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# Measurement Model on Community Farmer for Agriculture Cluster Development

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***Abstract*—Community entrepreneurship (CE) is an established synergetic network between the community and social entrepreneurship. CE in agricultural cluster area development (ACD), which is based on small-medium enterprise (SMEs) comprises the collaborative engagement between farmer community, agribusiness cluster, and common resources. This research aims to analyze CE performance in ACD based on SMES through emerging CE variables and how to manage CE's variables most effectively. This study contributes to the enhancement of CE performance in ACD. It also contributes to the methodology through the community effectiveness entrepreneurship index (CEEI). CEEI is a model to measure CE in ACD. It is an average score of 30 indicators from CE functions: collective innovation, collective supply chain management, collective accessibility to economic resources and opportunities, profit accumulation, and benefit-sharing. Using a factor analysis validation, CEEI has been applied to farmer groups in Lembah Gumanti subdistrict, Solok regency, West Sumatra province, Indonesia as a pilot test. The results indicated constructing the measured performance of CE in ACD identified CE performance supported by all CE variables. There are three CE effectiveness categories in ACD; strong (4), fair (3), and weak. Primarily, the management has yet been effective for CE variables. This is because the majority of CE is still not managed by non-social business communities. Community social businesses are better at managing synergies with the dimensions of collective action for innovation, SCM, accessibility, profits, and benefit-sharing.**

***Keywords*— Collective action; small farming; social entrepreneurship; community entrepreneurship; regional development.**

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## I. INTRODUCTION

Researches on Community Entrepreneurship (CE) have garnered more attention recently as CE is expected to become a force that could improve marginalized society's lives. This is the effect caused by the failure of the individual and corporate entrepreneurship approaches that are capital-based to meet the said objective. The non-optimized function of the approaches also occurred in the empowerment of small-scale agricultural operations in agricultural cluster areas [1], [2], [3], [4]. Small-scale agricultural operations or Small and Medium Enterprises (SMEs) play a vital role in product marketing production. Unfortunately, SMEs confront many difficulties, resulting in a lower income-generating capacity. While its dominant and potential resources. SMEs spread over the Asian continent (85%), sub-Saharan Africa (6%) , Europe (4%) and America (2%) [5], [6], [7], [8], [9], [10]. In Indonesia, SMEs nearly have 88% [11].

CE serves as the beacon of hope for the agricultural cluster area development (ACD) based on CE characteristics. It is an established synergetic network between the community and social entrepreneurship. The community and the business run within social entrepreneurship, which combines both individual and organization's social and economic perspectives to solve social problems through innovation and business. [12], [13], [14] , [15]. CE is collective action to transform social-economy, culture and environmental system within several roles in the community; owner, businessmen, and workers [16], [17], [18], [19], [20], [21], [22], [23]. They identify opportunities, market as well as self-managing improvement, exploited advantages locally to promote local welfare. This is a match with cluster area since cluster area is a local dynamic system related to three aspects; *common knowledge, a common problem, and common effort.* All those dimensions should be involved within collective action, innovation, and togetherness to achieve community welfare [24], [25], [26].

The CE implementation showed a positive result and performed well amongst local businesses in the USA and over the other continents to Europe and Australia. Agricultural development in Ogata, Japan, also used the CE approach as the endogenous power to encourage growth, conserve local resources and industry. These proved that CE is an acceptable mechanism and agent in local economic development [27], [28], [29], [30]. However, CE, for the most part, is still weak and requires development [6], [31]. The development of CE requires identification of CE condition and the measurement of the CE performance itself. This measure must have a collective action dimension.

However, the measurement tool is yet available. This is also related to the measurement of CE performance CE in ACD based on SMEs. This research's novelty is that it constructs a model for CE performance measurement in ACD based on SMEs. Until nowadays, the measurement of entrepreneurship performance is still in individual and corporate entrepreneurship. Existing performance measurement has not been able to accommodate the collective action character within the community. For example, the Global Entrepreneurship Development Index (GEDI) is known from the Global Entrepreneurship Monitor 2015-2019. This annual aggregate index measures various countries' entrepreneurship ecosystems health as interaction among characters of individuals, organizations, and states that reflect entrepreneurship development based on attitude, resources, and infrastructures. The other is performance measurement of CE using a time-based organizing framework [37].

Moreover, performance measurement for CE in ACD is based on SMEs, which is not yet available. The literature review showed no one has yet presented CE in ACD based on SMEs. Studies on CE are still few and relatively in shortage of detailed CE study results [3]. Existing literature is mostly biased towards the success stories of ecosystem growth strategy [32]. Some of them are about the influence of CE on regional development fostering CE within the city for the industrial sector [28], qualitative mapping of CE research [3], a gender perspective in CE [16], the willingness of farmers to be involved in an entrepreneurial system [33], CSR clusters, social businesses and communities [34], community social capital synergy and CSR [29], the synergy of social entrepreneurship with local institutions [35], social capital in CE education [31], strategic entrepreneurship in local communities for sustainable development of tourism communities [36], economic ecosystems and dynamics of small-city scale CE [18], social capital and participation in CE.

