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Enhancing Rice Farming through Extension: The Role of Farmer-Related Factors in PalayCheck System Effectiveness in Davao Oriental

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ABSTRACT

PalayCheck is a rice crop management system that provides an overview of the key technology and practices as Key Checks; contrasts farmer learning and practice with the best practice. This study examined the personal and farming-related factors that influence the adoption of the PalayCheck system among 221 rice farmers in Davao Oriental. The study employed a descriptive correlational research design. Results showed that the greater part of farmers were male (57%), middle-aged (41–70 years), with high school-level education (56%) and household sizes of 4–6 members (50%). A large portion of the respondents were experienced farmers, with 48% having more than 26 years of rice farming. Among the respondents, it was evident that educational attainment manifested a performing literacy that aligns with the requirements of the PalayCheck system. A good number of the farmers (65%) were members of farmers' organizations, which helped them gain better access to resources and support. In the meantime, farmers who owned the land they grew accounted for 66%, which likely gave them the guts and impulse to adopt the PalayCheck system. The definition of the Department of Agrarian Reform for small farmers who worked with less than 5 hectares is evident in this study, which revealed that 99% of the respondents fall under this category. When it came to accessing agricultural information, nearly half (49%) relied on the agricultural extension workers, while others turned to media sources such as radio and television for additional guidance. It was reported that 55% of the respondents have weekly contact with the extension agent, while the other 38% have it monthly. Demonstrate that individual behavior and agricultural conditions significantly influence farmers' acceptance of technical developments, such as PalayCheck, underscoring the necessity of tailored extension methods to promote inclusive and sustained adoption.

INTRODUCTION

Agricultural extension services are crucial instruments for the advancement of rural communities, specifically through the enhancement of agricultural methodologies, amplification of productivity, and promotion of sustainable practices. Indeed, the facilitation of knowledge dissemination, technology transfer, and the adoption of optimal farming practices is a key function of these services (Kumar *et al.*, 2020). According to the Philippine Rice Research Institute (n.d), PalayCheck is a dynamic rice crop management system that presents the best key technology and management practices as Key Checks, compares these with actual farmer practices, and promotes continuous learning through farmers' discussion groups to sustain improvements in productivity, profitability, and environmental safety. This system advocates for essential practices at all phases of rice cultivation, emphasizing productivity enhancement, sustainability, and decision-making processes founded on empirical data (Philrice, 2023)

While the PalayCheck system offers potential benefits, its effectiveness can vary across communities due to farmer-related factors. Individual characteristics such as age, gender, education, farming experience, land tenure, access to information, and organizational involvement can influence a farmer's adoption and application

of PalayCheck recommendations (Palis *et al.*, 2015). Understanding these variables is crucial in assessing how well the system translates from theory into practice.

This study was conducted in three rice-producing municipalities in District II of Davao Oriental—Banaybanay, Lupon, and Governor Generoso—areas known for their active rice farming communities and participation in the PalayCheck Farmers Field School (FFS). The research sought to evaluate the effectiveness of the PalayCheck System and to identify the extent to which various farmer-related factors contribute to its success or limitations.

Objectives

1. To evaluate the effectiveness of the PalayCheck system.
2. To identify the farmer-related - related factors that affect the effectiveness of the PalayCheck system.
3. To describe the extent to which these farmer related - related factors influence the effectiveness of the PalayCheck system

LITERATURE REVIEW

The Role of Agricultural Extension in Agricultural Development

Agricultural extension has long served as a strategic

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instrument for disseminating technologies, improving farm productivity, and fostering rural development. In recent decades, its role has expanded from the conventional model of top-down technology transfer to more participatory and integrative approaches. Modern extension systems are now geared toward empowering farmers through knowledge co-creation, skill enhancement, and capacity building to promote sustainable agricultural practices (Chouhanet *et al.*, 2023). The PalayCheck System, a science-based rice farming technology promoted by the Philippine Rice Research Institute (PhilRice), exemplifies such an integrated approach. It combines technical information, experiential learning, and field-based decision-making to improve productivity, profitability, and environmental sustainability among rice farmers. These programs are often delivered through season-long farmers' field schools and are complemented by support from extension agents, change agents, and local agricultural technicians.

