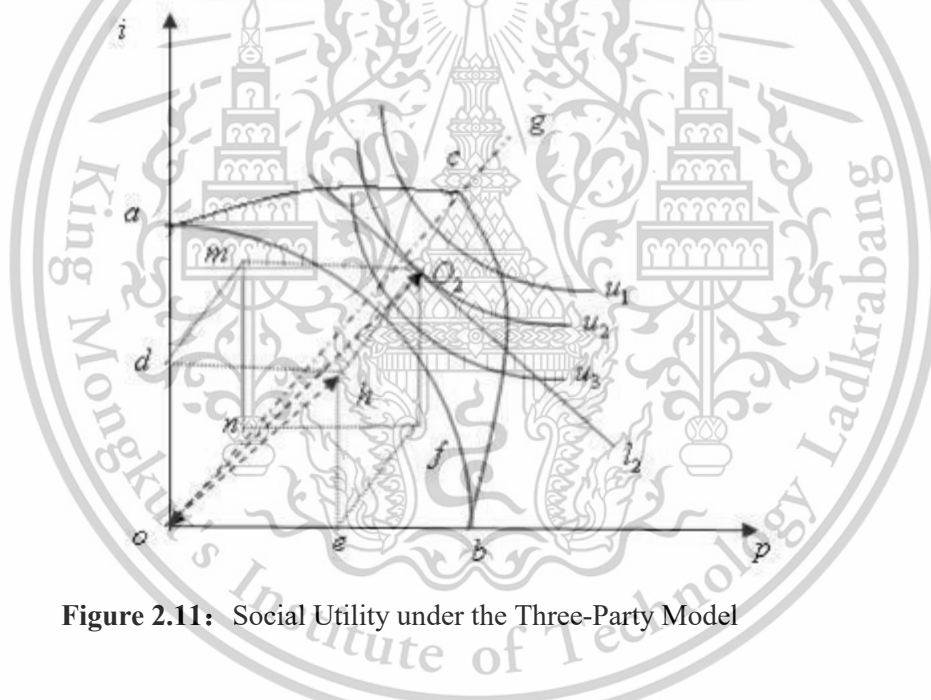


Figure 2.11: Social Utility under the Three-Party Model

Taking the indifference curve u_2 as an example for utility analysis: suppose the tangent between the surface abc and indifference curve u_2 is line l_2 , with the tangency point being O_2 . Under this condition, the spatial area $odmnehO_2f$ represents the total social utility at the u_2 level. When the government subsidy is set at no, the utility obtained by the insurance companies and the farmers is od and oe , respectively. The combined social utility of the three stakeholders—government, farmers, and insurance companies—is denoted as oO_2 .

When the projection of oO_2 on plane aob is fixed at oh , the optimal state of this tripartite interaction occurs when od and oe are as close as possible. Only in this scenario can

oO_2 be maximized. Otherwise, the imbalance leads to a loss in social utility, breaking the Pareto optimal condition and reducing the system to a Pareto-improvable state.

From this analysis, it can be concluded that in order to maximize the social utility brought about by tea planting insurance, the benefits obtained by either farmers or insurance companies cannot be increased without reducing the benefit of the other. That is, any further gain by one party without hurting the other is impossible under Pareto efficiency.

(3) Selection of a Cooperative Model for Supply and Demand Entities in Tea Planting Insurance

The above analysis indicates that a purely commercialized tea planting insurance model is neither effective nor sustainable. Given the quasi-public good nature of agricultural insurance, coupled with the high risk, high payout ratio of tea planting insurance, and the limited purchasing power of farmers, an effective and stable supply of such insurance necessitates government intervention.

Based on domestic and international experiences with policy-oriented agricultural insurance, there are four main models of government-led insurance operations:

① Government-Run and Government-Organized Model

This model is heavily dependent on the government, which not only initiates but also manages agricultural insurance operations through designated institutions. Its operational mechanism includes:

Establishing specialized state-owned insurance companies to manage policy-based agricultural insurance and reinsurance.

Creating dedicated agricultural insurance funds, with fundraising, allocation, and management overseen by these specialized companies.

Setting up provincial, autonomous regional, and municipal branches, with county-level sub-branches and agents responsible for on-the-ground implementation.

Offering preferential policies from the state to support policy-based agricultural insurance and reinsurance.

Advantages:

The government-established specialized insurance companies aim to maximize social utility. Their nationwide operations help correct market failures and optimize resource allocation.

The government's leadership enhances insurance promotion efforts.

Agricultural insurance is rolled out nationwide, and certain insurance types are made mandatory. This enables spatial and temporal risk diversification, thereby enhancing the system's stability.

Disadvantages:

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State-owned policy insurance companies often lack internal incentive mechanisms, especially in areas of institutional innovation, management, and technology.

Coordination among entities is challenging, particularly between different government levels and between the government and insurance companies.

The effectiveness of this model relies on the government's integrity, efficiency, and access to complete information. In practice, these prerequisites are often compromised, leading to "government failure."

② Government-Supported Cooperative Model

This model operates on a voluntary basis, where farmers participate as shareholders to raise insurance funds. It follows principles of self-management, democratic governance, independent accounting, risk sharing, profit sharing, and dividend distribution according to shares. It is a non-profit model aimed at mitigating production risks for members.

Advantages:

Farmers act as both insurers and insured parties, effectively reducing adverse selection and moral hazard.

Cooperatives are flexible in operations, allowing for localized insurance design, premium setting, and contract development.

Operating and supervision costs are relatively low, thus reducing the fiscal burden on the government.

Main Limitations of the Cooperative Model

This model also presents several drawbacks:

① The limited scale of cooperatives leads to concentrated risk exposure and an inability to effectively diversify risks spatially. Moreover, the accumulation rate and scale of insurance funds are restricted, resulting in limited compensation capacity.

② Excessive interference from local governments often undermines independent operation.

③ The lack of a strong tradition of cooperation, cooperative consciousness, and self-organizational capacity among farmers constrains both the existence and development of this model.

③ Government-Supported Mutual Insurance Company Model

A mutual insurance company is a unique organizational structure that differs from a traditional joint-stock insurance company. It combines features of both corporate and cooperative forms. Unlike joint-stock companies, mutual insurers do not issue equity shares. Their funds primarily come from liabilities, and both the employees and insured individuals are policyholders of the company.

In this model, policyholders enjoy greater rights than in standard insurance firms, including rights to surplus distribution and participation in electing the board of directors.

Advantages of this model include:

- ① Clear ownership structure, which helps reduce transaction costs, uncertainty, and information asymmetry.
- ② Alignment of interests among government, insurance companies, and farmers, making it easier to overcome challenges in market development, underwriting, and premium collection.
- ③ Farmers serve as both insurers and the insured, which helps mitigate problems of adverse selection and moral hazard.

However, several disadvantages are also present:

- ① A lack of supporting legal frameworks, operational experience, and a mature financial market creates difficulties in fundraising and capital access.
- ② The model struggles to stimulate sufficient demand for agricultural insurance, limiting its scalability.
- ③ Issues such as low transparency, frequent ownership changes, and weak managerial oversight may give rise to free-rider behavior and ineffective governance.

④ Government-Led Commercial Insurance Company Model

In this model, commercial insurance companies operate agricultural insurance voluntarily within a government-defined policy framework. The key stakeholders include the government, commercial insurers, and farmers, each bearing distinct responsibilities. The government provides policy guidelines and support; farmers, as policyholders and insureds, pay premiums and receive protection; while commercial insurers handle underwriting, fund management, and product development.

This model offers several significant advantages:

- ① Commercial insurance companies bring existing technical expertise, personnel, and operational experience, reducing the government's burden and implementation costs.
- ② Their established marketing networks facilitate the broad promotion and accessibility of agricultural insurance.
- ③ Motivated by profit, commercial insurers tend to operate efficiently and are more inclined to pursue innovation in products and services.

Nonetheless, the model also faces challenges:

- ① Determining the appropriate form and level of government support remains complex.

② Adverse selection and moral hazard among farmer participants are difficult to control.

③ As for-profit entities, commercial insurers may prioritize profitability over meeting farmers' actual needs, particularly in insurance product design.

Based on the above comparative analysis, leveraging the government's strengths in institutional innovation, policy formulation, and macro-regulation requires a contextually appropriate institutional design. To maximize social benefits, a coordinated mechanism is needed that combines the government's policy and regulatory capacity with the market-driven strengths of commercial enterprises.

This entails the establishment of a well-structured operational system for agricultural insurance, the formulation of sound macro-regulatory frameworks and policies, and the strategic utilization of commercial insurers' capabilities in competition, innovation, and operational efficiency—all under effective government supervision and coordination.

Therefore, the government-led commercial insurance company model emerges as the most suitable approach under China's national conditions. It effectively mobilizes the enthusiasm and participation of all three major stakeholders—government, insurers, and farmers. Under this model, all parties are linked by mutual interests:

The government seeks to maximize social welfare,
Insurance companies aim for profit maximization, and Farmers pursue income maximization.

The alignment of these interests is essential for achieving the overall maximization of social utility.

2. Design of an Effective Cooperative Model

(1) Definition of the Underwriting Entities

Commercially insurable risks must meet at least the following basic conditions:

Sufficient historical data must be available to calculate premiums accurately;

The probability of catastrophic losses must be relatively low;

The owners of at-risk property must be both capable and willing to purchase insurance.

However, tea plantation insurance is characterized by high risk and a high claims ratio, while farmers often have limited financial capacity. As a result, the premium rate for tea plantation insurance rarely reaches a level sufficient to cover claims and administrative costs, let alone generate a surplus. Therefore, tea production risks do not fully qualify as commercially insurable risks.

Tea plantation insurance cannot be operated independently by commercial insurance companies on a profit-and-loss basis. Given its quasi-public good nature, this type of insurance should be jointly underwritten by both the government and commercial insurers.

(2) Scope of Coverage

Agricultural risks can be categorized by their sources into natural, social, economic, political, and technological risks. At present, the primary focus of agricultural insurance is on natural risks occurring during agricultural production, including preliminary processing and transportation before products enter the market.

For planting insurance specifically, the main insured risks are natural disasters, such as droughts, floods, waterlogging, typhoons, hailstorms, frost, low temperatures, and landslides.

At this stage, economic, technological, social, and political risks are generally not recommended for inclusion. Regarding economic risks, although farmers often hope that price fluctuations can be insured, the current state of development in China does not support this. The boundaries for price insurance are difficult to define, and public understanding of agricultural insurance remains limited.

As for technological risks, issues such as counterfeit seeds, immature technologies, and the inappropriate introduction of new varieties or crops have caused significant losses for farmers in recent years. Some experts suggest including these in policy-based insurance, but such risks are heavily influenced by moral hazard and are thus not advisable for coverage under the current system.

Since policy-based agricultural insurance is government-led, social and political risks are also unsuitable for inclusion. This approach aligns with international practices. For instance, in the United States, crop insurance mainly covers natural disasters. Between 1989 and 2004, droughts accounted for about 40% of total indemnities, followed by floods and waterlogging at around 30%, and frost, freezing, and hail each contributing about 10%.

Therefore, tea plantation insurance should primarily cover natural risks such as torrential rain, floods, waterlogging, windstorms, hail, and frost.

(3) Risk-Sharing Among Stakeholders

The substantial risks associated with tea plantation insurance cannot be borne solely by commercial insurance companies. On one hand, natural disasters like droughts and floods, which typically result in widespread and significant losses, necessitate shared liability between the government and commercial insurers. On the other hand, participation in tea plantation insurance is a governmental responsibility, enabling it to assist farmers in reducing production-related risks, guaranteeing a minimum income, supporting the continuity of farming activities, and ultimately contributing to national food security and the stable development of rural economies.

To achieve this, the government should establish an excess-loss compensation mechanism for tea plantation insurance. The risk should be shared among the insured (i.e., farmers), commercial insurers, reinsurers, and the government. Specifically:

Losses below the deductible should be borne by the farmers themselves;

Losses between the deductible and the maximum indemnity rate should be covered by the commercial insurer;

Losses above the maximum indemnity rate but within the excess indemnity range should be assumed by reinsurers and capital markets;

Losses beyond the excess indemnity threshold should be covered by the government.

As illustrated in Figure 2.12, this layered risk-sharing model effectively distributes risks and reduces the government's financial burden while offering farmers basic protection against major losses.

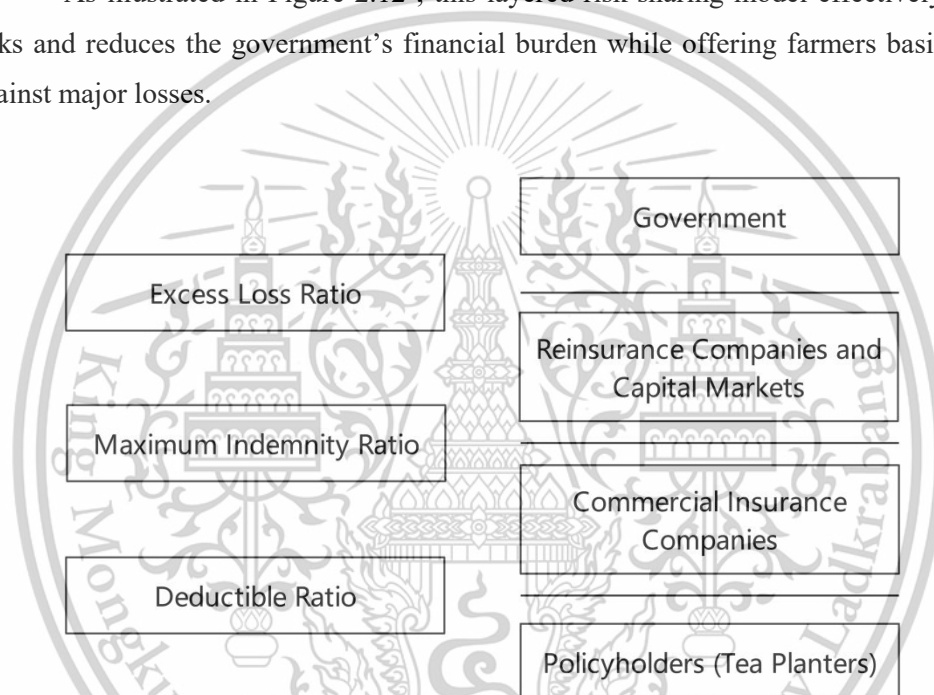


Figure 2.12: Diagram of the Risk-Sharing Mechanism for Tea Crop Insurance

3. Operational Mechanism of an Effective Cooperation Model

Establishing a sound operational mechanism is fundamental to the successful implementation of an effective cooperation model for tea crop insurance. Given the current challenges faced in the development of tea crop insurance in China, the existing operational mechanisms require further improvement, particularly in the areas of incentive mechanisms, protection mechanisms, and supervisory mechanisms.

(1) Improving the Incentive Mechanism for Tea Crop Insurance

As previously discussed, relying solely on market mechanisms for tea crop insurance tends to result in a situation of low supply and low demand. Therefore, government intervention is essential, particularly through the establishment of a robust incentive mechanism. Currently, both domestic and international agricultural insurance systems mainly

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employ subsidies and tax incentives as motivational tools. In light of China's national circumstances, the development of an effective incentive mechanism for tea crop insurance should focus on the following key aspects:

First, premium subsidies should be tailored to local conditions. At present, agricultural insurance in China provides varying premium subsidies based on the type of insured item, but the subsidy rate for a given item is generally uniform across different regions. However, regional disparities in socio-economic development result in differing levels of price elasticity for tea crop insurance—that is, the sensitivity of demand to price varies from one area to another. Therefore, premium subsidies for tea crop insurance should be region-specific to maximize their motivational effectiveness.

Second, differentiated subsidies for tea cultivation should be implemented. This approach involves granting varying levels of subsidies to farmers who purchase tea crop insurance versus those who do not. As China faces a continual decline in tea cultivation area, government subsidies are necessary to support and incentivize planting. Based on earlier analysis using a game-theoretical approach, offering higher cultivation subsidies to insured farmers while providing lower or no subsidies to uninsured farmers can significantly stimulate demand for tea crop insurance.

Third, tax incentives should be introduced. The high-risk and high-compensation nature of tea crop insurance dampens the enthusiasm of commercial insurance companies to enter the market. To ensure that these companies can maintain a reasonable profit margin and are motivated to provide such insurance, the government should implement tax relief policies targeting insurers involved in tea crop insurance. These tax incentives can help improve supply and encourage greater participation from commercial insurers.

(2) Enhancing the Protection Mechanism for Tea Crop Insurance

Commercial insurance companies often face challenges in gaining farmers' trust when offering tea crop insurance. Therefore, greater support from the government in terms of financial and human resource protection is essential.

In terms of financial support, given the high-risk nature of tea crop insurance, commercial insurers must maintain adequate liquidity. Strengthening credit support for tea crop insurance can serve as an effective incentive. For instance, commercial insurance companies engaged in tea crop insurance should be allowed to apply for interest-free or low-interest loans when facing liquidity shortages.

In terms of personnel support, it is crucial to develop a pool of specialized technical professionals in tea crop insurance. A shortage of trained personnel is one of the major factors limiting the supply of tea crop insurance in China. The government should support the training of professionals through relevant educational institutions and vocational schools, or encourage insurance companies to provide professional training for their staff. This will

improve the overall competency of personnel in the tea crop insurance sector and help address the human resource constraints that hinder its development.

(3) Strengthening the Supervision Mechanism for Tea Crop Insurance

Due to the potential for fraudulent activities such as false claims in the development of agricultural insurance, the promotion and implementation of tea crop insurance must be accompanied by a robust supervisory mechanism. Supervision should target both insurance providers and farmers.

Supervision of insurance companies involves two key areas:

First, monitoring the supply side of tea crop insurance to prevent fraudulent practices, such as fabricating claims to unlawfully obtain government subsidies.

Second, overseeing the claims process to ensure that farmers receive timely and fair compensation following insured losses, thereby protecting their interests.

Supervision of farmers focuses on mitigating moral hazard in agricultural insurance. To prevent unethical behaviors such as insurance fraud, both the government and insurance companies must implement effective oversight of farmers' insurance enrollment and claims activities, thereby ensuring the healthy functioning of the tea crop insurance system.

The above content first provides an analysis of the utility of various agricultural insurance cooperation models. Based on this analysis, it concludes that a government-led model operated by commercial insurance companies is the most suitable for China's national context. This model effectively mobilizes the active participation of government, enterprises, and farmers.

Subsequently, a practical cooperation plan for agricultural insurance is proposed under this model, identifying that both the government and commercial insurers should serve as underwriters. The scope of coverage should primarily include natural risks encountered during agricultural production, such as heavy rainfall, floods, waterlogging, windstorms, hail, frost, and pest and disease outbreaks.

To effectively mitigate these risks, the establishment of a catastrophic loss compensation system is essential. Risk should be jointly borne by the insured (farmers), commercial insurers, reinsurers, and the government. Finally, to ensure the successful implementation of this cooperative model, a corresponding operational mechanism is developed, focusing on improvements to the incentive, protection, and supervision systems for tea crop insurance.

2.9.4 Supporting Conditions for an Effective Cooperation Model among Tea Crop Insurance Stakeholders

1. Improving Relevant Legal Frameworks

A sound legal and regulatory system is a crucial institutional guarantee for the sustainable development of tea crop insurance. Across the world, regardless of the model adopted for agricultural insurance, the foundation always begins with establishing a legal framework to support its implementation. This ensures the orderly establishment and stable operation of the agricultural insurance system.

Currently, China's tea crop insurance relies primarily on the Regulations on Agricultural Insurance as its sole piece of supporting legislation, and lacks a comprehensive and cohesive legal framework. Therefore, accelerating the legislative process for agricultural insurance is essential. A complete legal system is needed to regulate all aspects of the agricultural insurance process, alleviating concerns from both farmers and commercial insurance companies regarding the purchase and provision of tea crop insurance.

(1) Fundamental Principles for Agricultural Insurance Legislation

Given the distinct characteristics of agricultural insurance compared to other types of insurance, its legislative framework should be guided by the following two principles:

Principle of Differentiation: Agricultural and livestock products vary by region, and local social and economic conditions differ significantly. Therefore, legislation should allow for regional flexibility to accommodate local conditions and better mobilize the enthusiasm of all stakeholders involved in agricultural insurance.

Principle of Government Support: Unlike conventional insurance markets, agricultural insurance is particularly susceptible to the problem of “cold supply and demand.” Its development and widespread adoption require active and targeted government support measures.

(2) Core Components of Agricultural Insurance Legislation

The basic contents of agricultural insurance legislation should include the following key aspects:

Clarifying the Policy-Oriented Nature of Agricultural Insurance: Establishing the policy-driven nature of agricultural insurance is foundational for building China's agricultural insurance system and accelerating its development. To resolve the tension between market-based operations and policy-driven objectives, and to ensure robust government support, regulations must clearly define the public-policy orientation of agricultural insurance.

Defining the Government's Role in Agricultural Insurance: Legislation should clearly articulate the government's leading role in the operation of the agricultural insurance system. This includes enshrining in law the government's responsibility to support agricultural

insurance, such as establishing systems for premium subsidies, subsidies for operational management expenses, and detailed implementation rules for preferential tax policies.

Specifying Operational Requirements for Commercial Insurance Companies: The legislation should clearly define how agricultural insurance funds are raised and managed, outline the scope of operations and the risk responsibilities of commercial insurers, and provide technical standards for setting premium rates, actuarial methods, and claims settlement procedures.

2. Improving the Information Feedback System for the Tea Planting Industry

A robust information feedback system in the tea planting industry can enhance communication among stakeholders in tea crop insurance, thereby reducing issues such as moral hazard and adverse selection. On one hand, this helps lower the non-agricultural risks borne by commercial insurance companies when offering tea crop insurance. On the other hand, it ensures that farmers receive fair compensation, thereby protecting their interests and promoting the broader adoption of tea crop insurance.

(1) Timely Collection and Disclosure of Tea Production Data

The government should establish dedicated departments responsible for collecting and publishing data related to tea production, including output, quality, and disaster impact. The availability of authoritative data serves a dual purpose: it deters fraudulent insurance claims and provides a reliable reference for farmers to support their claims, indirectly safeguarding their interests.

(2) Analyzing Factors Influencing Farmers' Willingness to Insure

Since the factors affecting farmers' willingness to purchase tea crop insurance vary across regions and time periods, government agencies or insurance providers should regularly conduct statistical analyses of these factors within their jurisdictions. This analysis not only contributes to the continuous improvement of existing insurance schemes but also provides valuable insights for formulating targeted promotion and education strategies.

(3) Measuring Satisfaction with Pilot Insurance Programs

In some regions of China, pilot tea crop insurance programs have already been implemented. Conducting satisfaction surveys in these areas can help identify shortcomings and issues during implementation. Addressing these issues promptly will accelerate the refinement of the insurance system, ensuring that it fulfills its intended role of stabilizing farmer income and supporting the sustainable development of the tea planting industry.

3. Fostering New Types of Insurance Participants in the Tea Industry

Based on the earlier analysis of farmers' willingness to participate in tea crop insurance, there is still insufficient effective demand. It is crucial to cultivate new types of insurance participants to expand the coverage and impact of tea crop insurance.