CE in ACD based on SMEs is the collaborative engagement between farmer community, agribusiness cluster and common resources. It is an effort to develop agricultural cluster as an interactive factors, oriented to be collective action by the community [10] [13], [38], [39], [40]; agribusiness cluster [41], [42], [43]; who collaboratively related each other within used common resources [22], [44], [45], [46], [47].

The CE function is explored from the entrepreneurship dimension and cluster competitiveness. It consists of collective innovation, collective supply chain management, collective accessibility to economic resources and opportunities, profit accumulation, and benefit-sharing. This research aims to analyze CE's performance in ACD based on SMEs by identifying (1) emerging variables of CE works in ACD based on SMEs (2) who and how to manage CE's variables in ACD most effectively. These become parts of the attempt to develop CE in ACD. This research contributes the methodology through measurement with *Community Entrepreneurship Effectiveness Index* (CEEI). CEEI is a model for the mapping of CE conditions in the agricultural cluster area. The index is an indicator from 30 indicators showing the interaction of four CE's interrelated variables. CE's variables are collective innovation, collective supply chain management, collective accessibility of economic resources and opportunities, profit accumulation, and benefit-sharing. Generally, they contribute to enhancing CE performance in ACD**.**

## II. Material and Methods

### *A. Background*

This article focuses on the development of a model for CE performance measurement. The model exists to accommodate the collective action character within the community. So far, there is no available measurement; meanwhile, CE performance measurement is immeasurable through both individual and corporate approaches. The measurement towards community entrepreneurship performance requires method and instrument within the collective actions dimension, which is yet present. This research contributes novelty in the form of a measurement method called Community Entrepreneurship Effectiveness Index (CEEI). The index is a measurement yielded from the combination of several distinct indicators into a single score. CEEI has 30 indicators of four interrelated variables of CE. CE's variables are collective innovation, collective supply chain management, collective accessibility to economic resources and opportunities, profit accumulation, and benefit-sharing. These variables, along with the indicators, identify the strength of synergy between the community's internal and external collective actions and social businesses in the ACD. The ACD serves as the strength of the CEEI. The measurement of each indicator in CEEI uses the Likert scale, i.e., the measurement to capture the intensity, level, or potential of a variable. The measurement towards a community was performed on the farmers based on their respective farmer group/community.

The measurement was obtained from the filling of questionnaires, in-depth interviews, cross-check between samples and community, scoring, the summation of scores based on the grouping, and score-based analysis. Data gathering used to survey, in-depth interview, and expert opinion (Fig.1).

### *B. Research Site*

The research was carried out from March to December 2018 to identify how CE works in the cluster area at Lembah Gumanti sub-district, Solok Regency West Sumatra province. As stipulated in the governmental decree, Lembah Gumanti (2014) has been incorporated into the 20 upper rates of the prospective location to develop both agriculture and trading area. Here, person's employment-focused more (77.55 %) on an agricultural basis. Farmer households could be categorized into cultivated land < 0.5 hectares and > 0.5 hectares,

dominant in the area [48]. However, [49] explored here, and at the time, agricultural development had yet integrated into each other. Lembah Gumanti still required improvement in terms of its collaborative institutional framework for preserving sustainability and integration.

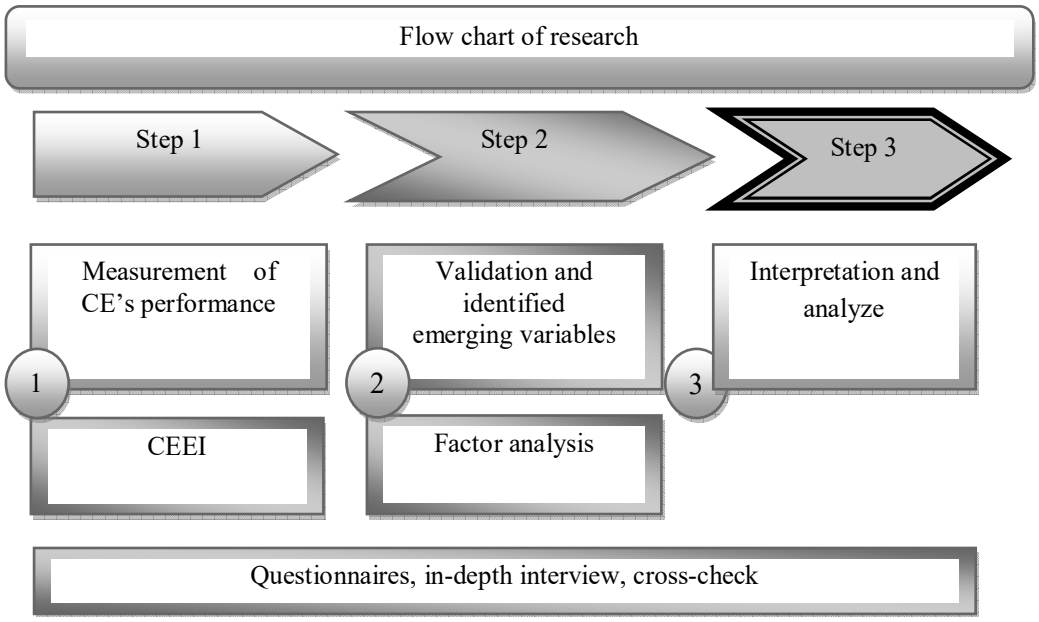


Fig. 1 Research road map

*C. Variable and Indicator of CEEI*

CEEI contributed to the mapping process of CE conditions in an agricultural cluster using quantitative data. CEEI was resulted from combining several indicators with a standardized and weight consideration. CEEI is a tool for mapping CE conditions based on interaction and established synergetic stakeholders to measure entrepreneurship dimension and cluster bargaining position and variables. CE variables consisted of collective innovation, collective supply chain management/ SCM, collective accessibility to economic resources and opportunities, profit accumulation, and benefit-sharing.

