AGRO EKONOMI, Vol 29, No 1, Juni 2018, Hal.118-131
DOI : http://doi.org/ 10.22146/ae.31225
ISSN 0215-8787 (print), ISSN 2541-1616 (online)
Tersedia online di https://jurnal.ugm.ac.id/jae/

FEASIBILITY OF CHRYSANTHEMUM FARMING IN TOMOHON CITY

Kelayakan Usahatani Krisan di Kota Tomohon

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Diterima tanggal : 13 Desember 2017 ; Disetujui tanggal : 20 Maret 2018

ABSTRACT
This research entitled "Feasibility of Chrysanthemum Farming in Tomohon City". Chrysanthemum is one of floriculture commodities that people are interested and popular due to its many species and its beautiful shape and colour. Tomohon is a town in North Sulawesi Province that having potential to develop cut flower chrysanthemum. This research was intended to identify cost and income of chrysanthemum farming in Tomohon and its farming feasibility. Cost and income approach was used to identify costs and income of chrysanthemum farming in Tomohon, while feasibility of chrysanthemum farming was analyzed using R/C ratio, π/C ratio and break even point analysis. Sample was taken using simple random sampling in 4 Villages on North Tomohon Sub-district that is centre of chrysanthemum farming in Tomohon. Results of the research indicated that cost for the chrysanthemum farming is Rp 128,330,475.42 per farming per year, while its income reaches Rp 169,750,054.50 per farming per year. Result of feasibility study indicated that chrysanthemum farming in Tomohon has R/C ratio of 2.63 (R/C >1), π/C ratio of 113.58% (π/C>9%), and feasible BEP, where BEP of revenue of Rp 27,472,521.11 (farming revenue Rp 274,086,000 per year), BEP of production of 9,156 stems (production 91,362 stems per year) and BEP of price of Rp 1,142.01 per stem (price Rp 3,000 per stem). Therefore, chrysanthemum farming in Tomohon is profitable and feasibly to develop.

Keywords: *Chrysanthemum flower, Farming, Feasibility, Tomohon*

INTISARI
Penelitian ini berjudul "Kelayakan Usahatani Krisan di Kota Tomohon". Krisan adalah salah satu komoditas florikultura yang sangat diminati masyarkat dan menjadi populer karena banyaknya jenis serta keindahan baik bentuk maupun warnanya. Kota Tomohon merupakan salah satu daerah di Propinsi Sulawesi Utara yang cukup potensial untuk pengembangan bunga potong krisan. Penelitian ini bertujuan untuk mengetahui biaya dan pendapatan usahatani krisan di Kota Tomohon serta kelayakan usahataninya. Pendekatan biaya dan pendekatan pendapatan adalah pendekatan yang digunakan untuk mengetahui besarnya tingkat biaya dan pendapatan usahatani krisan yang ada di Kota Tomohon, sedangkan untuk mengetahui kelayakan usahataninya digunakan analisis rasio R/C, analisis rasio π/C dan analisis Break Even Point. Pengambilan sampel dengan simple random sampling di 4 Kelurahan pada Kecamatan Tomohon Utara yang merupakan sentra usahatani

krisan di Kota Tomohon. Hasil penelitian menunjukan bahwa besarnya biaya usahatani adalah Rp 128.330.475,42 per usahatani per tahun, sedangkan pendapatannya mencapai Rp 169.750.054,50 per usahatani per tahun. Hasil analisis kelayakan menunjukkan bahwa usahatani krisan di Kota Tomohon memiliki rasio R/C 2,63 (R/C > 1), rasio π/C 113,58% (π/C > 9%), dan BEP yang layak, dimana BEP penerimaan Rp. 27.472.521,11 (penerimaan usahatani Rp. 274.086.000,00 per tahun), BEP produksi 9.156 tangkai (produksi usahatani 91.362 tangkai per tahun), dan BEP harga Rp. 1.142,01/tangkai (harga Rp. 3.000 per tangkai). Dengan demikian usahatani krisan di Kota Tomohon menguntungkan dan layak untuk dikembangkan.

