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Marketing challenges and strategic responses among pineapple smallholders in Samarahan, Sarawak

Jeripson Jalong Jefrin¹, Abdul Rahman Saili^{2*}, Wan Abdul Rahim Wan Ahmad³,
Yosini Deliana⁴

^{1,2,3} Faculty of Plantation and Agrotechnology, Universiti Teknologi MARA Cawangan Sarawak, 94300 Kota Samarahan, Sarawak, Malaysia

⁴ Department of Agricultural Social Economics, Faculty of Agriculture, Universitas Padjadjaran, Jatinangor 45363, Indonesia

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ABSTRACT

This study explored the marketing experiences, challenges, and strategic responses of pineapple smallholders in Samarahan, Sarawak. A qualitative design was employed, involving semi-structured interviews with 13 pineapple smallholders selected through purposive sampling. The interview data were transcribed verbatim and analysed manually using the six-phase thematic analysis framework. Four main themes were identified: entry into pineapple farming, pineapple marketing strategies, marketing challenges, and solutions and adaptations. The findings show that smallholders commonly combine bulk sales to wholesalers or middlemen with direct selling through roadside stalls and small outlets. Economic considerations, family and community influence, land availability, transport constraints, and access to buyers shape the marketing choices. Major challenges include seasonal demand, rising production costs, crop damage, weak infrastructure, limited bargaining power, and dependence on informal marketing channels. In response, some farmers diversify crops, process surplus pineapples into value-added products, and use Facebook and WhatsApp to communicate with customers. However, digital adoption remains partial because online marketing cannot fully compensate for limited connectivity, varying digital familiarity, and the logistical constraints of transporting perishable produce. The study contributes a context-specific explanation of how entry motivations, marketing channel choices, structural challenges, and adaptive responses interact in shaping smallholder livelihoods. The findings support improvements in rural infrastructure, market information, farmer organisation, digital capability, and value-added processing to strengthen the sustainability of pineapple marketing in Sarawak.

^{2*}Corresponding author. E-mail address: arsaili@uitm.edu.my

1. INTRODUCTION

Agriculture remains a major source of employment, income, and food security in many developing countries. Smallholder farmers contribute substantially to the production of horticultural crops and fruits. In Malaysia, pineapple farming has drawn growing attention because of its economic potential, government development programmes, and adaptability to local agro-climatic conditions (Mohamad et al., 2022). Samarahan is among the recognised pineapple-producing areas in Sarawak.

Institutional support has facilitated the expansion of pineapple cultivation through the provision of planting materials, extension services, and market facilitation. Nevertheless, smallholders continue to experience complex difficulties in marketing their produce (Anthony et al., 2021). Poor roads, limited storage, transport constraints, fluctuating prices, and dependence on middlemen can restrict timely market access, bargaining power, and profitability (Nahar et al., 2020; Rashidi et al., 2021). Limited access to market information and digital technologies may further reduce transparency and opportunities to reach customers directly (Chandra Permata & Mukhlis, 2023).

The COVID-19 pandemic also exposed the vulnerability of agricultural marketing systems through disrupted supply chains, weaker demand, and greater logistical uncertainty. Smallholders in several countries experienced rising input costs and market volatility during this period (Amare et al., 2021; Hammond et al., 2022). These disruptions reinforced the need for more inclusive and resilient marketing arrangements.

Existing studies have often examined agricultural marketing at the level of market channels, institutions, or policy. Less attention has been given to how smallholders themselves explain the links between their entry into farming, their choice of marketing channels, the difficulties they encounter, and the adaptations they develop. A qualitative approach is therefore useful for capturing local narratives, informal relationships, and context-dependent decisions that may not be visible in aggregate market data (Aryal, 2024).

The novelty of this study lies in its integrated, experience-based account of pineapple marketing in Samarahan. Rather than treating marketing strategies, constraints, and responses as separate issues, the study traces how initial farming motivations shape channel choices, how structural challenges affect those choices, and how farmers respond through diversification, value addition, and digital communication. In doing so, this provides a locally grounded conceptual explanation of smallholder marketing adaptation within a semi-rural Sarawak context.

Accordingly, this study addresses three research questions: (1) How do pineapple smallholders in Samarahan market their produce? (2) What challenges do they experience in marketing pineapples? and (3) What strategies and adaptations do they use to address these challenges? The findings are expected to support more targeted interventions for sustainable and profitable smallholder pineapple farming.