If CE =Y, then:

$$Y=X_1+X_2+X_3+X_4 \quad (1)$$

While: Y = CEEI;
X1 = collective innovation;
X2 = collective SCM;
X3 = collective accessibility to economic resources and opportunities;
X4 = profit accumulation and *benefit-sharing.*

CEEI is the derivative of CE variables represented by 30 indicators. In short, CEEI is the result of a measurement that describes the rate of effectiveness of CE in ACD. Based on the 30 criteria established from the collective innovation, collective SCM, collective accessibility to the economic resources and opportunities, and the accumulation of benefit and profit-sharing as illustrated in figure 2.

CEEI was measured based on the validity and reliability of the standardized tool.

The definition of each variable is as follows:

*1) Collective innovation:* CE requires both farmers' competency and institutional capacity established by collective innovation. Collective innovation is an activity to find out notion, idea implementation, behavior, products, information, a newly verification trial, which should not yet adopted by dominant farmers among certain locality [33] [50], [51], [52], [53], [54], [55], [56].

*2) Collective* Supply *Chain Management (SCM):* SCM involves a collaborative process, coordination, and different functional activity such as marketing, sales, production, product design, supply, logistics, budgeting, and information technology in the SCM network. It includes raw material flow, information, and financial support to produce and deliver both products and services [57], [58], [59]. Collective SCM is an SCM that was established by synergic producers networking to create products and deliver to the end-users.

*3) Collective accessibility to economic resources and opportunity:* In an English-Indonesian dictionary, accessibility is easy to achieve. Accessibility to economic resources promotes income source diversification as well as farmers' welfare. It consists of enlarging options to economic resources [60], such as credit and business widen. CE was determined by access toward economic resources, such as productive resources, institutional resources, human capital, natural capital, financial capital, and social capital [47], [61], [62].

*4) Common orientations:* The entrepreneurship orientation is profit. The measurement of this orientation in community entrepreneurship is the profit accumulated and how the community could gain merits fairly. The community has a role in representing the needs of individuals within. [45], [63], [64].

