

Analysis on Cost and Profit in Farming Activity in Malaysia*

Noraniza Yusoff

Universiti Utara Malaysia, Kedah, Malaysia

There is an excessive dissimilarity between scholars in how to accumulate output costs. Worldwide farming advancement is concerned with yield enhancement instead of a holistic natural source management for food safety. Nevertheless, knowledge regarding the achievement of agriculture systems subject to natural and conventional management in tropical and subtropical areas is insufficient. Why do several farmers record less profit than other farmers? Cost in agriculture activity influences the volume of profit gained by farmers. The number of respondents was 53. Data analysis was made using linear regression analysis to achieve the objective. The scatter diagram manifested a positive connection in cost and profit in agriculture activity from 2009 to 2013. For each cost increase in 2009-2012, the model forecasts a rise of returns for every year. The rate of profit earned by farmers every year shifts considerably in relation to the rate of cost in agriculture activity. This study recommends common accounting principles practices that exercise bookkeeping and managerial accounting to enhance farmstead management and profit. Future research may be conducted on the use of compost fertilizer in increasing agricultural income.

Keywords: cost, farming, Malaysia, profit, regression

Introduction

The green revolution has created a series of technological accomplishments in farming output, specifically in Asia. Worldwide farming advancement is concerned with enhancing yield instead of a holistic natural resource management for food safety. Nevertheless, knowledge regarding the achievement of agriculture systems subject to natural and conventional management in tropical and subtropical areas is insufficient (Forster, Andres, Verma, Zundel, Messmer, & Mader, 2013). There is an excessive dissimilarity between scholars in how to accumulate output costs. Full amount of costs involved working or variable costs, all output operations containing planting, insect and weed administration, collecting yield and so forth; cash overhead, land rental, property taxes and the like; and non-cash costs, devaluation and economic costs for apparatus, irrigations arrangements, instruments and buildings. In farmstead economics, there is no certain interpretation of things regarded as variable costs or as fixed charges; it relies on the goal of the study. Several researches take solely variable costs into consideration to estimate total surplus, others encompass fixed charges in researches and nevertheless others do not distinguish among variable and fixed charges. Fixed charges are proportions of gross farmstead charges which do not differ importantly with the amount of yield and can solely be transformed in the long term, while variable costs are those which differ exactly with the amount of production. The distinction among variable and fixed charges is essentially merely significant whenever total surplus is estimated because for those, fixed charges are not counted (Nemes, 2009).

* **Acknowledgment:** The author would like to thank financial support from the Research Acculturation Grant Scheme (RAGS) 12739.

Noraniza Yusoff, senior lecturer, School of Government, UUM COLGIS, Universiti Utara Malaysia. Email: noraniza@uum.edu.my.

Nevertheless, fixed charges are vital for farmstead profitability; for modification for example, some large investments have to be made, such as recent affable housing arrangements for animals. Although nearly all researches produce the differentiation among the two sorts of costs, it may not designate precisely the charges incorporated. Indicating only variable and fixed charges does not permit the enhancement of the variables utilized and consequently, generates actual differentiations. Estimation of producing costs is not direct as many yields can be traded in processed or unprocessed types. Exchanges costs are related to the buying and selling as well as distribution of commodities from the farmstead to the buyer. These encompass post-yield management, packing and depot, worker to exchange, bill and distribution of commodity. Growers generally trade commodities via a third alliance, a trade or a trader for that a trading cost has to be paid up. Whenever growers are contracted to a company as organic growers or to a processor, no merchandising costs are encompassed in the allocation. Economic researches do not indicate precisely the capacity of yield which is useless and consequently not traded even though it would be beneficial to acknowledge the amount of capability to decrease wastage and consequently expand profitability (Nemes, 2009).

The quality and quantity of documents which growers preserve throughout the cultivating period influenced their designing step and capability to precisely estimate costs of output. The outcome indicates an obvious portion between the two groups of growers: micro record-keepers and macro record-keepers. Micro record-keepers, comprised one beginner and one skilled grower, preserve many documents and statements, and experience the administration aspect of agriculture. These growers consider that this exercise provides a favorable effect on profitability. Assessment of Excel spreadsheets showed that the farmsteads involved in complicated recordkeeping. Growers utilized many worksheets, for example, one worksheet per crop or one worksheet per week and growers utilized formulas, allowing for increased precision and more rapid estimations. The growers preserve full documents of materials, harvests, and sales. Data were documented in actual period base, indicating that the data were inserted not less than once a week base. These growers declared that the goal was to generate a charge which encompasses costs of output. Growers avoid trading crops which would not produce sufficient profit. The macro record-keepers, which also contain one beginner and one skilled grower, preserve lesser documents. The other grower declared that employees preserve course of action of period; however, the other proprietor did not. Estimation of information tracking system discovered that the growers did not track productions (solely sales), and the other grower generally tracked information for bigger businesses (vegetables and meat) (Becot, Conner, Kolodinsky, & Mendez, 2014).

Literature Review

Cost in Farming Activity in Malaysia

In succession to two decades of not absolute disregard, attention on farming is resuming in a great and eager way, as revealed in Malaysia where it is made known as the subsequent means of development and encouraged as “New Agriculture” in Malaysia’s recent five-year advancement program: the Ninth Malaysia Plan (RMK-9). Following the two decades (at a subsequent time mid-1980s) of disregard or lack of interest by academics, researchers, donor societies, and several growing nations, concern in farming has raised again, principally stimulated by a recent understanding. Daily Fresh, a Malaysian brand mark originated on the corn-in-a-cup conceptualization to incorporate other inventive commodities such as sweet-corn ice *gelati*, smoothie, and exotic flavored corn-in-a-cup, has a delivery network in a local area including the Middle East. The company further employs an arrangement of contract growers and devoted distributors. Marine Gold, a community business trading branded sweet-corn cobs, comes in cling-wrapped package of two and five cobs and is traded by superstore links in Malaysia and Singapore (Wong, 2007).