2. LITERATURE REVIEW

2.1 Smallholder agricultural marketing channels

Smallholders commonly select marketing channels according to farm size, perishability, transport access, market information, and the volume available for sale. Bulk marketing through wholesalers or middlemen reduces the farmer's immediate burden of transport and customer search, while direct selling can provide higher unit returns but requires time, market access, and interaction with consumers. In Samarahan, channel selection has been associated with practical constraints and the need to dispose of perishable produce quickly (Nahar et al., 2020). Similar patterns have been reported among pineapple farmers elsewhere, where channel choice reflects a balance between convenience, risk, transaction cost, and expected price (Arinloye et al., 2015; Campita et al., 2022).

2.2 Middlemen reliance in perishable agricultural markets

Middlemen remain important in smallholder value chains because they aggregate produce, arrange transport, and connect dispersed farmers with larger markets. This role can be beneficial where farmers lack vehicles, storage facilities, or reliable buyer networks. However, dependence on intermediaries may also weaken bargaining power and reduce price transparency. Power imbalances become more pronounced when farmers must sell quickly because of perishability or limited market alternatives (Corsi & Filippini, 2023). Farmer organisations and cooperative marketing may improve collective bargaining, market access, and marketing efficiency (Cruz et al., 2023).

2.3 Rural digital marketing adoption

Digital tools can help smallholders share product information, communicate with customers, and obtain market information. Mobile communication and social media may reduce search costs and enable more direct interaction with buyers (Arinloye et al., 2016). Nevertheless, adoption in rural areas is often uneven. Digital marketing still depends on connectivity, confidence in using online platforms, customer reach, payment practices, and the physical ability to deliver perishable produce. Digital channels therefore tend to complement rather than completely replace conventional marketing relationships.

2.4 Conceptual framework

The conceptual framework, developed from the literature and the study focus, proposes that smallholder marketing is a connected process. Entry motivations and available resources influence the selected marketing strategies. Structural and market challenges then shape these strategies. Farmers respond through product, channel, and communication adaptations, which collectively influence the sustainability of their livelihoods.



Fig. 1. Conceptual framework of pineapple smallholder marketing adaptation

3. METHODOLOGY

3.1 Study design

The study employed a qualitative design to obtain an in-depth understanding of pineapple smallholders' marketing experiences in Samarahan, Sarawak. This approach was appropriate because the study focused on participants' narratives, perceptions and context-specific decisions rather than statistical generalisation. Qualitative inquiry recognises that experiences are shaped by the social background, culture and everyday conditions (Negou et al., 2023).

3.2 Study area

The study was conducted in Samarahan, Sarawak, an important pineapple-producing area in Malaysia. The Malaysian Pineapple Industry Board reported 396.5 hectares of pineapple cultivation and more than 9,000 metric tonnes of production in Samarahan in 2022 (Lembaga Perindustrian Nanas Malaysia, 2022). The area was selected because of its production significance and reported marketing constraints, including road and market facility limitations (Nahar et al., 2020).

3.3 Sampling and participant profile

Purposive sampling was used to recruit 13 pineapple smallholders who were directly involved in both cultivation and marketing. Participants represented different levels of farming experience, land access and market engagement. Recruitment continued until follow-up interviews no longer produced new themes, indicating data saturation (Campbell et al., 2020).

Table 1. Selected participants' characteristics reported in the interview data

Participant	Reported farming context	Reported farm/production detail	Reported marketing context
P3	Family influence; father cultivated pineapple; 9 years of farming experience	Approximately 35 acres	Wholesale; online selling; Facebook and WhatsApp; juice processing
P4	Shifted from rubber after declining rubber prices; community influence; 9 years farming experience	Approximately 3 acres	Direct selling; wholesale/dealer channel
P7	Pineapple viewed as more profitable than other crops; 6 years farming experience	Approximately 1 acre	Direct selling; weekend and holiday selling
P9	11 years of farming experience	Approximately 1 acre	Direct selling; bundle pricing, including three small fruits for RM5
P10	Approximately 27–28 years in farming; pineapple viewed as highly profitable	Approximately 5 acres	Wholesale; reported seasonal demand decline and rising operating costs
P11	8 years of farming experience	Approximately 1 acre; about 300 pineapples supplied in a typical wholesale transaction	Wholesale; small outlet in front of the house
P12	12 years of farming experience	Approximately 4.5 acres; bulk purchases commonly exceeded 100 pineapples	Direct selling; wholesale

Source: Authors' compilation from interview data reported in the manuscript

3.4 Data collection

Data were collected through semi-structured interviews. The interview guide covered farming background, current marketing practices, pricing, marketing challenges, adaptations, and perceptions of government support. The flexible format allowed participants to explain their experiences in their own words while ensuring that comparable topics were discussed across interviews (Adeoye-Olatunde & Olenik, 2021). Interviews were conducted in the participants' preferred language and audio-recorded with consent. The recordings were transcribed verbatim. Participants were allowed to review the accuracy of their accounts through member checking, which supported credibility and reduced the risk of misinterpretation (Coleman & Ed, 2022; Wong et al., 2023).