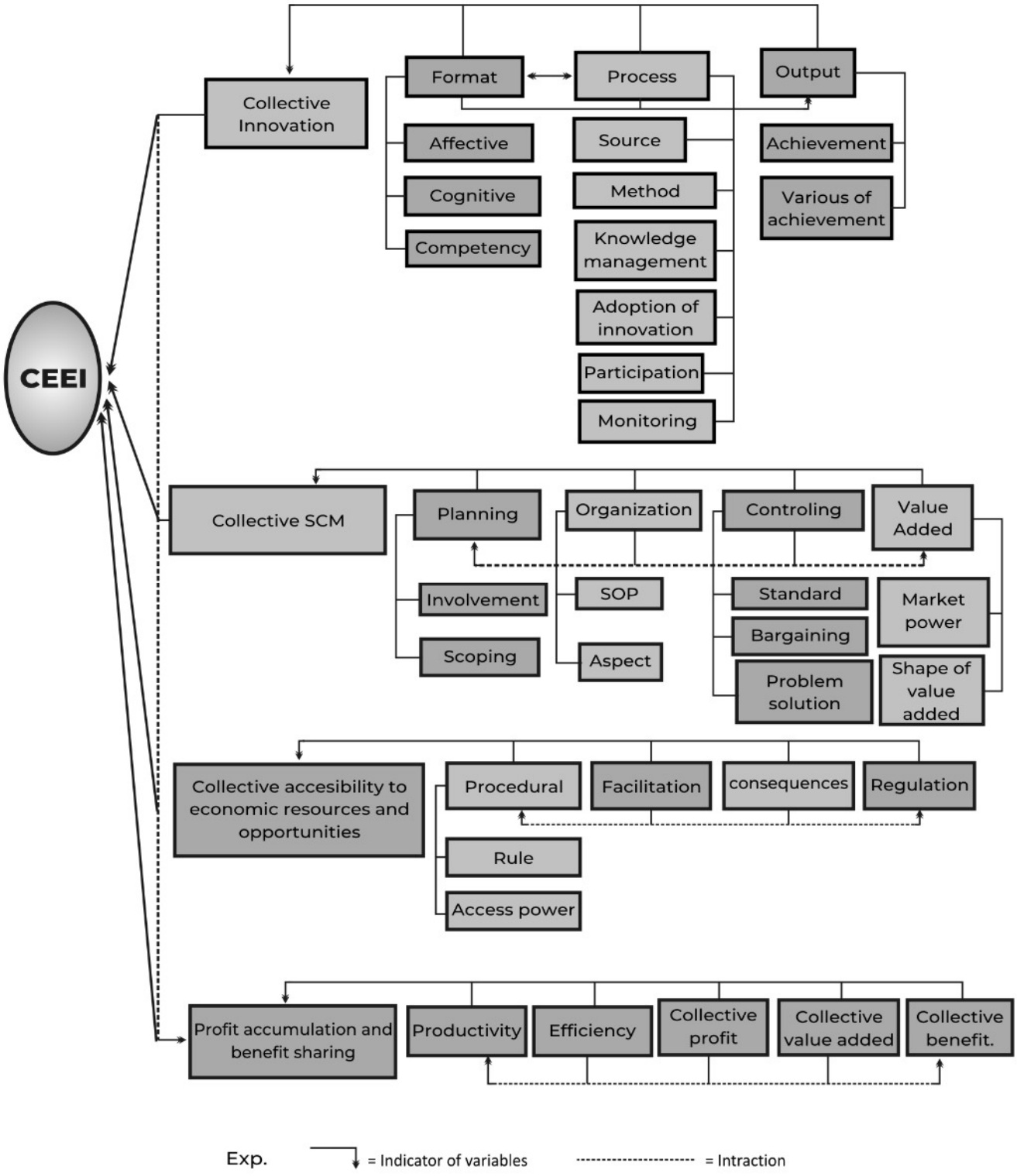


Fig.2 Variables and Indicators of CEEI

Figure 3 shows that CEEI is an average score of 30 indicators with the highest rate at 150 points resulting from the highest value at 5. There were five categories/levels of CEEI. For each indicator, CEEI used scale measurement to represent intensity, level, and variable potential. Existing CE measurement using CEEI was carried out of farmer groups or communities in agricultural development clusters. Each group measurement contributed to the cluster condition, where CEEI exposes CE's working mechanism.

*D. Validation of CEEI measurement*

The result of the CEEI measurement was validated by using factor analysis (FA). FA is a kind of multivariate method to confirm the model as hypothecated earlier. The FA aimed to identify the relationship between variables using a correlation test to confirm its validity and reliability level. Its step follows a serial formulating the problem, arranging correlation matrix, extracting the factor, rotating factor,

interpreting factor, scoring factor, selecting variable surrogate, and determining the full scale. The FA model was used to measure CEEI to test each latent variable's validity and reliability and its connectivity. Using *Cronbach's Alpha*, reliable tests have been done to ensure that research has a high validity and reliability confidence [65]. The research has explored how CE works in ACD using measurements by CEEI. CEEI has shown emerging variables, manage and manage variables effectively. This can be a reference for improving CE in ACD performance.

