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The Entrepreneurial Mindset: Views and Perspectives of Cacao Entrepreneurs on Innovation and Entrepreneurship in Bicol Region, Philippines

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ABSTRACT

Innovation and entrepreneurship are fundamental drivers of economic growth. Oftentimes, sustainable development is equated with these two indices where untapped potential and emerging industries are available that present countless opportunities for the people. A research study was conducted composed of cacao farmers, farmers/processors and farmers/processors/traders residing in various towns in the Bicol region, Philippines aimed at determining their perception, innovation and entrepreneurial initiatives and strategies. A survey-questionnaire was designed and administered to 70 cacao farmers and entrepreneurs and qualitative data analysis techniques, such as thematic coding and content analysis was employed to analyze result of the interview and focus group discussions. Findings of the study showed that farming is the primary focus for the majority of respondents (67%), with only a minority involved in processing or trading activities. The most highly recommended innovative cacao-based products with potential market success are primarily in the food and confectionery categories, with substantial interest in beverages and skincare products. Ninety-one percent (91%) are willing to pay a premium for innovative cacao products because they value supporting local entrepreneurship and a good sign of a strong community support for local businesses with high level of willingness to invest in locally developed products. Job creation and empowerment of small-scale farmers are considered as top benefits of a community-based value-added cacao products enterprise. Limited financial investment/capital is the most significant problem faced, followed closely by unstable demand and low and unregulated farm gate price of agricultural commodities.

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Keywords: entrepreneurship, innovation, cacao products, cacao entrepreneurs

1. INTRODUCTION

Innovation and entrepreneurship are fundamental drivers of economic growth. Oftentimes, sustainable development is equated with these two indices where untapped potential and emerging industries are available that present countless opportunities for the people.

The Philippines is acknowledged as one of the middle-income economies with the fastest innovation catch-up, alongside China, India, Iran, and Vietnam. It is also among the 26 economies classified as Global Innovation Index (GII) Achievers, surpassing expectations considering their respective development levels (WIPO, 2022 as cited in NIASD). However, our country dropped its spot in the GII as it ranked 59th in 2022 from 51st in 2021 among

26 132 competing countries. Hence, the Philippines missed its target rank of top one-third by
27 the end of plan period (PSA, 2022).

28 There is a great deal of opportunities just waiting to be tapped which will enable our country
29 to step up and maintain the stature in the GII. One way is to motivate the increasing number
30 of enterprises operating which is reported by the Philippine Statistics Authority. The 2022
31 List of Establishments (LE) recorded a total of 1,109,684 business enterprises operating in
32 the country. Of these, 1,105,143 (99.59%) are MSMEs and 4,541 (0.41%) are large
33 enterprises. Micro enterprises constitute 90.49% (1,004,195) of total establishments,
34 followed by small enterprises at 8.69% (96,464) and medium enterprises at 0.40% (4,484)
35 (DTI, 2022). **These data include** chocolate and cacao-based industries which are sprawling
36 in various parts of the country.

37 The Philippine Statistics Authority reported that from July to September 2022, production of
38 cacao (dried beans with pulp) was estimated at 2.65 thousand metric tons or an increase
39 of 8.2 percent, from 2.45 thousand metric tons output in the same period of 2021. The
40 leading cacao-producing region was still Davao Region, which produced 2.02
41 thousand metric tons or 76.1 percent of the total cacao production for the quarter. (PSA,
42 2022). Despite this increase in production, the cacao industry continue to face challenges
43 such as low productivity, lack of modernization, and limited market access. In recent years,
44 there has been a concerted effort to transform these challenges into opportunities by
45 leveraging innovation and entrepreneurship at the community level.

46 One strategy that has been adopted is the concept of value addition. By adding value to raw
47 cacao through processing and product diversification, communities cannot only increase
48 their incomes but also create a sustainable livelihood that will foster their creativity. From
49 artisanal chocolates to specialty cocoa butter and beyond, the potential for value-added
50 cacao products is vast, providing a platform for farmers and local entrepreneurs to thrive in
51 both domestic and international markets. This report will delve into the perception of actors
52 involved in the cacao industry relative to promoting innovation and entrepreneurship through
53 community-based value-added cacao products in the Philippines particularly in the Bicol
54 region.

55 **2. REVIEW OF RELATED LITERATURE**

56 Initiatives on innovation and entrepreneurship has been strengthened through The
57 Innovative Startup Act (RA 11337) law which was enacted in 2019. It aims to strengthen,
58 promote, and develop an innovative and entrepreneurial ecosystem and culture in the
59 Philippines. It focuses on providing benefits and removing constraints to encourage the
60 establishment and operation of innovative new enterprises and businesses.

61
62 The effects of this policy are visible in the rapid expansion of the country's start-up
63 ecosystem. In 2020, the Department of Trade and Industry (DTI) reported that the
64 Philippines has more than 1,100 startups, 35 incubators and accelerators, 50 investors, 200
65 co-working spaces, and 40 venture capitalists (PWC Philippine Startup Survey Report 2020).
66 Metro Manila's Startup Ecosystem Value grew from USD2.1 billion to USD3.5 billion. Metro
67 Manila is also recognized for being in the Top 20 Asian Ecosystem in Funding, Top 30 Asian
68 Ecosystem in Performance, and Top 30 Asian Ecosystem in Talent & Experience (Global
69 Startup Ecosystem Report 2023). Meanwhile, Naga, Iloilo, Cebu, and Davao were hailed as
70 potential innovation hubs (Global Startup Ecosystem Report, 2022).