In addition to facilitating technology adoption, agricultural extension contributes to broader development outcomes, including organizational capacity building, participatory learning, and institutional support (Hagmann *et al.*, 1996). The role of extension agents has evolved to that of facilitators who enable farmer-to-farmer learning, encourage collective action, and link producers to input and output markets (Saryam & Jena, 2019). These services are particularly relevant in rice-producing regions such as Davao Oriental, where diverse farmer profiles and socio-economic conditions demand context-specific extension strategies. Moreover, the effectiveness of these interventions is largely influenced by farmer-related factors such as education, farm experience, access to resources, organizational membership, and perception toward farming. Understanding how these variables shape the outcomes of extension efforts, particularly in the implementation of the PalayCheck System, is critical for designing targeted and impactful extension programs (Anugwa, 2018). As such, agricultural extension is no longer merely a channel for transmitting information but a dynamic system for empowering rice farmers and strengthening rural resilience.

Background and Development of the PalayCheck System

The PalayCheck System is an integrated rice crop management framework developed by the Philippine Rice Research Institute (PhilRice) to address persistent productivity gaps and sustainability challenges in the country's rice farming sector. Introduced in the early 2000s, the system consolidates science-based recommendations into a farmer-friendly set of "Key Checks" that span the rice production process, including land preparation, seed selection, nutrient and pest management, water control, and postharvest handling (PhilRice, 2010). Each Key Check represents a best practice that farmers are encouraged to observe and adopt based on local conditions and performance indicators.

What distinguishes PalayCheck from traditional extension models is its emphasis on experiential learning and farmer empowerment. The system uses participatory approaches such as season-long Farmers' Field Schools (FFS), field demonstrations, and regular field monitoring. These are designed to promote peer learning, critical thinking, and adaptive decision-making among rice farmers (PhilRice, 2014). Through this approach, farmers actively engage in field observations, conduct simple experiments, and assess outcomes against recommended standards. This learner-centered model supports the broader goals of sustainable agriculture, increased yield, and improved livelihood, particularly in smallholder contexts (PhilRice, 2020). Over the years, PalayCheck has become a cornerstone of national rice extension initiatives and continues to be promoted across major rice-producing regions, including Davao Oriental.

Components and Principles of the PalayCheck System

The PalayCheck System is an integrated rice crop management system developed by the Philippine Rice Research Institute (PhilRice) to help rice farmers improve productivity, profitability, and sustainability. It consists of eight "key checks" that serve as benchmarks or standards for good rice farming practices throughout the production cycle. These include the use of high-quality seeds of recommended varieties, proper land preparation, synchronous planting within a two-week period, balanced fertilization based on soil analysis, effective pest and nutrient management, efficient water management through alternate wetting and drying (AWD), timely harvesting when grain moisture is between 21–24%, and proper postharvest handling techniques (PhilRice, 2023). These practices are designed to be science-based and adaptable to local conditions, encouraging farmers to assess and improve their practices using measurable indicators. Beyond its technical components, PalayCheck is grounded in participatory and experiential learning. The system promotes farmer empowerment through season-long education programs such as Farmers' Field Schools (FFS), which encourage group learning, field-based experimentation, and farmer-to-farmer knowledge sharing (Philippine Rice Research Institute, n.d.). The core principles of PalayCheck include integrated crop management, continuous learning, and self-evaluation through regular monitoring and assessment. It recognizes farmers as active decision-makers and promotes capacity-building by enabling them to adapt practices based on observations and outcomes in their fields (Malonzo *et al.*, 2021). By fostering a culture of innovation and learning, PalayCheck not only delivers technical knowledge but also strengthens the institutional and human capacities necessary for resilient and sustainable rice production.

Farmer-Related Factors Influencing Extension Effectiveness

Age

Age is a major determinant in farmers' receptivity to

new technologies and practices. Younger farmers are typically more adaptive to modern approaches such as digital tools, while older farmers may prefer traditional learning models and require more time or convincing to adopt new methods (Mariano *et al.*, 2012). In regions of the Philippines, younger rice farmers were found to be more likely to adopt integrated pest management (IPM) and modern production techniques (Horstkotte-Wesseler, 1999). This generational difference in learning behavior suggests that extension strategies must be age-sensitive, offering hybrid learning modes such as hands-on demonstrations for older farmers and digital media for younger ones.

Gender

Gender continues to be a critical, yet often neglected, factor in the effectiveness of extension systems. Despite women's vital roles in agricultural production and postharvest operations, they are frequently marginalized in formal extension activities (Kameswari *et al.*, 2011). Brilliantes *et al.* (2004) and FAO (2013) stress the need for gender-sensitive extension frameworks that recognize the differentiated needs, access levels, and decision-making roles of men and women in agriculture.