Ismail, Idris, and Hassanpour (2013) reported that in Malaysia, paddy and cattle ranching businesses have been recognized as two vital sectors that have strategic interest but little self-sufficiency. Paddy notably is predetermined a larger attention as it is an essential food for Malaysian. The state is engaged in advancing this sector to certify that rice yield can fulfill the need. Numerous subsidies are supplied to support growers in raising yield, where in the Tenth Malaysia Plan the state specified a goal of 70% self-sufficiency status. From 17 paddy growers, six paddy growers were from east coast of Peninsular Malaysia, while 11 paddy growers were from the west coast. The mean of technical effectiveness for west coast is calculated at 66% and designated 72% for east coast. It manifests that growers in east coast are more successful in organizing paddy yield compared to growers in west coast.

In current decades, numerous states involving Malaysia have actualized the demand for food safety and self-sufficiency and have entered on a concentrated farming plan. In Cameron Highlands, growers have been modifying subsistence to increase productions and to upgrade safety when faced with unsteady vegetable charges, increasing material costs and the threat of crop decrease to extreme season, insects and illness. There has been a change from cabbage yield to an extensive combination of vegetables, flowers, tomatoes, or in lesser instances: watercress, strawberries, fungi, or passion fruit (Barrow, Weng, & Masron, 2009). Farming in several states involving Malaysia is even so a relevant sector because of the benefaction it causes to raising the economy of the state and growing societies. Throughout the economic crisis in 2007, Asian states involving Malaysia transformed to farming as one of the major revenue generators. As a result of its influence with regard to forming the socio-economic advancement of the society, farming has been acknowledged in each Malaysian Plan as having earned a greater amount of money into the state and the local society. In the RMK-9, farming is declared as the third biggest revenue generator for Malaysia. A number of high-effect farming programs like Permanent Food Production Park, High Impact Project-Aquaculture Industrial Zone, *Agropolitan*, and contract agriculture have been commenced (Abdullah & Abu Samah, 2013).

Paddy charge is discovered to be connected with greater productivity charge and may have an effect on the decrease of paddy planted lands in Malaysia (Tey, Darham, Mohd Noh, & Idris, 2010). Huat and Tan (1980) reported that the harvest of rice is enhanced by the initiation of fish into the rice fields. The charges received by a landholder vary from those received by a renter grower since a landholder has to spend for land and irrigation charges but a renter grower has to spend rental. It is intricate to calculate with whichever precision the actual charge of productivity of rice in Asian states because it generally utilizes family worker. In Malaysia, no further spending is received by provision fish in rice fields as the fish are mainly initiated in a passive manner with the influx of water. The physical changes made to the rice field to provide fish may nevertheless need additional insert of money whenever employed worker is hired. Data related to the further charge received for farming fish in rice fields are rather inadequate. Arshad and Abu Bakar (1980) fixed charges occasionally related to as growth charges involved the charge of obtaining land and the essential instrumentation for the preparation of ponds notably for land evacuation and levelling, bund building and so forth. Moreover, it comprised the charge of worker and equipment utilized for pond preparation. The building of ponds was entirely appointed to a contractor and the sum paying was considered as permanent charges. Charges variable comprised the charge of materials, for example, seed or cooked fish, fertilizers, insecticides, pesticides and materials and other items for example worker, both family and employed. Items such as restores and conservation were least and were removing from the estimations. The permanent charges received for a 0.25-acre pond: a sum of M\$2,200 with a mean of M\$800 (36%) for land acquirement. The residual 64% of the permanent charges were building costs

paid to contractors. For every personal farmstead, the real volume for building works differed with the size and place of ponds, depth of dig out and the topography of the land. The charges variable differed with several causes, for example, stocking scale, quantity and frequency of feeding and so on. For a mean 9-month productivity time, the calculated charges variable for a 0.25-acre pond was M\$847. Other vital elements of the charges variable were worker salaries and feed expenditures that consist of 32% and 35% respectively. Fertilizers estimated for merely 7% of the sum charges variable and several administrators utilized animal wastes instead of chemical fertilizers for purposes of small charge and high accessibility. The productivity relies on some variables comprised stocking, fatality, and development proportion. The fatality proportions were between 5% and 25% relying on the species. The total gain of M\$1,059 expecting sum profits from a 0.25-acre pond of M\$1,906 and the charge installing 0.25-acre fish ponds in land programs was discovered to be lower than the profit in yield from selling of fish estimated on the base of a monthly productivity term.

Terano, Zainalabidin, and Golnaz (2013) expressed that rested on the features of cost and profit assessment in farmstead administration, there were various means in total profit (gross profit) produced from selling of paddy for rice and paddy for seeds between the three areas. Total profit earned comprised two sorts, that is, total profit containing paddy and paddy seed traded to *Padiberas Nasional Berhad* (BERNAS) and moreover from state subsidy for each ton traded by the growers. While paddy growers acquired subsidy of RM248.1 per ton for paddy traded, the profit from sales of paddy and paddy seed was established by the charge per ton that was generally dissimilar in every area. In northwest of Selangor Integrated Agriculture Development Area (BLS), total profit acquired from rice productivity sales as paddy and seed was greatest between the three regions at RM8,399 per hectare. While the mean disfavor proportion of paddy at accumulation center was 16% ranked from 14% to 17% and mean rice charge was RM1,230 ranked from RM1,150 to RM1,400 per ton. The majority of the paddy growers traded paddy to local non-public factories in BLS. In case of *Kawasan Pembangunan Pertanian Bersepadu Terengganu Utara* (KETARA) region, paddy was distributed to BERNAS, non-public factories, and local farmers' association that established the portion thrown away for decay at a mean of 21% ranked from 18% to 23%. The mean charge was at RM1,040 per ton, ranked from RM980 to RM1,150 per ton. From another point of view in Muda Agricultural Development Authority (MADA), the mean disfavor proportion was 17% of distributed paddy in the region. Even though BERNAS and non-public businesses were the vital locations for paddy growers to trade output, the mean charges were identical at RM750 per ton for both BERNAS and non-public businesses.