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72 Similarly, Naga City being one of the progressive cities in the Bicol region continues to
73 solidify its position as a strong player in the Philippine startup ecosystem, advancing 48
74 spots in the global rankings of startup cities since its inclusion in the annual startup index in
75 2022(Naga City News, 2023). Remaining among the top 1000 startup cities worldwide, Naga
76 is one of only five cities in the Philippines to achieve this distinction, maintaining its fourth
77 spot in the country after Manila, Cebu, and CDO. The city has also progressed from the 20th
78 spot to the 19th spot in Southeast Asia. Globally, Naga has demonstrated notable
79 improvement, rising from the 952nd to the 904th spot in the 2023 Global Rankings.
80

81 This staggering result on ranking is brought about by the increasing desire of Filipinos to
82 venture into business. About four in every five Filipinos prefer to own their own business if
83 they could, citing a number of benefits such as being able to manage one's time(Monzon,
84 2023). This is according to survey conducted by analytics firm OCTA Research for Go
85 Negosyo, the advocacy arm of the Philippine Center for Entrepreneurship, which found that
86 78 percent of respondents aspire to become entrepreneurs.
87

88 In the context of cacao production, entrepreneurship is becoming a byword, especially in
89 cacao industry. To become successful entrepreneurs, some attributes need to be in place.
90 Entrepreneurial competence has significant positive effect on cocoa productivity, so an
91 increase in farmers' entrepreneurial competence will increase cocoa productivity, and vice
92 versa(Echdar, 2017). For entrepreneurial competencies are capabilities of farmers in land
93 preparation, planting, maintenance, harvesting and post-harvest cocoa. Farmers with good
94 entrepreneurial competence will produce better cocoa productivity because it is a
95 manifestation of behavior to plan activities to achieve the target. Farmers must be
96 competent, skilled farm managers to perform their tasks planned farm when to plant,
97 harvest, marketing results, seeking capital, control the farming operation. Therefore, building
98 institutional and entrepreneurial competencies of integrated and sustainable farmers is
99 considered significant. Entrepreneurial competence and institutional farmers provide
100 significant impact on the productivity of cocoa. It shows the magnitude of the contribution of
101 entrepreneurial competence and institutional productivity of farmers on cocoa.

102 Entrepreneurial enterprises have focused the need for efforts to increase quality through
103 better management, certification and consistency in post-harvest processing(Villasis,
104 2022).These efforts are largely achieved through direct relationships between the
105 processor/exporter and producers. Contracting, training in production methods and
106 promoting cacao producer associations are steps that these enterprises have taken as a
107 means of capturing credence demands in global markets. Through contracting, some of the
108 difficulties of vertical integration are mitigated, but the contracts and associations facilitate de
109 facto provenance and lower costs of certification. Creating a network of cacao suppliers to
110 ensure uniform quality and provide fermented and dried beans with the exact attributes the
111 company seeks is very critical.

112 To further support the development of cacao industry, strategic measures are essential.
113 Zulfiandri (2023) recommends a mutual public-private partnership between cocoa farmers
114 and the cocoa processing industry in a complete agro-industrial system, strengthening
115 capacity building for post-harvest handling at the farmer level, provision of incentive
116 schemes for farmers and domestic processing industries, deepening and developing
117 diversification of cocoa products that are more downstream to retain the maximum added
118 value in the country, improvement and strengthening of marketing institutions from the farm
119 level to exports, developing business and R&D cooperation with cocoa institutions and
120 industries abroad and intensifying advocacy about the health benefits of chocolate to boost
121 demand
122

123 At the global level, evolution and innovation in the cocoa industry is shaped by both
124 opportunities and challenges. Strategies to effectively link productivity and sustainability tend
125 to be disconnected and, in many cases, work against each other(Herve, 2021).Evolution
126 from cocoa to chocolates, the type of stakeholders and partnership that plays significant
127 roles in the products evolution and the information and knowledge that have been
128 associated with the short-term boom-and-bust cycles can lead to a long-term boom-and-bust
129 cycle with country-wide consequences. Different evolution trajectories of cocoa from the old
130 world to the new world and West Africa have shaped the flavor patrimony of cocoa and
131 innovative sociotechnical systems needed for transformative change. Transformative change
132 should be progressive by exploring new perspectives at various level (substitutions), review
133 or revise the governance structure of existing socio-technical system centered on
134 productivity-enhancing interventions and initiate a co-building and co-construction of the
135 whole system by integrating emerging sustainability challenges.