Household Size

Household size is another relevant demographic factor that affects a household's capacity to implement extension advice. Larger households often mean more labor availability, which can enhance farm productivity and the ability to adopt labor-intensive practices (Koirala *et al.*, 2014). However, they also face increased consumption needs and potential internal labor conflicts, especially if younger members seek non-agricultural employment. Sullano and Tan-Cruz (2013) showed that in Region XI, farmer households involved in participatory extension (through CPAR) displayed varying efficiency based on household composition and labor dynamics.

Socio-Economic Factors Influencing Extension Effectiveness

Educational attainment is a key determinant in the adoption of agricultural technologies and the overall success of extension programs. Farmers with higher levels of formal education are generally more capable of processing technical information, making informed decisions, and adopting recommended practices introduced through extension services (Abdullah & Samah, 2013). Education enhances cognitive ability and widens access to diverse sources of information, making it easier for farmers to evaluate new technologies critically (Ghimire *et al.*, 2015). Studies have shown that literate farmers are more likely to attend training sessions, read instructional materials, and understand complex agricultural innovations, thereby increasing the likelihood of successful extension program implementation (Davis *et al.*, 2012).

Farming experience is another influential factor in extension effectiveness. Experienced farmers often rely

on accumulated knowledge and intuition from years of practical exposure, which can either complement or conflict with new technologies being introduced. While long years in farming can provide a solid foundation for innovation adoption, it can also breed resistance to change, especially if new practices contradict traditional knowledge (Tayang *et al.*, 2023). Nonetheless, experience contributes to better risk assessment, resource allocation, and adaptation of practices to local conditions, enhancing the practical value of extension interventions.

Land tenure security plays a critical role in farmers' willingness to adopt sustainable and long-term agricultural practices. Farmers who own or securely lease their land are more likely to invest in new technologies and resource-conserving strategies recommended by extension agents because they expect long-term benefits (Paltasingh, 2018). In contrast, those with insecure tenure may hesitate to apply expensive or labor-intensive practices due to uncertainty over land access. Similarly, farm size influences both the feasibility and scalability of innovations. Larger farms have greater capacity to absorb risks and invest in new technologies, making them more responsive to extension efforts (Doss & Morris, 2000). However, smallholders often face resource constraints that limit their adoption of capital-intensive innovations. Access to farm inputs such as quality seeds, fertilizers, and irrigation facilities is crucial in the effective implementation of extension recommendations. Extension advice, no matter how well-intentioned, may fail if farmers lack the resources to act upon it. According to Masereand (2022), access to essential inputs significantly affects the degree to which farmers can implement technologies introduced by extension systems. Therefore, availability and affordability of inputs must go hand-in-hand with knowledge transfer to ensure meaningful outcomes.

Source of Agricultural Information

Access to accurate, timely, and relevant information is a fundamental pillar of effective extension delivery. Farmers receive information through a wide array of sources, including government extension workers, radio, TV, ICT tools (SMS, mobile apps), other farmers, NGOs, and private sector actors (Rivera & Qamar, 2003). Studies have shown that information from trusted sources, particularly those perceived as credible and knowledgeable, significantly influences adoption behavior (Mariano *et al.*, 2012).

Membership in Farmers' Organizations or Cooperatives

Belonging to a farmers' organization or cooperative enhances extension effectiveness by facilitating group learning, peer support, access to input and output markets, and collective bargaining power. Studies have consistently shown that members of well-functioning organizations are more likely to access extension services, participate in training, and adopt improved practices due to increased exposure and shared learning (Hellin *et al.*, 2009). The study of Ballesteros *et al.*, (2021) suggests that

the effectiveness of extension services is significantly influenced by the active membership of farmers in well-structures organizations.

Contact with Extension Agents

Regular and meaningful contact with extension workers remains a cornerstone of effective knowledge transfer. Face-to-face interaction allows for contextualized, trust-based communication, which is particularly important in explaining complex or location-specific technologies such as the PalayCheck System or climate-resilient rice varieties (Mariano *et al.*, 2012).

Farmers who have frequent visits from extension agents show higher levels of awareness, better farm management practices, and improved yields, according to multiple impact evaluations (Koirala *et al.*, 2014). The availability, approachability, and competence of the extension worker are also important. Where agents are poorly trained, overburdened, or under-resourced, the quality of interaction suffers, and so does farmer adoption (Swanson, 2008).

Perception towards Rice Farming

The way farmers perceive rice farming whether as a sustainable livelihood, a cultural heritage, or merely a subsistence activity shapes their level of engagement with extension services. In many rural areas in the Philippines, older farmers view rice farming as a way of life deeply embedded in tradition and identity, which can either facilitate or hinder innovation depending on cultural compatibility (Sebastian *et al.*, 2000). For example, farmers who take pride in rice farming and see it as a meaningful occupation are more likely to invest in knowledge-enhancing activities such as farmer field schools or community trainings (Mariano *et al.*, 2012).