3.5 Data analysis

The transcripts were analysed manually using the six-phase thematic analysis framework described by Braun and Clarke and illustrated by Byrne (2022): familiarisation with the data; generation of initial codes; construction of candidate themes; review of themes; definition and naming of themes; and production of the report. Relevant segments were coded and compared across participants. Related codes were grouped

into sub-themes and then organised into four overarching themes. The analysis was primarily inductive, allowing patterns to develop from the interview data rather than imposing predetermined categories. An audit trail documented coding and theme development, while comparisons with relevant policy and research documents provided contextual triangulation (Carcary, 2020; Nowell et al., 2017).

3.6 Ethical considerations

The study received approval from the relevant university ethics committee. Participants received information about the study, the handling of their data, and their right to withdraw without adverse consequences. Written consent was obtained, participant identifiers were used in reporting, and interview files were stored securely in encrypted digital form (Flick, 2021; Recker, 2021).

4. RESULTS

The analysis generated four main themes: entry into pineapple farming, pineapple marketing strategies, challenges in marketing, and solutions and adaptations. The themes show how farmers' initial motivations and resources are connected to their marketing choices, the constraints they face, and the responses they develop.

4.1 Entry into pineapple farming

The participants entered pineapple farming because of its perceived economic potential, access to land, previous farming experience, and family or community influence. Several participants compared pineapple favourably with other crops. Participant 10 explained, "I have been in farming for about 27 or 28 years. I have been planting various types of crops, but the pineapple crop is the one that generates a high profit." Participant 7 similarly stated, "It is more profitable than any other crop that I have tried."

Land availability also shaped production capacity, although the scale of landholding differed among participants. Participant 3 operated on a relatively larger scale, cultivating approximately 35 acres of land provided by his father. He explained, "My pineapple cultivation is around the house, and the one you see now, I planted on the land given by my father, which is about 35 acres. So, I planted on those 35 acres." Changes in the profitability of other crops also encouraged movement into pineapple farming. Participant 4 explained, "At first, I was not really interested in planting pineapples since I had them for rubber. But when the price of rubber went down, I thought I would just go in for pineapples." Family continuity and community practice were also influential. Participant 3 stated, "My dad was growing pineapples, so I just naturally did what he did," while Participant 4 observed, "From my early days, our community has always been seen planting pineapples."

4.2 Pineapple marketing strategies

Participants used a combination of wholesale and direct marketing channels. Wholesale transactions were attractive because larger quantities could be sold at one time and buyers often collected produce directly. Participant 11 explained, "A farm would normally give the wholesaler about 300 pineapples. It is a lot easier to decide on the wholesale price." Participant 12 added, "Most of the time, they buy more than a hundred pineapples in bulk."

Other participants sold directly through small shops or roadside outlets. Participant 11 stated, “I also sell at a small shop in front of my house.” Packaging and bundle pricing were adjusted for local customers. Participant 9 explained, “We sell in bundles. If they want the small ones, I pack 3 for RM5.” Sales were also influenced by timing. Participant 7 reported that sales occurred “mainly on weekends” and were easier during major or public holidays.

4.3 Challenges in marketing

Seasonal demand was a recurring difficulty. Participant 10 stated that “pineapples sell well at first, but then between April and August, they do not sell.” Crop damage also reduced the volume and quality available for marketing. Participant 3 reported that young pineapples were eaten by wild boars or disturbed by porcupines, while Participant 7 explained that fruit damaged internally by caterpillars could not be sold.

Rising operating and labour costs placed further pressure on smallholders. Participant 10 observed, “The expenses associated with farm operations and paying workers have gone up quite a bit.” These constraints were particularly difficult for farmers with small landholdings, limited transport and weak access to direct markets. Dependence on local buyers or intermediaries reduced control over price and limited the range of available outlets.