136
137 Innovation in the cacao industry also extends to the utilization of by-products. Traditionally
138 considered waste, pod husks, pulps, and bean shells can be transformed into valuable
139 products such as dietary fiber, antiwrinkle cosmetics and preservatives, animal feed, organic
140 fertilizers, paper-making materials, and biofuels (Indiarto, et.al., 2021). The cocoa pulp can
141 make mixed drinks, kefir drinks, wine, and other products such as marmalade and vinegar—
142 one of the latest innovations in research on renewable energy for cocoa bean shells

143
144 Lastly, the success of innovation in the cacao industry also depends on the willingness to
145 adopt new technologies. A research study was conducted to gain a better understanding of
146 the variables determining farmers' willingness to pay for hybrid cocoa seeds, and the
147 amounts farmers are willing to pay for these technologies(Emmanuel, 2023). Faced with the
148 volatility of bean prices in an increasingly unstable external market, and with the increasing
149 demand from emerging processing industries, farmers are looking for varieties with high
150 productivity and capable of withstanding climate change and diseases. Hence they prefer
151 hybrid cocoa variety to improve the productive capital of cocoa farms. However, little is
152 known about the factors that determine willingness to pay for the adoption of improved
153 seeds. The results show that the sex of the farmer, the level of education and the number of
154 people living in the respondent's household have a positive influence on the willingness to
155 pay for cocoa variety.

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158 3. METHODOLOGY

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160 A mixed-methods approach was employed to comprehensively explore cacao production
161 practices, value addition activities, and perceptions of innovation and entrepreneurship in
162 cacao-basedproducts within the Bicol region, Philippines.A structured survey questionnaire
163 was designed and administered to 70 cacao farmers and entrepreneurs across various
164 provinces in the region. The survey captured key quantitative data related to their production
165 practices, value addition activities, and their views on the promotion of innovation and
166 entrepreneurship within their communities.To complement the quantitative data, in-depth
167 interviews and focus group discussions (FGDs) were conducted with selected respondents.
168 These qualitative methods aimed to delve deeper into the challenges, barriers, and
169 opportunities in fostering innovation and entrepreneurship in the cacao sector.

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171 Quantitative data were analyzed using descriptive statistics to identify trends and patterns
172 among respondents. For the qualitative data, thematic coding and content analysis were
173 employed to identify recurring themes, key insights, and perspectives from the interviews
174 and focused group discussions.

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4. RESULTS AND DISCUSSION

4.1 Category of Respondents

180 Table 1 shows a total of 70 respondents composed of cacao farmers, farmers/processors
181 and farmers/processors/traders residing in various towns in the Bicol region, Philippines who
182 were selected for this research study. Out of 70 respondents, 67% are solely farmers. This
183 indicates that majority of the respondents are involved only in farming, with no involvement
184 in processing or trading. This could suggest that the primary activity in the region is farming,
185 or that most individuals focus only on cultivation rather than engaging in other parts of the
186 agricultural supply chain. Twenty-four percent (24%) are involved in both farming and
187 processing. This indicates that value addition through processing is a relevant activity,
188 though it is not as common as farming alone. Only 9% are engaged in all three activities:
189 farming, processing, and trading. This group represents the most diversified respondents,
190 who not only produce and process agricultural goods but also engage in trading.

191 **Table 1. Type of Respondents**

Type	Frequency	Percentage
Farmer	47	67
Farmer/Processor	17	24
Farmer/Processor/Trader	6	9
Total	70	100

192 4.2 Perception on Innovation and Entrepreneurship

193 Respondents were asked several questions relative to their ideas on innovation and
194 entrepreneurship for cacao-based products in their local community. Figure 1 illustrates the
195 responses to the question regarding the creation of value-added cacao products and their
196 potential to stimulate entrepreneurship. Majority of respondents, which is more than half of
197 the respondents (69%) strongly believe that the creation of value-added cacao products can
198 effectively stimulate entrepreneurship in local communities. This indicates strong support for
199 the idea and suggests that many see it as a promising opportunity for economic
200 development. However, a smaller portion of respondents (21%) agree with the statement,
201 indicating that while they see potential benefits, they may not feel as strongly about the
202 impact as those who selected "Strongly Agree." Moreover, a small number of respondents or
203 10% chose to reply "Neutral". This suggests that they may be uncertain about the impact of
204 value-added cacao products on local entrepreneurship or they lack information in order to
205 arrive at a more conclusive answer. Overall, respondents show a positive outlook on the
206 potential for value-added cacao products to foster entrepreneurship in their community.

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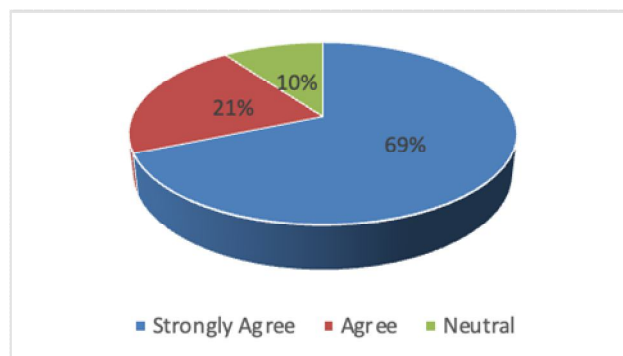


Fig. 1. Perception on Value-added Cacao Products to Stimulate

213 This research result is in consonance with the findings of a research study that cacao
 214 farmers are generally open to innovation and new technology. However, while farmers
 215 respond positively to certain innovations, they do not fully adopt others. This uneven
 216 adoption, is not just a result of limited resources or poor extension services but stems from a
 217 failure to address the multiple challenges farmers face when introducing new innovations,
 218 including insecure land-use rights, youth disinterest, migration, and seemingly lucrative
 219 alternative land use. While promising innovations, such as agroforestry and smartphone
 220 applications for agricultural service delivery and training, are currently being implemented,
 221 such innovations, will only lead to sustainable cocoa cultivation if these broader challenges
 222 are addressed, thereby moving beyond a narrower concern with yields and climate change
 223 mitigation and adaptation (Boadi, 2022).