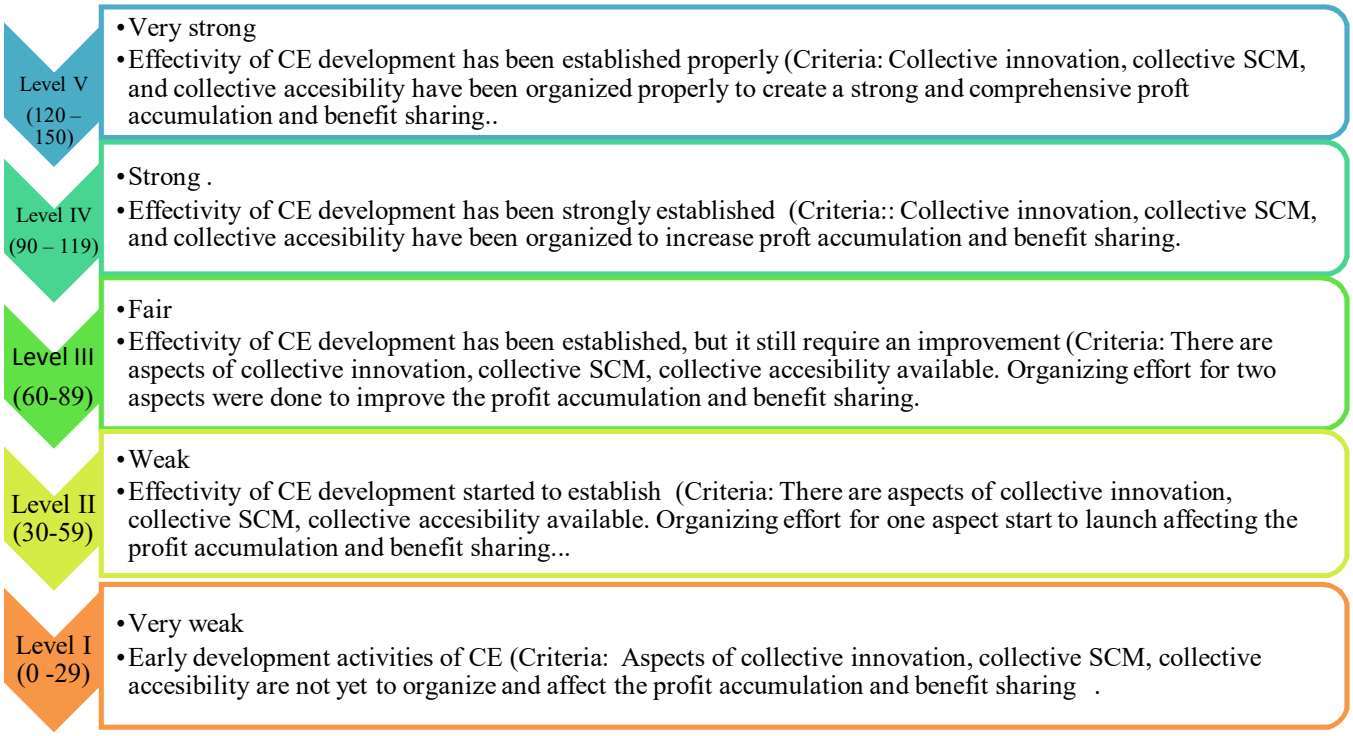


Fig. 3 Level and criteria of CEEI

## III. Result and Discussion

This section exposes the reality of CE in ACD. Its objective is to show performance CE in ACD at Lembah Gumanti District. It consists are (1) emerging variables CE in ACD, (2) how does CE performance in ACD. The tools called *Community Entrepreneurship Effectiveness Index* (CEEI) in developing the agricultural cluster area. The performance of farmer's groups formed it. Table 1 shown the measurable performance of farmer groups from Lembah Gumanti area.

### *A. The emerging variable CE in ACD*

The emerging variable is obtained from CEEI measurement and factor analysis. Validation of CEEI result used factor analysis (FA) within SPSS system, ensuring a high validity [65], as shown in FA process.

*1) Kaiser-Meyer-Olkin measurement (KMO) and Bartlett's test:* These two tests showed the *Measure of sampling Adequacy* (MSA) was 0.802 ('> 0.5). This reflected enough number of the sample identified by KMO and Bartlett's chi-square test value 90,460 at significant 0.000. The value indicated that there was a feasible correlation among variables to proceed further.

*2) Anti-image correlation:* The anti-image correlation value suggested that all indicators achieved FA requirement due to MSA value at each indicator above 0.5. Variables of collective innovation (X1=0.815), collective SCM (X2=0,775), collective accessibility to economic resources and opportunities (X3=0.769), and profit accumulation and benefit-sharing (X4=0.855). Because of all indicators achieved requirement, there was no single indicator excluded from FA.

*3) Communalities:* Communalities showed that the value of variables was higher than 90 %, reflecting each variable's effectiveness to CE in the cluster. Extraction column showed: Xl (indicator 0.839 meaning that 83,9% of variant indicator of collective innovation could be represented; X2 (indicator at 0.878 figuring that 87,8% of variant indicator of collective SCM. These mean that a similar interpretation for X3 value at 0.958 or 5.8% of collective accessibility to economic resources and opportunities; for 0.943 meaning 94.3% of profit accumulation and benefit-sharing could be trusted (fig. 4).

*4) Eigenvalue:* Value of initial eigenvalues≥ 1 shaped by a single factor from 4 variables (factor 1 eigenvalue as 3.617 with variance 90.437%). This value *eigenvalue* showed the relative importance of each variable in the analysis. The sum of all variable's value was 4 (similar with its variables) 3.617/4 x 100% = 4/4X100%, extracted to be single factor 90.437% meaning that new established factor contributed 90.437%. While the rest of 9,6% could be explained by others.

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TABLE I
CEEI IN LEMBAH GUMANTI AREA

| | Farmer Group/*Nagari (village)* | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **NI** | **Aie Dingin** | | | | | **Sungai Nanam** | | | | | | | **Alahan Panjang** | | | | | **Salimpat** | |
| | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** | **15** | **16** | **17** | **18** | **19** |
| 1 | 3 | 4 | 4 | 4 | 3 | 2 | 3 | 2 | 2 | 2 | 3 | 2 | 3 | 3 | 4 | 2 | 2 | 2 | 1 |
| 2 | 3 | 3 | 4 | 4 | 3 | 2 | 3 | 2 | 2 | 2 | 3 | 2 | 3 | 3 | 2 | 2 | 2 | 2 | 1 |
| 3 | 4 | 4 | 4 | 4 | 4 | 1 | 2 | 1 | 1 | 1 | 2 | 1 | 2 | 2 | 1 | 1 | 2 | 1 | 1 |
| 4 | 3 | 3 | 5 | 5 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 1 |
| 5 | 4 | 4 | 4 | 4 | 4 | 2 | 3 | 2 | 2 | 2 | 3 | 2 | 3 | 2 | 2 | 1 | 2 | 1 | 1 |
| 6 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 |
| 7 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 5 | 1 |
| 8 | 3 | 3 | 4 | 4 | 3 | 2 | 3 | 2 | 2 | 2 | 3 | 2 | 3 | 3 | 2 | 2 | 3 | 2 | 1 |
| 9 | 4 | 4 | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 3 | 4 | 1 |
| 10 | 4 | 4 | 4 | 4 | 4 | 3 | 4 | 2 | 2 | 2 | 3 | 2 | 3 | 3 | 2 | 2 | 2 | 2 | 1 |
| 11 | 4 | 4 | 4 | 4 | 4 | 2 | 3 | 2 | 2 | 2 | 4 | 2 | 3 | 3 | 2 | 2 | 2 | 2 | 1 |
| 12 | 3 | 3 | 4 | 4 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 3 | 1 | 1 |
| 13 | 3 | 2 | 4 | 4 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 1 | 1 |
| 14 | 3 | 3 | 4 | 4 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 1 | 1 | 3 | 1 | 1 |
| 15 | 3 | 3 | 5 | 5 | 3 | 2 | 2 | 1 | 1 | 1 | 2 | 1 | 2 | 1 | 1 | 1 | 3 | 1 | 1 |
| 16 | 3 | 3 | 5 | 5 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 3 | 1 | 1 |
| 17 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 1 | 1 |
| 18 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 |
| 19 | 4 | 4 | 4 | 4 | 4 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 2 | 1 | 1 |
| 20 | 4 | 4 | 5 | 5 | 4 | 1 | 2 | 1 | 1 | 1 | 2 | 1 | 2 | 2 | 1 | 1 | 3 | 1 | 1 |
| 21 | 3 | 3 | 3 | 5 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 |
| 22 | 2 | 2 | 3 | 3 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 |
| 23 | 4 | 3 | 4 | 4 | 4 | 2 | 4 | 1 | 3 | 1 | 4 | 3 | 4 | 3 | 2 | 2 | 4 | 2 | 2 |
| 24 | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 3 | 3 | 3 | 3 | 3 |
| 25 | 3 | 3 | 4 | 4 | 3 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 4 | 1 | 1 | 1 | 1 | 1 | 1 |
| 26 | 4 | 4 | 4 | 4 | 4 | 2 | 3 | 2 | 2 | 2 | 3 | 2 | 3 | 3 | 2 | 2 | 3 | 2 | 1 |
| 27 | 3 | 3 | 3 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 3 | 2 | 1 |
| 28 | 4 | 4 | 4 | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 1 | 1 | 1 | 1 |
| 29 | 4 | 4 | 4 | 4 | 4 | 1 | 3 | 1 | 1 | 1 | 3 | 3 | 3 | 3 | 1 | 1 | 3 | 1 | 1 |
| 30 | 3 | 3 | 4 | 4 | 3 | 1 | 2 | 1 | 1 | 1 | 2 | 1 | 2 | 2 | 1 | 1 | 3 | 1 | 1 |
| Total | 96 | 96 | 114 | 118 | 97 | 59 | 73 | 56 | 58 | 56 | 75 | 59 | 76 | 68 | 51 | 47 | 76 | 47 | 33 |
| Level | | | IV | | | II | III | II | II | II | III | II | III | III | II | II | III | II | II |