(1) Unlocking Latent Demand for Tea Crop Insurance

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Raising farmers' awareness of tea crop insurance is key to tapping into its potential market. First, government agencies should intensify their promotional efforts, providing farmers with comprehensive information about policy measures, coverage benefits, premium contributions, and subsidy ratios. Second, local governments should invite professionals to explain key concepts—such as insurance contracts, claim standards, and liability coverage—using simple, relatable language and real-life case studies. This will help farmers better understand and appreciate the benefits of tea crop insurance. Third, greater emphasis should be placed on educating students and young people about tea crop insurance. As they tend to be more receptive to new ideas, their understanding can help influence older family members and shift traditional mindsets, ultimately enhancing overall willingness to participate in insurance programs.

(2) Encouraging Group Insurance among Tea Farmers

As previously discussed, due to relatively low educational levels, many farmers tend to imitate the behavior of respected peers. If the government or commercial insurers introduce favorable policies—such as discounts or enhanced service quality—to encourage group purchases of tea crop insurance, it can significantly increase participation. When a critical mass of farmers enrolls, others are more likely to follow due to herd behavior, thereby boosting demand. Furthermore, promoting tea crop insurance through collective organizations can reduce marketing and promotion costs for insurance providers.

4. Establishing a Risk Prevention and Early Warning Mechanism for the Tea Planting Industry

Agricultural risks are often characterized by spatial and temporal concentration. When such risks materialize, they can lead to large-scale agricultural catastrophes. Commercial insurance companies alone are often insufficient to effectively disperse these risks. To address this challenge, it is necessary to expand the scope of agricultural risk-sharing—requiring the government to take appropriate measures to establish a comprehensive risk prevention and early warning mechanism for the tea planting industry.

(1) Improving the Agricultural Reinsurance System

China's reinsurance market is currently underdeveloped, which poses a challenge to risk diversification for commercial insurers engaged in agricultural insurance. To address this, the government should take an active role in improving the agricultural reinsurance framework and provide substantial support for reinsurance companies participating in agricultural risk-sharing. Domestic and international reinsurance companies should be encouraged to jointly offer reinsurance services for agricultural insurance, thereby expanding the range of risk diversification, reducing the burden on commercial insurers, and enhancing their underwriting capacity.

(2) Establishing a Tea Crop Catastrophe Risk Fund

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As outlined in the policy design section, the state should act as the ultimate insurer in managing tea crop production risks. When large-scale agricultural disasters cause severe losses in the tea planting industry and commercial insurance companies are temporarily unable to fulfill claim obligations, forcing them to compensate immediately may deplete their reserves and capital, threatening their survival and continued operation. In such circumstances, the government must step in as the ultimate insurer. To prepare for such scenarios, a Tea Crop Catastrophe Risk Fund should be established, drawing from government allocations, insurance company contributions, and market-based fundraising efforts. This dedicated fund should be created at the national level, coordinated and supported by government leadership.

The above analysis outlines the necessary supporting conditions for an effective cooperation model between supply and demand stakeholders in tea crop insurance. These conditions include:

- Enhancing relevant legal and regulatory frameworks;
- Improving the information feedback system within the tea planting industry;
- Cultivating new types of insurance participants;
- Establishing a robust risk prevention and early warning mechanism for tea crop production.

2.10 Research on the influence of government support on purchase behavior

1. Research on the influence of government support on purchase intention

During field interviews with corn farmers, survey results underscored the pivotal role of government financial subsidies in farmers' decisions to invest in agricultural insurance. The farmers demonstrated latent demand for price insurance, income insurance, and index insurance, expressing a willingness to invest in agricultural insurance with higher security levels (Wang & Liu, 2020). Factors such as income levels and risk awareness intensity to some extent influence the demand for agricultural insurance, with age, gender, and other variables closely intertwined (Ernest & Molua, 2011).

As the risk coverage and premium subsidies for agricultural insurance improve, farmers' initiative and enthusiasm for purchasing agricultural insurance are expected to rise correspondingly (Smith & Glauber, 2012). In-depth analysis of farmers' adoption of federal crop insurance reveals a significant positive impact of government subsidy policies on insurance uptake, with most farmers purchasing insurance for the subsidies rather than purely risk aversion motives (Calvin, 2016).

Farmers' risk attitudes significantly influence their inclination to insure. Risk-averse individuals may not perceive insurance as the optimal protection against production risks,

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while those inclined toward risk-taking are more amenable to insurance (Moschini & Hennessy, 2001). A study on the demand for agricultural insurance in the United States indicated that as farmers' income levels improve, their ability to manage risks increases, leading to a decrease in their willingness to purchase agricultural insurance (Serra & Goodwin, 2003).

Increasing government premium subsidies proves to be a potent stimulus for encouraging farmer participation in agricultural insurance, subsequently elevating the overall participation rate (Babcock, 1996). Empirical research, drawing on survey data from forest farmers in Fujian Province, demonstrates that elevating the government's premium subsidy proportion positively correlates with increased farmer willingness to engage in insurance (Li, 2007). An analysis of 357 cotton farmers in the Manas River Basin of Xinjiang highlights that a government premium subsidy ratio exceeding 50% results in a cotton insurance coverage rate of approximately 90% (Ning, 2006).

The level of farmers' trust in the government, coupled with the proportion of government premium subsidies, significantly and positively influences the demand for agricultural insurance (Du, 2011). Notably, an increased government premium subsidy translates to heightened farmer willingness to participate in agricultural insurance (Qiu, 2014; Lin & Liu, 2018; Holly, 2011). Meta-analysis underscores the regulatory impact of premium subsidies on agricultural insurance demand (Feng, 2012).

Furthermore, the level of government subsidy exhibits a significant positive effect on the willingness of family farms to engage in agricultural price index insurance. However, the proportion of price insurance that farmers are amenable to accepting in household investment exhibits a notable negative impact on their inclination to participate in agricultural price index insurance (Wang, 2017).

However, some scholars posit that the promotional effect of premium subsidies on farmers' willingness to engage in insurance is limited. Only a higher subsidy ratio significantly boosts farmers' participation, with the marginal effect of premium subsidies exhibiting a diminishing trend, presenting an "inverted U-shaped" pattern (Zheng, 2020). Effective enhancement of the participation rate or willingness to participate in agricultural insurance necessitates a higher premium subsidy ratio. Utilizing the double boundary bidding experiment (DBDC) method, the influence of premium subsidies on rice farmers' inclination to join insurance was studied based on experimental data from small-scale farmers in Sichuan Province (Zhang, 2018). Results indicate that premium expenditure is not the sole and significant obstacle for farmers to participate in insurance. Farmers' willingness and ability to pay premiums surpass the current levels, and a singular increase in premium subsidies does not substantially augment farmers' willingness or participation rates.

A study on the agricultural insurance needs of farmers in France and Italy highlights that high premium subsidies merely encourage farmers to participate in agricultural insurance (Enjolras, 2014). Given the limited demand elasticity of agricultural insurance, a fairly high premium subsidy rate is essential for a substantial increase in the participation rate (Goodwin, 2001). Research on the agricultural insurance needs of Spanish farmers indicates that a 40% premium subsidy can elevate the participation rate in agricultural insurance to 50% (Garrido and Turvey, 2008). Specifically for corn and rice insurance, the participation rate only reaches 80% when the premium subsidy ratio reaches 100% (Sun and Zhong, 2008).

Factors such as publicity and promotion, government credibility, and government actions significantly influence farmers' willingness to participate in agricultural insurance. A survey on the insurance demand of rice and wheat farmers in Huai'an city, Jiangsu Province, reveals that higher government credibility corresponds to a greater willingness to pay (Sun, 2008). Confirming the significant role of the government in promoting farmers' willingness to participate in insurance and insurance demand, the Logit model, based on survey data from eight provinces and regions in China, underscores the government's impact (Sun and He, 2015). Empirical studies on research data from farmers in Henan Province establish that the intensity of publicity and the level of premium subsidies for agricultural price index insurance have a markedly positive impact on farmers' willingness to participate in agricultural insurance (Hui, 2015).

2. Research on the influence of government support on purchase behavior

Before 1938 faced failure (Kramer, 1983), and agricultural insurance could not operate independently in the private sector. Relying solely on commercial insurance without policy insurance inevitably led to business difficulties (Hewitt & Wright, 1994; Appel & Harrington, 1999). Due to the moral hazard and adverse selection of insured farmers, the operational and management costs of agricultural insurance became excessively high. Consequently, insurance companies increased the premium rates, making it unaffordable for farmers. Without government-provided premium subsidies, insurance companies would incur operating losses or even fail to cover expenditures (Mishra, 1996). Government-provided premium subsidies reduce the cost of farmers purchasing agricultural insurance, enhance the expected marginal net income for farmers purchasing crop insurance, and boost farmers' enthusiasm to participate in insurance (Calvin & Quiggin, 1999; Babcock & Hart, 2000). The primary motivation for farmers participating in federal agricultural insurance is to receive government subsidies rather than being driven by risk aversion (Calvin & Quiggin, 1999). After the implementation of agricultural insurance market policies in the United States and Canada, it was observed that an increase in the government's premium subsidy level significantly enhanced farmers' enthusiasm to participate in insurance, effectively improving the participation rate of agricultural insurance (ClaudiaBur, 2004). Following the examination

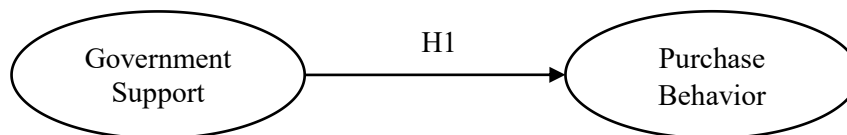
of agricultural insurance practices in developed countries, it is emphasized that the absence of public financial subsidies from the government would render the sustainable operation and development of agricultural insurance unsustainable (Smith & Glauber, 2012).

To balance supply and demand in the agricultural insurance market, the government utilizes policies, laws, financial support (bonded subsidy, tax reduction, reinsurance premium subsidy), and direct intervention (establishment of catastrophe risk funds, government coverage for the bottom). Premium subsidies are the most direct factor affecting the insurance participation decision for the micro subject of agricultural insurance—farmers. Research on government behavior influencing agricultural insurance participation primarily focuses on the impact of premium subsidies on insurance participation decisions, efficiency evaluations of premium subsidies, and policy improvements.

A study on the willingness of 572 small-scale farmers to participate in insurance in Jiangsu Province reveals that premium subsidies and risk aversion significantly influence farmers' participation behavior (Jiang and Li, 2012). Empirical studies, utilizing survey data from thousands of participants across eight provinces and regions in China, indicate that premium subsidies have a significant positive impact on farmers' participation in agricultural insurance (Sun and He, 2015). An examination of survey and experimental data from 690 vegetable farmers in Shaanxi Province, using Probit and hierarchical regression models, explores the effect of government publicity on farmers' participation in “Yinbao fu” greenhouse loss insurance. The results empirically demonstrate that government promotion significantly enhances farmers' participation in agricultural insurance (He and Kong, 2018). Utilizing survey data from 707 apple farmers in two counties in Shaanxi Province, the influence of local government support on farmers' decisions regarding apple insurance is investigated. The empirical research reveals that premium subsidies positively influence farmers' participation in apple insurance, while grassroots propaganda by village cadres has a significant positive effect on participation behavior and frequency (Zhang, 2019). A practical survey on dairy cow insurance and apple insurance in Shaanxi Province suggests that the lack of policy confidence contributes to the insufficient demand for agricultural insurance. It recommends supporting the development of agricultural insurance through increased government policies and financial assistance (Xiu and Jia, 2009). Another study focused on apple insurance in Qixia City points out that the current "insurance company-village cadres-farmers" relay of information dissemination, with village cadres as the main conduit for insurance business, lacks specialization. This informational gap is a crucial factor leading to the low participation rate among farmers (Xie, 2009). The level of government subsidy significantly and positively influences family farms' willingness to participate in agricultural price index insurance. However, the proportion of price insurance that farmers are willing to

accept as part of their household investment significantly and negatively affects their willingness to participate in agricultural price index insurance (Wang, 2017).

In conclusion, this paper posits the following hypotheses:



2.11 Research on the influence of Risk cognition on purchase behavior

1. Research on the influence of Risk cognition on purchase intention

Risk cognition serves as the foundational element in the decision-making process of farmers participating in agricultural insurance, shaping their behaviors and willingness within the framework of perceived risks. It is widely acknowledged that heightened risk awareness correlates with increased agricultural insurance participation, while lower awareness tends to result in farmers' reluctance to engage in insurance (Gao, Liu, Wang, 2017). When farmers subjectively perceive the probability of risks below a certain threshold, they may dismiss these risks, foregoing risk management practices. Conversely, when risk awareness surpasses the threshold, farmers are inclined to opt for agricultural insurance (Liu, Tao, 2016). Additionally, objective risk factors like agricultural disasters or price fluctuations influence farmers' risk cognition, consequently shaping their decisions regarding agricultural insurance participation. For instance, higher disaster frequency tends to increase the likelihood of farmers choosing to participate in agricultural insurance (Jiang, Li, 2012).

The positive impact of risk awareness on farmers' participation behavior is underscored in research findings (Cheng, Liu, Tao, 2018). Elevated risk awareness serves as the bedrock for farmers' engagement in agricultural insurance, facilitating increased participation (Gao, Liu, Wang, 2017). However, divergent opinions exist, with some scholars contending that the ubiquity and varying magnitudes of agricultural disasters minimally impact production, rendering risk awareness inconsequential to farmers' participation behavior (Liu, 2016; Zhou, 2015).

Regarding the influence of insurance cognition, scholars generally posit a positive correlation between the two. Insurance cognition forms the basis for farmers' consumption demand for insurance. A comprehensive understanding of insurance products alleviates doubts, dispels misunderstandings, and reduces skepticism, fostering increased demand for agricultural insurance (Chao, Yang, 2017; Zhang, Zhan, Chen, 2017; Sun, 2008).

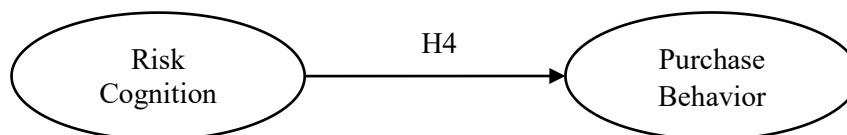
The future surge in agricultural insurance demand is anticipated to be driven predominantly by the heightened awareness of farmers. True comprehension of insurance principles, mechanisms, and operational processes is pivotal for transforming farmers' insurance demand (Chao, Yang, 2017). A profound and objective understanding of insurance diminishes doubts, misunderstandings, and biases, particularly when routine measures prove insufficient in averting risks, thereby intensifying the demand for insurance (Zhang, Zhan, C. Chen, 2017).

In an empirical analysis employing an orderly Logistic model to examine broiler farmers' risk cognition and insurance cognition's influence on insurance purchase intention, the study underscores an interaction effect. The enhancement of farmers' risk awareness amplifies the effect on insurance purchase intention as insurance awareness improves (Wang, He, 2020).

2. Research on the influence of Risk cognition on purchase behavior

Agricultural production grapples with inherent natural and market risks, showcasing their severity and intricate nature. Consequently, mitigating these risks holds paramount importance for the well-being of the populace. This serves a dual purpose: firstly, it smoothens the fluctuations in agricultural income, ensuring stability in farmers' production; secondly, it curtails opportunity costs and streamlines post-disaster relief efforts by the government (Ajzen, 1991). The overarching objective of risk management is defined as benefit maximization, with agricultural insurance emerging as a pivotal and impactful measure in this regard (Zhang, 1997). Encouraging farmers to participate in insured agricultural insurance is suggested as an effective means of addressing the risks associated with agricultural operations (Wang, 2007). However, the decision-making process for agricultural insurance participation is intricately linked to farmers' risk cognition. According to some scholars, farmers' insurance behavior is fundamentally rooted in risk cognition, asserting that higher levels of risk awareness significantly promote farmers' engagement in agricultural insurance (Hazell, Pomareda, 1986). Risk cognition forms the bedrock of effective insurance demand, influencing the selection of insurance types and coverage amounts based on varying levels of insurance cognition (Karl Borch, 1999). Acknowledging the unavoidable reality that agriculture contends with the dual constraints of natural and market risks, it becomes imperative to dissect risk cognition into natural risk cognition and market risk cognition, examining their distinct impacts on farmers' participation in insurance behavior.

In conclusion, this paper posits the following hypotheses:

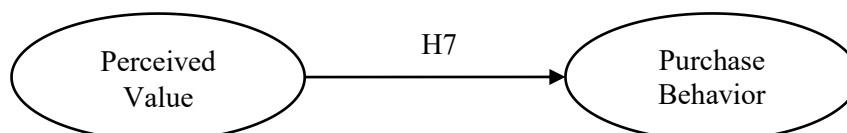


2.12 Research on the influence of Perceived value on purchasing behavior

The discrepancy between anticipated and actual service attributes can result in negative utility, potentially diminishing the family's perceived value of the project and subsequently reducing the willingness to pay (Prasenjit, 2016). Perceived quality, perceived value, and farmers' attitudes toward crop insurance exert the most significant impact on farmers' satisfaction. Further studies affirm that customer satisfaction stands as the predominant factor influencing farmers' decisions to purchase insurance (Yazdanpanah, 2013). Exploring factors affecting farmers' acceptance of new crop varieties, a probit model with 341 samples reveals that farm location, land area, and the perceived value of farm dealers play pivotal roles in farmers' choices of new crop varieties (Han, 2012). The perceived risk substantially amplifies farmers' marginal willingness to pay for forest contracts, with an extension of the waiting time for forest cutting rights diminishing farmers' perceived value of the contracts (Carlsson, 2011).

Drawing on the theory of perceived value and the practicalities of suburban farmers' farmland input behavior, a structural equation model of farmers' farmland input behavior decision is devised. This model unveils that farmers' cognition of farmland value exerts both direct and indirect effects on their willingness and behavior to input into land (Ren, 2018). Analyzing data from farmers in Shandong, Hubei, and Sichuan provinces, a study differentiates farmers' lock purchase behavior in different areas and the same lock-in purchase behavior. The findings underscore that brand cognition value and retail store cognition image directly influence purchase behavior. Social norms of brand perceived value positively regulate brand lock purchase behavior (Sun, 2018).

In conclusion, this paper posits the following hypotheses:



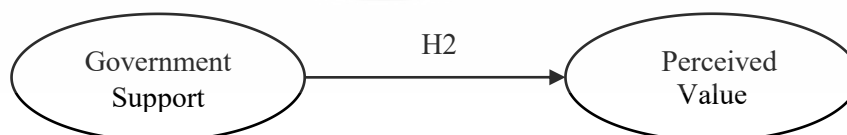
2.13 Research on the influence of Government support on perceived value

As the visible hand in the development of a market economy, the government plays a crucial role in replacing, expanding, or supplementing the imperfect market. It provides various forms of support to mitigate the adverse effects arising from imperfections in the market system during economic transformations (Anni H, 2010). An examination of planning behavior theory, government regulation, and other frameworks indicates that government support also influences farmers' insurance purchase behavior by shaping their personal cognition of value (MaY, 2021).

Perceived value is the comparison of consumers' expectations of government services with the objectively received services (Gronroos, 1988). When service expectations align with the actual perceived service, it reflects a standard service; if service expectations are lower than the actual service cognition, it signifies high service quality; if service expectations exceed the actual perceived service (Parasuraman, Zeithaml, Berry, 1996). When the government places greater emphasis on public sentiments during the provision of support and endeavors to enhance public satisfaction, public perceived value and trust in government support subsequently increase (He, 2019).

Government support for cultural and creative industries in the financial sector can effectively enhance the market competitiveness of these industries. Preferential financial services, such as loans and credit, can more efficiently stimulate innovation in cultural and creative industries and elevate awareness of perceived value (Lin, 2022). The quality of the government's business management and information services can significantly enhance public awareness of value, establishing a notable positive relationship with the public's willingness to continue using these services (Zhang, 2018). Moore introduced the concept of public value, asserting that public administration should fulfill citizens' needs and subsequently create public value (Moore, 2000).

In conclusion, this paper posits the following hypotheses:



2.14 Research on the influence of Risk cognition on perceived value

When examining the impact of consumer risk cognition on the adoption attitude of the O2O model, it is emphasized that within the luxury market, risk cognition significantly

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exerts a negative influence on acceptance attitudes (Qiu, 2015). Both the government and enterprises should strive to minimize consumers' awareness of risks, enabling them to enjoy a worry-free experience in the pre-sale, sale, and after-sale phases, thereby enhancing their perceived value (Zhao, Wang, 2019). Offering service guarantees can effectively mitigate customers' perceived risks, enhance their confidence in service quality, improve their overall evaluation of the enterprise, and stimulate their purchase intentions. Consumer concerns about potential payment risks in online shopping persist (Chen, 2022). Despite advancements in online payment methods, some consumers still harbor apprehensions about information leakage or fraud during the payment process. Perceived risks associated with mobile phone usage have a negative impact on perceived value (Snoj, Korda, Mumel, 2004). Relevant authorities should enhance existing laws, regulations, and authoritative standards to comprehensively safeguard the rights and interests of both merchants and consumers, thereby reducing perceived risks. Simultaneously, efforts should be made to continually enrich online shopping product information, enhancing consumer perceived value by improving the accuracy and authenticity of product details (Chen, 2022). The data collected from South Africa, Sweden, and the USA support the hypothesis that there is a connection between motivational values and risk cognition dimensions (Nordenstedt, Ivanisevic, 2010).

In conclusion, this paper posits the following hypotheses:



2.15 Research on the mediating influence of environmental concern

Environmental concerns represent the overall attitude of consumers towards protecting the environment (Weis, Angt, Jancenelle, 2018). It plays a central role in pro-environmental consumer behavior and is considered to be one of the factors influencing the adoption of sustainable consumer lifestyles (Newton, Tsarenko, Ferraroc, 2015). Studies have demonstrated the impact of environmental concerns on purchase intentions in the context of green energy brands (Hartmann, Apaolaza Ibanez, 2012). Environmental attention has a positive impact on the preference of environmental attributes, while environmental attribute preference also has a positive impact on green consumption behavior (Du, Ma, 2017). Environmental concern is a key driver of the intention to buy environmentally friendly food (Liu, 2019), as consumers with environmental concerns prefer to buy products that have less impact on environmental damage (Taufique Kmr,Polonsky, Vocino, 2019). In addition, the

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Covid-19 pandemic has raised consumer sensitivity to more sustainable and environmentally friendly consumer behavior (Qix, Ploeger, Ancelika, 2019). Scholars have begun to study how consumer environmental sensitivity increases consumers' intention to buy environmentally friendly foods (Cahero-Martinez, 2020; Tandon, Dhira, Kaurp, 2020).

Environmental concerns positively influenced the relationship between green perceived risk and purchasing low-carbon consumption behavior. That is, environmental concerns play a mediating role between risk perception and purchasing behavior. Based on the above theoretical analysis, research believe that risk cognition has a certain impact on consumption behavior, while perceived value has a positive impact on consumption behavior.