Kata Kunci: *Bunga Krisan, Kelayakan, Tomohon, Usahatani*

INTRODUCTION

Colourful flowers with pleasant fragrance have been a source of attraction to mankind. Flowers provide pleasure through enlightening colours and spreading fragrance. Therefor, man has always taken support of flowers as a token of expression of kind sentiments on number of occasions and consequently, ever increasing demand of flowers has made the floriculture of paramount importance for conducting economic evaluation and marketing investigation.

Ornamental plants (floriculture) can be found in the form of ornamental plants of pots and cut flowers. Cut flowers are one of the agricultural commodities that can help improve the income and welfare of farmers. One of the cut flowers having high economic value is chrysanthemum (Putra, 2016).

Chrysanthemum is one of the floriculture commodities. The existence of chrysanthemum as an ornamental plant of commercial cut flowers is increasingly popular in various countries. It is not surprising that much research is being done to increase production so that income also increases. Viyachaia *et al* (2015) conducted research on Development of Cut Chrysanthemum Production in Two Soilless Systems. Chrysanthemum production is possible by soilless culture system. The chrysanthemum growers encountered soil-born deseases, nematodes, and accumulation of salinity when production in the same area was practiced continuously. Soilless culture was cultivation technique independent from soil condition. The purpose of the research was to determine the growth of chrysanthemum grown in two soilless system included tray system and trough system. The results is the growth and quality of flowers produced in the tray and the trough system were similar. No significant differences in flower characteristics were observed between the two system except for flower color. Chrysanthemum produced in both soilless systems received the same price for grade A as soil grown chrysanthemum.

Chrysanthemum became one of the types of floriculture plants that are in demand by the people of Indonesia in the past 7 years. Chrysanthemum production is dominated from Java Island with total production of 432,827,108 stems (Bestari, 2017). Centre of chrysanthemum development in Indonesia was in West java, Central Java, Yogyakarta Special Territory, East Java and North Sumatera. To improve the production and quality of chrysanthemum flower in Indonesia, the Center for Research and Development of Horticulture has conducted research and assessment program of chrysanthemum plant management implementation in several provinces of chrysanthemum production center. Management of chrysanthemum integrated plants includes (a) the use of varieties and quality seeds; (b) the creation of a protected house and its facilities; and (c) cultivation process (Ridwan, 2012). Due to increased demand, there is opportunity of cut flower chrysanthemum agribusiness that should be developed outside the development centre that also has potential.

Tomohon is a town in North Sulawesi Province that having potential to develop cut flower chrysanthemum. The town is at 700-800 masl with temperature of 30^{o}C at day and 23-24^{o}C at night. In addition, Tomohon is located in Wallace line. In consequent, some Indonesian specific decorative plants grow in this town. Therefore, with supporting natural condition, it is normal when floriculture commodity particularly chrysanthemum is good to develop.

Chrysanthemum production in Tomohon continuously increases. It is normal due to one of agricultural potentials developed by Tomohon people is floriculture. So, flower is made as icon of the region with motto flower town. Decorative flower in Tomohon is part of its culture. Every year flower festival was held that is followed by local, domestic or foreign florists. Since 2008, Tourism and Creative Economy Ministry in cooperation with various parties held event entitled "Tomohon International Flower Festival" that early it was national level, which grow to international scale in 2010, with various theme in each festival. Even, the festival is included in calendar of event in Tourism and Creative Economy Ministry. The event is effort to promote Tomohon as flower town and encourage increase in agriculture and tourism sector and give contribution for local economy.

However, the various events did not automatically make Tomohon known in national and international level. Even, various events did not make Tomohon as national centre for decorative plant. In addition, farmer did not have capability in accessing source potential including capital and technology that increasingly develop to obtain feasible income. The resource

usage was not done in integrated manner; it was done by sub sector. Moreover, implementation of published program was not suit the need of agribusiness actor, particularly farmer. Technology used was simple that affected quantity and quality of floriculture product that in turn had effect on income and welfare of farmer. With such condition, supply from other regions cannot be avoided, particularly at big event such as TIFF.