Legend: Farmer's group: 1=Bukik Radjo; 2= Cahaya Baru; 3= Gunuang Talang; 4= Sawah Rawang; 5= Pinang Saiyo; 6= Joker Merah; 7= Nawaitu Ikhlas 8= Matahari Terbit; 9= Kayu Ambun Saiyo; 10= Orida Elba'; 11= Pawuah Sapakaik; 12= Berkah Tani; 13= Agrobionts Rimbo; 14= Pauh Sepakat; 15= Kembali Jaya; 16= Tuah Saiyo; 17= Aneka Usaha; 18=Harapan Gumanti; 19= Usaha Bersama.
*NI (number of indicator): I. Collective Inovation: 1.1. Shapes: {(1). affective (2). cognitive (3). psychomotor}; 1.2. Process: {(4). Source (5). way (6). knowledge management (7). adoption innovation (8). Participation (9). monitoring}; 1.3. Result: {(10). target (11). target variation}. II. Collective SCM: 2.1. Planning {(12). participation (13). scope} 2.2. Organizing {(14). SOP, (15). aspects}; 2.3. Controling {(16). standard, (17). bargaining (18). problem solution}; (2.4). Value added creation {19). market power. (20). kind of value added}; 3. Collective Access {(21). rule, (22). access (23). Facilitation (24). Consequences (25). regulation}; 4. Profit accumulation and benefit sharing {(26). productivity, (27). efficiency (28). Collective profit (29). Collective value added (30). Collective benefit}*

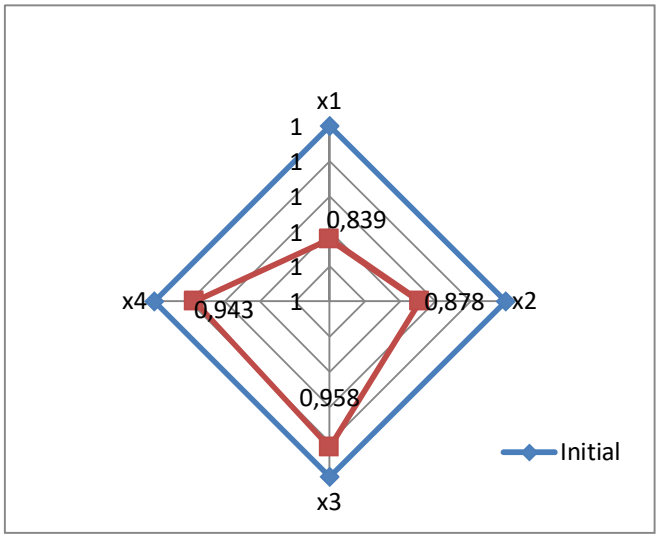


Fig. 4 Communalities

Legend: *Extraction Method: Principal Component Analysis.*
X1 = collective innovation; X2 = collective SCM; X3 = collective accessibility to economic resources and opportunities; X4 = profit accumulation and *benefit sharing.*

*5) ANOVA:* analysis of variance explained, and screen plot shows an established factor from four indicators at matrix component with one column. Rotated Component matrix showed the value of the loading factor of each correlation variables; X1 was 0.916; X2 was 0.937; X3 was 0,979; and X4 was 0.971. *Loading factor* is a power of established correlation between factors or variables. Each variable correlation with CEEI value >90%. If the loading factor value is higher, the correlation also higher (fig. 5).