2.16 Research on the influence of environmental concern on Purchase Behavior

Environmental concerns refer to the consumer assessment of the environmental outcomes (Hansla, Gamble, Juliusson; Tommy Garling, 2008). Previous studies have shown that environmental concerns play an important role for consumers in making their purchasing decisions for green products. According to Aguilar. (Aguilar, Vlosky, 2007), consumers who focus on environmental certification and believe that environmental certification can mitigate the environmental impact (such as the production and consumption of wood products on the tropical rainforest) are willing to pay a premium for environmentally certified products, especially those in the United States. Hansla The research suggests that consumers who focus on environmental issues and have higher awareness will have a more positive attitude towards buying green products (Hansla, Gamble, Juliusson , Tommy Garling, 2008). It is worth noting that his research found that environmental concern is consumers' intention to buy green products through attitude, namely, that is, confirmed that attitude plays a completely intermediary role in the relationship between environmental concern and purchase intention. It can be seen that if consumers show high concern for environmental issues, they will adopt more environmentally friendly standards to evaluate and select products, so they may give more positive evaluation of low-carbon certified home appliances and drive their purchase behavior.

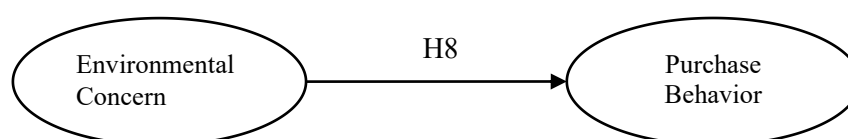
Consumers' environmental concern can be explained as "the degree to which consumers are concerned about environmental problems and support efforts to solve them", for instance by purchasing green or sustainable products (Dunlap and Jones, 2002). According to Yue (2020), environmental concern can be divided into two categories, such as environmental concern for (1) specific environmental issues (e.g., soil pollution) and (2) comprehensive and universal (e.g., variety of different environmental issues). In this study, we adopted the latter definition, as a full and universal perspective of environmental issues.

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Existing literature suggests that environmental concern is a major factor that affects consumers' decision-making process towards sustainable products (Diamantopoulos, 2003; Sharma and Foropon, 2019). In fact, environmental concern is often considered as an important predictor of consumers' environmentally-friendly behavior and directly impacts purchase intention (Bamberg, 2003; Hartmann, 2012; Felix, 2018; Pagiaslis and Krontalis, 2014; Santos, 2021; Siraj, 2022; White and Simpson, 2013; Yue, 2020; Rausch and Kopplin, 2021). Testa (2020) indicated that environmental concern might positively influence the purchase of sustainable packaging as green consumers actively search for environmental information. Park and Lin (2020) found that environmental concern has a positive impact on the intention to purchase recycled and upcycled fashion products. Similarly, Rausch and Kopplin (2021) found that environmental concern can positively impact both attitude and purchase intention for sustainable clothes. According to the argument above, we formulated the following hypothesis:

Marketing literature also suggests that consumer intention to purchase a product is affected by the product price. In this regard, consumers who are concerned about the environment might not necessarily buy green or sustainable products (Yue et al., 2020). In fact, consumers who claim to be concerned about the environment might still not adopt pro-environmental behavior during the purchase, due to the higher price of green products compared to traditional products (Malik, 2017; Yue, 2020). Thus, it is important to study whether a price increment can affect consumers' purchase behavior for sustainable products (Lichtenstein, 1993; Stall-Meadows and Davey, 2013). As environmental concern is an antecedent of attitude, people who value environment issues tend to evaluate environmental consequences related to the purchase of a product (e.g., less harmful to the environment) (Santos, 2021; Siraj, 2022). If these consequences are significant enough for consumers, then they might be willing to pay a higher price for this product. For instance, Notaro and Paletto (2021) investigated the WTP of Italian consumers for different bio-textile garments (shirt, socks and T-shirt) made from certified wood. Authors found that consumers with higher environmental concern were willing to pay a premium price – between 64 % to 128 % of the initial price – for these products. Based on the aforementioned considerations, we formulated the following hypothesis:



2.17 Conceptual Framework Diagram

From the analysis of the literature review, and the consultation of the concepts, theories, and models regarding the relationship between variables, the following conceptual framework was developed.

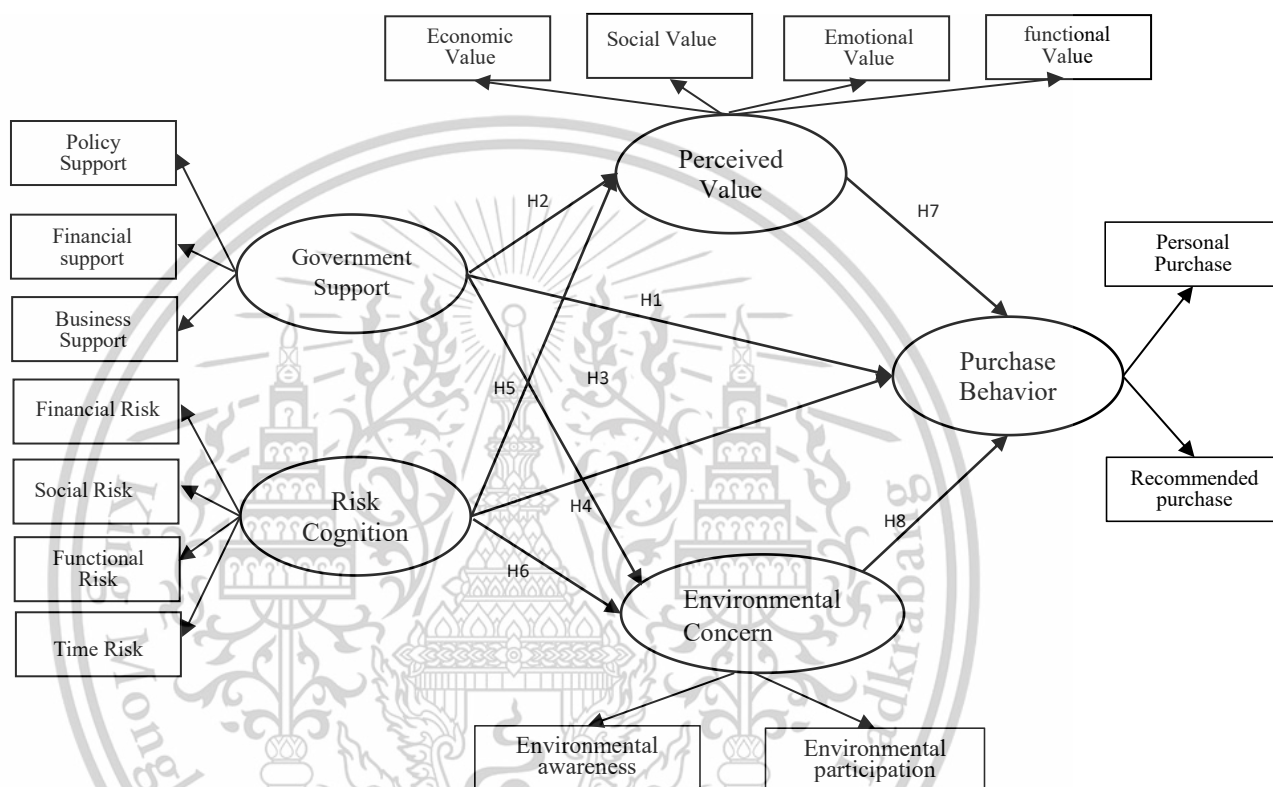


Figure 2.13: Conceptual Framework of the study

The conceptual framework above shows that the dependent variable is Purchase Behavior. In contrast, the independent variables include Government support and Risk cognition. And intervening variables include Perceived Value and environmental concern. From the above conceptual framework, the following hypothesis was developed.

H1: Government support has a positive impact on tea planters' planting insurance purchasing behavior.

H2: Government support has a positive impact on the perceived value of tea planters.

H3: Government support has a positive impact on tea planters' environmental concern.

H4: Risk cognition has a positive impact on tea planters' planting insurance purchasing behavior.

H5: Risk cognition has a positive impact on the perceived value of tea planters.

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H6: Risk cognition has a positive impact on tea planters' environmental concern.

H7: Perceived value has a positive impact on tea planters' planting insurance purchasing behavior.

H8: Environmental concern has a positive impact on tea planters' planting insurance purchasing behavior.

H9: Perceived value plays a mediating role in the impact of government support on tea planters' planting insurance purchasing behavior.

H10: Perceived value plays a mediating role in the impact of risk cognition on tea planters' planting insurance purchasing behavior.

H11: Environmental concern plays a mediating role in the impact of government support on tea planters' planting insurance purchasing behavior.

H12: Environmental concern plays a mediating role in the impact of risk cognition on tea planters' planting insurance purchasing behavior.

H13: Perceived value has a positive impact on tea planters' environmental concern.



CHAPTER 3

RESEARCH METHODOLOGY

3.1 Research Design

This article is focused on enhancing tea planters' intent to purchase planting insurance and investigates the influence of government support, risk cognition and perceived value on tea planters' purchase behavior regarding planting insurance. Firstly, by integrating existing theories, expert consultations, and surveys, the core concepts of agricultural government support and perceived value are defined. A theoretical framework is constructed, incorporating theories such as insurance demand, cognitive behavior, planned behavior, government support, and agricultural insurance function. Guided by these theories, the paper analyzes the mechanisms and pathways through which government support and perceived value impact farmers' willingness and behavior in participating in insurance, creating a comprehensive theoretical analysis framework.

Next, data is collected, organized, and analyzed, refining the characteristics of core variables. Descriptive analysis is conducted on farmers' willingness and behavior to purchase planting insurance, and key influencing factors – government support and perceived value – are measured, analyzed, and refined.

Subsequently, an in-depth analysis is carried out to assess the degree and pathway of influence of government support and perceived value on farmers' planting insurance purchases. Econometric models, including linear regression and mediation effect tests, are employed to examine their impact on environmental concern and behavior. The mediation effect model is used to evaluate the role of perceived value in mediating the impact of government support on environmental concern and behavior.

Finally, the article presents countermeasures and suggestions. Building on the theoretical analysis and empirical findings, it proposes policy recommendations for enhancing the government support mechanism and improving farmers' perceived value of planting insurance. This study provides a theoretical and empirical basis for policy formulation and improvement, aiming to boost farmers' engagement in agricultural insurance and enhance the effectiveness of their participation.

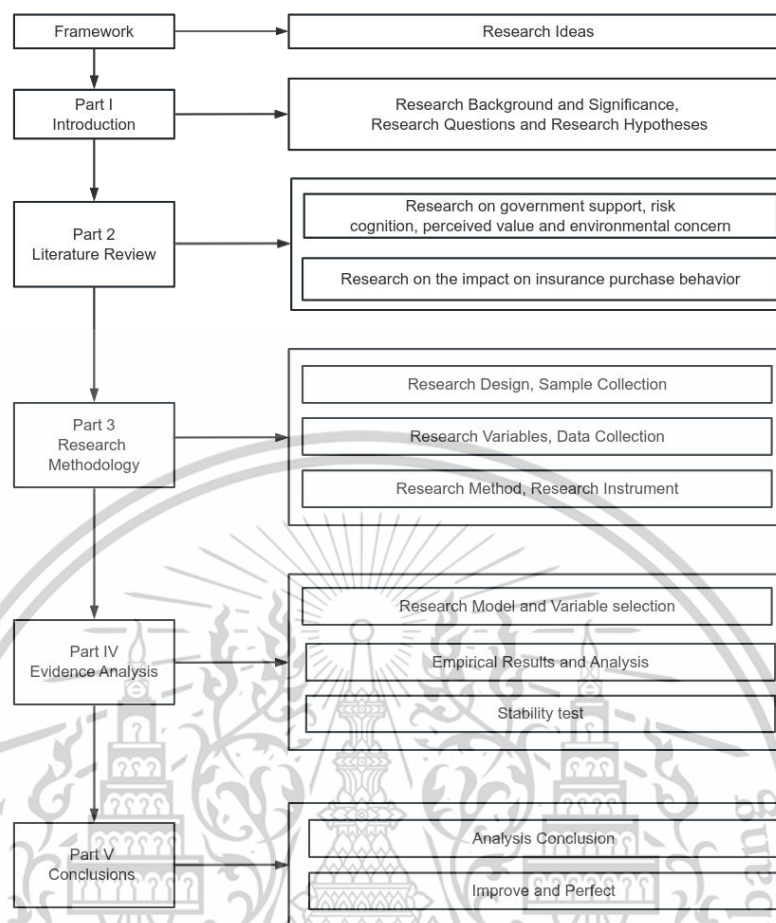


Figure 3.1: Process of Research Methodology

3.2 Variables in the Research

After conducting, analyzing and studying relevant theories, literature reviews and concepts, this study created potential and observable variables as presented below.

3.2.1 Exogenous latent variables

1. Government support: it consists of 3 observation variables

-Policy support

-Financial support

-Business support

2. Risk cognition: it consists of 4 observation variables

-Financial risk cognition

-Social risk cognition

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- Functional risk cognition
- Time risk cognition

3.2.2 Intermediary variables

1. Perceived value: it consists of 4 observation variables

- Economic value
- Social value
- Emotional value
- Function value

2.Environmental concern : it consists of 2 observation variable

- Environmental awareness
- Environmental participation

3.2.3 The endogenous latent variables

1. Purchase behavior: it consists of 2 observation variable

- Personal purchase
- Reconmended purchase

3.3 Population and sample

3.3.1 Population

The study encompassed approximately 5,800 tea planters, all of whom were members of the Guizhou Tea Association (Guizhou Tea Association, 2022). To ensure optimal collection of relevant data on tea planters' purchasing behavior regarding planting insurance, the selection of the research area adhered to specific criteria. Firstly, the research scope focused on the primary tea planting regions. Secondly, the survey area had a well-established history of agricultural insurance development. Taking into account the tea planting scenario in Guizhou (with a stable tea garden area exceeding 7 million mu, tea production reaching 454,000 tons, and a tea output value of 60.62 billion yuan by the end of 2022, as reported by the Guizhou Tea Association, 2022), this study specifically targeted representative tea farmers in tea-producing counties of Guizhou province. A representative sample was drawn from this population to collect data related to government support, risk cognition, perceived value, and environmental concern and behavior regarding insurance purchases.

3.3.2 Sample and Sampling Design and Technique

This research primarily explored the factors influencing the purchasing behavior of planting insurance among tea planters in Guizhou Province, China. The study focused on tea planters who are members of the Guizhou Tea Association. The sampling design employed a random sample approach to ensure a representative selection from the population. The use of probability sampling aimed to create a sample that accurately reflects the population, providing each subject in the population an equal chance of inclusion in the study sample. Random samples are known for closely representing the population, allowing for the determination of the accuracy probability for a given sample (Henry, 2009). In terms of the sampling technique, a stratified random sampling approach was adopted for this study.

The steps are as follows:

Guizhou Province, one of China's major tea-producing regions, was selected as the study area due to its significant role in national tea cultivation and production. Notably, Guizhou's tea production accounts for 25% of the national total, underscoring its critical importance within the sector. According to the total number of 5,800 tea planters in Guizhou Province, and according to the regional distribution of tea planters, the sample size was selected for the tea planters in 10 cities and prefectures of Guizhou Province. Although Hair et al. (2011) considered 5 respondents per variable as cutoff, the ratio of 20:1 is the most appropriate method (20 samples per variable) (Peng & Lai, 2012). Considering the 5 variables in this study totaling 15 survey items, 300 were determined as the appropriate sample size (15 X 20 survey items).

A structured questionnaire survey was used to obtain the main data of this study. Some analyses, including correlation and descriptive statistics, to examine the relationship between the variables. The main analysis of this study, SEM will help to assess the relationship between latent variables, observed variables, and how these variables influence the purchasing behavior of implant insurance.

3.4 Research Method

3.4.1 Literature Review Method

The methodology for the literature review entails a systematic exploration and analysis of the research subject through the gathering, evaluation, and organization of scholarly articles. This study compiles a comprehensive set of both domestic and international literature that addresses the nexus between agricultural insurance for crop cultivation and the perceived value's impact on the willingness to take out insurance. This compilation serves as the foundational framework for subsequent investigation and discourse, helping to identify

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the research trajectory and theoretical underpinnings. Furthermore, it offers robust and credible evidence to support forthcoming research hypotheses and model development.

3.4.2 Questionnaire Survey Method

This study garners a wealth of primary data through extensive field research, thereby furnishing robust empirical support for the accomplishment of our research objectives. Regarding the survey instrument, it is meticulously designed in alignment with the study's aims. The questionnaire draws inspiration from the Ministry of Agriculture's "Analysis of Agricultural Insurance Market Demand" as well as relevant scholarly literature from both domestic and international sources. Preliminary fieldwork was undertaken in the key tea-cultivating regions of Guizhou Province to test the survey and interview frameworks. Subsequent refinements were made to address any identified issues, thereby ensuring the reliability and validity of the data collection tools.

3.4.3 Empirical Analysis Method

The empirical analysis method in this study is grounded in contemporary social and academic contexts and utilizes real-world data for its evaluations. The research primarily employs SPSS software for tasks such as descriptive statistics, as well as reliability and validity assessments. Additionally, the study utilizes AMOS to construct a Structural Equation Modeling (SEM) framework. This is followed by fit and path analyses to scrutinize the model's integrity. Furthermore, mediation effect analyses are conducted to rigorously validate the research model and hypotheses posited in this article.

3.5 Research Instrument

This study collects relevant data by issuing questionnaires to further test the validity of the data and finally verify the relationship between variables.

1. The research questionnaire was developed based on previous literature, theories, and studies conducted in a comparable or most appropriate setting.
2. The relationships between endogenous, exogenous, intermediary and observable variables are the result of the model, theory and concept development tested.
3. The questionnaire used to collect the data followed the suggested format. We assess the reliability and validity of the questionnaire and to determine the item-objective consistency (IOC) of the questionnaire. These questions will need improvement in order to meet objectives and research questions. (Tomprast, 2014).

4. Questionnaire / tools use Chinese to collect data sets, because Chinese is the official language of China, all tea planters in Guizhou province use Chinese for communication. At the same time, the questionnaire was translated in English, and the experts from China and Thailand were invited to revise it.

5. The internal consistency or reliability of the data collected. This test is used when providing Likert-like questions for investigation. The purpose of this study was to determine the reliability and consistency of this scale.

3.5.1 Structure of the questionnaire and tools

The questionnaire was the research tool used in this study. The questionnaire was constructed from the literature, concepts, theories, and models of the research questions and previous studies. These questions were designed to assess all variables in the study, including government support, risk cognition, perceived value, environment concern, and purchase behavior.

The questionnaire is divided into four parts:

Part 1: Demographic Data -- In this section, personal information about the respondents was collected, including their age, gender, level of education received, scale of tea planting, years of tea planting, and current residence. This was done to capture the demographic details of the respondents.

Part 2: Potential Variable Problems -- The issues in this section assess the association between the latent variables. This section is constructed using the above literature as guidance.

Part 3: Questionnaire survey example -- To on the influence of tea farmers in Guizhou Province.

Example of a questionnaire:

Part 3: 3.1 Government Support

Item measurements used in the questionnaire with questions about government support was constructed with references to several scholars, including(Khan, Khan & Sheikh, 2022; Singh, Singh & Singh,2021; Liu & Bruce Lee, 2022; Wang & Zhang, 2021; Zhang & Li ,2020).

Below is a sample questionnaire linked to government support.

Instructions: To respond to each of the following questions, please check the box (✓) next to the statement that best expresses your viewpoint. The scale is divided into the following five levels:

Table 3.1. Questions on government support

The variable government support can promote the purchase of planting insurance through policy support, economic support and business support.

Question	Source	Least →Most				
		1	2	3	4	5
Policy Support	Khan, Khan & Sheikh, 2022; Singh, Singh, & Singh, 2021; Liu & Bruce Lee, 2022; Wang & Zhang, 2021; Zhang & Li, 2020					
I understand the government's policy support for planting insurance.						
I think the government's policy support for planting insurance is effective.						
The government's policy support for planting insurance has an impact on my willingness to buy planting insurance.						
Economic Support						
I understand the government's economic subsidy policy for planting insurance.						
I think the government's economic subsidies for planting insurance is sufficient.						
The government's economic subsidy policy for planting insurance has an impact on my willingness to buy planting insurance.						
Business Support						
I understand the government's business support policies for planting insurance.						
I think the government's business support policy for planting insurance is effective.						
The government's business support policy for planting insurance has an impact on my purchase of planting insurance.						

Part 3: 3.2 Risk Cognition

Item measurements used in the questionnaire with questions about risk cognition was constructed with references to several scholars, including(Shawn Flanagan & Michael Ashby, 2022; Andrew Hall, David, Thomson, 2021; John Antle, Matthew Bell, 2020; Liu & Bruce Lee,2022; Li & Chen,2021; Zhang & Li, 2020).

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Table 3.2. Questions on risk cognition

The variable risk cognition can promote the purchase of planting insurance through financial risk, social risk, functional risk and time risk.

Question	Source	Least →Most				
		1	2	3	4	5
Financial Risk	Shawn Flanagan					
I have a good understanding of the financial risks (premiums, claims amount, etc.) of planting insurance.	& Michael Ashby, 2022; Andrew Hall,					
I think the financial risks of planting insurance (premium, claim amount, etc.) are acceptable.	David Thomson, 2021;					
I think the financial risks of planting insurance (premiums, claims, etc.) will have an impact on my income.	John Antle, Matthew Bell, 2020; Liu &					
Social Risk	Bruce Lee,					
I have a good understanding of the social risks (policy changes, market fluctuations, etc.) of planting insurance.	2022; Li & Chen,2021;					
I think the social risks of planting insurance (policy changes, market fluctuations, etc.) will have an impact on my planting production.	Zhang & Li, 2020; Peters & Slovic, 2006					
I think the social risks of planting insurance (policy changes, market fluctuations, etc.) will affect whether I buy planting insurance.						
Functional Risk						
I have a full understanding of the functional risks (insurance coverage, claim settlement process, etc.) of planting insurance.						
I think the functional risks of planting insurance (insurance coverage, claim settlement process, etc.) are reasonable.						
I think the functional risks of planting insurance (insurance coverage, claim settlement process, etc.) will affect whether I buy planting insurance.						

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Table 3.2(continue)

The variable risk cognition can promote the purchase of planting insurance through financial risk、 social risk、 functional risk and time risk.

Question	Source	Least →Most				
		1	2	3	4	5
Time Risk						
I have good aware of the time of planting insurance.						
I think the settlement time for planting insurance is reasonable.						
I think the time of the settlement of planting insurance will affect whether I buy planting insurance.						

Part 3: 3.3 Perceived Value

Item measurements used in the questionnaire with questions about perceived value was constructed with references to several scholars, including(Shawn Flanagan & Michael Ashby, 2022; Andrew Hall, David Thomson, Mark Swinbank, 2021; John Antle, Matthew E. Bell, 2020; Liu and Bruce Lee, 2022; Li & Chen, 2021; Zhang and Li, 2020).