4.4 Solutions and adaptations

Table 2. Thematic summary of the findings

Main theme	Sub-themes	Key finding	Representative quotation
Entry into pineapple farming	Economic motivation; land; family and community influence	Entry decisions reflected livelihood opportunity and existing social and land resources	“It is more profitable than any other crop that I have tried.” (P7)
Pineapple marketing strategies	Wholesale; direct selling; bundle pricing; timing	Farmers combined convenient bulk sales with flexible direct marketing	“Most of the time, they buy more than a hundred pineapples in bulk.” (P12)
Challenges in marketing	Seasonality; crop damage; rising costs; limited market access	Perishability and structural constraints reduced profitability and bargaining power	“Between April and August, they do not sell.” (P10)
Solutions and adaptations	Diversification; value addition; Facebook and WhatsApp	Farmers used practical adaptations to reduce losses and reach customers	“We can send pictures, and people can order right away.” (P3)

Source: Interview data

Farmers responded through diversification, value addition and digital communication. Surplus fruit was processed to reduce losses and extend shelf life. Participant 3 stated, “If we cannot sell pineapples, we turn them into juice. It is still sweet and can be sold.” Participant 5 similarly explained, “We do jam processing, juice, or chips. All of these products can be sold.”

Some participants used Facebook and WhatsApp to display produce and communicate directly with customers. Participant 3 explained, “Facebook and WhatsApp are convenient. We can send pictures, and people can order right away.” These tools widened communication opportunities but did not remove physical marketing constraints. Online orders still depended on internet access, customer familiarity, payment practices and the ability to transport fresh produce. Digital adoption therefore remained partial and functioned mainly as a complementary channel rather than a full replacement for wholesalers, stalls and community networks.

5. DISCUSSION

5.1 Entry motivations and early marketing orientation

Farmers' entry into pineapple cultivation provides an important basis for understanding later marketing behaviour. Economic opportunity, declining returns from other crops, family tradition and community influence encouraged participation. This is consistent with Hasan et al. (2023), who found that farmers may shift towards higher-value crops to sustain their livelihoods. However, entry into production did not always involve a formal marketing plan. For some participants, marketing developed as an extension of farming and depended initially on familiar local networks.

5.2 Marketing channel choices and reliance on middlemen

The two dominant approaches were bulk selling and direct selling. Wholesale channels reduced the burden of transport, customer search, and repeated small transactions. This supports previous findings that smallholders in perishable value chains often rely on intermediaries when storage and transport are limited (Campita et al., 2022; Nahar et al., 2020). Direct selling through small outlets and bundles offered greater flexibility and closer customer contact, particularly during weekends and festive periods. The coexistence of these channels indicates that farmers do not simply choose between traditional and modern marketing; instead, they combine channels according to volume, timing, convenience, and available resources.

5.3 Structural and market challenges

The findings show that marketing outcomes are constrained by seasonal demand, crop losses, rising operating costs, poor infrastructure, and limited market alternatives. Such conditions increase the urgency to sell perishable produce and may force farmers to accept prices determined by local buyers. Price volatility and limited transparency can also weaken production planning and investment decisions, consistent with Nahar et al. (2020). The absence of clearly reported cooperative participation further suggests that collective marketing remains underdeveloped. Farmer organisations can improve bargaining, market access and marketing efficiency (Arlinloye et al., 2015; Cruz et al., 2023), although their feasibility depends on local participation, governance and sustained institutional support.

5.4 Digital and product adaptation

Value-added processing and digital communication demonstrate adaptive learning. Turning surplus fruit into juice, jam or chips can extend shelf life and reach different customer segments, supporting the view that smallholder innovation often emerges from necessity (Hounkonnou et al., 2012). Facebook and WhatsApp allow farmers to promote products and communicate directly with customers, consistent with evidence that mobile access to market information may strengthen smallholder bargaining capacity (Arinloye et al., 2016).

Nevertheless, digital adoption remained partial. First, social media communication does not solve transport, storage and delivery constraints. Second, farmers may differ in their familiarity and confidence with online selling, particularly where digital literacy is uneven. Third, connectivity and customer reach may be inconsistent in semi-rural areas. The present interview excerpts do not provide a complete age-based comparison; therefore, differences between older and younger smallholders should be treated as an area for further investigation rather than a confirmed finding. Digital tools in this context are best understood as complementary mechanisms that support, but do not replace, physical channels and social relationships.

5.5 Synthesis and policy implications

Taken together, the themes support the conceptual framework proposed in this study. Entry motivations and resources shape initial channel choices; those choices are constrained by structural and market conditions, prompting the farmers to respond through product, channel, and communication adaptations. Sustainable improvement therefore requires more than individual resilience. Rural roads, transport arrangements, market information, farmer organisation, digital capability and value-added processing must be strengthened together. Such support can help smallholders move from reactive selling towards more stable and planned commercial participation.