The FA process explained that emerging variables' CE in ACD at Lembah Gumati area consist are innovation collective, SCM collective, collective accessibility to economic resources and opportunities, profit accumulation, and benefit-sharing.

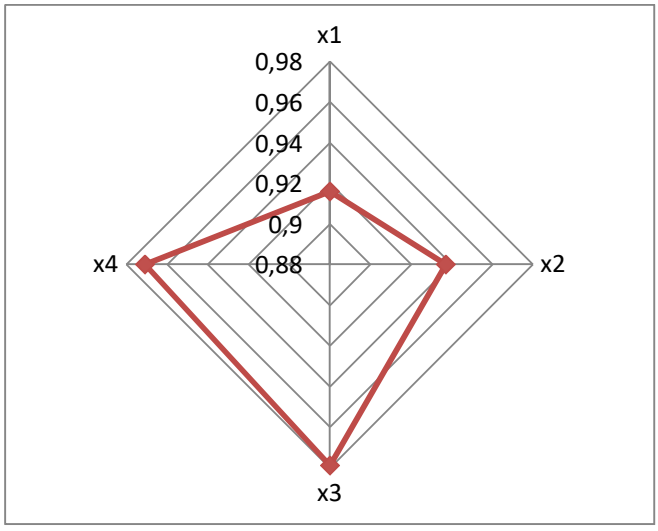


Fig. 5 Component matrix

Legend: *Extraction Method: Principal Component Analysis.*
X1 = collective innovation; X2 = collective SCM; X3 = collective accessibility to economic resources and opportunities; X4 = profit accumulation and *benefit sharing.*

*B. How does CE's Performance in ACD at Lembah Gumanti area?*

CEEI value is a single entity, then CEEI could also reveal any farmer group at Lembah Gumanti sub-district. This also reflects the way CE being implemented in ACD. CE value in ACD showed at various levels depending on the effectiveness of managing variables. Table 1 shown, CE at Lembah Gumanti sub-district could be categorized into three CEEI levels; strong (4), fair (3), and weak (2). CEEI value was fulfilled collective innovation, and the other three variables tend to be weak. While CE has been establishing at Lembah Gumanti sub-district, most of the farmer groups' position still weak (48 %), then fair (26 %), and strong (26 %). Thus, CE is still weak, except farmer group, which has been developed into multi-innovation. For farmers groups focused more on technical innovation, the resulting total CEEI value tends to be categorized as weak.

Performance CEEI at Lembah Gumanti can be described as follows:

*1) Strong (level 4):* There were five farmer groups representing CEEI at level 4; Bukik Radjo, Cahaya Baru, Gunung Talang, Sawah Rawang and Pinang Saiyo. Those group established a *Koperasi* called Solok Radjo in 2014 with registered as stipulated by regulation number 25/1992 on the *Koperasi*. Solok Radjo focuses on developing Arabica coffee from different members' backgrounds and competencies; extension workers, traders, experts, and coffee farmers. They have the vision to develop Arabica coffee on a sustainability orientation. The primary *Koperasi* objectives are to increase the coffee gate price and farmers' competency. Starting from 11 members, the *Koperasi* has been developing with 900 members. Members could be categorized into three levels; fixed member, newcomer, and in-ordinary member. Its market also developed from domestic to export supported by innovation and a synergistic community social business.

*2) Fair (level 3).* The farmer group level 3 included are Pawuah Sapakaik, Nawaitu ikhlas, Agribusiness Rimbo, Pauh Sepakat and Aneka Usaha. CE management solely depends on the chairman's interest. These groups, i.e., Pawuah Sapakaik, Nawaitu Ikhlas, and Pauh Sepakat disseminate innovation on seeding and local governmental programs. The groups, while also sale red onion, starting with sale seed. The group started to use collective SCM. Agribusiness Rimbo focuses on educating entrepreneurship due to its members, mostly from students. The Andalas University plays a vital role by establishing centers for technological dissemination. These education group performances are lower than Solok Radjo *Koperasi,* which search their income from the main business.

*3) Weak (level 2):* Farmer group level 2 describes most of the CE performance in ACD. There were no community social businesses, nonprofit institutions, and personal interests. An established community faces various weaknesses in terms of CE.

The effectiveness of CE at Lembah Gumanti subdistrict was affected by farmer groups condition in developing CE variables

*1) X1 (collective innovation):* it was set up as good covered by farmer groups under Solok Radjo *Koperasi*; i.e.:

Bukik Radjo, Cahaya Baru, Gunung Talang, Sawah Rawang, Pinang Saiyo (strong). Groups was fair i.e.; Pawuah Sapakaik, Nawaitu Ikhlas, Agribusiness Rimbo and Pauh Sepakat. The strong effectiveness of collective innovation is supported by the building of character, knowledge, and competence. The support of various sources and competence synergizes with the community' rates of absorption and implementation. The realized innovations at least cover technological, products-related, marketing aspect-related, and institutional innovations.