Table 3.3. Questions on perceived value

The variable perceived value can promote the purchase of planting insurance through economic value、 social value、 emotonal value and functional value.

Question	Source	Least →Most				
		1	2	3	4	5
Economic Value	Shawn Flanagan &					
Planting insurance can help farmers reduce their risk and losses.	Michael Ashby, 2022; Andrew Hall,					
Planting insurance can help farmers raise their incomes.	David Thomson, Mark Swinbank,					
Planting insurance can help farmers reduce their financial pressure.	2021; John Antle, Matthew E. Bell, 2020;					

Table 3.3(continue)

The variable perceived value can promote the purchase of planting insurance through economic value, social value, emotional value and functional value.

Question	Source	Least →Most				
		1	2	3	4	5
Social Value	Liu and Bruce Lee, 2022; Li & Chen, 2021; Zhang and Li, 2020.					
Planting insurance can help farmers improve their social status.						
Planting insurance can help farmers increase their resilience to risks.						
Planting insurance can help farmers to promote agricultural production development.						
Emotional Value						
Planting insurance can bring farmers a sense of peace of mind.						
Planting insurance can bring happiness to farmers.						
Planting insurance can give farmers a sense of hope.						
Functional Value						
The coverage of planting insurance meets the needs of farmers.						
The claim settlement process of planting insurance is convenient.						
The premium for planting insurance is reasonable						

Part 3: 3.4 Environmental Concern

Item measurements used in the questionnaire with questions about environmental concern was constructed with references to several scholars, including(Shawn Flanagan & Michael Ashby & Michael Boland, 2022; Andrew Hall & David Thomson, 2021; Robert Heiman, 2020; Zhang, 2022; Bockarjova and Steg, 2014; Demski, 2017; Krosnick, 2016; Lee, 2015).

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Table 3.4. Questions on environmental concern

The variable environmental concern can promote the purchase of planting insurance through environmental awareness and environmental participation.

Question	Source	Least →Most				
		1	2	3	4	5
Environmental Awareness	Shawn Flanagan					
Environmental protection is more important than economic benefits in tea planting.	& Michael Ashby					
You think you have some responsibility for the environmental protection in tea cultivation	& Michael Boland, 2022;					
In your opinion, the environmental problems in tea planting have a certain seriousness	Andrew Hall & David Thomson, 2021; Robert Heiman, 2020;					
Environmental Participation	Zhang, 2022;					
Tea cultivation can alleviate environmental problems	Bockarjova and Steg, 2014;					
Tea cultivation can represent a deep participation in environmental protection	Demski, 2017; Krosnick, 2016;					
Tea planting is an experience of social responsibility for environmental protection behavior.	Lee, 2015					

Part 3: 3.5 Purchase Behavior

Item measurements used in the questionnaire with questions about purchase behavior was constructed with references to several scholars, including(Shawn Flanagan, Michael, Ashby, Michael Boland, 2022; Andrew Hall, David Thomson, 2021; John Antle, Matthew Bell, 2020; Liu and Bruce Lee, 2022; Li, Chen, Sun, 2021; Zhang, Li, 2020).

Through Table 3.5, we can see the survey items for the variable of purchase behavior.

3.5.2 Scale development

Research questions and the conceptual framework were all considered when developing the questionnaire. Items developed for each observed variable were also informed by the literature review.

The table 3.6 shows the scale development of the latent and observed variables.

Table 3.5. Questions on purchase behavior

The variable purchase behavior can promote the purchase of planting insurance through personal purchase and recommended purchase.

Question	Source	Least →Most				
		1	2	3	4	5
Personal Purchase	Shawn Flanagan,					
I usually buy my own planting insurance	Michael, Ashby,					
I will choose the planting insurance according to my own needs	Michael Boland, 2022; Andrew Hall,					
I think planting insurance is a necessary guarantee for my own tea planting	David Thomson, 2021; John Antle,					
Recommended Purchase	Matthew Bell,					
I would recommend planting insurance to others	2020; Liu and Bruce Lee, 2022;					
I think that planting insurance is a beneficial financial product for planting	Li, Chen, Sun, 2021; Zhang, Li,					
I think planting insurance can help farmers reduce their risk	2020					

Table 3.6. Scale development table

Latent Variables	Observed Variables	Development of Research Variables	Number of Questions
Government Support	-policy support - economic support - business support	Khan, Khan & Sheikh, 2022; Singh, Singh, & Singh, 2021; Liu & Bruce Lee, 2022; Wang & Zhang, 2021; Zhang & Li, 2020	9
Risk Cognition	-financial risk -social risk -functional risk -time risk	Shawn Flanagan & Michael Ashby, 2022; Andrew Hall, David Thomson, 2021; John Antle, Matthew Bell, 2020; Liu & Bruce Lee, 2022; Li & Chen, 2021; Zhang & Li, 2020; Peters & Slovic, 2006	12

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Table 3.6(continue)

Latent Variables	Observed Variables	Development of Research Variables	Number of Questions
Perceived Value	-economic value -social value -emotional value -functional value	Shawn Flanagan & Michael Ashby, 2022; Andrew Hall, David Thomson, Mark Swinbank, 2021; John Antle, Matthew E. Bell, 2020; Liu and Bruce Lee, 2022; Li & Chen, 2021; Zhang and Li, 2020.	12
Environmental Concern	-environmental awareness -environmental participation	Shawn Flanagan & Michael Ashby & Michael Boland, 2022; Andrew Hall & David Thomson, 2021; Robert Heiman, 2020; Zhang, 2022; Bockarjova and Steg, 2014; Demski, 2017; Krosnick, 2016; Lee, 2015	6
Purchase Behavior	-personal purchase -recommended purchase	Shawn Flanagan, Michael Ashby, Michael Boland, 2022; Andrew Hall, David Thomson, 2021; John Antle, Matthew Bell, 2020; Liu and Bruce Lee, 2022; Li, Chen, Sun, 2021; Zhang, Li, 2020	6

Analytical data were collected from the questions, scoring each answer using a Likert scale. These surveys were based on previous studies and the opinions of other scholars. In the Likert scale, the 5-point scale contains the following components:

- “5” --strongly agree
- “4” --Consent
- “3” --Neutral (neither agree nor disagree)
- “2” -- Dissent
- “1” --strongly disagree

These problem sets were designated as being excluded. Therefore, the obtained integrals are organized in a different way than those mentioned above. The generation and use of course intervals was used to understand the high scale as follows.

Class interval = (maximum-minimum) / (number of classes) = (5-1) / 5=0.80 The distance between them is calculated as 0.80, and this value is used to establish the evaluation criteria shown in the table below.

3.5.3 Quality of Instruments

It was crucial to assess whether the data collection instrument utilized for the research met quality standards. The validity and reliability of the instruments were assessed to ensure that they met the quality requirement, as is explained in the following sections.

Validity of the Instruments:

The Item of Congruence was utilized to assess the validity of the instruments. A group of three experts-academics and industry professionals who expertise of consumer behavior to assess the questions' appropriateness and the significance of any needed improvements. The instrument calculation between each question and variables was done in addition to this evaluation. The questions, which had greater than 0.5 were considered appropriate. The calculation method is shown below.

$$IOC = \frac{\sum R}{N}$$

Where:

R = Congruence value of each Question

N = the number of experts

1 = Congruent

0 = Uncertainty

-1 = Incongruent

The IOC ranges from -1 to +1. As a result, a question was deemed to be good the closer it is to +1. Revisions were made to the questions with IOCs less than 0.6. Those with an IOC of less than 0.5 were not included in the questionnaire (Tongprasert, 2014). The IOC's range included:

+1 = The questions were discovered to be congruent with the content.

0 = The questions are uncertain if the questions would be congruent with the content

-1 =The questions are found to be congruent with the content

The following were the criteria for the IOC's consideration:

1. If $IOC > 0.5$, valid and can be used.

2. If $IOC \leq 0.5$, to be revised.

The experts evaluated the questionnaire to ensure its consistency and validity. They looked at each detail to see if it was easy to understand and whether it satisfied the criteria or not.

Reliability of the Instruments:

The Cronbach's alpha was calculated to assess the whole questionnaire in order to evaluate the instrument's reliability. Acceptable Cronbach's alpha was greater than 0.7 (Taber, 2018). The following criteria were used to evaluate Cronbach's alpha:

Table 3.7. Cronbach's Alpha Criteria

Cronbach's Alpha	External Consistency
$\alpha \geq 0.9$	Excellent
$0.9 > \alpha \geq 0.8$	Good
$0.8 > \alpha \geq 0.7$	Acceptable
$0.7 > \alpha \geq 0.6$	Questionable
$0.6 > \alpha \geq 0.5$	Poor
$0.5 > \alpha$	Unacceptable

Source: Taber, 2018.

Taber (2018) provides the formula for developing the Cronbach's alpha (2018). According to the criteria listed above, the coefficient of alpha ranges from 0-1, and the greater the Cronbach's alpha, the more reliable the questions are. The calculations are shown below.

$$\alpha = \frac{k}{k-1} \left[1 - \frac{\sum s_i^2}{s_t^2} \right]$$

Where:

α = Reliability coefficient

K = the number of questions of the instrument

$\int_i^t s$ = Variance of score in each question

$\int_t^2 s$ = Variance of total score of all respondents

In the interpretation of results, the Cronbach's alpha coefficient would be considered acceptable if it is above 0.70. However, if it is below 0.7, it would be necessary to re-evaluate the questions of the questionnaire.

Two tests (Validity and Reliability test) will be conducted to determine the instrument's internal consistency and correctness. The sample study pilot (n30), which uses the research's actual data from Guizhou province (n300). This study will use SPSS to conduct Cronbach's tests.

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3.6 Data Collection

The method described below will be used for quantitative data collection. Different methods were used to obtain main and secondary data.

3.6.1 Main data

The first step involves obtaining the identification and approval of the key stakeholders. The second consent was obtained from the organizations and educational institutions collecting the data. We will consult Guizhou Tea Association and tea planters in Guizhou Province to study the impact on the purchase behavior of tea planters' planting insurance.

The second step is to send the link to the survey to the selected sample after obtaining the necessary permission to collect the data. Each respondent was asked to complete their own responses in an online survey.

The third step involves a review and assessment of the thoroughness of the questionnaire, followed by the actual data collection and subsequent analysis.

3.6.2 Secondary data

Secondary data include information collected from a variety of sources, including theories, books, scholars, journals, statistics, articles, and other works published by researchers at home and abroad. Data obtained from secondary sources were used to establish research objectives, test research hypotheses, and compare the results of data analysis from the discussion section.

3.7 Statistical Data Analysis

3.7.1 Analysis of the quantitative data

Upon receipt of the questionnaire completed by each participant, they were examined for their accuracy, validity, and reliability. This requires filling any gaps in the data, looking for and eliminating outliers, and eliminating any values that appear to match the other data. In this study, a significance level of 5% was used, indicating the significance level of $\alpha = 0.05$. The analytical procedure used is as follows:

1. The acquisition of descriptive statistics is the first step in this study. To determine descriptive statistics, the variables used in the data must measure their mean, mode, median, standard deviation, percentile, skewness, kurtosis, maximum and minimum, and other
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features. Before starting the detailed statistical analysis, we performed a descriptive analysis to understand the characteristic behavior of the data.

2. The diagnostic test was used for a second analysis of the data. To determine whether the data were statistically accurate, diagnostic tests were performed. The following are some diagnostic tests:

A) Normality test — is based on Greene (2008), who believes that the error terms of the linear regression should be normally distributed. After Hooland (1998), normality was tested using skewness and kurtosis.

3. The third analysis is the correlation analysis. To assess the association between study variables and between study variables, we used Pearson's correlation analysis. This is a basic analysis of the factor discovery process using a structural equation model (SEM), which affects the purchase of planting insurance by tea planters. The criteria for consideration of the correlation analysis are listed below.

Table 3.8. Levels of the Correlation coefficient

Correlation Coefficient (r)	Levels of relationships
$r > 0.8$	Very high
$0.6 < r < 0.8$	Quite high
$0.4 < r < 0.6$	Moderate
$0.2 < r < 0.4$	Quite low
$r < 0.2$	Low

Source: Karl Pearson, 1895.

4. The purpose of other parts of the analysis is to evaluate how to apply the conceptual framework to study the influence of government support and risk cognition on the purchase behavior of tea farmers. Through the empirical investigation of the purchase behavior of tea farmers in Guizhou Province, PLS-SEM is used for the analysis.

3.7.2 Analytical objectives

Analysis This section illustrates the statistical techniques used to analyze each study objective.

For Objective 1, we conducted an empirical investigation on the impact of government support, risk cognition and purchasing behavior of planting insurance for tea planters in Guizhou Province, and we will use the structural equation model (SEM) for analysis.

Objective 2 is to empirically determine the mediating role of perceived value on government support, risk cognition and purchasing behavior, using SEM analysis with perceived value as the mediating variable.

Objective 3 is to empirically determine the mediating role of environment concern on government support, risk cognition and purchase behavior, using an SEM analysis with perceived value as the mediating variable.

Objective 4 is to develop a behavioral promotion model for the purchase behavior of tea planters to better promote the participation of tea farmers.

The data processing approach for this study involves utilizing SPSS software to analyze survey data. Initially, a descriptive statistical analysis of the data will be conducted. Following this, the data will undergo reliability and validity analysis. Subsequently, the structural equation model will be constructed using AMOS software to verify the model's fitting and perform a path test. The analysis will also include the verification of the mediation effect. Finally, the empirical analysis results will be summarized to draw conclusions.

Confirmatory Factor Analysis (CFA)

The confirmatory Factor Analysis (CFA) will be applied to examine the model fitness and accuracy of the scale in terms of the relationship between the latent variables, observed variables, mediating variables, and endogenous variables. The statistical analysis involved the covariance analysis on the variance analysis of all the variables to be used in the overall study, which is in compliance with the SEM to confirm its accuracy and completeness. The covariance analysis was applied to the observed variables, latent variables, endogenous variables, and mediating variables. The congruence evaluation between the empirical data and the conceptual framework to be also conducted. The fit indices details are presented in the following table.

The structural Equation Modeling (SEM)

The research hypothesis will be tested using a Structural Equation Model (SEM) approach based on Partial Least Square (PLS). PLS is a component or variant-based structural equation model (SEM). Structural Equation Model (SEM) is a field of statistical study that can test a series of relationships that are relatively difficult to measure simultaneously. PLS-SEM is a soft analysis method for SEM that, most notably, provides good predicted accuracy without restricting the data distribution or sample number (Haenlein & Kaplan, 2004). It entails partial least squares data analysis and is generally used to create theories that concentrate on the study of variance in the dependent variables for model testing (F. Hair Jr et al., 2014); which according to Wong (2013), it may test theoretically supported linear and additive causal models and visually assess the correlations between pertinent variables, which can be helpful to researchers in marketing research.

Table 3.9. Congruence Evaluation Table between the conceptual framework and empirical data

Statistics	Symbol	Objectives	Statistics showing congruence between empirical data and conceptual framework
Relative Chi-square	X ² /df	To test the congruence of empirical data and conceptual framework	X ² /df <5.00
Goodness of Fit Index	GFI	To measure GFI, between 0-1.00	>0.90
Comparative Fit Index	CFI	To Compares the fit of a target model to the fit of an independent, or null, model	>0.90
Normed Fit Index	NFI	Measures NFI between 0 and 1	>0.90
Tucker Lewis index	TLI	To measure TLI, between 0-1.00	>0.90
Root mean square of approximation	RMSEA	To show conceptual framework errors in for of RMSEA between 0-100	<0.05

Source: Wheaton, Muthen, Alwin & Summers, 1977.

According to Hair (2014) SEM is a multivariate analysis technique which is a combination of factor analysis and regression analysis (correlation), which aims to examine the relationship between variables that exist in a model, both between indicators and their constructs, or relationships between constructs. The data that have been obtained will examine and analyze using PLS-SEM. In this study, a number of statistical studies were carried out to evaluate the offered hypotheses. According to Latan & Ghazali (2012), PLS is an alternative approach that shifts from a covariance-based SEM approach to a variance-based approach. Covariance-based SEM generally tests causality or theory, while PLS is more of a predictive model. However, the difference between covariance-based SEM and component-based PLS is in the use of structural equation models to test theories or develop theories for prediction purposes. PLS is a powerful analytical method because it is not based on many assumptions (Hellberg, 1985).

The data do not have to be normally distributed in multivariate (indicators with theoretical scale, ordinal, interval to ratio are used in the same model), and the sample does not have to be large. Besides being used to confirm theory, PLS can also be used to explain whether there is a relationship between latent variables.

Because it focuses more on data and with limited estimation procedures, model specifications have little effect on parameter estimation. PLS can analyze as well as constructs formed with reflexive and formative indicators, and this is not possible in covariant based SEM because an unidentified model will occur (Latan & Ghozali, 2012).

The following are some reasons for using PLS in this study:

1. The PLS algorithm is not limited to the relationship between indicators and their latent constructs that are reflective, but the PLS algorithm is also used for formative relationships.
2. PLS can be used to estimate the path model
3. PLS can be used for very complex models consisting of many latent and manifest variables without experiencing problems in data estimation.
4. PLS can be used when the data distribution is highly skewed or not spread across the mean value.
5. PLS can be used to calculate the moderator variable directly, because this study itself consists of 1 moderator variable.

Descriptive statistics are employed to analyze the basic information of the respondents provided in the first part of the questionnaire. Typical descriptive statistics, such as frequencies and percentages, were used for nominal scale items (gender, education background, planting scale, planting years). Similar to the nominal level variables, the ordinal variables (age and period in the firm) are analyzed and evaluated using frequencies and percentages because the use of mean, standard deviation, and other parametric statistics is inappropriate.

The analysis technique in this study uses the PLS technique, which is carried out in two stages, namely:

1. The first stage is to test the measurement model, which is to test the validity and construct reliability of each indicator.
2. The second stage is to conduct a structural model test which aims to determine whether there is an influence between variables/correlation between constructs as measured by using the t-test of the PLS itself.

A. Measurement (Outer) Model

The measurement model, or outer model, shows how each indicator block relates to its latent variable. The MTMM (MultiTrait-MultiMethod) approach is used to evaluate the measurement model through confirmatory factor analysis by examining the convergent and

discriminant validity. Cronbach's Alpha and Composite Reliability were both used to conduct the reliability test (Latan & Ghozali, 2012).

a. Validity test

A questionnaire's validity is evaluated using a validity test. A questionnaire is deemed to be valid if its questions can provide light on the subject it is intended to measure. All questions in each variable are put through a validity test. Testing will be done at various phases, including convergent validity, average variance extracted (AVE), and discriminant validity.

1. Content Validity

The validity of the questionnaire can be obtained by using a questionnaire that has been widely used by researchers. The questionnaire used in this study is the result of a literature study with necessary modifications to avoid respondents' tendencies towards certain preferences.

2. Convergent Validity

This measure of convergence reveals whether each response captures the degree to which the variable's dimensions are comparable. The relationship between item scores/indicators and construct scores provides evidence of the measuring model's convergence validity, by correlating the item score (component score) with the construct score which then produces the loading factor value. Therefore, only the question items—which are more significant than twice the standard error in the measurement of the study variable—have a high level of significance. When an individual reflective measure has a correlation with the construct being tested of more than 0.70, it is said to be high. A loading of 0.50 to 0.60 is still appropriate at the scale development stage, but, during the research phase (Latan & Ghozali, 2012). Additionally, convergent validity can be satisfied if each variable's AVE value is greater than 0.5 and each item's loading value is also higher than 0.5. (Ghozali, 2008). However, for research in the early stages of development, a loading factor of 0.5 to 0.6 is considered sufficient (Chin, 1998; Ghozali, 2008).

3. Average Variance Extrated (AVE)

This validity test is to assess the validity of the question items by looking at the average variance extracted (AVE) value. AVE is the average percentage value of variance extracted (AVE) between question items or indicators of a variable which is a summary of the convergent indicator. For good requirements, if the AVE of each question item is greater than 0.5 (Ghozali, 2008).

4. Discriminant Validity

This validity test explains whether the two variables are quite different from each other. Cross loading between the indicators and their constructs reveals discriminant validity indicators. The latent constructs predict the indicators in their block more accurately than the

indicators in other blocks if the correlation between the constructs and their indicators is larger than the correlations between the indicators and other constructs. If the correlation value of the variable to the variable itself is higher than the correlation value of all other variables, the discriminant validity test can be satisfied. Additionally, if the cross-loading value of each variable statement item to the variable itself is higher than the correlation value of the statement item to other variables, this provides alternative means of passing the discriminant validity test. Comparing the square root of the average variance extracted ($\sqrt{\text{AVE}}$) for each construct with the correlation between constructs and other constructs with the model is another way to evaluate discriminant validity. If the AVE root for each construct is higher than the correlation between that construct and other components, the model is said to have good discriminant validity (Ghozali, 2008).

b. Reliability Test

Model measurement is also used to examine a construct's dependability in addition to the validity test.

Reliability is typically described as a set of tests to evaluate the consistency of statement items. The reliability test was carried out to demonstrate the instrument's precision, consistency, and accuracy in measuring the construct. A reliability test is used to assess the consistency of measuring tools in gauging a concept or of respondents in responding to statement items in surveys or other research instruments.

Reliability states the extent to which the results or measurements can be trusted or reliable and provide relatively consistent measurement results after several measurements have been made. A variable is considered trustworthy when it has a composite reliability value of 0.7, which is one way to test for reliability (Sekaran & Bougie, 2017).

There are two approaches to test the reliability of a construct with reflexive indicators in PLS-SEM using the Smart PLS 3.0 program, Cronbach's Alpha and Composite Reliability. If the composite reliability and Cronbach alpha values are higher than 0.70, the construct is deemed reliable (Latan & Ghozali, 2012).

To measure the level of reliability of the research variables, alpha coefficients or Cronbach's alpha and composite reliability are used. The measurement item is said to be reliable if it has an alpha coefficient value greater than 0.6 (Malhotra, 1996).

B. Structural Model (Inner Model)

The link or strength of estimates between latent variables or constructs based on substantive theory is described by inner models (inner relations, structural models, and substantive theory). The purpose of the structural model test is to see the correlation between the measured constructs which is the t-test of the partial least square itself. The R-square test for the dependent variable, the Stone-Geisser Q-square test for predicting elevation, the t-test,

and the significance of the coefficients of the structural route parameters were used to assess the structural model.

a. R-Square

In examining the structural model, first examine the R-Square for each endogenous latent variable as the predictive capability of the structural model. The R-square value, which is the model's goodness-of-fit test, is used to test the structural model. The R-square for each dependent latent variable is the first thing to be considered when evaluating the model with PLS. The interpretation is identical to the regression interpretation. Whether or not particular exogenous latent factors have a significant impact on endogenous latent variables can be determined by changes in the value of R-Square. R-Square values of 0.75, 0.50 and 0.25 can be concluded that the model is strong, moderate and weak (Latan & Ghozali, 2012). Changes in the R-square value can be used to assess the effect of certain independent latent variables on the dependent latent variable whether it has a substantive effect (Ghozali, 2008). In addition to looking at the R-square value, the Partial Least Square (PLS) model was also evaluated by looking at the relevance predictive Q-square for the constructive model. Q square measures how well the observed values are generated by the model as well as the estimated parameters.