6. CONCLUSION AND IMPLICATIONS

6.1 Conclusion

This study examined how pineapple smallholders in Samarahan market their produce, the challenges they experience, and the adaptations they use. The findings show that the farmers commonly combine wholesale selling with direct marketing. Their decisions are influenced by economic motives, land and family circumstances, and production volume, timing, transport access, and buyer availability. Seasonal demand, crop damage, rising costs, weak infrastructure and limited bargaining power continue to restrict market participation. The farmers respond through diversification, value-added processing and digital communication, although these adaptations cannot fully overcome structural constraints.

6.2 Theoretical and managerial implications

The study contributes an integrated qualitative explanation of smallholder marketing adaptation. It shows that entry motivations, marketing channel choices, challenges and responses form a connected process rather than separate stages. For extension officers, buyers and agribusiness managers, the findings indicate that interventions should reflect farmers' actual channel combinations and operational constraints.

Training in pricing, customer communication, simple record-keeping, product presentation and value-added processing may improve decision-making and marketing confidence.

6.3 Policy recommendations

Policy support should prioritise rural road and transport improvements, accessible market information, suitable collection or aggregation arrangements, and practical digital marketing training. Support for farmer groups should focus on transparent governance and achievable collective functions such as shared transport, coordinated supply, and buyer negotiation. Small-scale processing support may also reduce losses during periods of weak fresh-fruit demand. These measures should be designed with farmers' existing practices and resource limitations in mind.

6.4 Study limitations and future research directions

The study was limited to 13 pineapple smallholders in Samarahan and was intended to provide contextual understanding rather than statistical generalisation. Future studies could compare districts, pineapple varieties and marketing channels, examine the performance of farmer organisations, and investigate how age, digital literacy, connectivity, and logistics influence online marketing adoption.

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8. CONFLICT OF INTEREST STATEMENT

The authors declare that the research was conducted in the absence of commercial or financial relationships that could be construed as a potential conflict of interest.

9. AUTHORS' CONTRIBUTIONS

Jeripson Jalong Jefferin: Investigation, data collection, formal analysis and writing – original draft. **Abdul Rahman Sali:** Conceptualisation, methodology, supervision, validation and writing – review and editing. **Wan Abdul Rahim Wan Ahmad:** Validation and writing – review and editing. **Yosini Deliana:** Validation, scholarly input and writing – review and editing.

10. DECLARATION OF GENERATIVE AI IN THE WRITING PROCESS

During the preparation of this work, the authors used ChatGPT by OpenAI to improve the readability and language quality of the manuscript. After using this tool, the authors reviewed and edited the content as needed and take full responsibility for the content of the publication.

11. DATA AVAILABILITY/ SUPPLEMENTARY MATERIALS

The interview data supporting the findings of this study are available from the corresponding author on reasonable request, subject to ethical and confidentiality requirements.

12. ETHICS STATEMENT

This study involved human participants and received approval from the UiTM Research Ethics Committee under reference number REC/12/2021 (MR/956). All participants provided informed consent before the interviews. The authors confirm that the research was conducted in accordance with applicable institutional ethical requirements.

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ABOUT THE AUTHORS

Jeripson Jalong Jefrin is a Master of Science (AT750) candidate at the Faculty of Plantation and Agrotechnology, Universiti Teknologi MARA (UiTM) Cawangan Sarawak, Malaysia. He also serves as an Assistant Agriculture Officer with the Department of Agriculture Sarawak. His academic and professional interests include agribusiness, agricultural development, and sustainable farming practices. He can be reached at jeripsonjalong@gmail.com.

Assoc. Prof. Ts. Dr. Abdul Rahman Saili is an Associate Professor at the Faculty of Plantation and Agrotechnology, Universiti Teknologi MARA (UiTM) Cawangan Sarawak, Malaysia. His research interests include agribusiness, agricultural development, sustainable agriculture, technology adoption, and smallholder farming. He can be reached at arsaili@uitm.edu.my.

Wan Abdul Rahim Wan Ahmad is affiliated with the Faculty of Plantation and Agrotechnology, Universiti Teknologi MARA (UiTM) Cawangan Sarawak, Malaysia. His academic and research interests are related to agriculture and plantation management. He can be reached at warwa@uitm.edu.my.

Prof. Dr. Yosini Deliana is a Professor at the Department of Agricultural Social Economics, Faculty of Agriculture, Universitas Padjadjaran, Indonesia. Her research interests include agricultural socioeconomics, agribusiness, agricultural marketing, and consumer behaviour. She can be reached at yosini22@yahoo.com.