Spending comprised seeds, packet charge for transplanting, purchasing fertilizer, pesticide, weedicide, employed worker, reapers, tractor, land rent, and fuel. Transplanting is completely contracted to non-public businesses or semi-nonpublic businesses as a packet in BSL. The packet charge in BLS was RM659 per hectare. Nevertheless in KETARA, the transplanting packet that is partially assisted by the local authority was charged at RM469.3 per hectare. In MADA, 100% of paddy growers employed directly seeding for paddy output. Consequently, there was no transplanting packet. In BLS and KETARA, merely 63% and 54% employed direct seeding respectively. The spending of fertilizer, pesticide, and weedicide was the highest in BSL accompanied by KETARA. Growers in BSL were inventive and employed additional fertilizer, pesticide, and weedicide furthermore to the subsidized commodities acquired to optimize effectiveness in productivity and produce better administration and methodical system for farmstead. In KETARA from another point of view, utilization of extra fertilizer, pesticide, and weedicide was rather considerable compared to MADA regions at RM556.4 and RM351.10 respectively (Terano et al., 2013).

In Malaysia, rice is an old, densely saved, and subsidized industry. Malaysia is a high charge grower and for this reason, the National Agricultural Policy (1992-2010) does not propose complete self-sufficiency. The food import bill for Malaysia is RM7 billion in 2002. Rice need in Asia is predicted to increase by 30% in 2010 as the provincial economic retardation affects more individuals to depend on the essential diet because of the higher charge in varying diets (Najim, Lee, Haque, & Esham, 2007).

Profit in Farming Activity in Malaysia

The worker supply and credit accessibility differ between farmstead, the material and output charges differ from location to location, and the growers have varying experience with recent technology and performances. The growers are moreover confronted with varying marketplace situations. The whole situation is confounded by the differences in attitudes of every grower under the threat of adopting the recent technology and understanding of the peril of the recent invention. Consequently, nearly every advancement plan or program that may be considered for farming is not able to be evaluated as to its profitability or productivity. It can merely be done regarding the feedback it suggests between the growers who come in contact with the plan or program. Return optimization indicates a linear usage function. This indicates vertical insignificance curves. Consequently, the return optimization farmstead program was the maximum right of the E-V frontier. The combined estimation design was the best predictor in seven cases. The following best predictor of the real farmstead program was the transcendental, the negative exponential, and the Cobb-Douglas usage designs; and ultimately the return optimization design. For the conventional behavior expectation of profit optimization, the possibility of precisely forecasting real behavior is basically or very near to zero in 15 of the 20 cases examined. The outcome of the assessment indicates that Bernoullian usage optimization describes real grower behavior more precisely than return optimization. It would be exemplary if the authority plans could achieve the individualized performance of thousands of farmsteads and direct the design of performance in each of these farmsteads so as to optimize the anticipated usage of each grower. This, certainly, is almost impossible. Nevertheless, it is considered that the achievement of advancement aims and intentions can be accomplished through the incentive method. It would be far simpler and more generative to offer a common encouragement regarding an impermanent higher charge, or factor subsidy and so forth, intended at enhancing farmstead return and to make every grower, with the support of a good data plan, elaborate a very effective system of performance for his specific farmstead in relation to his choice (Mohayidin, 1982).

Effectiveness and profitability in the farming sector are vital to Malaysia's industrialization development endeavors. The Malaysian authority has established its rice self-sufficiency degree at 65% and is capable of generating this volume currently. Therefore, for the purpose of accomplishing the need for the increasing population, Malaysia has to maintain its productivity, however with enhancement in rice output. This must come from the similar acreage indicated as the granary regions for rice output. Actually, the acreage subject to farming has been undergoing risk because of desertion. Because rice is a strategic crop, it is vital to sustain a domestic output degree for food safety purposes and the intention 65% of self-sufficiency must be in tandem with the increasing population. As the worker cost, instrument rentals and other material charges are greater, it is necessarily inclined to despair rice agriculture due to low profitability. The Malaysian authority's goal for farming is optimization of farmstead output and profit. This is realizable via automation by reduction of output charge and rising worker and land output (Najim et al., 2007).

Sallih (2005) reported that the biophysical assessment system was a vital instrument to get quick and efficient outcomes of possible locations for green mussel agriculture. The profitability framework of great deal and long line customs approaches becomes a useful administration instrument in promoting greater market driven productivity administration and provides a chance for a comparison of customs approaches. The profitability approach was utilized to design the output and money flow over a 10-year period. The investment and finance manifest the volume of assets required for a cultivator to start the agriculture. The profit return will be acquired after deducting the charges from the profits of the performance. The productivity design moreover manifests other elements of the economic assessment involving surplus (deficits and profits), profit return after devaluation and returns as well as estimations of net present value (NPV) and the internal rate of return (IRR). The NPV of the returns and the internal estimate of profit for every approach were estimated for a period of 10 years subject to the reduction estimate at 10% and 15%. In the output cycle, specific components, for example charges and quantities, may be variable which has an impact on the net profit. Reactivity estimates were done by influencing the charge of seed, size of yield, and ex-farmstead charge to determine which rates in the output approach have the greatest effect on net profits. The total charges deducted from the profit at the end of the output cycle perform a net return of RM156,000 (USD41,700) for the first year of output and a raised net return for the second year onwards because of an increase of predicted output.