Structural or inner model can be measured by looking at the value of R Square model which shows how much influence between variables in the model.

b. F-Square

This f-square test was performed to assess the model's robustness. Indicated by the f-square values of 0.02, 0.15, and 0.35 can be interpreted as whether the latent variable predictor has a weak, medium, or strong, which is the latent variable predictor's degree of influence on the structural level (Ghozali, 2008).

c. Estimate For Path Coefficients

The bootstrapping method is the next test, which determines the statistical significance of the effect between variables by examining the parameter coefficient values and the statistical significance value of T (Latan & Ghozali, 2012). The estimation of the path coefficient which is the estimated value for the path relationship in the structural model obtained by the bootstrapping procedure with a value that is considered significant if the statistical t value is greater than 1.96 (significance level 5%) or greater than 1.65 (significance level 10%) for each path relationship.

C. Hypothesis test

In this study, structural equation modeling (SEM) analysis with smart PLS is used for hypothesis testing. In the whole model, structural equation modeling not only supports the theory but also clarifies whether there is a relationship between the latent variables (Ghozali, 2008); examining the estimated Path Coefficient value during the inner model testing to

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evaluate hypotheses. If the T statistical value for the hypothesis exceeds T table 1.96 (α 5%), it is said to be accepted or proven. This is because the T statistical value for each hypothesis must be greater than T table in order for it to be considered accepted or proven.

Additionally, this test is also carried out to determine the significance of the indirect relationship between the variables. Smart PLS 3.0 is used to run this test using the bootstrapping method. Intervening variables in this study include trust and attitude. If the P value is less than the 5% significant level and the T statistic value exceeds the T table, intervening variables are said to be able to mediate the effect of exogenous (independent) variables on endogenous (dependent) variables.

3.7.3 Secondary Research

After conducting the quantitative data analysis, it was important to conduct also secondary research analysis as a way of confirming the findings of the quantitative analysis. The qualitative analysis relied purely on secondary data obtained from previous studies, which are related to the topic of study. These sources include books, articles from refereed journals, academic publications, statistical data, and other sources. These sources were used to set the research objectives, research questions, and research hypotheses.

CHAPTER 4

DATA ANALYSIS AND RESULTS

4.1 Questionnaire Pilot Survey

The pilot survey was conducted to assess the reliability (consistency of measurement) and validity (accuracy in measuring intended constructs) of the questionnaire, determining its readiness for full-scale implementation. Data were collected via social platforms including WeChat, TikTok, and Wenjuanxing, yielding 88 initial responses. After excluding 6 invalid responses—identified through attention-check questions and abnormally short completion times—82 valid samples remained, achieving a 93.18% validity rate. The sample size satisfied the psychometric requirement of being 5–10 times the maximum number of items (12 questions for the most detailed variable), ensuring statistical robustness for subsequent exploratory factor analysis and reliability testing.

4.1.1 Reliability test

Reliability analysis was conducted to ensure the internal consistency of the measurement scales used in this study. Cronbach's Alpha coefficient, a widely accepted statistical measure of reliability (Nunnally & Bernstein, 1994), was calculated for each construct, including government support, risk cognition, perceived value, environmental concern, and purchase intention.

A Cronbach's Alpha value above 0.70 is considered acceptable for reliability (Hair et al., 2014), while values above 0.80 indicate good reliability.

Descriptive analyses were performed on all government support, risk cognition, perceived value, environmental concern, and purchase intention. These descriptive analyses include means and standard deviation. As Table 4.1 presents the summary of means and standard deviation for each item.

The reliability analysis results presented in Tables 4.1 to 4.5 demonstrate satisfactory psychometric properties of the measurement scales. All subscales met the required threshold for Cronbach's α coefficient, with government support (0.906), risk cognition (0.912), perceived value (0.858), environmental concern (0.795), and Purchase behavior (0.840) all achieving α values above 0.8. Notably, government support and risk cognition demonstrated exceptional reliability with an α coefficient exceeding 0.9.

Table 4.1. Scale reliability test results of government support (N=82)

Variable	Item	Average scale value after deletion	Variance of the scale after deleting items	Revised items and their correlation with the total	Cronbach's alpha coefficient after item deletion
Government support (IGS)					
policy support	ps1	28.52	36.003	.629	.900
	ps2	28.64	35.455	.689	.895
	ps3	28.68	33.969	.722	.893
economic support	cs1	28.62	34.323	.711	.894
	cs2	28.48	33.725	.792	.887
	cs3	28.47	34.891	.706	.894
business support	bs1	28.64	36.066	.617	.900
	bs2	28.55	36.140	.601	.902
	bs3	28.49	35.642	.667	.897
Total scale Cronbach's alpha coefficient					0.906

Table 4.2. Scale reliability test results of risk cognition (N=82)

Variable	Item	Average scale value after deletion	Variance of the scale after deleting items	Revised items and their correlation with the total	Cronbach's alpha coefficient after item deletion
risk cognition (IRC)					
financial risk	fr1	39.40	58.076	.543	.909
	fr2	39.07	58.370	.664	.904
	fr3	39.15	58.769	.574	.908
social risk	sr1	39.44	56.250	.644	.905
	sr2	39.44	55.055	.762	.899
	sr3	39.21	56.749	.725	.901

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Table 4.2 (continue)

Variable	Item	Average scale value after deletion	Variance of the scale after deleting items	Revised items and their correlation with the total	Cronbach's alpha coefficient after item deletion
risk cognition (IRC)					
functional risk	fur1	39.34	57.228	.564	.909
	fur2	39.37	56.236	.694	.902
	fur3	39.26	56.084	.662	.904
time risk	tr1	39.05	57.303	.697	.902
	tr2	39.23	57.653	.678	.903
	tr3	39.08	58.132	.600	.906
Total scale Cronbach's alpha coefficient					0.912

Table 4.3. Scale reliability test results of perceived value (N=82)

Variable	Item	Average scale value after deletion	Variance of the scale after deleting items	Revised items and their correlation with the total
Perceived value (MPV)				
economic value	ev1	32.92	25.104	.575
	ev2	32.85	25.546	.536
	ev3	32.81	25.685	.623
social value	sv1	32.90	26.449	.503
	sv2	33.07	26.648	.483
	sv3	32.77	26.264	.643
emotional value	emv1	32.90	25.366	.587
	emv2	33.18	23.843	.660
	emv3	33.11	24.793	.608

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Table 4.3(continue)

Variable	Item	Item	Average scale value after deletion	Variance of the scale after deleting items	Revised items and their correlation with the total
Perceived value (MPV)					
functional value	fv1	32.82	25.547	.654	.746
	fv2	33.12	23.576	.682	.728
	fv3	33.05	25.164	.554	.842
Total scale Cronbach's alpha coefficient					0.858

Table 4.4. Scale reliability test results of environmental concern (N=82)

Variable	Item	Item	Average scale value after deletion	Variance of the scale after deleting items	Revised items and their correlation with the total
Environmental concern (MEC)					
environmental awareness	ea1	14.86	6.009	0.629	0.738
	ea2	14.77	6.931	0.478	0.784
	ea3	14.95	5.636	0.696	0.715
environmental participation	ep1	14.93	6.315	0.595	0.751
	ep2	15.01	6.180	0.495	0.786
	ep3				
Total scale Cronbach's alpha coefficient					0.795

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Table 4.5. Scale reliability test results of purchase behavior (N=82)

Variable	Item	Item	Average scale value after deletion	Variance of the scale after deleting items	Revised items and their correlation with the total
Purchase behavior (DPB)					
personal purchase	pp1	18.21	9.888	0.642	0.809
	pp2	18.00	10.250	0.663	0.805
	pp3	18.12	10.110	0.704	0.797
recommended purchase	rp1	18.23	10.959	0.473	0.842
	rp2	18.05	10.997	0.641	0.812
	rp3	18.01	10.180	0.607	0.816
Total scale Cronbach's alpha coefficient					0.840

While environmental concern showed the lowest reliability coefficient among the variables, its α value of nearly 0.8 remains marginally acceptable. This suggests that comprehensive scale revision may not be necessary, though targeted wording refinements in specific items could enhance measurement precision.

Furthermore, all items demonstrated adequate discriminative validity with corrected item-total correlations exceeding 0.5, indicating appropriate inter-item relationships within each construct. These collective findings confirm the measurement instrument's overall reliability and structural validity, requiring no item deletion or substantial modification to the current scale configuration.

4.1.2 Validity test

The validity analysis of the pre-survey data is examined through exploratory factor analysis (EFA), primarily to test the construct validity by assessing the alignment between the actual measurement results and the expected theoretical framework. Validity analysis requires separate testing for each variable.

First, the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's test of sphericity are evaluated to determine the suitability for factor analysis. A KMO value above 0.7 indicates appropriateness, while a value above 0.8 suggests high suitability. Bartlett's test must yield a significance level (p-value) below 0.05 to pass the significance threshold. Second, the factor

reduction process is analyzed to verify whether the empirically derived factor structure aligns with the predefined theoretical categorization. The cumulative variance explained rate should exceed 60% to ensure adequate explanatory power. Finally, the factor loadings are examined to evaluate the correlation strength between variables and their corresponding common factors, thereby validating the structural integrity of the measurement scale.

1. The Reliability Analysis for Government support

According to the test results of the government support scale in Table 4.6, the KMO value is 0.876, which exceeds the required threshold of 0.8. Additionally, Bartlett's test of sphericity yields a significance value of 0.000, lower than the required 0.05. These results indicate that the data from the government support scale is suitable for factor analysis and can be further used to validate the structural validity of the scale, thereby confirming whether the factor categorization aligns with theoretical expectations.

Table 4.6. Government support scale KMO and Bartlett spherical test results

Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO)	0.774
Approximate Chi-Square	409.948
Bartlett spherical test	
Df	36
Sig.	0.000

As shown in Table 4.7 presenting the total variance explained for the government support scale, there are three factors with eigenvalues greater than 1. The cumulative variance explained rate reflects the cumulative effectiveness of the common factors in interpreting the scale, which reaches 64.38%, exceeding the required threshold of 60%. This result confirms that no adjustment to the factor data is necessary.

Table 4.7. Total variance interpretation of Government support

Factor	Initial Eigenvalues and Extraction Sums of Squared Loadings		
	Eigenvalue	Percentage of Variance Explained (%)	Cumulative Percentage of Variance Explained (%)
1	5.159	57.322	57.322
2	1.026	11.395	68.717
3	.742	8.247	76.963

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As demonstrated in Table 4.8 detailing the exploratory factor analysis (EFA) results for government support, three common factors were extracted from the government support scale. All item factor loadings exceeded the threshold of 0.5, indicating robust correlations between the observed variables and their corresponding common factors. These statistically significant relationships confirm that the dimensional categorization of the government support construct aligns with theoretical expectations, thereby validating its structural coherence.

Table 4.8. Exploratory factor analysis of government support (N=83)

Variable	Item	factor loadings		
		Factor 1	Factor 2	Factor 3
policy support	ps1	0.704		
	ps2	0.768		
	ps3	0.792		
economic support	cs1		0.786	
	cs2		0.852	
	cs3		0.776	
business support	bs1			0.693
	bs2			0.678
	bs3			0.749

2. The Reliability Analysis for Risk cognition

According to the test results of the risk cognition scale in Table 4.9, the KMO value is 0.876, which exceeds the required threshold of 0.8. Additionally, Bartlett's test of sphericity yields a significance value of 0.000, lower than the required 0.05. These results indicate that the data from the risk cognition scale is suitable for factor analysis and can be further used to validate the structural validity of the scale, thereby confirming whether the factor categorization aligns with theoretical expectations.

As shown in Table 4.10 presenting the total variance explained for the risk cognition scale, there are four factors with eigenvalues greater than 1. The cumulative variance explained rate reflects the cumulative effectiveness of the common factors in interpreting the scale, which reaches 64.38%, exceeding the required threshold of 60%. This result confirms that no adjustment to the factor data is necessary.

Table 4.9. Risk cognition scale KMO and Bartlett spherical test results

Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO)		0.797
Approximate Chi-Square		541.622
Bartlett spherical test	Df	66
	Sig.	0.000

Table 4.10. Total variance interpretation of Risk cognition

Factor	Initial Eigenvalues and Extraction Sums of Squared Loadings		
	Eigenvalue	Percentage of Variance Explained (%)	Cumulative Percentage of Variance Explained (%)
1	6.181	51.505	51.505
2	1.306	10.886	62.391
3	0.917	7.638	70.028
4	0.851	7.094	77.122

As demonstrated in Table 4.11 detailing the exploratory factor analysis (EFA) results for risk cognition, four common factors were extracted from the risk cognition scale. All item factor loadings exceeded the threshold of 0.5, indicating robust correlations between the observed variables and their corresponding common factors. These statistically significant relationships confirm that the dimensional categorization of the risk cognition construct aligns with theoretical expectations, thereby validating its structural coherence.

Table 4.11. Exploratory factor analysis of risk cognition (N=83)

Variable	Item	factor loadings			
		Factor 1	Factor 2	Factor 3	Factor 4
financial risk	fr1	0.846			
	fr2	0.873			
	fr3	0.709			

Table 4.11(Continue)

Variable	Item	factor loadings			
		Factor 1	Factor 2	Factor 3	Factor 4
social risk	sr1		0.685		
	sr2		0.779		
	sr3		0.795		
functional risk	fur1			0.859	
	fur2			0.605	
	fur3			0.834	
time risk	tr1				0.769
	tr2				0.727
	tr3				0.774

2. The Reliability Analysis for Perceived value

According to the test results of the perceived value scale in Table 4.12, the KMO value is 0.876, which exceeds the required threshold of 0.8. Additionally, Bartlett's test of sphericity yields a significance value of 0.000, lower than the required 0.05. These results indicate that the data from the perceived value scale is suitable for factor analysis and can be further used to validate the structural validity of the scale, thereby confirming whether the factor categorization aligns with theoretical expectations.

Table 4.12. Perceived value scale KMO and Bartlett spherical test results

Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO)		0.784
Approximate Chi-Square		440.096
Bartlett spherical test	Df	66
	Sig.	0.000

As shown in Table 4.13 presenting the total variance explained for the perceived value scale, there are four factors with eigenvalues greater than 1. The cumulative variance explained rate reflects the cumulative effectiveness of the common factors in interpreting the scale, which reaches 64.38%, exceeding the required threshold of 60%. This result confirms that no adjustment to the factor data is necessary.

Table 4.13. Total variance interpretation of perceived value

Factor	Initial Eigenvalues and Extraction Sums of Squared Loadings		
	Eigenvalue	Percentage of Variance Explained (%)	Cumulative Percentage of Variance Explained (%)
1	5.101	42.510	42.510
2	1.367	11.388	53.898
3	1.314	10.946	64.845
4	1.047	8.724	73.569

As demonstrated in Table 4.14 detailing the exploratory factor analysis (EFA) results for perceived value, four common factors were extracted from the perceived value scale. All item factor loadings exceeded the threshold of 0.5, indicating robust correlations between the observed variables and their corresponding common factors. These statistically significant relationships confirm that the dimensional categorization of the perceived value construct aligns with theoretical expectations, thereby validating its structural coherence.

Table 4.14. Exploratory factor analysis of perceived value (N=83)

Variable	Item	factor loadings			
		Factor 1	Factor 2	Factor 3	Factor 4
economic value	ev1	0.787			
	ev2	0.808			
	ev3	0.855			
social value	sv1		0.607		
	sv2		0.624		
	sv3		0.800		
emotional value	emv1			0.717	
	emv2			0.788	
	emv3			0.701	
functional value	fv1				0.733
	fv2				0.674
	fv3				0.733

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2. The Reliability Analysis for Environmental concern

According to the test results of the environmental concern scale in Table 4.15, the KMO value is 0.876, which exceeds the required threshold of 0.8. Additionally, Bartlett's test of sphericity yields a significance value of 0.000, lower than the required 0.05. These results indicate that the data from the environmental concern scale is suitable for factor analysis and can be further used to validate the structural validity of the scale, thereby confirming whether the factor categorization aligns with theoretical expectations.

Table 4.15. Environmental concern scale KMO and Bartlett spherical test results

Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO)		0.745
Approximate Chi-Square		152.836
Bartlett spherical test	Df	15
	Sig.	0.000

As shown in Table 4.16 presenting the total variance explained for the environmental concern scale, there are two factors with eigenvalues greater than 1. The cumulative variance explained rate reflects the cumulative effectiveness of the common factors in interpreting the scale, which reaches 64.38%, exceeding the required threshold of 60%. This result confirms that no adjustment to the factor data is necessary.

Table 4.16. Total variance interpretation of environmental concern

Factor	Initial Eigenvalues and Extraction Sums of Squared Loadings		
	Eigenvalue	Percentage of Variance Explained (%)	Cumulative Percentage of Variance Explained (%)
1	3.191	53.183	53.183
2	0.904	15.072	68.255

As demonstrated in Table 4.17 detailing the exploratory factor analysis (EFA) results for environmental concern, two common factors were extracted from the environmental concern scale. All item factor loadings exceeded the threshold of 0.5, indicating robust correlations between the observed variables and their corresponding common factors. These statistically significant relationships confirm that the dimensional categorization of the environmental concern construct aligns with theoretical expectations, thereby validating its structural coherence.

Table 4.17. Exploratory factor analysis of environmental concern (N=83)

Variable	Item	factor loadings	
		Factor 1	Factor 2
environmental awareness	ea1	0.515	
	ea2	0.722	
	ea3	0.800	
environmental participation	ep1		0.698
	ep2		0.719
	ep3		0.641

3. The Reliability Analysis for Purchase behavior

According to the test results of the purchase behavior scale in Table 4.18, the KMO value is 0.876, which exceeds the required threshold of 0.8. Additionally, Bartlett's test of sphericity yields a significance value of 0.000, lower than the required 0.05. These results indicate that the data from the purchase behavior scale is suitable for factor analysis and can be further used to validate the structural validity of the scale, thereby confirming whether the factor categorization aligns with theoretical expectations.

Table 4.18. Purchase behavior scale KMO and Bartlett spherical test results

Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO)		0.793
Approximate Chi-Square		171.814
Bartlett spherical test	Df	15
	Sig.	0.000

As shown in Table 4.19 presenting the total variance explained for the purchase behavior scale, there are two factors with eigenvalues greater than 1. The cumulative variance explained rate reflects the cumulative effectiveness of the common factors in interpreting the scale, which reaches 64.38%, exceeding the required threshold of 60%. This result confirms that no adjustment to the factor data is necessary.

Table 4.19. Total variance interpretation of purchase behavior

Factor	Initial Eigenvalues and Extraction Sums of Squared Loadings		
	Eigenvalue	Percentage of Variance Explained (%)	Cumulative Percentage of Variance Explained (%)
1	3.383	56.390	56.390
2	.877	14.614	71.004

As demonstrated in Table 4.20 detailing the exploratory factor analysis (EFA) results for purchase behavior, two common factors were extracted from the purchase behavior scale. All item factor loadings exceeded the threshold of 0.5, indicating robust correlations between the observed variables and their corresponding common factors. These statistically significant relationships confirm that the dimensional categorization of the purchase behavior construct aligns with theoretical expectations, thereby validating its structural coherence.

Table 4.20. Exploratory factor analysis of purchase behavior (N=83)

Variable	Item	factor loadings	
		Factor 1	Factor 2
personal purchase	pp1	0.760	
	pp2	0.696	
	pp3	0.783	
recomnended purchase	rp1		0.858
	rp2		0.587
	rp3		0.577

Based on the reliability and validity analysis of the pilot survey data, the original questionnaire was deemed suitable for formal investigation after refining item wording for clarity and contextual appropriateness. For example, the statement "I find the claim settlement time for crop insurance within an acceptable range" was revised to "I consider the claim settlement time for crop insurance to be reasonable." The finalized questionnaire was distributed one-on-one to tea growers via the Questionnaire Star platform. To ensure data quality, attention-check questions were embedded to screen out insincere or inattentive respondents. A total of 586 responses were collected, and after filtering based on completion

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time thresholds and attention-check results, 550 valid samples were retained, achieving a validity rate of 93.86%.

4.2 Descriptive Statistical Analysis

4.2.1 Sample Description

This survey is strongly supported by Guizhou Tea Association and tea growers in Guizhou Province. Only when the relevant data and information needed by the institute is obtained in the survey can we better study the planting insurance purchase behavior of tea growers. The data collection process uses the questionnaire star platform to effectively collect the respondent information through the online questionnaire. This study collected some main valid responses from tea planters across several regions. Prior studies have shown that farmers' socioeconomic characteristics, such as education, income, and land size, significantly influence their risk attitudes and decision-making processes (Xu et al., 2018; Zhang & Wang, 2020).

Table 4.21. Demographic Information (n =550)

Variable	Items	Frequency	Percent
Gender	Male	392	71.27
	Female	158	28.73
Age	Less than 25 years old	32	5.82
	26-35 years old	80	14.55
	36-45 years old	286	52.00
	More than 46 years old	152	27.64
Planting scale	Less than 5 acres	142	25.82
	6-10 acres	157	28.55
	11-15 acres	63	11.45
	16-20 acres	146	26.55
	More than 21 acres	42	7.64
Planting years	Less than 3 years	102	18.55
	4-6 years	163	29.64
	7-9 years	145	26.36
	More than 10 years	140	25.45

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Table 4.21(continue)

Variable	Items	Frequency	Percent
Education	Junior middle school	376	68.36
	Senior middle school	106	19.27
	Junior college	56	10.18
	Bachelor's degree or above	12	2.18

Table 4.21 presents the demographic characteristics of the survey respondents, providing an overview of the sample distribution. In terms of gender, the majority of respondents are male, accounting for 71.27% of the total sample. Regarding age, 79.64% of the respondents are over 36 years old. As for the scale of tea planting, 25.82% of respondents manage less than 5 acres, 28.55% manage between 6 to 10 acres, and only 7.64% manage more than 21 acres. In terms of years of experience, 51.81% of the respondents have been engaged in tea planting for more than 7 years. With respect to education, 68.36% of the respondents have completed junior middle school, while only 2.18% have attained a bachelor's degree or higher.

4.2.2 Descriptive statistics of variables

Descriptive statistics for the key variables (government support, risk cognition, perceived value, environmental concern, and purchase behavior) are presented in Table 4.22. Studies such as those by Liu et al. (2020) and Huang & Yang (2019) support that these variables are critical in understanding farmers' insurance adoption behavior.