Expectations from the PalayCheck System

The PalayCheck System - a science-based integrated rice crop management system developed by PhilRice—relies heavily on the trust and perception of its target users. Farmers’ expectations of PalayCheck determine their commitment to adopt and sustain the recommended practices. Studies have shown that farmers expect PalayCheck to provide simple, practical, and low-risk solutions to recurring production issues such as pest infestation, nutrient deficiency, and water management (Mariano *et al.*, 2012; Sebastian *et al.*, 2000).

Willingness to Adopt New Technologies

Willingness to adopt agricultural innovations is a central component of attitudinal influence on extension effectiveness. Adoption is not purely technical; it is a behavioral process affected by risk perception, cost-benefit considerations, and social influence (Michler & Shively, 2015). Farmers who are risk-averse or constrained by limited access to capital tend to be hesitant in adopting new technologies, even if they are exposed through extension activities (Rola & Quintana-Alejandrino, 1993).

MATERIALS AND METHODS

This study was conducted in Davao Oriental, a province in Region XI, Philippines, strategically located in the easternmost part of the region. The selected study areas included the municipalities of Banaybanay, Lupon, and Governor Generoso, which were chosen due to the active participation of rice farmers in the PalayCheck System Farmers Field School. The study employed a descriptive correlational research design, aiming to assess the effectiveness of the PalayCheck system.

The respondents of the study were rice farmers from the three municipalities who had participated in the PalayCheck System. The total population consisted of 494 farmers, including 229 from Banaybanay, 120 from Lupon, and 145 from Governor Generoso. Using Slovin’s formula at a 95% confidence level with a margin of error of 0.05, a total sample size of 221 farmers was determined. These were proportionally distributed among the municipalities as follows: 102 respondents from Banaybanay, 54 from Lupon, and 65 from Governor

Generoso

A semi-structured questionnaire was employed to collect data from farmers, capturing essential farm-related factors such as age, educational attainment, farm size, family income, and sources of agricultural information. The survey assessed the effectiveness of the PalayCheck system in relation to the farmer-related factors.

Descriptive statistics, including frequency counts, percentages, means, and standard deviations, were utilized to profile respondents and evaluate the effectiveness of the PalayCheck system.. To further explore the influence of farmer-related factors on the effectiveness of PalayCheck, a stepwise multiple regression analysis was conducted. Statistical significance was determined at the 0.05 level.

RESULTS AND DISCUSSION

Personal Factor According to Age Distribution

The age of rice farmers in Davao Oriental ranges from 21 to 73 years. As presented in Table 1, more than three-fourths of the respondents were aged between 41 and 70 years, indicating a predominance of middle-aged to elderly farmers. Notably, younger farmers also participated in the adoption of the PalayCheck system, with 14 farmers aged 21–30 and 26 farmers aged 31–40 reporting its use. These findings suggest that the majority of PalayCheck adopters

Table 1: Personal Factor According to Age Distribution

Age Distribution	Frequency	Percentage
21 – 30 years old	14	6 %
31 – 40 years old	26	12 %
41 – 50 years old	66	30 %
51 – 60 years old	75	34 %
61 – 70 years old	31	14 %
71 years old and above	9	4 %
Total	221	100 %

in the province are from older age groups. This supports the findings of Ambong and Paulino (2020), who emphasized that age is a significant factor influencing the adoption of agricultural technologies in rice production.

Personal Factor According to Gender Distribution

Table 2 presents the gender distribution of the 221 rice farmers with access to the PalayCheck system. Among the respondents, 125 (57%) were men and 96 (43%) were women, reflecting a gender gap of approximately 14% in favor of male farmers. Although a disparity remains, the relatively balanced ratio suggests a gradual narrowing of the gender gap in access to rice farming technologies. This observation aligns with the findings of Harman *et al.* (2015), who noted that the Department of Agriculture’s efforts to institutionalize gender equality frameworks in rural and agricultural development have contributed to increasing the participation of women in farming innovations..