Mailena, Shamsudin, Mohamed, and Radam (2013) proposed that calculated criterions of *translog* type of standardized limited return procedure and share material equation were not able to be utilized since they included a great number of criterions. These criterions were primarily employed to obtain empirical measurement of elasticity so that the common meaning of *translog* criterion could be disregarded. Negative figure of fertilizer charge proved that a lower charge of fertilizer raised the return. The big farmstead size could raise return because of the positive figure of region for rice output. Abdul Fatah and Von Cramon-Taubadel (2015) declared that there are farmsteads which generate a net surplus for Malaysia. In this case, plan must be concerned with promoting structural transformation that permits farmsteads to develop to the point where they can produce adequate profit from social returns alone, i.e., excluding (or with much less) subsidy. In this method, the state could obtain greater self-sufficiency for a smaller amount of money. Kamarulzaman, Husin, Mohayidin, and Enchi (2013) expressed that the private sector does not produce any beneficial programs to growers. Consequently, as the growers have to pay for transportation charges, it converts to growers' unwillingness in selecting the private sector as their intermediaries. Mohd Shafiai and Moi (2015) reported that farming activities can be performed to fulfill personal or family demands or even for beneficial goals. Personal demands will encourage the farming sector and affect the rural economies. Based on the theoretical design proposed by Islamic scholars in developing the farming sector, alliance programs of return and deficit sharing are beneficial and more appropriate for long run capitalization when compared to debt financing.

Mohamed Shaffril, Asmuni, and Ismail (2010) proposed that one of the farming sectors which can return from the portion allocated in advancement program in Malaysia is paddy industry. Revenues produced via its output have enlarged because of the rise in export activity and better charges of farming industrial commodities. Domestic agro-based industries and state's food need greatly rely on this industry. There are a number of state programs which can produce return in paddy sector, for example, land stabilization and restoration, farming study and growth, commercialization of farming activities, modern agriculture practices, post-yield handling, processing and marketing, bigger payment of credit for farming programs and larger portion allocated for generating better farming drainage, irrigation and water source programs to upgrade flood control and water supply.

Prior Studies

Estimations of total surplus need stabilization of productivity charges. Research focused on productivity charges except bank rates for credits and contained material charges, worker charges for field activities including compost preparation and charges related to the buying of materials from the local market place. Variable output charges for cotton, soybean, and wheat were ensured with the rates documented by the Ministry of Agriculture, authority of India. Total surplus was acquired by deducting the variable output charges from the total profit. Charges of goods, materials, and worker compatible to local market place situations were adjusted every year. The output charges of worker and material charges were in an identical range as documented by the Ministry of Agriculture, authority of India. The variable output charges of conventional compared to organic agriculture system were on average 38%, 66%, and 49% greater in cotton, soybean, and wheat (Forster et al., 2013). By genetically-changed technology, crop productivity has been raised by 21%. The rise of productivity is not because of greater heredity harvest potential; however, it is due to more efficient pest control and consequently reduced crop impairment. Concurrently, genetically-changed crops have decreased pesticide quantity by 37% and pesticide charge by 39%. The effect on the charge of output is not significant. Genetically-changed seeds are more costly than non-genetically-changed seeds; however, the extra seed charges are remunerated via savings in chemical and mechanical pest control. Average return earnings for growers adopting genetically-changed mechanisms are 69% (Klumper & Qaim, 2014).

Nkang, Ajah, Abang, and Edet (2007) examined charges and profits in cocoa output in Cross River State in the framework of three recognized administration systems of cocoa output in the region, i.e., owner-organized, lease-organized, and sharecrop organized systems, utilizing a hundred and fifty indiscriminately selected cocoa growers. The finding shows that cocoa output is a beneficial trade regardless of administration system, because total of variable had positive NPVs at 10% reduction estimate. The NPV for lease-organized farmstead is greatest. The benefit-cost ratio (BCR) at 10% reduction estimate was higher than one for the three administration systems which implies that the profits from cocoa output are great. Owner-organized farmstead had the greatest BCR accompanied by lease-organized farmstead in that order. Lease-organized farmsteads were more realistic compared with other administration systems concerning great NPVs. Given the great profits compared to charges included in cocoa output regardless of administration system, investment in cocoa output can be enhanced enormously by contributing widened entry to inexpensive and adaptable credit and land that have portrayed as restricting factors in cocoa output based on the descriptive statistical assessment.

Soha (2014) noted that growers are permanently producing changes in farmsteads for steady performances and profitability. Many times, these selections include operations to increase the financial profit of the farmstead, while other times these decisions are made necessarily to reduce the consequences of disadvantageous situations or occasions for example drought or changes in the market place situations. Several of these decisions are comparatively easy demanding making selections between options within a company while others are complicated including a complete redevelopment of the commerce and its company. Alternative selections within an individual company can have a distinctive consequence on farmstead profitability. Consequently, making the best decision may produce the distinction between return and deficit for that company. Limited allocation is very profitable in producing this kind of change in a farmstead. Limited allocation is an instrument utilized to estimate the charges and profits related to a particular change in a

farmstead. This instrument is particularly concerned with the consequences of the proposed change in a commerce performance by examining the profits and charges deriving from executing the option in relation to the present operation. Limited allocation is an arrangement and decision-making design which is employed to compare the charges and profits of options encountered by farmstead commerce. Before transforming from one output means to another, the grower examines several factors, for example, agro ecological specifications, accessibility of demanded extra output resources (worker, credit, skill, farmland, instrument, and so forth), extra charges and extra profit resulting from the change, the study was concerned with evaluating the impact on net profit of transforming from one degree of Nitrogen-fertilizer practice to another. The outcome signifies that the surplus scale of profit of transforming from Treatment 1 (100 kg N/Feddan) to Treatment 2 (200 kg N/Feddan) was 9.61, and a transformation from Treatment 2 (200 kg N/Feddan) to Treatment 3 (300 kg N/Feddan) produced a surplus scale of profit of 0.72, so Treatment 2 (200 kg N/Feddan) was suggested.