Table 4.22. Mean and Standard Deviation for Each Variable

Variable	Min	Max	Mean	S.D.
Government support (IGS)	1	5	3.6166	0.42141
Risk cognition (IRC)	1	5	4.0260	0.43548
Perceived value (MPV)	1	5	3.9004	0.40616
Environmental concern (MEC)	1	5	4.0353	0.45248
Purchase behavior (DPB)	1	5	4.3511	0.40545

Table 4.22 presents the mean and standard deviation (S.D.) for each variable measured in the study. The variable government support (IGS) score from 1 to 5, the mean score is 3.6166, and the standard deviation is 0.42141; the variable risk cognition (IRC) score

from 1 to 5, the mean score is 4.0260, and the standard deviation is 0.43548; the variable perceived value (MPV) score from 1 to 5, the mean score is 3.9004, and the standard deviation is 0.40616; the variable environmental concern (MEC) score from 1 to 5, the mean score is 4.0353, and the standard deviation is 0.45248; the variable purchase behavior (DPB) score from 1 to 5, the mean score is 4.3511, and the standard deviation is 0.40545. All variables have mean scores exceeding 3.50, indicating a high level of agreement or positive perception among respondents. The standard deviations, ranging from 0.40616 to 0.45248, suggest consistent perceptions across respondents for the measured constructs.

4.3 Reliability and validity test

4.3.1 Reliability test

Table 4.23. Scale reliability test results of government support (N=550)

Variable	Item	Average scale value after deletion	Variance of the scale after deleting items	Revised items and their correlation with the total	Cronbach's alpha coefficient after item deletion
Government support (IGS)					
policy support	ps1	32.70	20.698	.241	0.782
	ps2	32.78	19.509	.350	0.770
	ps3	32.75	19.912	.308	0.775
economic support	cs1	33.26	17.528	.535	0.743
	cs2	32.86	18.094	.585	0.737
	cs3	33.06	18.079	.511	0.747
business support	bs1	33.04	17.816	.553	0.740
	bs2	32.80	18.214	.561	0.740
	bs3	33.02	18.259	.481	0.751
Total scale Cronbach's alpha coefficient					0.876

Table 4.24. Scale reliability test results of risk cognition (N=550)

Variable	Item	Average scale value after deletion	Variance of the scale after deleting items	Revised items and their correlation with the total	Cronbach's alpha coefficient after item deletion
Risk cognition (IRC)					
financial risk	fr1	45.63	39.372	.669	0.873
	fr2	45.62	38.495	.720	0.870
	fr3	45.50	40.065	.634	0.875
social risk	sr1	45.65	40.123	.581	0.878
	sr2	45.58	38.440	.669	0.872
	sr3	45.54	39.106	.733	0.870
functional risk	fur1	45.65	38.387	.749	0.868
	fur2	45.68	38.874	.713	0.870
	fur3	45.75	42.019	.359	0.890
time risk	tr1	45.56	41.464	.476	0.883
	tr2	45.50	41.928	.432	0.885
	tr3	46.05	40.069	.421	0.890
Total scale Cronbach's alpha coefficient					0.886

The reliability analysis results presented in Tables 4.26 to 4.27 demonstrate satisfactory psychometric quality of the measurement instrument. The overall scale achieved excellent reliability with a Cronbach's α coefficient of 0.876. All latent variable subscales surpassed the acceptable reliability threshold, showing α values above 0.7.

Critical examination of item-level statistics revealed that deleting any individual item would not enhance scale reliability, as evidenced by the fact that all subscale α coefficients remained higher than those calculated after hypothetical item removal. This confirms the structural stability of the measurement model.

Additionally, all measurement items demonstrated adequate discriminant validity with corrected item-total correlations exceeding 0.5. These systematic psychometric evaluations confirm appropriate inter-item relationships within each construct, eliminating the need for item deletion or scale modification. The collective evidence supports the

measurement instrument's robust reliability and internal consistency across all theoretical dimensions.

Table 4.25. Scale reliability test results of perceived value (N=550)

Variable	Item	Item	Average scale value after deletion	Variance of the scale after deleting items	Revised items and their correlation with the total
Perceived value (MPV)					
economic value	ev1	44.47	22.636	.525	0.726
	ev2	44.33	23.752	.545	0.731
	ev3	44.54	23.054	.530	0.728
social value	sv1	44.59	24.719	.350	0.758
	sv2	44.36	25.411	.326	0.762
	sv3	44.90	27.844	.001	0.713
emotional value	emv1	44.56	23.813	.514	0.735
	emv2	44.58	24.043	.508	0.737
	emv3	44.38	25.506	.369	0.758
functional value	fv1	45.08	26.251	.122	0.798
	fv2	44.64	26.759	.117	0.794
	fv3	44.91	25.764	.149	0.796
Total scale Cronbach's alpha coefficient					0.782

As shown in the tables, all constructs meet or exceed the acceptable threshold. The highest reliability was observed for Perceived Value ($\alpha = 0.782$), reflecting the robustness of the items used to capture this construct. Similarly, Risk Cognition ($\alpha = 0.886$) and Purchase behavior ($\alpha = 0.764$) also demonstrate high reliability, ensuring consistent responses across participants.

Government Support ($\alpha = 0.876$) and Environmental Concern ($\alpha = 0.795$) displayed slightly lower, yet satisfactory reliability.

Table 4.26. Scale reliability test results of environmental concern (N=550)

Variable	Item	Item	Average scale value after deletion	Variance of the scale after deleting items	Revised items and their correlation with the total
Environmental concern (MEC)					
environmental awareness	ea1	21.09	7.351	.448	0.723
	ea2	20.93	7.273	.503	0.702
	ea3	20.95	7.410	.497	0.705
environmental participation	ep1	20.85	8.537	.311	0.767
	ep2	20.65	8.614	.309	0.767
	ep3	20.70	8.326	.375	0.748
Total scale Cronbach's alpha coefficient					0.795

Table 4.27. Scale reliability test results of purchase behavior (N=550)

Variable	Item	Item	Average scale value after deletion	Variance of the scale after deleting items	Revised items and their correlation with the total
Purchase behavior (DPB)					
personal purchase	pp1	20.78	9.032	.528	0.724
	pp2	20.92	8.874	.507	0.729
	pp3	21.01	8.214	.520	0.727
recommended purchase	rp1	20.80	8.619	.531	0.722
	rp2	20.80	9.322	.451	0.742
	rp3	20.83	9.026	.506	0.729
Total scale Cronbach's alpha coefficient					0.764

This is consistent with findings by Peng (2016) and Liu (2020), who emphasized that multidimensional constructs often exhibit varying levels of internal consistency based on the diversity of items used.

To further ensure robustness, inter-item correlations were examined, revealing values ranging from 0.40 to 0.65 for most constructs, suggesting moderate to strong relationships between items (Fornell & Larcker, 1981). These results confirm that the scales used in this study are reliable for measuring the constructs of interest, providing a solid foundation for subsequent analyses, including hypothesis testing and structural equation modeling.

The reliability findings validate the appropriateness of the instrument and align with prior studies in agricultural insurance adoption, supporting its applicability in examining the role of government support, risk cognition, and mediating variables in influencing purchase intention.

4.3.2 Validity test

The validity analysis of the pre-survey data is examined through exploratory factor analysis (EFA), primarily to test the construct validity by assessing the alignment between the actual measurement results and the expected theoretical framework. Validity analysis requires separate testing for each variable.

First, the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's test of sphericity are evaluated to determine the suitability for factor analysis. A KMO value above 0.7 indicates appropriateness, while a value above 0.8 suggests high suitability. Bartlett's test must yield a significance level (p-value) below 0.05 to pass the significance threshold. Second, the factor reduction process is analyzed to verify whether the empirically derived factor structure aligns with the predefined theoretical categorization. The cumulative variance explained rate should exceed 60% to ensure adequate explanatory power. Finally, the factor loadings are examined to evaluate the correlation strength between variables and their corresponding common factors, thereby validating the structural integrity of the measurement scale.

4. The Reliability Analysis for Government support

According to the test results of the government support scale in Table 4.28, the KMO value is 0.876, which exceeds the required threshold of 0.8. Additionally, Bartlett's test of sphericity yields a significance value of 0.000, lower than the required 0.05. These results indicate that the data from the government support scale is suitable for factor analysis and can be further used to validate the structural validity of the scale, thereby confirming whether the factor categorization aligns with theoretical expectations.

As shown in Table 4.29 presenting the total variance explained for the government support scale, there are three factors with eigenvalues greater than 1. The cumulative variance explained rate reflects the cumulative effectiveness of the common factors in interpreting the scale, which reaches 64.38%, exceeding the required threshold of 60%. This result confirms that no adjustment to the factor data is necessary.

Table 4.28. Government support scale KMO and Bartlett spherical test results

Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO)		0.797
Approximate Chi-Square		1127.666
Bartlett spherical test	Df	36
	Sig.	.000

Table 4.29. Total variance interpretation of Government support

Factor	Initial Eigenvalues and Extraction Sums of Squared Loadings		
	Eigenvalue	Percentage of Variance Explained (%)	Cumulative Percentage of Variance Explained (%)
1	3.370	37.442	37.442
2	2.008	22.315	59.757
3	.841	9.347	69.104

As demonstrated in Table 4.30 detailing the exploratory factor analysis (EFA) results for government support, three common factors were extracted from the government support scale. All item factor loadings exceeded the threshold of 0.5, indicating robust correlations between the observed variables and their corresponding common factors. These statistically significant relationships confirm that the dimensional categorization of the government support construct aligns with theoretical expectations, thereby validating its structural coherence.

5. The Reliability Analysis for Risk cognition

According to the test results of the risk cognition scale in Table 4.31, the KMO value is 0.876, which exceeds the required threshold of 0.8. Additionally, Bartlett's test of sphericity yields a significance value of 0.000, lower than the required 0.05. These results indicate that the data from the risk cognition scale is suitable for factor analysis and can be further used to validate the structural validity of the scale, thereby confirming whether the factor categorization aligns with theoretical expectations.

Table 4.30. Exploratory factor analysis of government support (N=550)

Variable	Item	factor loadings		
		Factor 1	Factor 2	Factor 3
policy support	ps1	0.660		
	ps2	0.788		
	ps3	0.673		
economic support	cs1		0.734	
	cs2		0.704	
	cs3		0.606	
business support	bs1			0.632
	bs2			0.721
	bs3			0.801

Table 4.31. Risk cognition scale KMO and Bartlett spherical test results

Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO)		0.890
Approximate Chi-Square		2335.795
Bartlett spherical test	Df	66
	Sig.	.000

As shown in Table 4.32 presenting the total variance explained for the risk cognition scale, there are four factors with eigenvalues greater than 1. The cumulative variance explained rate reflects the cumulative effectiveness of the common factors in interpreting the scale, which reaches 64.38%, exceeding the required threshold of 60%. This result confirms that no adjustment to the factor data is necessary.

As demonstrated in Table 4.33 detailing the exploratory factor analysis (EFA) results for risk cognition, four common factors were extracted from the risk cognition scale. All item factor loadings exceeded the threshold of 0.5, indicating robust correlations between the observed variables and their corresponding common factors. These statistically significant relationships confirm that the dimensional categorization of the risk cognition construct aligns with theoretical expectations, thereby validating its structural coherence.

Table 4.32. Total variance interpretation of Risk cognition

Factor	Initial Eigenvalues and Extraction Sums of Squared Loadings		
	Eigenvalue	Percentage of Variance Explained (%)	Cumulative Percentage of Variance Explained (%)
1	5.615	46.793	46.793
2	1.692	14.102	60.895
3	.880	7.330	68.225
4	.731	6.090	74.315

Table 4.33. Exploratory factor analysis of risk cognition (N=550)

Variable	Item	factor loadings			
		Factor 1	Factor 2	Factor 3	Factor 4
financial risk	fr1	0.799			
	fr2	0.686			
	fr3	0.721			
social risk	sr1		0.507		
	sr2		0.699		
	sr3		0.821		
functional risk	fur1			0.775	
	fur2			0.770	
	fur3			0.888	
time risk	tr1				0.795
	tr2				0.779
	tr3				0.676

6. The Reliability Analysis for Perceived value

According to the test results of the perceived value scale in Table 4.34, the KMO value is 0.876, which exceeds the required threshold of 0.8. Additionally, Bartlett's test of sphericity yields a significance value of 0.000, lower than the required 0.05. These results indicate that the data from the perceived value scale is suitable for factor analysis and can be

further used to validate the structural validity of the scale, thereby confirming whether the factor categorization aligns with theoretical expectations.

Table 4.34. Risk cognition scale KMO and Bartlett spherical test results

Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO)		0.793
Approximate Chi-Square		1779.263
Bartlett spherical test	Df	66
	Sig.	.000

As shown in Table 4.35 presenting the total variance explained for the perceived value scale, there are four factors with eigenvalues greater than 1. The cumulative variance explained rate reflects the cumulative effectiveness of the common factors in interpreting the scale, which reaches 64.38%, exceeding the required threshold of 60%. This result confirms that no adjustment to the factor data is necessary.

Table 4.35. Total variance interpretation of perceived value

Factor	Initial Eigenvalues and Extraction Sums of Squared Loadings		
	Eigenvalue	Percentage of Variance Explained (%)	Cumulative Percentage of Variance Explained (%)
1	4.006	33.385	33.385
2	2.030	16.916	50.301
3	1.208	10.064	60.365
4	1.165	9.710	70.075

As demonstrated in Table 4.36 detailing the exploratory factor analysis (EFA) results for perceived value, four common factors were extracted from the perceived value scale. All item factor loadings exceeded the threshold of 0.5, indicating robust correlations between the observed variables and their corresponding common factors. These statistically significant relationships confirm that the dimensional categorization of the perceived value construct aligns with theoretical expectations, thereby validating its structural coherence.

Table 4.36. Exploratory factor analysis of perceived value (N=550)

Variable	Item	factor loadings			
		Factor 1	Factor 2	Factor 3	Factor 4
economic value	ev1	0.824			
	ev2	0.808			
	ev3	0.755			
social value	sv1		0.622		
	sv2		0.649		
	sv3		0.692		
emotional value	emv1			0.766	
	emv2			0.757	
	emv3			0.827	
functional value	fv1				0.684
	fv2				0.717
	fv3				0.709

7. The Reliability Analysis for Environmental concern

According to the test results of the environmental concern scale in Table 4.37, the KMO value is 0.876, which exceeds the required threshold of 0.8. Additionally, Bartlett's test of sphericity yields a significance value of 0.000, lower than the required 0.05. These results indicate that the data from the environmental concern scale is suitable for factor analysis and can be further used to validate the structural validity of the scale, thereby confirming whether the factor categorization aligns with theoretical expectations.

Table 4.37. Risk cognition scale KMO and Bartlett spherical test results

Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO)		.772
Approximate Chi-Square		860.190
Bartlett spherical test	Df	15
	Sig.	.000

As shown in Table 4.38 presenting the total variance explained for the environmental concern scale, there are two factors with eigenvalues greater than 1. The cumulative variance explained rate reflects the cumulative effectiveness of the common factors in interpreting the scale, which reaches 64.38%, exceeding the required threshold of 60%. This result confirms that no adjustment to the factor data is necessary.

Table 4.38. Total variance interpretation of environmental concern

Factor	Initial Eigenvalues and Extraction Sums of Squared Loadings		
	Eigenvalue	Percentage of Variance Explained (%)	Cumulative Percentage of Variance Explained (%)
1	2.338	38.964	38.964
2	2.049	34.153	73.117

As demonstrated in Table 4.39 detailing the exploratory factor analysis (EFA) results for environmental concern, two common factors were extracted from the environmental concern scale. All item factor loadings exceeded the threshold of 0.5, indicating robust correlations between the observed variables and their corresponding common factors. These statistically significant relationships confirm that the dimensional categorization of the environmental concern construct aligns with theoretical expectations, thereby validating its structural coherence.

Table 4.39. Exploratory factor analysis of environmental concern (N=550)

Variable	Item	factor loadings	
		Factor 1	Factor 2
environmental awareness	ea1	0.715	
	ea2	0.779	
	ea3	0.805	
environmental participation	ep1		0.592
	ep2		0.671
	ep3		0.824

8. The Reliability Analysis for Purchase behavior

According to the test results of the purchase behavior scale in Table 4.40, the KMO value is 0.876, which exceeds the required threshold of 0.8. Additionally, Bartlett's test of sphericity yields a significance value of 0.000, lower than the required 0.05. These results indicate that the data from the purchase behavior scale is suitable for factor analysis and can be further used to validate the structural validity of the scale, thereby confirming whether the factor categorization aligns with theoretical expectations.

Table 4.40. Risk cognition scale KMO and Bartlett spherical test results

Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO)		0.832
Approximate Chi-Square		971.479
Bartlett spherical test	Df	15
	Sig.	.000

As shown in Table 4.41 presenting the total variance explained for the purchase behavior scale, there are two factors with eigenvalues greater than 1. The cumulative variance explained rate reflects the cumulative effectiveness of the common factors in interpreting the scale, which reaches 64.38%, exceeding the required threshold of 60%. This result confirms that no adjustment to the factor data is necessary.

Table 4.41. Total variance interpretation of purchase behavior

Factor	Initial Eigenvalues and Extraction Sums of Squared Loadings		
	Eigenvalue	Percentage of Variance Explained (%)	Cumulative Percentage of Variance Explained (%)
1	2.760	46.008	46.008
2	1.817	30.278	76.286

As demonstrated in Table 4.42 detailing the exploratory factor analysis (EFA) results for purchase behavior, two common factors were extracted from the purchase behavior scale. All item factor loadings exceeded the threshold of 0.5, indicating robust correlations between the observed variables and their corresponding common factors. These statistically significant relationships confirm that the dimensional categorization of the purchase behavior construct aligns with theoretical expectations, thereby validating its structural coherence.

Table 4.42. Exploratory factor analysis of purchase behavior (N=550)

Variable	Item	factor loadings	
		Factor 1	Factor 2
personal purchase	pp1	0.780	
	pp2	0.761	
	pp3	0.748	
reconmended purchase	rp1		0.745
	rp2		0.727
	rp3		0.816

Table 4.43. The Reliability Analysis for Each Variable

Variable	Cronbach's Alpha	N of Items
Government support	0.876	9
Risk cognition	0.886	12
Perceived value	0.782	12
Environmental concern	0.795	6
Purchase behavior	0.764	6

Table 4.43 presents Cronbach's Alpha values and the items for each variable measured in the study. Except for perceived value, all variables demonstrate Cronbach's Alpha values exceeding 0.7, indicating excellent questionnaire reliability. Perceived value shows a Cronbach's Alpha of 0.682, suggesting relatively good reliability. This indicates that the study can proceed to the next step of analysis.

Following a comprehensive review of relevant literature and theoretical frameworks, a confirmatory factor analysis (CFA) was conducted to examine the relationships between internal and external variables (Andre, 2017). Using AMOS 28.0 to analyze the CFA results, the model was found to be statistically non-significant ($P > 0.05$), with a χ^2/df ratio ≤ 2.00 and an RMSEA value ≤ 0.05 . The comparative fit index (CFI) was reported at 0.986, indicating strong model fit, as CFI and Tucker-Lewis Index (TLI) values above 0.90 are generally considered acceptable, with values exceeding 0.95 being ideal (Hooper et al., 2008). Additionally, the adjusted goodness-of-fit index (AGFI) was recorded at 0.982, further demonstrating a strong model fit, as AGFI values above 0.90 indicate good fit.

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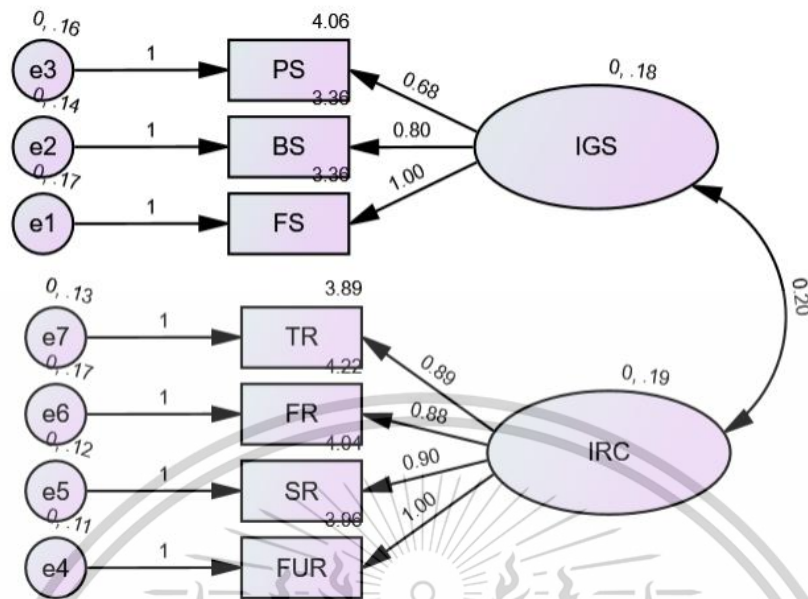


Figure 4.1: CFA of external latent variables IGS & IRC (n=550)

Note: Chi-Square (χ^2) = 8.439, df = 14, CFI=0.981, TLI=0.960, RMSEA = 0.026.

The figure 4.1 presents the results of the CFA (confirmatory factor analysis) conducted on the external latent variables IGS (Independent variable Government Support) and IRC (Independent variable Risk Cognition) with a sample size of 550. The model fit indices are as follows: Chi-Square (χ^2) = 8.439 with 14 degrees of freedom (df), Comparative Fit Index (CFI) = 0.981, Tucker-Lewis Index (TLI) = 0.960, and Root Mean Square Error of Approximation (RMSEA) = 0.026. These indices suggest a good fit of the model to the data.

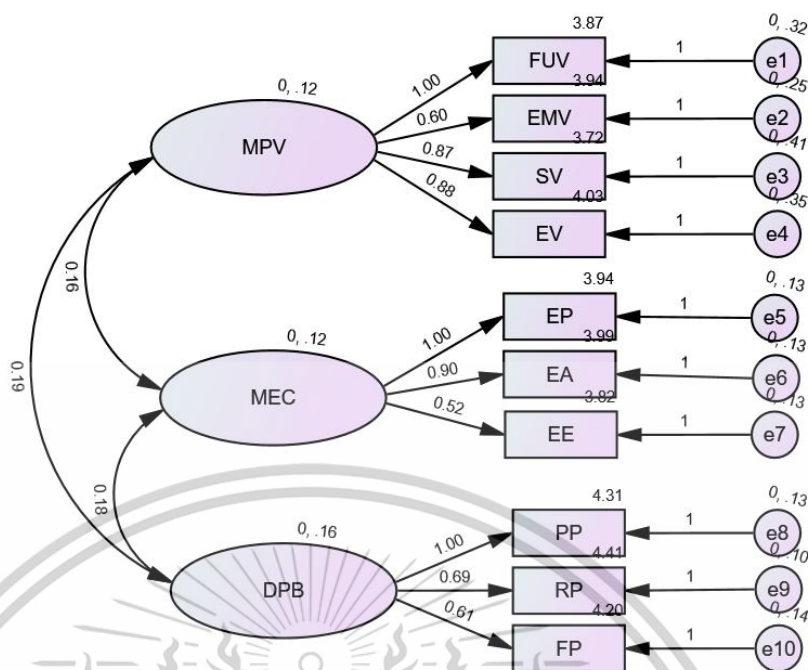


Figure 4.2: CFA of external latent variables MPV, MEC & DPB (n=550)

Note: Chi-Square (χ^2) = 34.872, df = 32, CFI=0.933, TLI=0.942, RMSEA = 0.024.