Table 2: Personal Factor According to Gender Distribution

Gender Distribution	Frequency	Percentage
Male	185	57%
Female	96	43%
Total	221	100%

Personal Factor According to Household Size

As shown in Table 3, 50% of the Davao Oriental farmer-cooperators reported an average household size of 4–6 members. The largest recorded household had 13 members, while the smallest had 3. Specifically, 111 respondents (50%) fell within the 4–6 range, followed by 67 respondents (30%) with 1–3 household members, 33 respondents (15%) with 7–9 members, and approximately 5% (10 respondents) reporting household sizes of 10 or more. This distribution suggests that many rice farmer-cooperators have larger families. This conforms with the study of Koirala *et al.* (2014) that larger households often mean more labor availability, which can enhance farm productivity and the ability to adopt labor-intensive practices. In addition, Martinez *et al.* (2021) posit that Household size, as a demographic variable, can exert multifaceted influences on a farming household’s decision-making process regarding the acceptance and implementation of new agricultural practices and tools.

Table 3: Personal Factor According to Household Size

Household Size	Frequency	Percentage
1 – 3 members	67	30%
4 – 6 members	111	50%
7 – 9 members	33	15%
10 members and above	10	5%
Total	221	100%

Personal Factor According to Educational Attainment

Summarizing the data, Table 4 presents the educational characteristics of the respondents in the different

schooling years/education levels. On average, a little over fifty percent (50%) of the respondents were only high school levels or high school graduate, twenty nine percent (29%) were elementary graduate or below and the rest, 15% of the respondents, having a college diploma, college level or taken their vocational courses. Though the gap of educational attainment between college level/degree holders against high school graduates/high school level of the participants was around 31%, technically, all the respondents had taken their basic education; hence, they can be considered as functionally literate and capable of understanding the principal guidelines of the PalayCheck system. The study by Martinez *et al.* (20121) showed that farmers’ level of education significantly influences their receptiveness to innovation, their ability to analyze complex information, and their overall decision-making processes regarding the adoption of new farming practices.

Table 4: Personal Factor According to Educational Attainment

Educational Attainment	Frequency	Percentage
Elementary Level	23	10%
Elementary Graduate	41	19%
High School Level	58	26%
High School Graduate	66	30%
College Level	16	7%
College Graduate	12	5%
Others	6	3%
Total	221	100%

Farming Factor According to Farming Experience

The rice farmers in Davao Oriental have been growing rice for an average of 21 years. As shown in Table 5, a large number of farmers 106, or 44% said they had more than 26 years of farming experience. Only 18 farmers said they had the least experience, which was between 1 and 5 years. Also, almost half (44%) of the people who answered had been farming rice for 6 to 25 years.

These results show that most of the rice farmers in the survey are experienced. They have probably learned a lot about farming over the years, which will help them grow rice in a way that is both efficient and productive.

This is in line with what Ambong and Paulino (2020) found, which stressed that access to or availability of rice

Table 5: Personal Factor According to Farming Experience

Years of Farming Experience	Frequency	Percentage
1 – 5 years	18	8%
6 -10 years	21	10%
11- 15 years	20	9%
16 – 20 years	20	9%
21 – 25 years	36	16%
26 years and above	106	48%
Total	221	100%

cultivation methods is not the only thing that matters. Instead, it's a complicated process of making decisions that is heavily influenced by the farmer's years of firsthand experience with farming, as well as their practical skills and perceptions.

Farming Factor According to Land Tenure

Table 6 presents the distribution of respondents according to their land tenurial status. It reveals that a majority of the rice farmers (66%) are owner-cultivators with titled lands, indicating a relatively secure tenure. This ownership provides them greater autonomy in farm decision-making and long-term investment in land productivity. In

contrast, 19% of the respondents identified as tenants, while 4% were lessees who rent land for a fixed amount or share of the harvest. The remaining 11% fall under other tenurial arrangements, such as informal agreements or shared family ownership.

The predominance of land ownership among respondents suggests a favorable environment for the adoption of improved farming practices and technologies. Secure land tenure has been shown to enhance farmers' willingness to invest in land improvements and sustainable agricultural practices, given the reduced risk of displacement and increased sense of control over production decisions (Ambong & Paulino, 202).

Table 6: Farming Factor According to Land Tenure

Land Tenurial Mode	Frequency	Percentage
Lessee	9	4%
Owner	146	66%
Tenant	41	19%
Others	25	11%
Total	221	100%

Personal Factor According to Farm Size

The Department of Agrarian Reform (DAR), as stipulated in Republic Act 6657, classifies farms with an area of five hectares or less as small-scale farms. Using this classification, it can be inferred that almost all participants in the PalayCheck system in Davao Oriental 218 out of 221 respondents, or 99% fall under the category of

smallholder farmers. As shown in Table 7, the majority (76%) cultivate between 0.1 and 1.0 hectares of land, while only 1% manage farms larger than five hectares.

The relationship between farm size and technology adoption is not always linear or straightforward, as smaller farms may have different incentives and constraints compared to larger farms (Obayelu, 2017).