In a paper written by Pangemanan (2011), the results indicated that cut flower chrysanthemum farming in Kakaskasen Dua Village was profitable, with production cost of Rp. 3,242,853.74 farmer got revenue of Rp. 14,375,000.00 and income of Rp. 11,132,146.25. Based on R/C ratio analysis indicated that the farming business is feasible with R/C 4.43.

The results of the research by Deltu (2016) indicated that red onion, potato, and tomato farming in Nagari Alahan Panjang was feasible and profitable to develop. In red onion farming, BEP production was 503.52 kg/ha and price BEP Rp 2,406.12/kg, with R/C ratio 3.27 and π/C ratio 301.98%. For potato farming, average production BEP was 767.31 kg/ha and price BEP 2,186.60/ kg, with R/C ratio 4.06 and π/C ratio 305.67%. For tomato farming, average production BEP was 1,483 kg/ha and price BEP was 1,463/kg, with R/C ratio 2.48 and π/C ratio 148.22%.

According to research from Masyhudi (2009), the results showed that various varieties of chrysanthemum flowers can flourish and proved the cultivation of ornamental plants can improve the welfare of farmers. The economic analysis of chrysanthemum farming in 2005 showed that B/C ratio and R/C ratio were 1.05 and 2.05 respectively. With increasing farmer experience the B/C ratio and R/C ratio were respectively to 1.47 and 2.47 in 2006, and then increased more again in the early 2007 with B/C ratio = 2.12 and R/C ratio = 3.12. Thus it can be concluded that the cultivation of cut flower chrysanthemum plants is very profitable and feasible to be developed in the Special Region of Yogyakarta.Problems in this research were formulated by focusing on the cost structure and income of chrysanthemum farming in Tomohon and the feasibility of chrysanthemum farming in Tomohon.

According to the formulated problems, the objective of the research is to identify cost and income of chrysanthemum farming and its feasibility in Tomohon.

METHODS

Basic method used in this research was descriptive analytical method, by formulating and interpreting data to give clear description. This method was done by taking sample from a population and focus attention on fact finding as actual condition.

Data obtained was compiled, analyzed, and explained to obtain explanation on occurring phenomena.

This research was done in Tomohon in August to September 2017. Location was selected purposively at 4 villages in Tomohon Utara Sub-district. The four villages were Kakaskasen, Kakaskasen I, Kakaskasen II, and Kakaskasen III that were centre of production and development area of cut flower chrysanthemum in Tomohon, with potential floriculture area of 100 ha.

Population intended in this research was all chrysanthemum farmers distributed in the four villages. From 259 chrysanthemum farmers in population, 26 farmers were taken as respondent selected with simple random sampling.

In this research data consisted of primary and secondary data. Data collected in this research was cross sectional one. Data was collected with: 1) Observation technique, which collecting data through direct observation in research site over object studied to identify actual condition; 2) Interview that collecting data by doing direct interview with respondent (farmer) using questionnaire; and 3) Recording that is data collected by recording information and existing data and available from stakeholders related to the problem studied.

Cost considered in this research is cost actually expended in chrysanthemum farming including fixed cost and variable cost. Total cost may be formulated as follows (Suratiyah, 2015).

$$TC = TFC + TVC$$

Notes:

TC = Total Cost

TFC = Total Fixed Cost

TVC= Total Variable Cost

Total revenue is farmer revenue from chrysanthemum farming. It is obtained by multiplying chrysanthemum production with selling price per one chrysanthemum unit. The formula is as follow.

$$TR = Y \cdot Py$$

Notes:

TR = Total Revenue

Y = Total Production

Py = Production Price

Chrysanthemum farmer income is the difference between income from chrysanthemum farming and all costs expended in chrysanthemum farming. Its formula is

$$I = TR - TC$$

Note:

I = Income

TR = Total Revenue

TC = Total $Cost_{(explicit)}$

Chrysanthemum farming profit is difference between revenue and explicit and implicit cost from chrysanthemum farming or difference between chrysanthemum

production yield income and implicit cost with following formula.