Figure 4.2 shows the results of the confirmatory factor analysis (CFA) on the external latent variables MPV (Mediating variable Perceived Value), MEC (Mediating variable Environmental Concern), and DPB (Dependent variable Purchase Behavior) with a sample size of 550. Model fit indices are as follows: Chi-Square (χ^2) = 34.872 with 32 degrees of freedom (df), Comparative Fit Index (CFI) = 0.933, Tucker-Lewis Index (TLI) = 0.942, and Root Mean Square Error of Approximation (RMSEA) = 0.024. These indices indicate an acceptable fit of the model to the data.

Table 4.44. The Validity Analysis for Each Variable

Variable	Observed Variable	KMO value	F value	Sig.
Government support	Policy support	0.674	326.611	0.000
	Financial support	0.691	337.196	0.000
	Business support	0.663	339.553	0.000
Risk cognition	Financial risk cognition	0.720	445.884	0.000
	Social risk cognition	0.666	355.497	0.000
	Functional risk cognition	0.630	352.203	0.000
	Time risk cognition	0.667	343.639	0.000

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Table 4.44(continue)

Variable	Observed Variable	KMO value	F value	Sig.
Perceived value	Economic value	0.733	584.098	0.000
	Social value	0.507	86.641	0.000
	Emotional value	0.729	484.060	0.000
	Function value	0.704	321.061	0.000
Environmental concern	Environmental awareness	0.718	490.137	0.000
	Environmental participation	0.687	368.454	0.000
Purchase behavior	Personal purchase	0.728	468.666	0.000
	Recommended purchase	0.711	475.446	0.000

Table 4.44 presents the Kaiser-Meyer-Olkin (KMO) values, F values, and significance levels (Sig.) for each observational variable measured in the study. All observational variables have KMO values exceeding 0.5, indicating excellent questionnaire validity. The study is ready to proceed with the next step of analysis.

4.4 Correlation analysis

Correlation analysis is a fundamental statistical technique used to assess the strength and direction of the relationship between two or more variables. It provides insights into whether variables move together in a systematic way, helping researchers identify patterns and dependencies within datasets. The most commonly used measure is the Pearson correlation coefficient (r), which quantifies the linear relationship between continuous variables, with values ranging from -1 to +1. A value of +1 indicates a perfect positive correlation, -1 signifies a perfect negative correlation, and 0 implies no linear relationship. Other measures, such as Spearman's rank correlation and Kendall's tau, are employed for non-linear or ordinal data, offering flexibility in analyzing diverse types of relationships. By calculating these coefficients, researchers can determine the degree to which variables co-vary, laying the groundwork for further statistical or predictive modeling.

The application of correlation analysis spans numerous fields, including finance, medicine, social sciences, and engineering, making it a versatile tool in both exploratory and confirmatory research. For instance, in finance, it helps assess the relationship between asset returns, while in medicine, it can reveal associations between lifestyle factors and health.

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outcomes. However, correlation analysis is not without limitations. A significant correlation does not imply causation, as external factors or confounding variables may influence the observed relationship. Additionally, the presence of outliers or restricted data ranges can distort correlation coefficients, leading to misleading interpretations. Therefore, it is critical to complement correlation analysis with visual tools like scatterplots and statistical tests to validate assumptions, such as linearity and normality, ensuring robust and reliable results.

In the context of this dissertation, correlation analysis serves as a preliminary step to explore relationships between key variables of interest. By identifying significant correlations, this analysis informs the selection of variables for more advanced modeling techniques, such as regression or machine learning algorithms. Furthermore, it provides a foundation for hypothesis generation, guiding subsequent investigations into causal mechanisms or predictive relationships. While correlation analysis alone cannot establish causality, its role in uncovering patterns and dependencies is indispensable, offering a critical lens through which to interpret complex datasets and advance the research objectives of this study.

Table 4.45. The correlation coefficient, reliability, and AVE of the latent variables

Latent variables	IGS	IRC	MPV	MEC	DPB
IGS	1.00				
IRC	.830**	1.00			
MPV	.755**	.717**	1.00		
MEC	.852**	.816**	.689**	1.00	
DPB	.827**	.853**	.706**	.901**	1.00
Construct Reliability	0.875	0.902	0.872	0.884	0.910
AVE	0.701	0.844	0.723	0.693	0.616
$\sqrt{\text{AVE}}$	0.837	0.919	0.850	0.833	0.785

Note: **. At the 0.01 level (two-tailed), the correlation was significant.

AVE (Average Variance Extracted) is a metric used to evaluate the convergent validity of Latent Variable in a measurement model. It measures the ability of latent variables to interpret variance of their measures (explicit variables), reflecting the validity and reliability of the measurement model. $\text{AVE} \geq 0.50$ indicates good convergence validity of the measurement model.

The analysis revealed highly significant positive correlations among all latent variables ($p < 0.01$, two-tailed), with correlation coefficients ranging from 0.689 to 0.901. Notably, the strongest association was observed between MEC and DPB ($r = 0.901$).

suggesting potential theoretical construct overlap or cross-loading in measurement items.

Construct reliability was excellent across all variables (0.872–0.910), exceeding the threshold of 0.70 (Nunnally, 1978). Convergent validity, as measured by Average Variance Extracted (AVE), was generally satisfactory (0.616–0.844), though DPB's AVE (0.616) approached the critical threshold of 0.50, indicating relatively weaker convergent validity for this construct.

4.5 Hypothesis Testing and SEM

Convergent model analysis

The analysis of the data, alongside the evaluation of the five constructs and their related hypotheses, revealed a strong model fit with the empirical research findings. Both convergent and discriminant validity were assessed to ensure accuracy. In structural equation modeling (SEM), confirmatory factor analysis (CFA) is typically employed to evaluate construct validity (Jöreskog, 2016). Hair (2016) and Byrne (2021) emphasized that factor loadings or regression weights for latent variables to observed variables should exceed 0.50, indicating that all constructs meet the criteria for construct validity and exhibit appropriate convergence.

The results presented in Table 4.46 show a χ^2 value of 139.930 with a df ratio of 1.284, demonstrating statistical significance as it exceeded 0.05. This supports the hypothesis that the model aligns with the empirical data. Further validation was provided by the goodness-of-fit index (GFI), which was 0.962, and the adjusted goodness-of-fit index (AGFI), recorded at 0.981 (Kenny & McCoach, 2003). Additionally, the root mean square error of approximation (RMSEA) was 0.013. As RMSEA is an absolute fit measure, a value of zero reflects a perfect fit, and values below 0.05 indicate a good fit (Hu & Bentler, 1999).

Table 4.46. Criteria and theory of the goodness-of-fit values

Criteria Index	Criteria	Values	Results	Supporting theory
Chi-square: χ^2	$p \geq 0.05$	139.930	passed	Measure whether the distribution of categorical variables corresponds to the desired theoretical distribution.(Rasch, 1980).
χ^2 / df	≤ 2.00	1.284	passed	Measure how well the theoretical model fits the actual data./ $df \leq 2.00$, the model fit is very good.(Byrne, 1989).

Table 4.46(continue)

Criteria Index	Criteria	Values	Results	Supporting theory
GFI	≥ 0.90	0.962	passed	The Goodness-of-Fit Index (GFI) measures how well a theoretical model fits the actual data. A GFI greater than 0.90 indicates that the model fits well (Hair, 2016; Jöreskog, 2016).
AGFI	≥ 0.90	0.981	passed	The Adjusted Goodness-of-Fit Index (AGFI) is an adjusted version of the Goodness-of-Fit Index (GFI), utilized to assess the goodness-of-fit in structural equation models. AGFI incorporates a degree of freedom adjustment in addition to GFI, which can more accurately reflect the complexity and fitting effect of the model. An AGFI value greater than 0.90 indicates that the model fits well (Kenny & McCoach, 2003).
RMSEA	≤ 0.05	0.013	passed	The RMSEA (Root Mean Square Error of Approximation) is an index used to evaluate the goodness of fit for a Structural Equation Model (SEM). It quantifies the extent of the approximation error between the model and the empirical data, indicating the model's fit within the population. An RMSEA value below 0.05 suggests that the model has a very good fit (Hu & Bentler, 1999).
Cronbach's Alpha	≥ 0.70	0.896	passed	Cronbach's Alpha is a statistical measure used to evaluate the reliability of the internal consistency of a scale or questionnaire. It assesses the correlation between items within the scale, reflecting the reliability and stability of the scale. A value of α greater than 0.70 indicates that the scale's reliability is relatively good (Tavakol & Dennick, 2011).

Table 4.47. Hypotheses testing results

Hypotheses	Estimate	S.E.	C.R.	P-Label	Results
H1: Government support has a positive impact on tea planters' planting insurance purchasing behavior. (DPB<--IGS)	0.181	0.027	6.774	***	Accepted
H2: Government support has a positive impact on the perceived value of tea planters. (MPV<--IGS)	1.539	0.218	7.053	***	Accepted
H3: Government support has a positive impact on tea planters' environmental concern. (MEC<--IGS)	0.306	0.033	9.4	***	Accepted
H4: Risk cognition has a positive impact on tea planters' planting insurance purchasing behavior. (DPB<--IRC)	0.231	0.028	8.242	***	Accepted
H5: Risk cognition has a positive impact on the perceived value of tea planters. (MPV<--IRC)	0.285	0.037	7.737	***	Accepted
H6: Risk cognition has a positive impact on tea planters' environmental concern. (MEC<--IRC)	0.153	0.03	5.11	***	Accepted
H7: Perceived value has a positive impact on tea planters' planting insurance purchasing behavior. (DPB<--MPV)	0.222	0.046	4.839	***	Accepted
H8: Environmental concern has a positive impact on tea planters' planting insurance purchasing behavior. (DPB<--MEC)	0.24	0.095	2.526	0.001	Accepted
H13: Perceived value has a positive impact on tea planters' environmental concern. (MEC<--MPV)	0.489	0.048	10.243	***	Accepted

Note: *Sig.<0.05, **Sig.<0.01, ***Sig.<0.001, Critical ratios (t-values) more than 1.96 are significant at the 0.05 level. S.E. = standard error, CR=critical ratio(t-value).

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4.6 Mediator effect analysis

The mediation effect of the model was analyzed by AMOS28.0, resulting in the following table. If the significant value of the mediation effect is less than 0.05, the results are credible. According to the values in the table, the two mediation variables, perceived value and environmental concern, are partial mediators.

Table 4.48. Results of the mediation effect test

	Parameter	Estimate	Lower	Upper	P
IGS→MPV→DPB	mediation effect	.237	.185	.288	.009
	total effect	.296	.191	.401	.009
	ratio	.800	.615	1.160	.008
IGS→MEC→DPB	mediation effect	.173	.123	.241	.007
	total effect	.232	.139	.334	.007
	ratio	.746	.516	1.225	.007
IRC→MPV→DPB	mediation effect	.072	.041	.126	.002
	total effect	.175	.105	.293	.002
	ratio	.410	.236	.727	.007
IRC→MEC→DPB	mediation effect	.069	.031	.114	.013
	total effect	.172	.108	.261	.009
	ratio	.400	.158	.629	.028

So, the following assumptions hold.

H9: Perceived value mediates the relationship between government support and tea planters' planting insurance purchasing behavior. Government support, such as educational initiatives and technical services, has enhanced tea planters' trust and recognition of insurance, making them more aware of its practical benefits and encouraging them to purchase insurance more actively. Tea planters who perceive higher value from insurance believe that the impact of government support is more significant.

H10: Perceived value mediates the relationship between risk cognition and tea planters' planting insurance purchasing behavior. In the tea planting process, planters assess

the balance between the benefits and costs of purchasing planting insurance. The higher their perceived value, the more willing they are to invest in insurance. However, their purchasing decision is influenced by risk perception, with perceived value acting as a mediator between risk perception and the intention to purchase planting insurance.

H11: Environmental concern mediates the relationship between government support and tea planters' planting insurance purchasing behavior. Moreover, government support stimulates tea planters' environmental awareness through subsidies for environmental protection and the promotion of eco-friendly agricultural technologies. This, in turn, increases their attention to environmental protection. As their awareness of ecological risks grows, including the impact of climate change and ecological degradation, they become more likely to purchase planting insurance as a precautionary measure to mitigate these risks.

H12: Environmental concern mediates the relationship between risk cognition and tea planters' planting insurance purchasing behavior. Tea planters with high environmental concerns are more attuned to the risks posed by environmental factors, which strengthens their awareness of the uncertainties and potential hazards associated with tea planting, prompting them to take proactive steps to avoid such risks.

4.7 Structural Equation Modeling (SEM) results

Hooper(2008) suggested that items with low R^2 values (≤ 0.20) should be excluded from analysis, as they indicate high levels of error. The results of the structural equation modeling (SEM), presented in Figure 4.3, confirm that the model meets the necessary criteria, with the index found to be non-significant. Furthermore, all causal factors in the model demonstrated a positive impact on purchasing behavior (DPB). Among these, environmental concern (MEC) exerted the strongest influence on purchasing behavior, with a coefficient of 0.24, followed by risk perception (IRC) at 0.23, and perceived value (MPV) at 0.22.

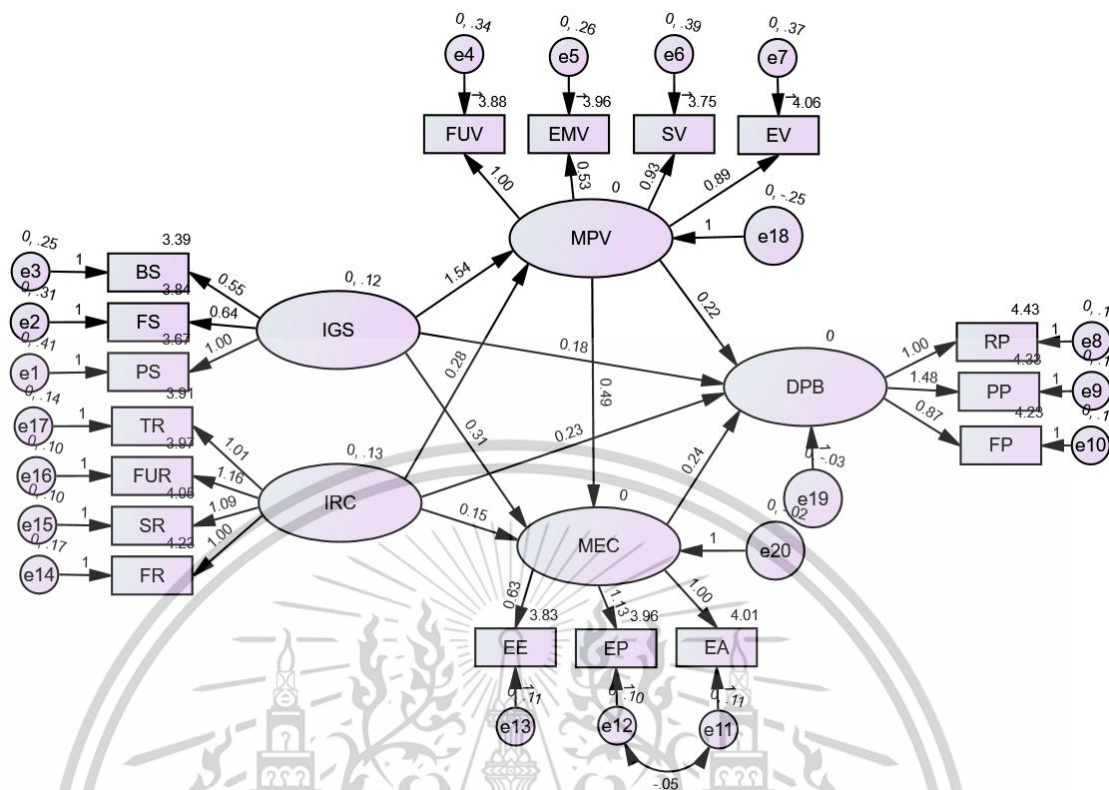


Figure 4.3: SEM final model with values from estimates (n=550)

Note: Chi-Square (χ^2) = 139.930, df=109, p-value=0.64514, RMSEA=0.013.

Figure 4.3 presents the final structural equation model (SEM) with estimated values based on a sample size of 550. Model fit statistics are as follows: Chi-Square (χ^2) = 139.930 with 109 degrees of freedom (df), p-value = 0.64514, and Root Mean Square Error of Approximation (RMSEA) = 0.013. These values indicate a strong fit of the model to the observed data, suggesting that the final SEM adequately represents the relationships among the variables.

The results of this study provide strong support for “H1”, demonstrating that government support (IGS) has a positive impact on tea planters' planting insurance purchasing behavior (DPB), with a correlation coefficient of 0.18. This conclusion is consistent with the responses of tea planters interviewed in the survey, who believe that government support can help reduce the economic losses of tea planters in terms of tea insurance types, premiums and claims. This finding aligns with research by Xiao (2013), which shows that increasing government premium subsidies is positively correlated with farmers' willingness to engage in insurance. Similar conclusions were drawn by Mahul & Stutley (2010) and Kousar (2023), who found that heightened government subsidies significantly enhance farmer participation in agricultural insurance.

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“H2” was also supported, showing that government support (IGS) positively influences the perceived value (MPV) of tea planters, with a coefficient of 1.54. In the interview, tea planters said that the government's knowledge of tea insurance can improve tea planters' awareness of the function of tea insurance and improve the perceived value of tea planters. When government support is aligned with public expectations and aims to enhance satisfaction, the perceived value and trust in government initiatives increase.

“H3” was supported as well, confirming that government support has a positive effect on tea planters' environmental concern, with a coefficient of 0.31. In interviews, tea planters said that the government has helped tea planters reduce production risks by providing services such as weather warnings and pest control, which indirectly increases their demand for insurance. By educating tea planters about the impact of climate change and the role of insurance, the government raises awareness of environmental risks among tea planters, thereby encouraging them to purchase insurance. Tea planters with high environmental concerns are more receptive to the government's insurance promotion policies.

The results also validate “H4”, indicating that risk cognition has a positive impact on tea planters' planting insurance purchasing behavior, with a coefficient of 0.23. Tea planters in this interview agree that when they are aware of the risks they may face during the planting process (e.g. drought, floods, pests and diseases, etc.), they are more inclined to buy insurance to protect against potential losses. This finding is consistent with previous research, which emphasizes the role of risk awareness in influencing farmers' participation in insurance .

“H5” was supported, showing that risk cognition positively affects the perceived value of tea planters, with a coefficient of 0.28. Studies conducted in South Africa, Sweden, and the USA also confirm the connection between motivational values and risk perception dimensions.

“H6” was supported, demonstrating that risk cognition positively influences tea planters' environmental concern, with a coefficient of 0.15. In the interview, tea planters said that a high level of risk cognition will motivate tea farmers to participate in environmental protection activities, such as soil and water conservation, ecological restoration, etc., to reduce the impact of environmental risks on tea plantations.

“H7” was supported, highlighting the positive impact of perceived value on tea planters' planting insurance purchasing behavior, with a coefficient of 0.22. This result supports previous findings, which emphasize that perceived value directly influences purchasing behavior .

“H8” was supported, confirming that environmental concern has a positive impact on tea planters' planting insurance purchasing behavior, with a coefficient of 0.24.

“H9” was supported, revealing that perceived value mediates the impact of government support on tea planters' planting insurance purchasing behavior, with a mediation

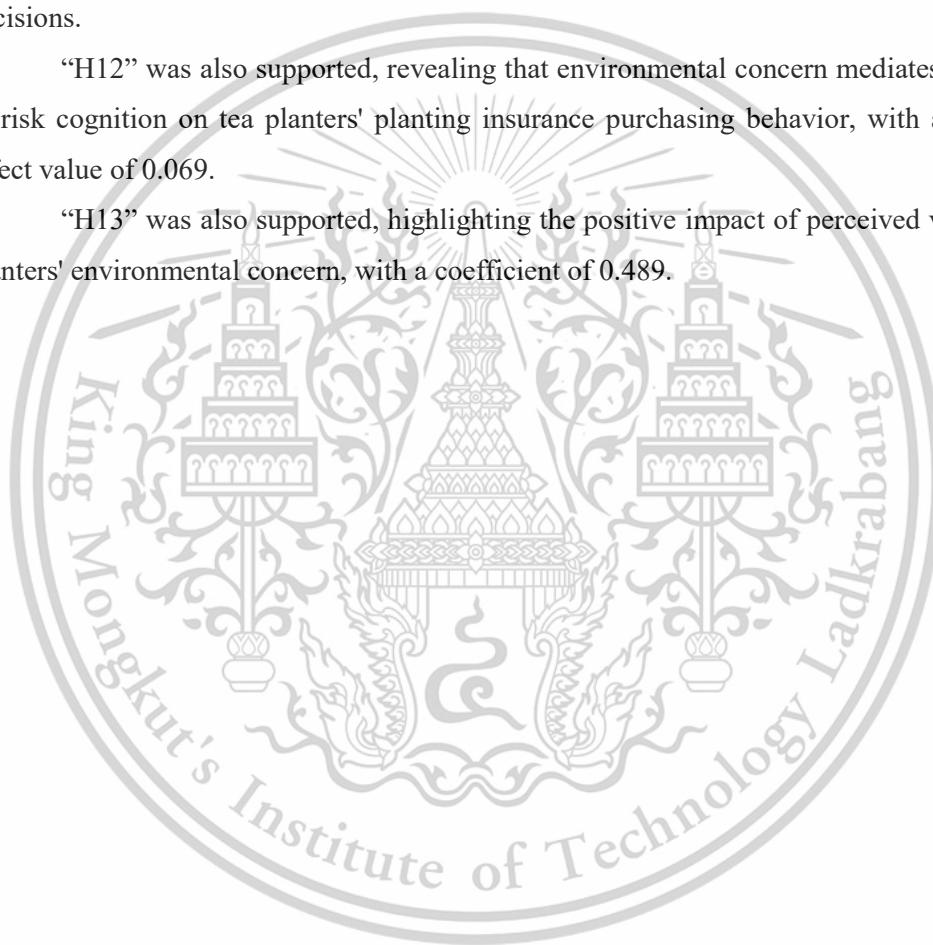
effect value of 0.237. This aligns with Zhang, who demonstrated the mediating role of premium subsidies in influencing rice farmers' insurance participation in Sichuan Province.

“H10” was supported, showing that perceived value mediates the impact of risk cognition on tea planters' planting insurance purchasing behavior, with a mediation effect value of 0.072.

“H11” was supported, indicating that environmental concern mediates the impact of government support on tea planters' planting insurance purchasing behavior, with a mediation effect value of 0.173. This is consistent with research suggesting that individuals who value environmental issues tend to evaluate the environmental consequences of their purchasing decisions.

“H12” was also supported, revealing that environmental concern mediates the impact of risk cognition on tea planters' planting insurance purchasing behavior, with a mediation effect value of 0.069.

“H13” was also supported, highlighting the positive impact of perceived value on tea planters' environmental concern, with a coefficient of 0.489.