224 Moreover, previous findings showed positive return on investment for cacao production and
 225 processing. The result of research conducted by Lirag (2021) showed high return on
 226 investment which is about 77.89% and 160% for the farmer and processor, respectively but
 227 a low return on investment of 13% for traders [4]. The value added from farmer to processor
 228 is Php 590.00/kilogram, and Php 125.00/kilogram from processor to trader. Various
 229 opportunities and prospects for cacao production had been identified such as increased
 230 technical and production support from the government, presence of R & D programs,
 231 increasing trend towards wellness & healthy lifestyle, and increasing businesses offering
 232 cocoa-based products.

233 Figure 2 shows various recommended cacao-based products that have the potential for
 234 market success. The largest number of respondents (30) indicate that a significant portion of
 235 the recommendations focus on cacao-flavored beverages. This suggests a strong market
 236 potential for cacao-based food items. This is followed by cacao-based energy bars (25)
 237 showing that cacao-based confectionery items, such as chocolates and sweets, are also
 238 highly recommended for market success. This reflects the traditional popularity and
 239 consistent demand for cacao in confectionery. Following this is the cacao-based
 240 confectionery and cacao-infused skin care products with 18 respondents each. Cacao has a
 241 strong potential for skincare products and highlights the versatility of cacao beyond the food
 242 industry. The following products have 1 respondent each namely, polvoron, soap, other food
 243 products, cookies, shampoo and cacao wine. This represents the smallest portion with
 244 potential for marketability but still, must be carefully considered since the research result
 245 show some interest in these products. This result demonstrates that the most highly
 246 recommended innovative cacao-based products with potential market success are primarily
 247 in the food and confectionery categories, with substantial interest in beverages and skincare
 248 products as well.

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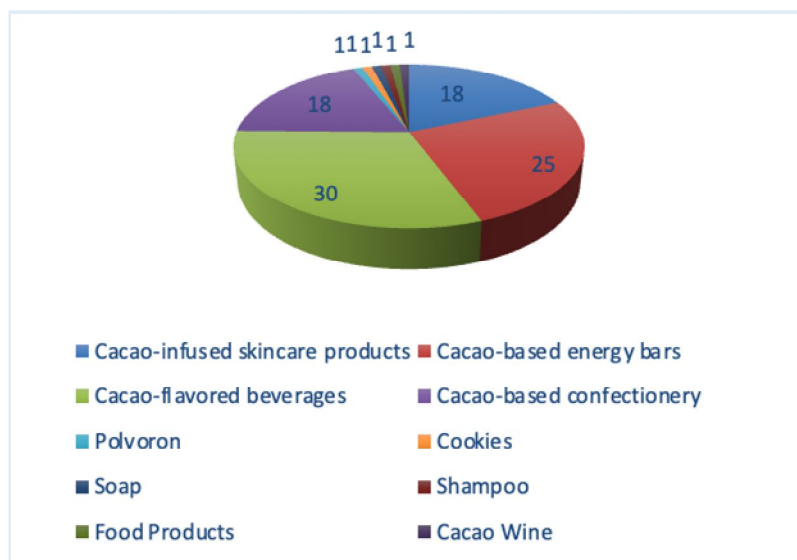


Fig. 2. Cacao-based Products with Potential Success in the Market

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256 There is indeed, numerous products which can be produced from cacao/cocoa. A previous
257 study suggested that cocoa pods can be used as dietary fiber, antiwrinkle cosmetics and
258 preservatives, animal feed, organic fertilizers, paper-making materials, and biofuels(Indiarto,
259 2021). The cocoa pulp can make mixed drinks, kefir drinks, wine, and other products such
260 as marmalade and vinegar—one of the latest innovations in research on renewable energy
261 for cocoa bean shells

262 This is further corroborated by another research study where valuable nutrients and
263 bioactive compounds from cocoa has served as a raw material for the development of
264 innovative cosmetic and pharmaceutical applications, et al, 2021). However, despite the
265 great economic importance of cacao exploitation, the amount of waste and by-products that
266 are generated is incompatible with sustainable development. The cacao industry represents
267 a challenge for the improvement of technologies focused on the recovery of different
268 residues, particularly for the extraction of bioactive compounds for different purposes.
269 Likewise, environmental applications involving waste transformation, such as
270 saccharification of biomass to obtain biofuels (bioethanol and biodiesel) and waste
271 conditioning for removing contaminants through adsorption processes, portray a formidable
272 task

273 Moreover, market channel for cacao products is highly encouraging. In a recent study of
274 Lirag (2024), majority are directly involved in selling goods to consumers, either through
275 retail or a combination of wholesale and retail activities. There is a strong inclination towards
276 digital marketing and direct consumer engagement, alongside traditional wholesale and retail
277 strategies. Likewise, market outlet for cacao products in the province suggests that most
278 market activities are locally or provincially focused, with some engagement in regional and
279 international markets (Lirag, 2023). Similarly, a key point to consider when new and
280 innovative cacao-based product is introduced to the market is the promotion and advertising.
281 It is essential that their digital presence be felt especially now that e-commerce and online
282 marketing is prevalent