$$\pi = TR - TC_{(exsplicit + implicit)}$$
$$\pi = I - TC_{(implicit)}$$

Notes:

π = Profit
TR = Total Revenue
TC = Total Cost$_{(explicit+implicit)}$

R/C ratio analysis or efficiency analysis is comparison between revenue and total cost per farming.

$$R/C\ ratio = TR / TC$$
$$R/C\ ratio = Y\ .\ Py / (TFC + TVC)$$

Notes:

TR = Total Revenue
TC = Total Cost
Y = Total Producyion
Py = Production Price
TFC = Total Fixed Cost
TVC= Total Variable Cost

Test criteria of R/C ratio is as follow:

R/C > 1, the chrysanthemum farming is efficient and profitable
R/C = 1, the chrysanthemum farming is at BEP
R/C < 1, the chrysanthemum farming is not efficient

π/C ratio or capital productivity is comparison between profit and total cost. In mathematical term it is written as follow.

$$\pi/C\ ratio = \pi / C \times 100\%$$

Notes:

π = Profit
C = Cost

Test criteria of π/C ratio is:

π/C ratio > effective bank interest, then the business is feasible to develop
π/C ratio < effective bank interest, the business is not feasible to develop

Break Event Point (BEP) analysis include BEP of revenue (Rp), BEP of production (stem), and BEP of price (Rp/stem), stated in following formula:

$$BEP_{(revenue)} = FC / (1 - VC / R)$$

Notes:

BEP = Break Event Point of Revenue
FC = Fixed Cos
VC = Variable Cost
R = Revenue

$$BEP_{(production)} = FC / Py\ .\ AVC$$

Notes:

BEP = Break Event Point of Production
FC = Fixed Cos
Py = Production Price
AVC= Average Variable Cost

$$BEP_{(price)} = TC / Y$$

Notes:

BEP = Break Event Point of Price
TC = Total Cost
Y = Total Production

RESULTS AND DISCUSSION

Chrysanthemum is one type of cut flowers are in great demand of the market and consumers. Demand for these products from year to year continues to increase and in 2012 production reached 384,215,341 stalks. The increase was also influenced by changes in market and consumer preferences on chrysanthemum produced by farmers and entrepreneurs (Nurmalinda, 2014). In 2014, Directorate General Horticulture stated that cut flower chrysanthemum rank first position over total production of national cut flower (57.67%) followed by rose (23.36%), tuberosa (14.12%) and orchid (2.66%) (Balithi, 2016). Similarly, demand and production for chrysanthemum flower in Tomohon increased every year. Data from the Agriculture Office of Tomohon City indicate that chrysanthemum production is likely to increase: 1,764,100 stalks (2010), 1,440,000 stalks (2011), 3,840,000 stalks (2012), 2,880,000 stalks (2013), 4,448,000 stalks (2014), and 4,419,764 stalks (2015). With the potential of Tomohon floriculture in the area of 100 ha, there is a great opportunity in its development. For that we need to know the cost and income in chrysanthemum farming and feasibility of farming.

Cost is important component in farming. Cost is classified into fix cost and variable cost. Fix cost in chrysanthemum farming are land rent cost, land tax, equipment depreciation, and other costs (equipment service cost, electricity cost and fuel). Variable costs consist of cost for production supply such as seed, fertilizer, pesticide, and labor cost. Fix cost and variable cost above is explicit cost in farming. Explicit cost is cost actually expended in chrysanthemum farming. In addition, there is also implicit cost that should also be considered in farming. Implicit cost is cost that is not directly expended by farmer. Implicit cost in this research include labor cost in household, rent of own land, interest of own capital and greenhouse cost of aid received by farmer without expending cost. Variable cost is cost fluctuating according to production level. Variable cost consist of worker and production supply (seed, fertilizer and pesticide). Worker cost in chrysanthemum farming in Tomohon include land preparation cost (land processing and basic fertilizer), planting cost, maintenance cost (following fertilizer and pesticide spray), watering, weeding, disbudding and harvesting. The worker cost is non-family labor that is explicit cost. While familial worker cost is included in implicit cost. Average labor cost of chrysanthemum farming in Tomohon is presented in table 1. Table 1 indicates that 27.21% of non-family labor cost is absorbed in land preparation activity. It is due to most farmer used non-family labor to process their land. Preparation activity