Oni, Osuntoki, Rahaman, and Amao (2013) noted that dry season vegetable output in Nigeria has become as vital as profit-generating employment that there are constantly deficiencies of appropriate land for a large number of producers. Output is subject to irrigation and it is featured by great combined cropping. Four main materials are taken into consideration excluding land allocation in vegetable output, namely, employed worker activities, fertilizer utilization, fueling of pumping machinery, and the charge of vegetable seed. Becot et al. (2014) noted that growers must gain profits that both take account of charges and generate sufficient profits. Understanding the means for effectively and precisely tracking a grower's own charges is more profitable to varied growers than are generalized charges profiles in business allocations. Charges must be low enough to participate, but great enough to cover charges. There is a lack of opinion on charge discovery for varied farmsteads in the literature. Growers' judgments are restricted by different causes, for example, insect constraint, periodical worker and material accessibility, financing, policies, education, and skills. The present research attempts to contribute to the academic and professional literature on agriculture charges and decision-making. Exactly, it attempts to comprehend the strategies that varied growers used to document their charges of output and how varied growers' recordkeeping applications formed their decision-making processes. This research requires learning fine applications regarding estimating charge of output and determining charges from growers who are common to be effective. Uniform sampling was adopted since required so as to be able to explain varied vegetable growers completely. Estimates of charge of output and charge determination were identical over entire farmstead; however, the strength of the process differs from one farmstead to another. Processes involved recordkeeping, information assessment and arrangement. Recordkeeping involved accumulating information to be employed for recordkeeping, arrangement, and decision-making. Growers calculated and documented information on sales for various delivery mediums, harvests, operating expenditures, material, and worker. These data were utilized for forthcoming farmstead performance arrangement.

Worker accounted for the greatest charges on all farmsteads and was regarded to be the difficult material to estimate and to allocate to various crops. Growers' applications ranged from keeping track of worker for every crop by the minute, to not tracking worker even so. Likewise, growers talked about the problem of recognizing how to characterize operating expenditures, containing tractor utilization and time spent on non-farmstead duties, for example, marketing and administration. Grower 2, a skilled micro-record-keeper, acknowledged referring most of the operating expenditures on the charge of the very beneficial businesses of the farmstead, while Grower 3, a beginning micro-record-keeper, ascribed an average failure of the charges over all the crops. Generally, growers considered that they are required to manage charges and keep them from

rising notably, although the charge of materials might be growing. One rising theme was the demand to manage the charges of output by becoming more production efficient. Unofficial data go into the shaping of a charge, containing charge of output, historical styles, experience, what competitors charge, and what consumers are inclined to pay. Growers were either charge makers or charge takers relying on buyers. Charge makers had some command regarding charge, and the growers were capable of obtaining a charge premium because of increasing applications and the quality of outputs. Growers were most frequently charge makers in direct marketing conditions. When trading to restaurants or supermarkets, growers were normally charge takers, where consumers named the charge based on a predetermined and well-known "going estimate". Nevertheless, there were conditions when growers were able to bargain the charge with the consumer because of cultivated connections. There is a separation among the growers concerning their desires to bargain values and change them over the period. The micro record-keepers reported that they would not lower their charge below their charge of output while macro record-keepers were inclined to lower their charge if they are considering to get rid of a bumper crop. The investigators also revealed vital and profound insights into growers' administration applications which are rarely considered in the literature and difficult to understand including making selections, dealing with the unknown and vagueness (Becot et al., 2014).

Wongnaa and Awunyo-Vitor (2013) had classified charges collected in cashew agriculture into two, i.e., investment or foundation charges and operating or maintenance charges. Investment charges as employed in the research refer to all charges collected before the cashew trees begin to bear fruits (first three years). On the other hand, operating charges refer to charges collected from the time the trees begin to bear fruits onwards (fourth year onwards). Principally, output charges comprised material charge, repairs, and extra charge because of intercropping cashew with maize and uncertainty reimbursement. Worker charges accounted for a vital proportion of material charges. Other material charges comprised charge of fertilizer (liquid and granular), charge of pesticides, charges of seeds, land rent, and charge of storage arrangement. The research recognized that profits come from three major sources, namely, trade of cashew nut, trade of maize and recovery rate of assets left over after the cashew farmstead is abandoned. With a 10% increase in worker charges, a cashew plantation establishment resulted in a positive NPV of GH¢492.05 (US\$256.28), BCR of 1.10, and an internal estimate of profit of 35.56%. With a 10% decrease in output charges, cashew plantation establishment resulted in a positive NPV of GH¢85.7 (US\$44.64). It also gave rise to an internal estimate of profit of 26.2% and a BCR of 1.02. When reduction estimate was raised by 10%, a positive NPV of GH¢459.23 (US\$239.18) was gained. Although there has been a decrease in the profitability indicators, it still indicates positive revenues on investment. It further sustained the internal estimate of profits of 43.85% which is higher than the cost of capital.

Worker charges for cashew plantation establishment are greatest in the first year than later years. Weeding and picking in cashew plantation establishment need large quantities of worker material and thus provide more to total worker charge. The high charge of output studied in the initial years of cashew output does not necessarily indicate capital intensive feature of cashew output. These charges are because of intercropping throughout the initial years. The BCR manifests that for each US dollar spent in cashew output, a revenue of GH¢1.13 (US\$0.59) would be anticipated. Since the BCR is higher than one, the research assumes that cashew plantation can pay for investment made in its establishment and offer growers profit exceeding charge. The profitability indicators are for a comparatively little cashew plantation. If the farmstead is bigger, the estimate of profit would be anticipated to be greater because of economies of scale. Since economic harvest of the crop starts