Table 7: Personal Factor According to Farm Size

Farm Size (Has)	Frequency	Percentage
0.1 – 1.0 ha	167	76%
1.1 – 2.0 has	31	14%
2.1 – 3.0 has	11	5%
3.1 – 4.0 has	6	3%
4.1 – 5.0 has	3	1%
5.1 has and above	3	1%
Total	221	100%

Farming Factor According to the Availability of Farm Inputs

Table 8 presents data on the availability of key farm inputs fertilizers, seeds, and chemicals within the farming communities of Davao Oriental. The findings indicate that these inputs are largely inaccessible within the farmers' immediate locality. Only 26% of the respondents reported being able to purchase fertilizers and chemicals within their barangay, while 38% had access to seeds

locally. In contrast, a majority 74% for both fertilizers and chemicals, and 62% for seeds had to travel outside their barangay to obtain these essential inputs, thereby incurring additional transportation costs and logistical burdens.

The availability of farm inputs, including seeds, fertilizers, pesticides, and irrigation facilities, plays a pivotal role in determining the extent to which farmers can adopt and effectively utilize modern rice farming technologies (Ituriaga *et al.*, 2024).

Table 8: Personal Factor According to the Source of Farm Inputs

Farm Inputs	Frequency Availability		Total	Percentage		Total %
	Within	Outside		Within	Outside	
Fertilizer	57	164	221	26	74	100

Seeds	84	137	221	38	62	100
Chemicals	57	164	221	26	74	100

Farming Factor According to Sources of Agricultural Information

Comparing the sources of essential methods to transfer information on the PalayCheck system and to analyze the information system on how the respondents were informed, it is clearly presented in Table 9 that almost one-half (49%) says that the information regarding the PalayCheck system was provided by the assigned Agricultural Extension Workers in their areas. Other respondents knew about the system through television (16%), radio broadcasting (22%), and newspapers (10%). The study of Ambong and Paulino (2020) deduced that the accessibility and credibility of these sources play a pivotal role in shaping farmers' decisions regarding the adoption of new practices.

Table 9: Personal Factor According to Sources of Information

Source of Agricultural Information	Frequency	Percentage
Television	36	16%
Radio	48	22%
Newspaper	22	10%
Primers	0	0
Agricultural extension Workers	108	49%
Others	7	3%
Total	221	100%

Personal Factor According to Membership of Organization

The study shows that several existing organizations support farmers by providing financial assistance, access to agricultural inputs, and other essential services. As shown in Table 10, approximately two-thirds (65%) of the PalayCheck cooperators are members of farmers' organizations, while 20% are affiliated with formal cooperatives. The remaining 15% reported no membership in any organization.

These figures highlight a strong level of engagement among the majority of respondents in organized groups, reflecting a spirit of cooperativism and collective action. Organizational membership plays a crucial role in empowering farmers by offering platforms for knowledge exchange and collaborative learning. These platforms facilitate the dissemination of information on innovative rice farming technologies and best practices, as emphasized by Karmakar *et al.* (2021). Through participation in farmer organizations or cooperatives, members gain access to peer experiences, expert advice, and demonstration activities that highlight key attributes of new technologies, such as relative advantage, compatibility with existing practices, complexity,

trialability, and observability. These factors significantly shape farmers' perceptions and influence their decisions to adopt or reject technological innovations.

Table 10: Personal Factor According to Membership of the Organization

Type of Organization	Frequency	Percentage
SamahangNayon	0	0
Irrigators Association	143	65%
Cooperatives	45	20%
Others	33	15%
Total	221	100%

Farming Factor According to Contact with Change Agent

More than one-half (55%) of farmer cooperators involved in this study indicated that at least once a week, they were visited by an Agricultural Extension Worker and some visitors regarding additional knowledge inputs on their involvement in the PalayCheck system. Sixteen (16) respondents were visited twice a week, but this was contradicted by some 84 respondents (38%) who said that their contact with the Agricultural Extension Worker occurs only once a month. (Table 11) Data showed that the limited interaction between the Agricultural Extension Worker and the farmers cooperators could be attributed to the distance of the farmers and their farm communities. Since this is a government system, the visitation services are necessary to update the farmers about innovations in rice farming technology.

The role of the extension agent in demonstrating new techniques, providing training, and offering ongoing support to address challenges as they arise is crucial in the adoption of technologies like Palaycheck demonstrating new techniques, providing training, and offering ongoing support to address challenges as they arise (Saryam & Jena, 2019).