took 2-4 working days and dominantly was done by male worker. Family labors were most intended on watering that was done routinely every day. Harvest cost was the least cost on non-family labor cost, only 2.38%. Harvest activity did not take relatively long time, but harvesting was done when there was purchase from consumer. Chrysanthemum flower harvest in Tomohon had no grading system, so price of chrysanthemum flower was relatively same. On family labor, planting activity indicated least labor because farmer use more non-family labor to plant and this activity is relatively fast, usually take one day, where incoming seed should be planted directly.

Production supply cost is cost expended to support production of farming. The cost depends on production level that will be achieved, the greater production the greater production supply. Production supply cost is variable cost and explicit cost including seed cost, fertilizer cost and pesticide cost to control pest and disease. Average production supply cost of chrysanthemum farmer in Tomohon is presented in table 2.

Table 2. Average Production Supply Cost of Chrysanthemum Farming in Tomohon (2017

Production Supply	Cost per Farm (IDR)	Percentage (%)
Seeds	52,257,115.38	82.63
Fertilizer	8,369,040.36	13.23
Pesticide	2,614,960.11	4.14
Amounts	63,241,115.85	100.00

Source: Primary data analysis (2017)

Table 2 indicates that the most production supply cost was in seed cost (82.63%). Most chrysanthemum farmers in Tomohon bought seed from outside Tomohon. Only 12% farmers did seedling.

Table 1. Average Labor Cost of Chrysanthemum Farming per year in Tomohon (2017)

Activities	Average Human Labor			Percentage (%)
	Family Labor (Work per Days)	Non-Family Labor		
		Work per Days	Value (IDR)	
Land preparation	8.37	57.45	6,036,615.39	27.21
Planting	5.19	18.51	1,824,826.92	8.23
Fertilizer and spraying plant pests	39.51	45.45	4,526,884.62	20.41
Sprinkling	66.09	36.3	3,398,221.14	15.32
Weeding	6.84	32.07	3,382,365.39	15.24
Pinching/Disbudding	6.09	24.96	2,488,719.54	11.21
Harvest	6.81	5.64	527,192.31	2.38
Amounts	138.9	220.38	22,184,825.31	100.00

Source: Primary data analysis (2017)

Seed planted have various varieties and types. Type of seed planted consisted of standard type and spray type. Its variety depended on supply for seed supplier outside Tomohon. The least production supply cost is pesticide usage to control pest and plant disease. Use of pesticide consisted of bactericide, fungicide and insecticide. Pest and disease that mostly attack is thrips and leaf rust disease. In line with that, according to research from Mamahit (2016) which identifies chrysanthemum plant species in Tomohon, the results show that there are three main species of pest that attack chrysanthemum namely Liriomyza spp., Thrips spp., And Aphis spp.

Fixed cost is cost expended by farming that is not influenced by output. Fix cost in chrysanthemum farming in Tomohon include land tax, land rent cost, depreciation cost, and other cost (equipment service cost, electricity cost and fuel). Table 3 present average fix cost in chrysanthemum farming in Tomohon.

Table 3 indicates that depreciation cost is the most fixed cost (81.72%), while the least cost is land tax (0.42%).

Implicit cost is cost that is not directly expended by farmer but still considered as cost in farming. Implicit cost at chrysanthemum farming in Tomohon include interest of own capital, rent of own land, family labor cost and greenhouse (subsidy) depreciation cost. There were chrysanthemum farmers in Tomohon that built their greenhouse with their own capital, but there were also farmers obtaining grant of greenhouse unit. So although they did not expend cost to obtain greenhouse, it was still calculated as cost (implicit).

Table 4 indicated that family labor cost is the greatest implicit cost (60.92%) per farming per year. Most farmers still used family labor in doing their farming, particularly in maintenance activity. The lowest cost is own land rent (3.81%).