from the third to fourth year onwards, it could be concluded from the outcomes that other cropping activities, for instance intercropping with maize, would provide profit to poor growers. The profitability of cashew farming also proposed that its output could sum up to accumulate food output and foreign exchange revenues. Worker material performs a vital function in cashew output; thus occupation in the research field would conceivably decrease rural-urban movement (Wongnaa & Awunyo-Vitor, 2013). Uddin, Sultana, Ndambi, Hemme, and Peters (2010) presented that dairy farming in Bangladesh is increasing rapidly but confronts problems of high material and low output charges resulting in lower profitability. Because of globalization and the effect of global milk charge changes, dairy growers are required to find methods of reducing charges and raising revenues so as to be more competitive. Every system varied concerning materials, outputs, charges, returns, and entrepreneur's revenues. The large-scale intensive output system had the lowest milk output charges (US\$30.88/100 kg Energy Corrected Milk (ECM)) compared to US\$43.46/100 kg ECM for the limited-scale conventional system. The greatest milk harvest was studied in the large-scale intensive dairying system (1,600 kg ECM/year). Milk harvest expanded and the charge of milk output declined with growing farmstead size. Limited-scale growers of large and conventional agriculture systems had a negative entrepreneur's revenue (US\$0.93 and US\$0.27/100 kg ECM, respectively), and were not able to compensate total economic charges from dairy farming. Growers are required to adopt recent charge-reducing administration strategies and the authority must perform initiatives to regenerate the institutional systems by liberalizing material sales, developing fundamental infrastructure, and promoting access to harvest growing technology that can finally reduce charges, enhance output and farmstead revenue.

Uddin et al. (2010) reported that the new historical progress in global food charges coupling with the new historical decline of milk charge push the dairy growers in a more difficult situation. The institutional system in the research field does not support dairy growers. The economic situation of the dairy growers is aggravated by shortage of fundamental infrastructure, inadequate access to non-natural insemination and veterinary amenities, inefficient market place structure and shortage of access to technological amenities. This also restricts dairy growers' access to materials and aid amenities. The charge of milk output differs between US\$23/100 kg ECM and US\$31/100 kg ECM. The main causes for this distinction are the dissimilarities in cost of capital for own sources of output (such as worker, land, and capital). The limited-scale large farmstead (BD-2KG) has 89% higher costs of capital than the large-scale intensive farmstead (BD-22SG). The major cause for the higher cost of capital is because of the fact that smallholders utilize more family labor for dairy farming. The higher cost of capital drives the milk output charge higher, resulting in an unfavorable condition for smallholders concerning economies of scale and profitability. If the alternative salary estimate is higher, then dairy workers will consequently turn to other occupations. The large-scale agriculture systems, both large (BD-14DP) and conventional (BD-10KG), have higher total farmstead charges than large-scale intensive agriculture systems (BD-22SG). The highest total farmstead charge is studied for BD-10KG that is US\$30/100 kg ECM compared to US\$25/100 kg ECM for BD-22SG. Within big farmsteads, a 17% higher charge is studied in conventional large-scale agriculture than intensive large-scale agriculture. The higher milk output is the main force for lower charge. While comparing smallholder dairying systems, the extensive agriculture system has the lowest total farmstead charge that is approximately US\$23/100 kg ECM, while the highest is for intensive agriculture system (BD-4SG) that is around US\$25.5/100 kg ECM. The lowest charge for smallholder farmsteads in extensive system is because of the fact that they have lower feed charge due to the access to larger public land for seasonal grazing.

Thennakoon and De Silva (2012) declared that selling need and output charge vary with specific crop type. Individual growers are not able enough to recognize selling economy behavior and output charge for every crop type. Charge of output for specific crop is varying with years. Preceding charge of output budget does not indicate output charge in this year. Thus, it is better to plan charge calculation budget for main cultivating crops yearly. Earning of great profit does not manifest the growers' profitability. The profitability must be calculated associated with charge of cultivation. Output charge of green leaf was Rs.12.40/Kg in 2009. Growers gain greatest profit acknowledged to earlier years. Preceding charges of earlier years for green leaf were less than its output charge. This is because of the changes of estimates for man day and estimate dissimilarity based on gender dissimilarity (unit of male man day was estimated as Rs.400.00 and female day was Rs.300.00 in charge calculation). In this year, it is measured as Rs.500.00 for man and Rs.350.00 for female. Green leaf output charge of earlier year was Rs.11.17. Charges of green leaf have been expanded extremely with time and principally from 2004 to 2008. In 2009, green leaf charge has been raised from unusual volume. The greatest revenue was gained from large onion cultivation and the second greatest revenue was received from tobacco cultivation. The smallest revenue was received from paddy cultivation. Output charge threat may be higher than charge threat in 2009 for every crop.

Hassan, Nwanta, and Mohammed (2005) presented that the main problems recognized in the research field were great feed charge, great charge, and non-availability of day-old chicks, vaccines shortcoming, and great capital investment. In Jema'a Local Government Area (LGA), the average profit was 202,595.50, average charge was 138,492.13, and the average surplus was 64,103.37 per 100 layers. The coefficient of variance of profit, charge, and surplus was 4.8%, 7.2%, and 21.4% respectively. These features manifest that there was broader variance in surplus between the growers in this LGA than in profit and charge. In Igabi LGA, the average profit was discovered to be 203,910.90, average charge was 119,215.21, and average surplus was 84,695.69. The coefficient of variance was discovered to be 4.4%, 12.3%, and 18.4% for profit, charge, and surplus respectively. The greater coefficient of variance (18.4%) revealed that there was broader variance in the surplus of the growers in Igabi LGA. The coefficient of variance (12.3%) for charge also manifested that there was a broad variance in charge between the growers in Igabi LGA. These broad variances in surplus and charge could be attributed to the fact that 60% of the growers in this LGA generated poultry feed locally and thus feed charges were lower and thus greater surplus than the 40% who bought feed. It was studied that egg output was productive. The total surplus measured per 100 layers for the three LGAs was N84,695.69 for growers in Igabi LGA, N63,266.64 for growers in Birnin-Gwari LGA, and N64,103.37 for the growers in Jema'a LGA. It was also found that feed material formed between 86%-87% of the whole variable charge of output. Growers who invented their poultry feed were discovered to have lower feed charge and thus greater surplus. The *t*-statistic test between charge and profit indicated that the *t*-values were significant at 1% level indicating that egg output was productive in the research location.