Table 11: Farmer-Related Factor According to Contact with Change Agent

Schedule of Personal Interaction	Frequency	Percentage
Once a week	121	55%
Twice a week	16	7%
Once a month	84	38%
Others	0	0
Total	221	100%

Farmers' Perception of Palaycheck System

The 156 respondents of the study "strongly agree" that rice farming is a dignified occupation (Mean of 4.71), and

this supported the idea that only the farmer believes in the dignity of their profession, for they faithfully plant seeds during spring and reap the harvest during the autumn, so that humanity can be fed (Forbes, 2000).

One hundred thirteen (113) respondents "strongly agree" that rice farming is indispensable to agricultural development, but 106 respondents agree on the indispensability of rice farming, resulting in a mean perception of 4.50. The result supported the idea of Aguilar (2005), who traces the transformation of rice from a prestige and mainly elite food to a staple food by the end of the nineteenth century. Rice today is primarily a consumer product; the consumption of which reflects the stratification of Filipino society, as supported by quantitative data on contemporary trends in rice consumption.

One hundred twenty-four (124) respondents agreed that rice farming can render life more profitable, compared to just four (4) respondents who doubted its profitability; the

mean was 4.41 (agree). The result supported the analysis of Salam and Rahmadani (2003) that if inputs and outputs are valued at international prices and domestic resources (land, labor, and capital) are valued at opportunity costs, rice producers would earn substantial profits.

The majority of the rice farmers agreed on the two (2) remaining indicators of perception, satisfy the basic needs of the family (4.34), and enhance physical and mental development (4.31). This suggests that respondents believed that rice farming conveys a message that one should be proud of being a rice farmer. They believe that rice farming is a noble and gainful occupation that plays a vital role in the economic development of an agricultural country like the Philippines.

Abdullah and Samah (2013) concluded that Farmers' perceptions, shaped by their experiences, beliefs, and socio-cultural contexts, significantly influence their willingness to embrace new technologies.

Table 12: Farmer-Related Factor According to Farmers' Perception on Rice Farming

Perception	Farmers Response					Mean	Description
	5	4	3	2	1		
a. Rice farming is a dignified occupation	156	65	0	0	0	4.71	Strongly agree
b. Rice farming is indispensable to agricultural development	113	106	1	1	0	4.50	Agree
c. Rice farming can render life more profitable	94	123	4	0	0	4.41	Agree
d. Rice farming can satisfy the basic need of the family	86	124	11	0	0	4.34	Agree
e. Rice farming enhances one's physical and mental development	82	128	10	0	1	4.32	Agree
Over-all Mean						4.45	Agree

Farmers' Expectations from PalayCheck

Table 13 shows that the respondents "strongly agree" based on the means of the two indicators of farmers' expectations, that PalayCheck can make farms more productive (4.67) and PalayCheck enhances good relations among farmers (4.52).

On the two variables, one hundred forty-eight (148) and one hundred fifteen (115) respective farmer respondents strongly agree, compared to 73 and 105 respondents who decided to just "agree," with one (1) undecided. The two variables supported the findings of Cruz (2009) that the rice yield in the Philippines grew faster at 2.7 per annum due to farmer's participation on the PalayCheck system and likewise upend to the descriptive results of the research conducted by Castañeda, (2008) which shows that the PalayCheck System had enhanced the

relationship among participating farmers in adopting the recommended best farming practices. With the identified potential benefits, it is recommended that the two-way communication system among rice farmers, which is one of its strengths, should be maintained through active participation in meetings and focus group discussions.

Rice Farmers "agreed" on all remaining variables, expressing high expectations of the PalayCheck system. They were expecting that the system would increase their income (4.33); that PalayCheck could fully utilize their time for rice farming (4.39); that it would help conserve the environment (4.41), and could improve farmers' decision making and farm management (4.35).

The data show that the rice farmers are optimistic about the PalayCheck system. This shows interests towards the PalayCheck technology necessary for its adoption.

Table 13: Farmers' Expectations from PalayCheck

Farmers Expectation	Farmers Response					Mean	Description
	5	4	3	2	1		
1. PalayCheck can make the farm more productive	148	73	0	0	0	4.67	Strongly agree
2. PalayCheck can enhance good relationships among farmers	115	105	1	0	0	4.52	Strongly Agree
3. PalayCheck can enhance farming income	88	122	8	2	1	4.33	Agree
4. PalayCheck can help farmers fully utilize their time for rice farming	96	117	6	2	0	4.39	Agree

5. PalayCheck can help conserve the environment	94	123	4	0	0	4.41	Agree
6. PalayCheck can improve decision-making and farm management	86	127	8	0	0	4.35	Agree
Over-all Mean						4.44	Agree

Relationship between Farmer-Related Factors and Effectiveness of PalayCheckSystem

Table 14 presents the results of the correlation analysis between selected farm-related factors and the effectiveness of the PalayCheck system. Out of eleven indicators examined, five factors educational attainment, farming experience, expectations from PalayCheck, land tenure, and availability of farm inputs were found to have statistically significant relationships with system effectiveness. These variables yielded correlation coefficients of 0.314, 0.256, 0.318, 0.273, and 0.401, respectively, with p-values all falling below the 0.05 significance level. These findings indicate that the aforementioned factors are not peripheral but rather central to the success of the PalayCheck system.