283 Figure 3 is about the willingness to pay for innovative cacao products that may be developed
284 by the community. Majority of respondents (91%) are willing to pay a premium for innovative
285 cacao products because they value supporting local entrepreneurship. This is a good sign of
286 a strong community support for local businesses and a high level of willingness to invest in
287 locally developed products. A smaller portion of respondents (9%) might be willing to pay a
288 premium, but their decision depends on the uniqueness and quality of the product. This
289 means that respondents are more selective and cautious, requiring the product to stand out
290 in terms of innovation and quality before committing to a higher price. This only goes to show
291 that there is a strong inclination towards supporting local entrepreneurs by paying a premium
292 for innovative cacao products, with majority of respondents valuing local business efforts. A
293 small portion might consider paying more based on product attributes.

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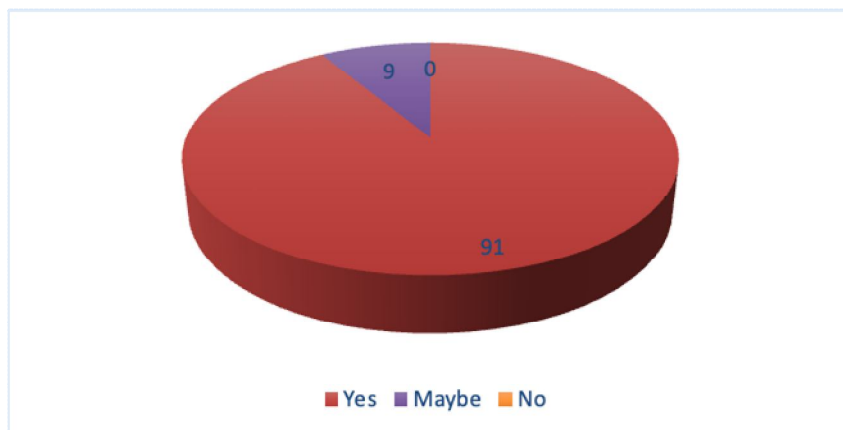


Fig. 3. Willingness to Pay for Innovative Cacao-based Products

298 The optimum price for cacao-based products need to be carefully studied and considered to
299 ensure its success in the market. In the Philippines, a research study was conducted to
300 determine the optimum price for local chocolates using Van Westendorp Price Sensitivity
301 Meter tool(Lirag, 2024). Result of the study showed that the acceptable price range of the
302 locally produced chocolate is between the point of marginal cheapness (PMC) and point of
303 marginal expensiveness. The values outside these range will result in declining number of
304 potential buyers because the locally produced chocolate is either too cheap or too
305 expensive. Furthermore, the optimal price where respondents feel the locally produced
306 chocolate is not too expensive and will not question the quality of the product is Php 1.60 per
307 gram (or \$2.88/100grams). This is the best price that does not only satisfy the demand of
308 chocolate customers for affordable price but also maximize profit of the producers

309 In so far as willingness to pay for cacao related products is concerned, there are some
310 identified factors that must be considered. Findings of a previous research showed that
311 various factors such as sex of the farmer, the level of education and the number of people
312 living in the respondent's household have a positive influence on the willingness to pay for
313 cocoa variety (Emmanuel, 2023).

314 In terms of benefits that can be derived from establishing cacao-based enterprises, job
315 creation and empowerment of small scale farmers are considered as top benefits (Figure 4).
316 The research result show that 35 respondents cited these benefits and rank as the highest
317 priority. This indicates a strong belief that such an enterprise would significantly contribute to
318 providing employment opportunities within the local community. This is followed by economic
319 growth as another key benefit, identified by 32 respondents and ranked third. This suggests
320 that respondents see significant potential for a community-based cacao enterprise to boost
321 the local economy, contributing to overall economic development and stability. Promoting
322 local culture and heritage is also considered an important benefit, with 29 respondents
323 highlighting this aspect. It ranks fourth, indicating that while economic and employment
324 benefits are prioritized, there is also a strong recognition of the value in preserving and
325 promoting the local culture and heritage through cacao-based products.

326 The benefit of fostering a healthier community is identified by only 1 respondent, making it
327 the least prioritized benefit and ranking fifth. This indicates that while health benefits are
328 recognized, they are not seen as the primary impact of a community-based value-added
329 cacao products enterprise compared to economic and cultural benefits.