Kuboja and Temu (2013) expressed that for tobacco, variable charges received were land preparation, farmstead husbandry, fertilizers, chemicals, transportation, burning, preservation of tobacco, and storage charges. For groundnuts, these included land preparation, farmstead husbandry, fertilizers, transportation, and storage. The market place of groundnut was not reliable because of the fact that growers traded yield at lower charge which did not indicate the output charge. The summation of the limited coefficients of output in relation to each material for uniform function (all sources contrasting in the identical allocation) is 1.332 for tobacco and 1.055 for groundnut. This indicates the profit-to-scale coefficient, also noted as function coefficient or total

productivity elasticity. If all source materials are various by the identical allocation, the function coefficient manifests the portion by which productivity will be raised. In this case, the output function can be employed to calculate the magnitude of profits to scale. Steady profit to scale holds if the sum of all limited coefficients is similar to one. If the sum is lower than one, the function has decreasing profit to scale. In this study, an increasing profit to scale exists in both farming systems; thus, an increase in all materials by 1% raises tobacco and groundnut outputs by more than 1%.

J. Miklovicova, S. Miklovicova, Ladislav, and Irena (2013) proposed that measured profitability index of farmsteads in areas of Slovakia was lower than one for the interest rates. The rate of indicator for interest rate is identical in Slovak areas. In Nitra and Trnava areas, the rates of index are lower than 0.3 which can be regarded as a negative direction. The better condition is on farmstead in Banska Bystrica, Zilina, and Kosice areas where the volume of index ranges from 0.83 to 0.95. The rates of profitability index in trading businesses were lower than in every area of Slovakia. The best rates of index were achieved by the trading businesses of Presov area. Approximately half rates of profitability index were achieved by the trading businesses in Banska Bystrica, Bratislava, and Trencin areas. Every financial profit was raised to achieve its highest rate of profitability index. Financial profit in Presov area was raised by the smallest value from €54/ha of farming land to €64/ha of farming land. The greatest value of increase was noted in financial profit in Trnava area and it was from €55/ha of farming land by the interest rate of 4.69% to €90/ha of farming land by the interest rate of 5.91%. Likewise, the volumes of financial profits in Nitra and Bratislava areas were raised by greater rates compared with other areas of Slovakia from €399/ha to €520/ha of farming land.

Panda and Mishra (2013) reported that dairying in Odisha utilized more than 60% of all manpower in agriculture and integrated activity. The milk output status is growing every year in Odisha. The milk output was 2.20 million ton in the period of 2010-2011 with per capita accessibility of milk 136 gms. There is a sum of 14.3 million of yielding milk cattle up to 2007. Most of dairy growers are small-scale and marginal growers. Mburu, Gitu, and Wakhungu (2007) declared that on average, profits considerably exceeded charges and the dairy company gained a profit. In the lower highlands, the charges of output were 19.1 Kenya shillings (KES)/kg and unit revenue was KES2.3/kg; in the upper midlands, the charges of output were KES16.90/kg and unit revenue was KES6.3/kg; and in the lower midlands, the charges of output were KES18.1/kg and unit revenue was KES3.45/kg. Growers in upper midlands were producing higher revenue from milk than those in lower highlands because of greater milk charges offered by itinerating merchants. In lower highlands and upper midlands, the land region devoted to crops and fodder was similar. Lower midlands had the smallest allocation of land region devoted to fodder output, total of sections of farmsteads, household head age and population density but greatest entire farmstead acreage. Lower highlands had the greatest household head age; allocation land region devoted to fodder, cows in milk and milk productivity per cow per day but smallest length to market place and average charge per kilogram. Upper midland had the greatest milk charge per kilogram, total of farmsteads and population density but smallest in all others except household head age, length to market place, and percentage region devoted to fodder output which were modest. Lower highlands had the smallest charges of labor and bought fodder but greatest charges of water and concentrates and milling by-products per kilogram of milk generated. Upper midlands had greatest charges of labor solely and smallest in charges of water. Lower midlands had greatest charges of bought and native fodder, and veterinary amenities per kilogram of milk generated. Charge of mineral salts is included in charge of concentrates and milling by-products.

Balamurugan and Manoharan (2013) reported that total variable charges per bird revealed a more sensible explanation of the variable charge on varied broiler farmstead sizes. The variable charge relatively declined as farmstead size increased. Identical directions were discovered in the case of per bird feed charge, interest on cost of capital, worker wage, and so forth. It may be assumed that per bird variable charge was lower on big farmsteads because of the existence of economies of scale in these farmsteads. Total fixed charge for broiler growers per bird portrayed on varied broiler farmstead sizes. Besides the cost of growing charge paid to broiler farmers is added the sum will be cost of production of the integrator or producer. The variable charges, total fixed charges, and total charge of broiler output on per bird basis were greatest on little farmsteads accompanied by moderate and big farmsteads. The total charge per bird declined with the increase in farmstead size, manifesting the existence of economies of scale on big farmsteads. The rate of rising value spent was summed that was Rs.4.17 per kilogram. It was great in big farmsteads and was small in moderate and little farmsteads. Sale of compost was greater in big farmsteads that totaled to Rs.28,800.00. Sale of gunny bags was totaled to Rs.14,711.43 in general. In little farmsteads, its sale was lower than moderate and big farmsteads. It could be determined that the profit on broiler output per bird was greatest on big farmsteads, accompanied by moderate and little farmsteads. The profit per bird increased with an increase in farmstead size, signifying the existence of economies of scale on big farmsteads. The total fixed investments per bird have been discovered to be the greatest on little farmsteads accompanied by moderate and big farmsteads. The total variable charges and total charges per bird have been discovered to be the greatest on little farmsteads, accompanied by moderate and big farmsteads. The total charge of meat output per bird has been observed to be the greatest on little broiler farmsteads, accompanied by moderate and big farmsteads. The net profits per bird over the variable charges have been documented to be the greatest on big farmsteads, accompanied by moderate and little farmsteads. This increasing trend of net profit with the farmstead size could be attributed primarily to the economies of scale on the big farmsteads. The output effectiveness of broiler farmsteads has increased with farmstead size because of better utilization of materials. On the basis of NPV, BCR, and internal rate of profit, investment in broiler agriculture has been discovered to be very productive on big farmsteads, accompanied by moderate and little farmsteads. The little broiler farmsteads have been observed to be highly sensitive to increase in charges and decrease in net profits. The broiler agriculture is a productive enterprise and has a favorable future in the research field of Tamil Nadu agriculture for enhancing economic status of the agriculture society.