CHAPTER 5

CONCLUSION AND RESPONSE STRATEGY

5.1 Conclusion

This study provides a comprehensive analysis of the factors influencing tea growers' decisions to purchase planting insurance, focusing on the roles of government support, risk cognition, and perceived value. By positioning purchasing behavior as the outcome variable—with government support and risk cognition as antecedents and perceived value as a mediator—several hypotheses were formulated and empirically tested.

The analysis confirms that both government support and risk cognition significantly impact perceived value and the adoption of planting insurance. Moreover, perceived value was found to foster positive purchasing behavior among tea planters. These findings underscore the importance of considering multiple factors—such as external support systems, individuals' risk assessments, and subjective value judgments—when understanding and influencing consumer behavior in the agricultural insurance sector (Smith, 2023; Wang & Li, 2024).

These insights offer valuable implications for policymakers, insurance providers, and agricultural stakeholders, enabling them to design targeted interventions that promote insurance adoption and reduce risks for tea growers. The application of heterogeneity testing methods enables the precise identification of diverse needs across different categories of tea planters, consequently improving their awareness and adoption of crop insurance (Johnson & Brown, 2022).

Specifically, small-scale planters tend to emphasize the affordability of premiums and the ease of enrollment. To cater to these priorities, policy interventions could include enhanced premium subsidy schemes, the introduction of micro-insurance options, and streamlined enrollment processes. These measures would effectively lower participation thresholds and mitigate financial pressures. Conversely, large-scale planters typically demand tailored insurance solutions and comprehensive risk management support. This can be achieved through the development of sophisticated insurance products featuring extended coverage and multi-risk protection, complemented by professional risk management advisory services, thereby optimizing their insurance portfolios and elevating protection standards (Garcia & Martinez, 2023).

Moreover, the creation of an integrated database encompassing tea planter information would serve as a critical foundation for evidence-based policy development. Implementing pilot initiatives coupled with adaptive policy refinement allows for continuous

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improvement of intervention strategies. It is imperative to foster synergistic partnerships among government entities, insurance providers, academic institutions, and agricultural cooperatives to collaboratively design and execute these policies. Such multi-stakeholder engagement ensures not only effective policy implementation but also sustained optimization to address the dynamic and varied requirements of tea planters (Chen & Zhang, 2024).

Looking forward, future research could explore additional variables and refine the conceptual framework to further enhance the understanding of agricultural insurance and consumer behavior dynamics.

5.2 Response Strategy

5.2.1 Policy Design and Implementation

The foundation of an effective tea planting insurance system lies in the formulation and implementation of well-structured policies that address both structural inefficiencies and behavioral barriers to adoption. Given the findings of this study, which highlight the significant influence of government support on perceived value and subsequent purchasing behavior, it is imperative that policy frameworks be designed with a nuanced understanding of regional disparities, farm size variations, and risk exposure levels. In particular, small-scale farmers are more sensitive to financial constraints and procedural complexities. Therefore, subsidy schemes must not only provide direct cost relief but also simplify access mechanisms to ensure broader participation.

One promising avenue for policy improvement involves the introduction of differentiated subsidy programs that reflect local economic conditions and agricultural vulnerabilities. For instance, regions prone to extreme weather events such as frost or flooding may warrant higher premium subsidies to offset the elevated risk perception among growers. Additionally, performance-based incentives can be tied to sustainable farming practices or cooperative engagement, thereby promoting long-term resilience while enhancing insurance uptake. Such targeted approaches not only improve the efficiency of public expenditure but also align with the broader objectives of rural development and climate adaptation.

Moreover, the integration of adaptive governance principles into policy design can enhance responsiveness to changing environmental and socio-economic contexts. This requires regular review cycles, stakeholder consultations, and evidence-based adjustments grounded in empirical data. By embedding flexibility into the policy architecture, decision-makers can better anticipate emerging risks and recalibrate interventions accordingly. Ultimately, a robust policy framework should serve as a dynamic instrument that supports

both short-term insurance participation and long-term sustainability within the tea planting sector.

5.2.2 Product Innovation and Customization

To meet the diverse needs of tea growers across different production scales and geographic locations, it is essential to develop innovative and customized insurance products. The heterogeneity analysis conducted in this study revealed clear distinctions between small-scale and large-scale planters in terms of their insurance preferences and risk management priorities. Smallholders often prioritize affordability and ease of enrollment, whereas larger producers seek comprehensive coverage and tailored advisory services. Recognizing these differences allows for the creation of segmented product portfolios that resonate with the unique circumstances of each farmer group.

For small-scale tea planters, micro-insurance models present a viable solution by offering limited yet accessible protection at affordable premiums. These products typically focus on specific perils—such as hailstorms or landslides—that have historically caused significant losses in certain regions. Importantly, micro-insurance schemes should be designed with minimal documentation requirements and integrated into existing rural financial systems, such as cooperative networks or mobile banking platforms, to reduce transaction costs and improve accessibility. Furthermore, these products can be bundled with credit facilities or savings plans to create a more compelling value proposition for resource-constrained farmers.

In contrast, large-scale tea plantation owners require more sophisticated insurance solutions that address complex operational risks and market uncertainties. Comprehensive risk management packages could include multi-peril coverage, yield guarantees, and post-harvest loss indemnification. Additionally, integrating value-added services such as agronomic consulting, climate forecasting, and supply chain risk mitigation can significantly enhance the perceived utility of insurance products. By offering a holistic approach that goes beyond traditional indemnity-based compensation, insurers can foster stronger customer relationships and encourage sustained policy renewal.

5.2.3 Institutional Collaboration and Stakeholder Engagement

The successful implementation of tea planting insurance initiatives depends heavily on the collaboration among various stakeholders, including government agencies, insurance providers, academic institutions, and local cooperatives. No single entity possesses the capacity to address all aspects of agricultural risk management independently. Therefore, establishing a coordinated institutional framework that facilitates knowledge sharing, resource

pooling, and joint decision-making is critical to ensuring program effectiveness and long-term viability.

Public-private partnerships (PPPs) offer a particularly promising model for fostering synergy between governmental oversight and private-sector efficiency. Under such arrangements, governments can provide regulatory guidance, financial backing, and risk-sharing mechanisms, while commercial insurers bring expertise in underwriting, claims processing, and product innovation. Reinsurance companies and international organizations can further contribute by offering technical assistance, capital support, and global best practices. These collaborative efforts help to build trust among farmers and create a more resilient insurance ecosystem that adapts to evolving challenges.

At the grassroots level, agricultural cooperatives and rural credit institutions play a vital role in bridging the gap between formal insurance systems and local communities. These entities possess deep-rooted connections with farming populations and can serve as intermediaries for outreach, enrollment, premium collection, and claims facilitation. Moreover, involving local leaders and community representatives in the design and implementation of insurance programs ensures cultural appropriateness and enhances social acceptance. By strengthening these institutional linkages, policymakers can improve service delivery and promote equitable access to risk protection for all segments of the tea-growing population.

5.2.4 Information Dissemination and Education

A major barrier to insurance adoption among tea growers is the lack of awareness and understanding regarding its benefits and procedures. Many farmers remain skeptical due to past experiences with inefficient claim settlements or insufficient communication about policy details. Addressing this issue requires a multifaceted approach to information dissemination and educational outreach that builds trust, clarifies expectations, and empowers farmers to make informed decisions.

Community-based awareness campaigns represent a powerful tool for reaching rural audiences and correcting misconceptions about insurance. These initiatives should be conducted through participatory methods such as workshops, field demonstrations, and peer-led discussions, ideally in local languages and using culturally relevant examples. Including testimonials from experienced users who have successfully claimed insurance benefits can significantly enhance credibility and encourage others to follow suit. It is equally important to engage women and youth, who are often underrepresented in agricultural decision-making processes.

In parallel, digital communication strategies can extend the reach of educational efforts and provide ongoing support to insured farmers. Mobile applications, SMS alerts, and

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online platforms can deliver timely updates on weather forecasts, insurance deadlines, and claim procedures. Interactive tools such as chatbots or voice-based tutorials can cater to varying literacy levels and technological familiarity. Furthermore, incorporating insurance education into school curricula and vocational training programs can cultivate a generation of risk-aware agricultural practitioners who are better equipped to navigate uncertainties in the future.

5.2.5 Monitoring, Evaluation, and Adaptive Learning

Continuous monitoring and evaluation are indispensable for assessing the performance of tea planting insurance programs and identifying areas for improvement. Without reliable feedback mechanisms, it is difficult to determine whether interventions are achieving their intended outcomes or if adjustments are needed to better align with farmer needs. Establishing a comprehensive M&E framework enables stakeholders to track progress, measure impact, and refine strategies based on empirical evidence.

Key performance indicators should be clearly defined and regularly updated to reflect changes in insurance penetration rates, claim settlement efficiency, customer satisfaction levels, and overall risk reduction outcomes. Data collection should be standardized across regions to allow for meaningful comparisons and trend analysis over time. Third-party audits and independent impact assessments can provide objective insights and help identify systemic issues that may hinder program success. Transparency in reporting findings is crucial for maintaining accountability and building confidence among farmers and other stakeholders.

Adaptive learning mechanisms are equally important for ensuring the long-term relevance and effectiveness of insurance policies. Scenario planning, predictive modeling, and risk simulation exercises can help anticipate future challenges and inform proactive policy responses. Regular stakeholder consultations and iterative policy reviews enable continuous refinement of insurance products and service delivery models. By embedding a culture of learning and responsiveness into the governance structure, decision-makers can ensure that tea planting insurance remains a dynamic and impactful tool for enhancing agricultural resilience in the face of growing uncertainties.

5.3 Outlook

Due to research limitations, this study's analysis of the factors influencing tea crop insurance purchasing behavior was confined to Guizhou Province. As such, whether the conclusions and policy recommendations derived from this study can be generalized to other

regions across the country—and whether they align with the broader characteristics of agricultural insurance—requires further validation.

Future research should extend the analysis to agricultural insurance practices in other provinces, conducting cross-regional comparative studies. In addition, comparative research across different types of agricultural insurance products is needed to explore supply and demand behaviors among various insurance entities. This will help uncover more universally applicable patterns and principles.

Moreover, while this study considered a specific set of factors influencing farmers' purchasing behavior of tea crop insurance, future studies could incorporate additional variables. Establishing a more comprehensive index system would also facilitate quantitative research in this area, providing deeper insights and more robust conclusions.



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APPENDIX 1

QUESTIONNAIRE

The purpose of this questionnaire is to study the influencing factors and the formation mechanism of tea planting insurance purchase. There is no right or wrong in this questionnaire. You can fill it out completely according to your own feelings and judgment. All data from the questionnaire are used by anonymous academic research, and your responses will be subject to strict confidentiality. Please do not have any concerns, directly according to your personal experience and comments to fill in the answer. Sincerely thank you for your help and support here!

Part 1 (Population information) :

1. Your gender

A. Male B. Female

2. Your age

A. Age under 25 years B. 26-35 C. 36-45 D. Over 45 years old

3. Your tea planting scale

A. Below 100 acres B. 100-500 acres C. 500-1000 acres D. Above 1000 acres

4. Your tea planting years

A. Under 3 year B. 4-6 year C. 7-9 year D. More than 9 years

5. Your degree

A. Doctor B. Master C. Undergraduate D. Under undergraduate

Part 2 (Variable information) :

Please complete the questionnaire honestly based on your genuine thoughts and opinions. Indicate your level of agreement by marking a check (√) in the corresponding column. Please provide responses for all the questions to ensure completion of the questionnaire. The options provided represent the degree to which you agree with your actual experiences and attitudes, using a scale of 1 to 5, with 1 indicating “strongly disagree”, 2 indicating “disagree”, 3 indicating “neutral”, 4 indicating “agree”, and 5 indicating “strongly agree”.

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Question	Opinion Level				
	1	2	3	4	5
Policy Support					
I understand the government's policy support for planting insurance.					
I think the government's policy support for planting insurance is effective.					
The government's policy support for planting insurance has an impact on my willingness to buy planting insurance.					
Economic Support					
I understand the government's economic subsidy policy for planting insurance.					
I think the government's economic subsidies for planting insurance is sufficient.					
The government's economic subsidy policy for planting insurance has an impact on my willingness to buy planting insurance.					
Business Support					
I understand the government's business support policies for planting insurance.					
I think the government's business support policy for planting insurance is effective.					
The government's business support policy for planting insurance has an impact on my purchase of planting insurance.					
Financial Risk					

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I have a good understanding of the financial risks (The amount of insurance premiums paid. The amount of insurance compensation that can be obtained if a claim is made.) of planting insurance.					
I think the financial risks of planting insurance (The amount of insurance premiums paid. The amount of insurance compensation that can be obtained if a claim is made.) are acceptable.					
I think the financial risks of planting insurance (The amount of insurance premiums paid. The amount of insurance compensation that can be obtained if a claim is made.) will have an impact on my income.					
Social Risk					
I have a good understanding of the social risks (policy changes, market fluctuations, etc.) of planting insurance.					
I think the social risks of planting insurance (policy changes, market fluctuations, etc.) will have an impact on my planting production.					
I think the social risks of planting insurance (policy changes, market fluctuations, etc.) will affect whether I buy planting insurance.					
Functional Risk					
I have a full understanding of the functional risks (insurance coverage, claim settlement process, etc.) of planting insurance.					
I think the functional risks of planting insurance (insurance coverage, claim settlement process, etc.) are reasonable.					

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I think the functional risks of planting insurance (insurance coverage, claim settlement process, etc.) will affect whether I buy planting insurance.					
Time Risk					
I have good aware of the time of planting insurance.					
I think the settlement time for planting insurance is reasonable.					
I think the time of the settlement of planting insurance will affect whether I buy planting insurance.					
Economic Value					
Planting insurance can help farmers reduce their risk and losses.					
Planting insurance can help farmers raise their incomes.					
Planting insurance can help farmers reduce their financial pressure.					
Social Value					
Planting insurance can help farmers improve their social status.					
Planting insurance can help farmers increase their resilience to risks.					
Planting insurance can help farmers to promote agricultural production development.					
Emotional Value					
Planting insurance can bring farmers a sense of peace of mind.					
Planting insurance can bring happiness to farmers.					
Planting insurance can give farmers a sense of hope.					
Functional Value					

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The coverage of planting insurance meets the needs of farmers.				
The claim settlement process of planting insurance is convenient.				
The premium for planting insurance is reasonable				
Environmental Awareness				
Environmental protection is more important than economic benefits in tea planting.				
You think you have some responsibility for the environmental protection in tea cultivation				
In your opinion, the environmental problems in tea planting have a certain seriousness				
Environmental Participation				
Tea cultivation can alleviate environmental problems				
Tea cultivation can represent a deep participation in environmental protection				
Tea planting is an experience of social responsibility for environmental protection behavior.				
Personal Purchase				
I usually buy my own planting insurance				
I will choose the planting insurance according to my own needs				
I think planting insurance is a necessary guarantee for my own tea planting				
Recommended Purchase				
I would recommend planting insurance to others				
I think that planting insurance is a beneficial financial product for planting				

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I think planting insurance can help farmers reduce their risk					
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APPENDIX 2

Tongren Polytechnic College

Research Ethics Committee Approval Report

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APPENDIX 2

Tongren Polytechnic College

Research Ethics Committee Approval Report

Research Title	Determinants of Tea Planters' Purchasing Behavior of Planting Insurance:		
Department	School of Economics and Management		
Research Name	Zhenhua Xu	Academic Rank	Associate Professor
Filing Materials	Project Plan	Yes	
	List of Researchers	Yes	
Checkup	Qualifications of Researchers	Conforms to the specifications	
	Research Project Plan	Suitable	
Research Duration	March 2, 2024 to October 20,2024		
<p>Review comments:</p> <p>Upon review and deliberation by the Institutional Ethics Committee, the proposed research is confirmed to adhere to the Research Ethics Regulations of Tongren Polytechnic College. Ethical approval is granted for study implementation. [Approval No: REC-TRZY-2024-003]</p> <p style="text-align: center;">Tongren Polytechnic College Ethics Committee</p> <p style="text-align: center;">Date:</p>			

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APPENDIX 3

Approval Form for Ethical [Approval No:

REC-TRZY-2024-003]

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APPENDIX 3

Approval Form for Ethical [Approval No: REC-TRZY-2024-003]

<p>Research Title: Determinants of Tea Planters' Purchasing Behavior of Planting Insurance: SEM analysis</p>
<p>Research name: Zhenhua Xu</p>
<p>academic advisor: Nuttawut Rojniruttikul</p>
<p>Research Program Overview:</p> <p>This study investigates the impact of government support and risk cognition on the purchasing behavior of tea planting insurance, with a particular focus on the mediating roles of perceived value and environmental concern. This study contributes to comprehending how government support and risk cognition can augment the adoption of planting insurance practices among tea farmers.</p>
<p>Research Assurance:</p> <p>I declare that the contents filled out are true and I will conduct the research in strict accordance with the relevant contents of the approval form. I also declare that I will strictly abide by the national laws and relevant regulations, while protecting the health, rights and privacy of the research subjects.</p> <p style="text-align: right;">Signature:</p> <p style="text-align: right;">Date:</p>
<p>The following content is filled in by the Ethics Committee</p>

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Department Opinion:

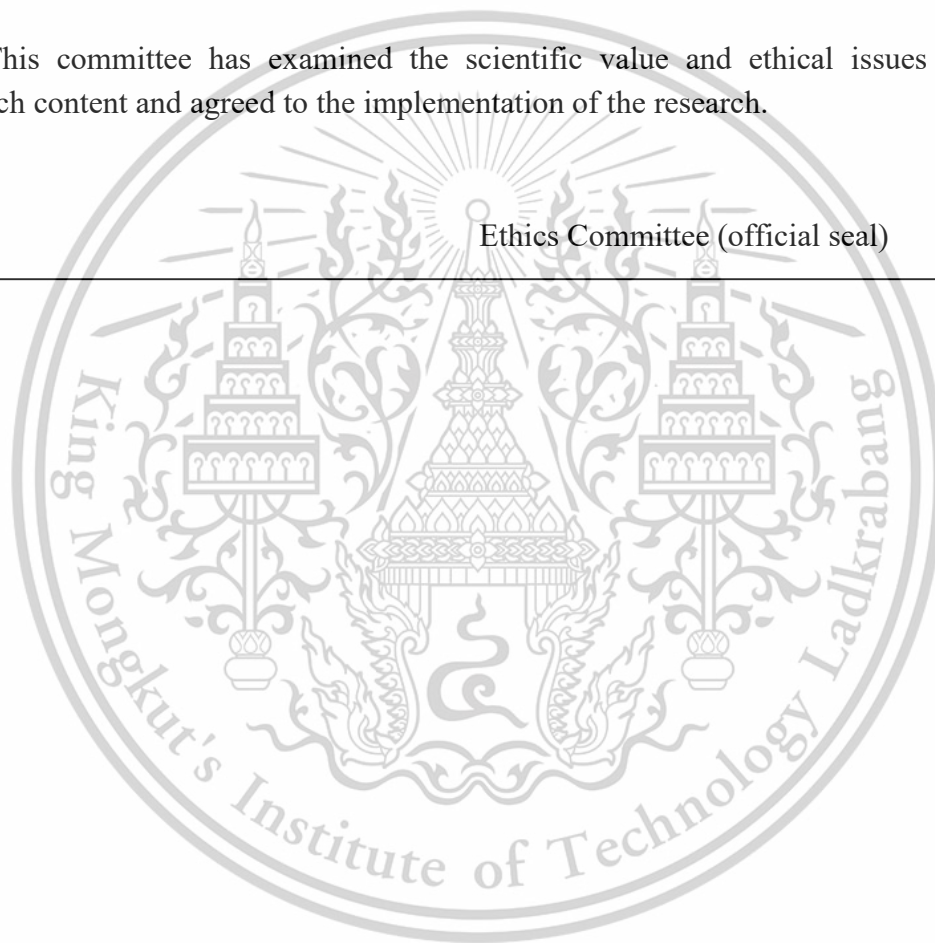
After review, the research value of the project is high, the research design is reasonable, the consideration of potential ethical issues is adequate, the treatment measures taken are effective and appropriate, and it meets the ethical requirements and is approved to carry out the research.

Department (official seal)

Ethics Committee Opinion:

This committee has examined the scientific value and ethical issues of the research content and agreed to the implementation of the research.

Ethics Committee (official seal)




Approval Form for Ethical [Approval No: REC-TRZY-2024-003]

<p>Research Title: Determinants of Tea Planters' Purchasing Behavior of Planting Insurance: SEM analysis</p>
<p>Research name: Zhenhua Xu</p>
<p>academic advisor: Nuttawut Rojniruttikul</p>
<p>Research Program Overview:</p> <p>This study investigates the impact of government support and risk cognition on the purchasing behavior of tea planting insurance, with a particular focus on the mediating roles of perceived value and environmental concern. This study contributes to comprehending how government support and risk cognition can augment the adoption of planting insurance practices among tea farmers.</p>
<p>Research Assurance:</p> <p>I declare that the contents filled out are true and I will conduct the research in strict accordance with the relevant contents of the approval form. I also declare that I will strictly abide by the national laws and relevant regulations, while protecting the health, rights and privacy of the research subjects.</p> <p align="right">Signature: <i>Zhenhua Xu</i> Date: <i>6/7/2024</i></p>
<p>The following content is filled in by the Ethics Committee</p>
<p>Department Opinion:</p> <p>After review, the research value of the project is high, the research design is reasonable, the consideration of potential ethical issues is adequate, the treatment measures taken are effective and appropriate, and it meets the ethical requirements and is approved to carry out the research.</p> <p align="right">Department (official seal)</p>
<p>Ethics Committee Opinion:</p> <p>This committee has examined the scientific value and ethical issues of the research content and agreed to the implementation of the research.</p> <p align="right">Ethics Committee (official seal)</p>

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Tongren Polytechnic College
Research Ethics Committee Approval Report

Research Title	Determinants of Tea Planters' Purchasing Behavior of Planting Insurance: SEM analysis		
Department	School of Economics and Management		
Research Name	Zhenhua Xu	Academic Rank	Associate Professor
Filing Materials	Project Plan	Yes	
	List of Researchers	Yes	
Checkup	Qualifications of Researchers	Conforms to the specifications	
	Research Project Plan	Suitable	
Research Duration	March 2, 2024 to October 20, 2024		
<p>Review comments:</p> <p>Upon review and deliberation by the Institutional Ethics Committee, the proposed research is confirmed to adhere to the Research Ethics Regulations of Tongren Polytechnic College. Ethical approval is granted for study implementation. [Approval No: REC-TRZY-2024-003]</p> <p style="text-align: center;">Tongren Polytechnic College Ethics Committee</p> <p style="text-align: center;">Date: 7/7/2024</p> 			

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AUTHOR BIOGRAPHY

Name	Mr. Zhenhua Xu
Address	Tongren City, Guizhou Province, China
Education	B.Sc. (Mathematics and Applied Mathematics), Taiyuan University of Technology M.A. (Regional Economics), Southwest University
Work Experience	Lecturer, Tongren Polytechnic College. 2012–2017 Associate Professor, Tongren Polytechnic College. 2017– Present