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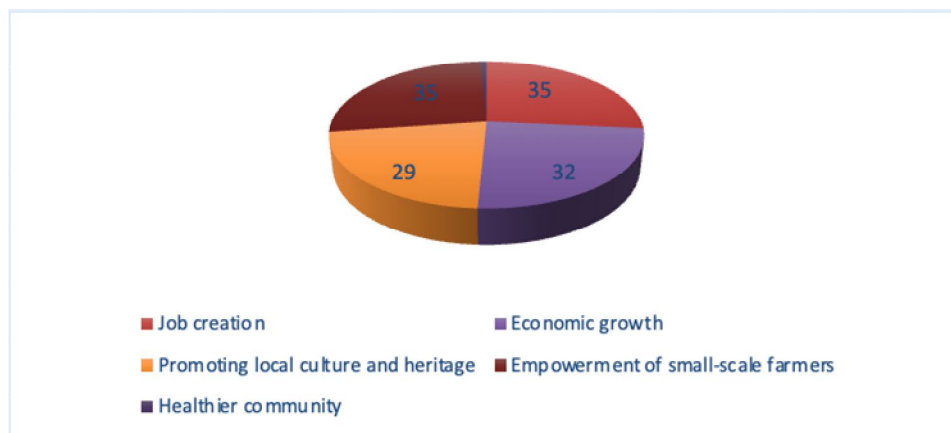


Fig. 4. Benefits of Cacao-based Product Enterprise

338 This finding aligns with Hernandez (2022) who emphasizes that institutional efforts to
339 strengthen the cacao sector must go beyond investment to establish new hectares. Other
340 important aspects must be considered such as: strengthening the skills and knowledge of
341 producers to improve crop management practices (human capital), promoting the
342 participation of household members in associations (social capital), stimulating sensitivity to
343 the rooting and sustainable management of the crop (cultural capital), and promoting
344 processes of technification and adaptation of the infrastructure of fermenters and dryers,
345 which will make it possible to guarantee an adequate quality of the cacao bean (built capital)
346 (Hernandez, 2022).

347 **4.3 Current Innovation and Entrepreneurial Initiatives and Strategies**

348 The partnership of community and university efforts in driving innovation and
349 entrepreneurship has become a key driver of socio-economic development in Bicol region.
350 The **Central Bicol State University of Agriculture** (CBSUA) is increasingly collaborating with
351 local communities to foster a culture of innovation and entrepreneurship. These partnerships
352 result in initiatives that not only address local challenges but also create opportunities for
353 sustainable growth and development.

354 Presently, the following innovation and entrepreneurial strategies and initiatives are being
355 undertaken by both the local cacao group communities and CBSUA which highlights
356 successful models of collaboration and innovative solutions:

357 **a) Support Structures**

358 The formation of cooperatives and associations of cacao farmers/entrepreneurs with
359 continued guidance from CBSUA provide significant assistance who are just starting
360 with their businesses. For instance, as a cooperative like the Cacao and Pili Growers
361 Association Sorsogon, Inc. (CAPIGASI), they are able to effectively manage their
362 resources, share experiences and knowledge with one another especially on the
363 marketing schemes they can practice. Likewise, they are able to promote collective
364 ownership, economic fairness, resilience and empower members of the
365 cooperative/association to work together for mutual benefit.

366 This strategy is in consonance with the findings that within an organization, farmers
367 need to manage resources collectively, share knowledge, and implement effective
368 marketing strategies (Echdar, 2017). Likewise, the focus on collective ownership and
369 economic fairness resonates with the findings of Rueda (2023), which emphasize that
370 collective action enhances farmers' access to high-value chains, leading to economic
371 upgrading and higher incomes.

372 **b) Business Support and Entrepreneurship:**

373 Various trainings and workshops in entrepreneurship, business management and
374 financial literacy had been conducted to help community members start and manage
375 their enterprises effectively. These also provided mentorship opportunities and facilitate
376 networking with successful entrepreneurs, industry experts, and potential investors.
377 These were conducted on different dates mentioned below with CAPIGASI members
378 and other members of cacao growers and entrepreneurs. The training sessions and
379 skills development focused on developing skills in various cacao production, including
380 farming practices, fermentation, drying and processing:

Title of Training/ Workshop/ Activity	Date Conducted	Sponsor	Estimated Number of participants
2 nd Cacao Festival and Technology Forum	November 9, 2023	CBSUA	150
1 st Regional Cluster Summit and Cacao and Coconut Fair	December 1-3, 2023	Department of Trade and Industry and Camarines Sur Cacao Council	100
Cacao Congress	December 1, 2023	Camarines Sur Cacao Council	80
CAPIGASI Site Visit	February 27- 28, 2024	CBSUA, Department of Agriculture	50
Memorandum of Agreement(MOA) Signing between CBSUA and CAPIGASI	May 28, 2024	CBSUA, Southeast Asian Regional Center for Graduate Study and Research in Agriculture -Seed Fund for Research and Training (SEARCA-SFRT)	50

381 The 2nd Cacao Festival included among others, a Technology Forum where
382 research results on cacao were discussed and shared to the participants. The topics
383 discussed were the following:

Topic	Resource Speaker
Cacao Nursery Establishment	Dr. Celerino B. Llesol
Good Agricultural Practices (GAP) for Cacao Production	Dr. Celerino B. Llesol
Development and Processing of Local Chocolates	Prof. Julieta M. Casaul
Price Determination for Locally-produced Chocolates	Prof. Ma. Teresa B. Lirag

384 The Cacao Summit and Fair was a venue for cacao processors to showcase their
385 cacao-based products such as chocolates, tablea, polvoron, wine, to name a few.
386 The venue provided more clients and customers access to these products.
387 Moreover, there were lectures provided relative to cacao processing and
388 development.