*2) Collective SCM*: It was established on Gunung Talang, Sawah Rawang (fair). Bukik Radjo, Cahaya Baru Gunung Talang, Sawah Rawang and the others were still weak. Good collective SCM in the community is embodied in the high participation in the planning activities. This is achievable due to the availability of the capacity to accommodate needs and efforts to improve performance. Complementary to the capacity's availability, there is also the organization management, systematic and sustainable cooperation, and the internal and external control standardization that contribute to the achievability. The presence of such a mechanism provides a solution to complaints submitted by partners and members. Bargaining position and added value include the improvement of quality to crops, post-harvest, and final products so, in the end, products can reach local, domestic, and global markets. The product's added value must be attempted to reach the market with the most significant profit (most significant demand or quality with the highest price).

*3) Collective accessibility:* It was still weak and necessary to establish for all groups. Several groups started to access economic resources and opportunities, such as the Agribusiness Rimbo group and farmer groups under the Solok Radjo *Koperasi*. Collective accessibility towards economic resources is conducted on equality and transparency despite the limited economic resources and opportunities. Supported by organizational structure, service management, and service provision spot, the limitations of supporting facilities and services to members can be improved one at a time. At the same time, naturally, the awareness of the consequences of collective decisions and responsibilities on rights and duties among members are equally important. This shall indeed demand the involvement of partners. Furthermore, at least at the local or even the lowest level, government policy is expected to support the achievement of access to economic resources and opportunities.

*4) Profit accumulation and benefit-sharing*: These have been distributed at each group, except Harapan Gumanti, Kembali Jaya, and Tuah Saiyo. Most farmer groups can experience profit accumulation and benefit sharing by improving productivity, cost efficiency, and added value.

A different effect affected by CE variables' management and how community entrepreneurship works in the agriculture cluster is shown in figure 6.

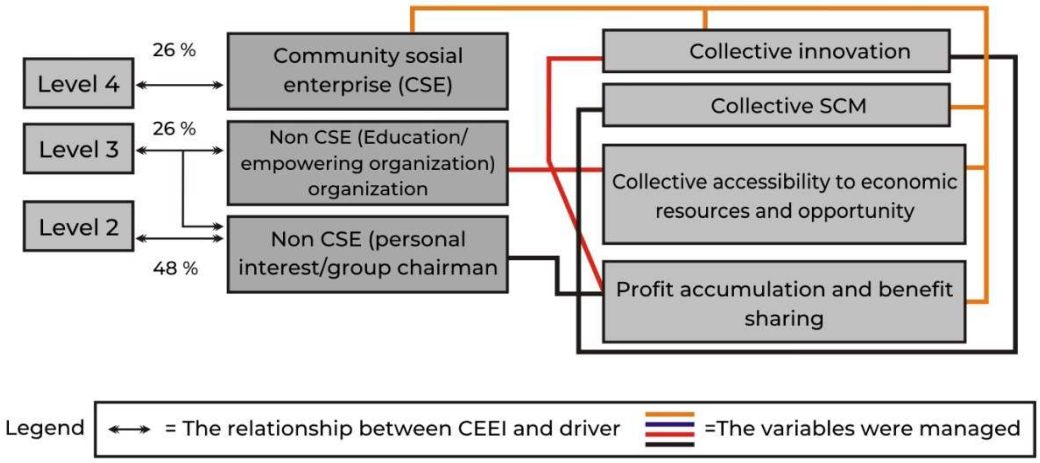


Fig. 6 Relationship between the level of effectiveness, management, and ability to manage.

CE has not been effective in managing collective innovation, collective SCM, collective accessibility to economic resources and opportunities, and the accumulation of profits and benefit-sharing. The effectiveness of CE is higher when using community social enterprise than other types of management. A synergic establishment among components and function resulted in a better collective action for innovation, SCM, accessibility, profit accumulation, and benefit. However, still somewhat CE (26%) managed by the community social enterprise. The majority of CE still relies on personal interest and education/empowering institutional; achievement of effectiveness is still fair (26%) and weak (48%).

Community social enterprise is a business model that engages the community with or in social enterprise. Community social entrepreneurs in the agricultural area need both institutional and community support [30]. In community social entrepreneurship, [66] explain social entrepreneurship plays a key role. Social enterprises address pressing needs in disadvantaged communities as social welfare providers that can compete with traditional social welfare systems. A positive effect on sustainable development through its related activities, facilitating job creation, and increasing the economy's aggregate demand will stimulate economic growth [67]. Social enterprises aim to eradicate various social problems and distribute positive and sustainable outcomes for local communities and beneficiaries. A collaborative arranged

as a profit-making [6]. Social enterprise's goal of achieving sustainable development and social missions. *Koperasi* is essential of profit-driven businesses working for community development [30].

## IV. Conclusions

CEEI constructing that CE's performance in a ACD based on SMEs supported by innovation collective, SCM collective, collective accessibility to economic resources and opportunities, profit accumulation, and benefit-sharing. However, most of the management has yet been effective due to the community entrepreneurship being still not managed by non-community social enterprises. Community social enterprises are better at managing synergies with collective action dimensions for innovation, SCM, accessibility, profits, and benefit-sharing. It is necessary to explore knowledge, implementation, and policies to encourage community social enterprise growth for ACD based on SMEs.

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