Table 3. Average Fixed Cost of Chrysanthemum Farming in Tomohon (2017)

Type of Cost	Cost per Farm (IDR)	Percentage (%)
Land tax	79,630.77	0.42
Land lease	346,153.86	1.83
Depreciation	15,453,796.62	81.72
Other costs	3,030,423.09	16.03
Amounts	18,910,004.34	100.00

Source: Primary data analysis (2017)

Table 4. Average Implicit Cost of Chrysanthemum Farming in Tomohon (2017)

Type of Cost	Cost per Farm (IDR)	Percentage (%)
Interest of own capital	3,503,076.93	14.59
Lease of self land	913,461.54	3.81
Family Labor	14,616,453.00	60.92
Depreciation of greenhouse (subsidy)	4,961,538.45	20.68
Amounts	23,994,529.92	100.00

Source: Primary data analysis (2017)

Cost is production element that is expended in production process. Cost play important role in decision making. Cost expended to produce a output determine cost of goods produced. Therefore, in doing farming, farmer should all farming costs either explicit or implicit so income or profit obtained by farmer may be known clearly.

Table 5. Average Chrysanthemum Farming Cost in Tomohon (2017)

EXPLICIT COSTS	
Description	Amount per Farm (IDR)
Fixed Cost	
Land tax	79,630.77
Land lease	346,153.86
Depreciation	15,453,796.62
Other costs	3,030,423.09
Variable Cost	
Seeds	52,257,115.38
Fertilizer	8,369,040.36
Pesticide	2,614,960.11
Non-Family Labor	22,184,825.31
Total Explicit Cost (1)	104,335,945.50
IMPLICIT COST	
Description	Amount per Farm (IDR)
Interest of own capital	3,503,076.93
Lease of self land	913,461.54
Family Labor	14,616,453.00
Depreciation of greenhouse (subsidy)	4,961,538.45
Total Implicit Cost (2)	23,994,529.92
TOTAL COST (1+2)	128,330,475.42

Source: Primary data analysis (2017)

Table 5 indicates that chrysanthemum farming in Tomohon has explicit and implicit cost. Most of the cost is explicit one (81.30%), where seed procurement is the highest cost among implicit and explicit cost. However, implicit cost is component that should be calculated to identify real profit.

Farming is an activity to obtain production in agricultural field. Eventually it will be assessed not only from cost expended by also from revenue obtained by farmer (Pangemanan L, 2011). Farming revenue is obtained by multiplication of production amount and production price. Revenue in chrysanthemum farming in Tomohon obtained with multiplication between chrysanthemum production (stem) and price per stem (Rp). Revenue of chrysanthemum farming in Tomohon is presented in table 6 below.

Table 6. Average Chrysanthemum Farming Revenue in Tomohon (2017)

Planting Season (PS)	Price (IDR)	per Farming	
		Production (stem)	Revenue (IDR)
PS- I	3,000	30,454	91,362,000
PS- II	3,000	30,454	91.362,000
PS- III	3,000	30,454	91,362,000
Total		91,362	274,086,000

Source: Primary data analysis (2017)

Production amount of chrysanthemum farming in Tomohon was relatively same in each planting season. Average production per farming was 30,454 stem per planting season, with 77% average survival rate.

It also occurred on its price (Rp 3,000 per stem). There is no grading system at chrysanthemum farming in Tomohon so there is no different price. Average revenue obtained by farmer was Rp. 91,362,000 per planting season or Rp. 274,086,000 per year.

Farmer as implementor of farming hoped to be able to produce greater output to obtain greater income. After cost and revenue is known, income should be also known. Farmer income is difference between revenue and total cost (explicit cost) per farming.

Table 7. Average Chrysanthemum Farming Income in Tomohon (2017)

Description	Value per Farming (IDR)
Total Revenue (1)	274,086,000.00
Total Explicit Cost (2)	104,335,945.50
Income (1-2)	169,750,054.50

Source: Primary data analysis (2017)

Table 7 indicates that average income per farming of chrysanthemum farmer in Tomohon was Rp 169,750,054.50 per year.