389 A site visit to one of the cacao growers/association provided CBSUA Cacao team
390 the opportunity to give the needed technical assistance. CAPIGASI, which is based
391 in Bulan, Sorsogon is an active association of farmers and growers which aims to
392 help each other in their desire to further improve their farms and products. The
393 formation of CAPIGASI was further strengthened and access to resources was done
394 through networking with the Department of Agriculture which provided free seedlings
395 and tools.
396

397 The various training programs and workshops aimed at enhancing entrepreneurship
398 and business management skills further illustrate the commitment to empowering
399 local communities. These efforts align with the literature that underscores the
400 importance of human capital development in agricultural sectors (Hernandez, 2022).

401 Training sessions cover crucial aspects of cacao production, such as farming
402 practices and processing, equipping farmers with the necessary skills to improve
403 their enterprises. This focus on education and mentorship facilitates networking
404 opportunities, which are essential for accessing markets and fostering sustainable
405 growth.

406 **c) Partnerships and Collaboration:**

407 Cooperatives and small and medium enterprises involved in the production of
408 cacao-based products and chocolates are actively and continuously collaborating
409 with the local government units (LGUs) and government bodies such as the
410 Department of Agriculture (DA), Department of Trade and Industries (DTI), **non-**
411 **government organizations (NGOs)** like the Camarines Sur Chamber of Commerce
412 and Naga City Chamber of Commerce, and other stakeholders to access funding,
413 technical assistance, and policy support. More importantly, partnership with
414 academic institutions such as the Central Bicol State University of Agriculture
415 (CBSUA) is of primordial importance for ease of access related to research,
416 innovation, and technical expertise.

417 The active collaboration between cooperatives, small and medium enterprises, and
418 local government units (LGUs) highlights the importance of multi-stakeholder
419 engagement. A research study supports this notion, stating that increased capacity
420 and collaboration among field extension workers and local governments can
421 significantly enhance agricultural productivity and entrepreneurial competence
422 (Echdar, 2017). The partnerships with CBSUA provide essential research,
423 innovation, and technical expertise, thereby reinforcing the local cacao industry's
424 potential for growth and sustainability.

425 **d) Innovation in Product Development:**

426 There is a great need to continue investing in R&D to develop new cacao products
427 and improve existing ones. Towards this end, CBSUA has the Cacao **Research and**
428 **Development (R and D)** Center to assist cooperatives, cacao farmers and growers in
429 exploring different types of chocolates, cacao-based beverages, and other
430 derivatives.

431 One project worthy to note is the processing of local chocolates and tablea which is
432 now available for marketing by the university. This was made possible through the
433 collaboration of CBSUA with Ghent University and funded
434 by **Vlaamselnteruniversitaire**
435 **RaadUniversitaireOntwikkelingssamenwerking (VLIRUOS)**, Belgium. Future plans
436 include emphasizing on value-added products such as cacao nibs, cacao powder,
437 and chocolate bars that will cater to niche markets which eventually, will be shared
438 to other cacao/chocolate cooperatives and associations.

439 Local cacao entrepreneurs can greatly benefit from the international partnership
440 between Central Bicol State University of Agriculture (CBSUA) and the University of
441 Ghent in Belgium as they will have access to cutting-edge research on cacao
442 cultivation, processing, and sustainable practices; knowledge transfer through joint
443 programs, workshops, and seminars is facilitated and access to global networks is
444 enhanced that can create opportunities for local cacao entrepreneurs to connect
445 with global markets.

446 The current innovation and entrepreneurial strategies are essential to ensure the
 447 sustainability of cacao development in the region. In a research study previously
 448 conducted, they focused on the importance of networking and collaboration
 449 especially with the government (Echdar, 2017). Stakeholders must make efforts,
 450 particularly local governments, in order to optimize the function of the help of field
 451 workers. For example, increase in the capacity of field extension workers can be
 452 through a participatory approach. This approach is oriented to the needs of the
 453 farmer relative to counseling, strengthening performance and extension institutions
 454 so that activities to improve the entrepreneurial and institutional competence of
 455 farmers can be ensured and eventually, will result to increased cocoa production

456 Over the years, research efforts in the cocoa sector have gradually shifted from
 457 upstream to downstream of the value chain on processed products (Mathe, 2023). It
 458 is therefore essential to reinvest this service downstream in order to produce the
 459 knowledge needed for the transition to sustainability and quality. The emergence
 460 and multiplication of niches dedicated to quality and sustainability associated with
 461 the demands of civil society, consumers, and governments may help to pave the
 462 way towards the transition.

463 Similarly, a research result showed that the driving factors of the implementation of
 464 integrated management model of coffee and cocoa plantation are the variety of
 465 agricultural crops (plantation products, agricultural products, and livestock), while the
 466 inhibiting factors are weak networks among government institutions and
 467 stakeholders (Soetrioni, 2020). Moreover, the strategy of the implementation of
 468 management model are: the role and participation of the community as managers,
 469 contribution from government and stakeholders, specific integrated plantation
 470 management, provision of facilities and clarity of the implication of the model on
 471 local communities, tourists, and government.

472 4.4 Barriers and Challenges

473 Table 2 shows the various problems encountered by cacao farmers/processors which can
 474 adversely affect their desire to innovate and undertake entrepreneurial activities. All the
 475 problems mentioned were at the moderate level with limited financial investment/capital
 476 considered as the most significant problem faced, followed closely by unstable demand and
 477 low and unregulated farm gate price of agricultural commodities. Competition is perceived as
 478 the least significant issue in addition to high cost of hauling, product quality, and poor
 479 condition of farm to market road are considered moderate concerns.