The significance of educational attainment suggests that farmers with higher levels of formal education are more likely to comprehend and apply the system’s science-based recommendations effectively, echoing findings by Abdullah and Samah (2013) and Davis *et al.* (2012), who argued that education enhances a farmer’s capacity to process technical information and adopt new practices. Farming experience also plays a key role, as seasoned farmers tend to have developed better adaptive strategies

and decision-making capabilities through years of exposure to field conditions (Tayang *et al.*, 2023). Similarly, expectations from the PalayCheck system significantly influenced adoption; when farmers perceive the system as beneficial and aligned with their needs, they are more likely to engage actively (Sebastian *et al.*, 2000). Moreover, land tenure security provides farmers with the confidence to invest in long-term improvements, as highlighted by Paltasingh (2018), while the availability of farm inputs directly enables the implementation of recommended practices, as emphasized by Masere and Worth (2022). On the other hand, age, household size, farm size, sources of agricultural information, organizational membership, and perception toward rice farming did not yield statistically significant correlations with the effectiveness of the PalayCheck system. This suggests that these variables, while relevant in broader agricultural contexts, may not have a direct influence on the adoption and performance of PalayCheck in the studied areas. These findings highlight the importance of focusing on critical enablers, such as education, experience, resource access, and land security, when planning and implementing extension interventions like PalayCheck.

Table 14: Correlation between Farmer-Related Factors and Effectiveness of PalayCheck System

Farmer Related Factors	Coefficient of Correlation	Probability	Decision
Age	0.101	0.092	Retain Ho
Household size	0.098	0.139	Retain Ho
Educational attainment	0.314	0.00	Reject Ho
Farming experience	0.256	0.018	Reject Ho
Land Tenure	0.273	0.00	Reject Ho
Farm size	0.104	0.088	Retain Ho
Availability of farm inputs	0.401	0.00	Reject Ho
Source of agricultural information	0.118	0.087	Retain Ho
Membership in farmer organization	0.113	0.086	Retain Ho
Perception towards rice farming	0.108	0.097	Retain Ho
Expectation from PalayCheck	0.318	0.00	Reject Ho

CONCLUSION

The study shows that how well rice farmers in Davao Oriental use the PalayCheck system largely depends on some farmer-related factors. Farmer who have more education, longer experience in farming, secure rights to their land, and clear expectations from the PalayCheck system were more likely to follow its recommended practices. Having easy access to necessary farm inputs also played an important role in helping them apply what they learned. On the contrary, other factors such as age, household and farm size, sources of farming

information, membership in farmer groups, and personal views on rice farming didn’t have a strong direct link to how effectively the system was used. This suggests that these factors might matter in some situations but aren’t consistently influential across the board.

The study makes one thing clear: the PalayCheck system can genuinely help farmers take better care of their rice production, but only if they get the correct kind of help. It's not enough to just give someone a new set of skills. The most important thing is whether the farmers are ready and able to use those methods. That means they

need the right tools, enough information, and faith in what they are doing. Even the best system might fail without them

Recommendation

Farmers should be given hands-on instruction through field schools that incorporate demonstrations of practical applications. They will learn to make good decisions when it comes to farming from this. Involvement of more seasoned farmers in this endeavor might be advantageous, as it will provide an opportunity for them to guide and teach newer, less experienced farmers.

More agricultural inputs should be made available to small-scale farmers at the barangay level. Consolidating the delivery of inputs through people's groups can save costs and increase involvement. Farmers must be involved at the community and farm levels for local extension organizations to provide them with adaptation strategies that are specific to their needs.

In conclusion, the effectiveness of the PalayCheck is directly affected by the lack of data-driven decision-making in extension services. Education, agricultural expertise, land tenure, system expectations, and input availability are some factors that should be considered before planning and resource allocation are finalized. When it comes to gathering resources, the role that farmer groups play should be paramount. In addition to continuing to take part in agricultural projects, they should help increase access to services.

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