Table 8. Average Chrysanthemum Farming Profit in Tomohon (2017)

Description	Per Farming (IDR)
Income (1)	169,750,054.50
Total Implicit Cost (2)	23,994,529.92
Profit (1-2)	145,755,524.58

Source: Primary data analysis (2017)

In doing their farming, farmers do not only want great income but also great profit. Great income did not automatically give great profit. To find out profit, all farming costs are calculated including implicit cost, which is different from income that only consider explicit cost. Profit (π) was obtained through deduction of revenue with total cost (explicit and implicit) or by deduction of income with implicit cost. Average profit of chrysanthemum farmer in Tomohon is presented in table 8.

Table 8 shows that average profit per farming of chrysanthemum farmer was Rp. 145,755,524.58 per year.

Table 9. Analysis of R/C Ratio of Chrysanthemum Farming in Tomohon (2017)

Revenue (IDR/ Year)	Total Cost (IDR/ Year)	R/C ratio
274,086,000	104,335,945.50	2.63

Source: Primary data analysis (2017)

Revenue Cost Ratio (R/C) analysis or business efficiency analysis is an analysis by comparing revenue with total cost. A business is stated as feasible when R/C is greater than 1. The greater R/C the more efficient the business is. It means cost used to produce is relatively few. Efficiency of chrysanthemum farming in Tomohon is presented in table 9.

Table 9 reveals that efficiency of chrysanthemum farming in Tomohon is

2.63 indicating that the chrysanthemum farming has been conducted efficiently because R/C >1. R/C = 2.63 means that every Rp 1 cost expended in early business activity give revenue of 2.63 times.

Analysis of π/C ratio or capital productivity analysis is comparison between profit and total cost and is used to measure yield of business capital stated in percentage. π/C ratio indicates if the farming is feasible or not when capital used is own capital or credit. When π/C ratio is far greater than interest of Kredit Usaha Rakyat of BRI, then the farming is feasible and vice versa. KUR BRI was used because credit for small and medium enterprise is BRI. π/C ratio of chrysanthemum farming in Tomohon is presented in table 10. Table 10 reveals that π/C ratio for chrysanthemum farming in Tomohon was 113.58%. Based on Bank Rakyat Indonesia (2017), interest rate used by BRI for KUR was 9% per year. Capital productivity is greater than interest rate. It indicated that chrysanthemum farming in Tomohon is feasible to develop either with own capital or with credit.

Table 10. Analysis of π/C Ratio of Chrysanthemum Farming in Tomohon (2017)

Profit (IDR/ Year)	Total Cost (IDR/ Year)	π/C ratio (%)
145,755,524.58	128,330,475.42	113.58

Source: Primary data analysis (2017)

Break even point is a condition where farming is a no-gain no losses condition. BEP analysis was done by considering BEP of revenue, BEP of production, and BEP of price. Break even point of chrysanthemum farming in Tomohon is presented in Table 11 below.

Table 11. Break Even Point of Chrysanthemum Farming in Tomohon (2017)

Description	Condition of Farming	BEP
Revenue	274,086,000	27,472,521.11
Production	91,362	9,156
Price	3,000	1,142.01

Source: Primary data analysis (2017)

BEP of revenue was Rp 27,472,521.11 per year, that means chrysanthemum farming is in no-gain no losses condition. Actually average revenue of farmer in Tomohon was Rp. 274,086,000 per year. The farmer revenue was far greater than BEP of revenue so chrysanthemum farming in the town is feasible to develop.

BEP of production was 9,156 stems per year. Actual production of chrysanthemum farmer in Tomohon was 91,362 stems per year. The production was far greater than BEP of production so chrysanthemum farming in the town is feasible to develop.

BEP of price was Rp 1,142.01 per stem. In fact, price per stem was Rp.

3,000 per stem. The price farmer got was far greater than BEP of price so chrysanthemum farming in the town is feasible to develop.