480 **Table 2. Problems Encountered by Cacao Farmers and Processors**

Problems Encountered	Mean	Rank
High Cost of Hauling	3.44	5
Limited Financial investment/capital	3.65	1
Poor condition of farm to market road	3.39	7
Low and unregulated farm gate price of agricultural commodities	3.61	3
Perishability of the Agricultural commodities produced	3.24	8
Price fluctuation	3.55	4
Unstable demand	3.63	2
Product quality	3.42	6
Competition	3.10	9

481
482 These findings resonate with a related study on the challenges of adopting precision
483 agricultural technologies (PATs) in cacao production. Bosompem (2021) identified five major
484 challenges hindering the implementation of PATs: demographic, environmental, educational,
485 economic, and technical challenges. Among these, demographic characteristics, such as the
486 age and education level of farmers, are particularly relevant to the research findings.
487 Farmers with limited capital often lack the educational background and technological literacy
488 necessary for adopting new practices, echoing the difficulties cited by (2019) regarding the
489 aging rural population and labor shortages that threaten the sustainability of
490 agroecosystems.

491
492 Furthermore, environmental challenges, such as poor infrastructure leading to difficult
493 access to farms, align closely with the issues raised by the cacao farmers in this study. The
494 poor condition of farm-to-market roads is a barrier that can severely impede access to
495 markets and increase transportation costs, reinforcing the findings of Bosompem (2021)
496 regarding the lack of accessible roads as a major obstacle to the adoption of precision
497 agriculture.

498
499 Additionally, Noguiera (2019) highlights that the absence of differentiated price and
500 marketing channels for organic cacao presents significant limitations. This aligns with the
501 research finding that unstable demand and low farm gate prices are prevalent challenges,
502 indicating a lack of robust market mechanisms that could provide stable income for farmers.
503 The study's findings on labor shortages and increased costs associated with adopting new
504 practices further emphasize the economic barriers identified in the literature.
505

506

507

508 **5. SUMMARY AND CONCLUSION**

509

510 A total of 70 respondents composed of cacao farmers, farmers/processors and
511 farmers/processors/traders residing in various towns in the Bicol region were selected for
512 this research study with the aim of determining their perception on innovation and
513 entrepreneurship, identifying current innovation and entrepreneurial initiatives and strategies
514 and determining the challenges and problems to ensure success of their cacao-based
enterprises.

515 Findings of the study showed that farming is the primary focus for the majority of
516 respondents (67%), with only a minority involved in processing or trading activities. This
517 could indicate limited access to resources or infrastructure for processing and trading, or that
518 there are barriers (such as knowledge, skills, or market access) that prevent most farmers
519 from moving into other parts of the agricultural value chain. The most highly recommended
520 innovative cacao-based products with potential market success are primarily in the food and
521 confectionery categories, with substantial interest in beverages and skincare products.
522 Majority of the respondents show a positive outlook on the potential for value-added cacao
523 products to foster entrepreneurship in their locality. Ninety-one percent (91%) are willing to
524 pay a premium for innovative cacao products because they value supporting local
525 entrepreneurship and a good sign of a strong community support for local businesses with
526 high level of willingness to invest in locally developed products. Job creation and
527 empowerment of small scale farmers are considered as top benefits of a community-based
528 value-added cacao products enterprise. Limited financial investment/capital is the most
529 significant problem faced, followed closely by unstable demand and low and unregulated
530 farm gate price of agricultural commodities. Innovation and entrepreneurial strategies must
531 be in place and this include support structures through the formation of cooperatives to

532 provide significant assistance for farmers and processors who are just starting with their
533 enterprises, innovation in product development, business support and entrepreneurship and
534 partnerships and collaboration.

535

536 **6. RECOMMENDATIONS**

537 Based on the results and findings of this research study, the following interventions are
538 hereby recommended:

- 539 **1.** Implement targeted continuous capacity building programs aimed at equipping cacao
540 farmers and entrepreneurs with the knowledge and skills needed to engage in value-
541 added cacao production. This can include entrepreneurship education, business
542 incubation, mentorship, networking, and access to shared facilities and resources.
543
- 544 **2.** Provide easy and quick access to financial resources for smallholder farmers and
545 community-based entrepreneurs through microfinance initiatives, cooperative lending
546 schemes, and government subsidy programs.
547
- 548 **3.** Facilitate networking opportunities, trade fairs, and business matchmaking events to
549 connect cacao producers with potential buyers and partners both at the domestic and
550 international level. Likewise, it is essential to strengthen coordination between farmers,
551 cooperatives, processors, exporters, government agencies, research institutions, and
552 NGOs to streamline production, processing, and marketing activities.
553
- 554 **4.** Strengthen policy support by advocating policy reforms that incentivize innovation and
555 entrepreneurship in the cacao sector.
556
- 557 **5.** Intensify research and development initiatives to support innovation in cacao production,
558 processing, and product development. This also means strengthened collaboration
559 between universities, industry, and government to conduct research on varietal
560 improvement, disease management, value addition technologies, and market strategies.
561

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