CONCLUSION AND SUGGESTION

Based on the research objective and results of analysis, the conclusions are: chrysanthemum cut flower farming in Tomohon is profitable based on analysis with cost and revenue approach and feasible to develop based on R/C analysis, π/C ratio analysis and BEP analysis (BEP of revenue, production and price).

Chrysanthemum farming is feasible to develop, farmers should continue to cultivate chrysanthemum as a source of income. Farmers need to increase production both quantity and quality, so that income increases. To increase the production (quantity) of chrysanthemum, farmers need to optimize the volume of planting per greenhouse (intensification), increase survival rate, and do the addition of greenhouse unit (extensification). To improve the quality of chrysanthemum, farmers need to improve quality in accordance with Good Agricultural Practices (GAP) and Good Handling Practices (GHP). Other then that, there is a need for cooperation from all stakeholders related to the development of chrysanthemum farming such as farmers, farmer groups, chrysanthemum associations, government, florist, and other stakeholders.

REFERENCES

Bestari, S. A., B. M. Setiawan, & T. Ekowati (2017). Analisis Kelayakan Finansial Usaha Tani Bunga Krisan di Daun Hijau Nursery Kecamatan Bandungan Kabupaten Semarang. *AGROMEDIA*, *35*, 64–71.

Deltu, S. N. (2016). *Analisis Kelayakan Usahatani Bawang Merah, Kentang dan Tomat di Nagari Alahan Panjang Kecamatan Lembah Gumanti Kabupaten Solok Sumatera Barat* (Tesis). Universitas Gadjah Mada, Yogyakarta.

Mamahit, J., & Jusuf Manueke (2016). Pengendalian Hama Terpadu Tanaman Hias di Desa Kakaskasen Kota Tomohon (Jenis-jenis Hama pada Tanaman Krisan di Desa Kakaskasen Kota Tomohon). *Jurnal LPPM Bidang Sains dan Teknologi*, *3*, 81–94.

Masyhudi, M. F., & Suhardi, S. (2009). Adaptasi Agronomis dan Kelayakan Finansial Usahatani Krisan di Daerah Yogyakarta. *J. Hort*, *19*, 228–236.

Nurmalinda, & Hayati N. Q. (2014). Preferensi Konsumen Terhadap Krisan Bunga Potong dan Pot. *J. Hort*, *24*. Retrieved from http://balithi.litbang.pertanian.go.id/publikasi-detail-360-preferensi-

konsumen-terhadap-krisan-bunga-potong-dan-pot.html

Pangemanan, L., G. Kapantow, & M. Watung (2011). Analisis Pendapatan Usahatani Bunga Potong (Studi Kasus Petani Bunga Krisan Putih di Kelurahan Kakaskasen Dua Kecamatan Tomohon Utara Kota Tomohon). *ASE*, *7*, 5–14.

Putra, I G Angga Dian, I Wayan Budiasa, & I Ketut Rantau (2016). Analisis Pendapatan Usahatani Bunga Potong Krisan di Desa Pancasari Kecamatan Sukasada Kabupaten Buleleng. *E-jurnal Agribisnis dan Agrowisata*, *5*, 690–699.

Ridwan, H. K., Hilman Y., Sayekti A. L., & Suhardi (2012). Sifat Inovasi dan Peluang Adopsi Teknologi Pengelolaan Tanaman Terpadu Krisan dalam Pengembangan Agribisnis Krisan di Kabupaten Sleman, DI Yogyakarta. *J. Hort*, *22*. Retrieved from http://balithi.litbang.pertanian.go.id/publikasi-detail-362-sifat-inovasi-dan-peluang-adopsi-teknologi-pengelolaan-tanaman-terpadu-krisan.html

Suratiyah, K. (2015). *Ilmu Usahatani* (Edisi Revisi). Jakarta: Penebar Swadaya.

Viyachaia, Taweesak, Thohirah Lee Abdullaha, Siti Aishah Hassana, Nitty Hirawaty Kamarulzamanb, & Wan Abdullah Wan Yusofc (2015). Development of Cut Chrysanthemum Production in Two Soilless Systems. *Elsevier B. V.*, *5*, 115–121.