According to Brumfield, Rimal, and Reiners (2000), merchantable yields for tomatoes, pumpkins, and sweet corn revealed variance during the research period primarily because of dry and wet weather situations. Nevertheless, there was no dissimilarity because of dry or wet seasons among arrangements. Average yields were calculated as simple averages for three years for three cropping systems. The merchantable yield was greatest subject to integrated crop management (ICM) for fresh tomatoes and pumpkins, while the average sweet corn yield per acre was greatest subject to the conventional system. Yield per acre for whole three crops subject to the organic system was lower by 15%-19% compared to that under the conventional system. The organic system of output received 28%-34% greater charge per unit compared to conventional system, while ICM received 3%-9% lower charge per unit than the conventional systems. The charges of machinery and equipment for organic tomatoes were nearly double those for conventional and ICM due to the usage of machinery to plant cover crops and practice compost. Consequently, mechanical methods were utilized to control weeds and compute nutrients in the organic systems but chemicals were utilized for these jobs in the

conventional and ICM systems. The organic system of making fresh tomatoes had the greatest total charges per acre but second greatest total profit and lowest net profit. The net profit for organic tomatoes was merely slightly lower than for the conventional system and was consequently almost comparable with the conventional system. While the conventional system had the smallest total charges, it had the second smallest total profit. When only total charges were raised by 20%, the organic system exceeded the conventional system.

According to Fisher (2012), the agriculture process has various charges involved. There are some constant expenses that are regarded to be direct (primary) charges. It is discovered that these charges will be present if the agriculture process is in existence. The process generates unintended charges. For the purpose of appropriately accounting for these charges, an accounting system must be utilized. Pre-harvest machinery and harvest machinery are separated into fixed charges and variable charges. Fixed machinery charges contain devaluation, profit on investment in machinery, insurance, and storage of the machinery. Variable machinery charges include fuel, oil, and repairs and maintenance. A positive net profit designates revenue for agriculture. A negative net profit designates a loss for agriculture. By utilizing spreadsheet, growers can specify what charges are value-added and what charges are non value-added charges.

United States Agency for International Development (2010) presented that the charge of agriculture materials is great and the availability of quality materials and associated technical services has been low. Retailers have been uncertain to provide listing to rural areas unless it is traded previously and are principally reluctant to give credit to smallholder growers for material purchases. Growers obtain materials packages that contain seeds and chemicals from cotton firms, the charge of which is subtracted when the crop is traded. The transaction charges of shifting from cotton to other crops for example maize are very low, when the charge of cotton declines, growers shift to other crops on a seasonal basis. Growers expressed their gratification with the herd health plans (HHP) since the precautionary method considerably decreased the charge of feeding animals (transit and medicine charges) once they became sick. Meeting individual grower's needs for supplies at a specific time is complicated by the need for agents to order in big volume to counterbalance the transportation charges. For smaller orders, the agents must wait for a significant number of orders to be placed before it is charge efficient for them to produce a trip to the material supplier.

Cloete (2009) proposed that the charges of processing and handling live animals mixed with great airfreight charges and fatalities can make alternative marketing strategies attractive. The preparation process for drying abalone is vastly labor intensive and must not be confounded with the sun dried output that trades for lower prices. At present, abalone charges are determined by several Asian states, guided by historical and changing traditions, preparations, populations, and economies. An extra effect is that of Asian populations living somewhere else in the earth. Short-run charge variations are predicted as the economies of the Asian purchaser states develop and decrease. Nevertheless, losses in weight related to shucking, disembowelment, and processing charges result in a lower value than live abalone per unit. There are benefits and drawbacks connected to varied abalone outputs sorts. Sensitivity assessment was done with all vital investment charges comprising selling value and quantity of abalone traded. The outcomes of the impact assessment imply that the abalone performance is most sensitive to the selling value of abalone. For instance, if the selling charges of abalone are increased by approximately 35%, the IRR is 15% which is a satisfactory rate of profit for the present program. The quantity of abalone traded also has an obvious effect on profitability. Variations in the charge of equipment and operational charges (fixed and variable) did not have an important effect on the

profitability of abalone agriculture. Nevertheless, variations in variable charges had a greater effect on the IRR of equity than the charge of equipment and fixed charges. Most of the existing abalone farmsteads in South Africa focus on the output of live (80-90 mm shell length) abalone. Live abalone is harvested at a smaller size than dried abalone, reducing labor and feed charges. Moreover, under normal conditions, live abalone obtains a superior value.

Research Methodology

Research Objective and Hypotheses

The objective of this paper is to determine the connection between cost of agriculture activity and growers' revenue. This objective tries to explain and anticipate the connection between the dependent and independent variables. Null hypothesis is that there is no significant relationship between cost in farming activity and growers' profit. Figure 1 below exhibits the association between the independent and dependent variables. This paper proposes that cost in agriculture activity reduces the probability of presenting profit. The research objective is to forecast the association between cost in agriculture activity and profit. Cost in this study relates to project and maintenance costs. Project costs include physical material, specifically compost, irrigation, pesticide, worker, land rental, tax, debt, contingency, and so forth. Maintenance costs include roads, building, vehicle, machinery, and the like. The question is: "Why do several farmers record less profit than other farmers?". Cost in agriculture activity influences the volume of profit gained by farmers. The independent variable is cost of agriculture activity and the dependent variable is profit of farmers.

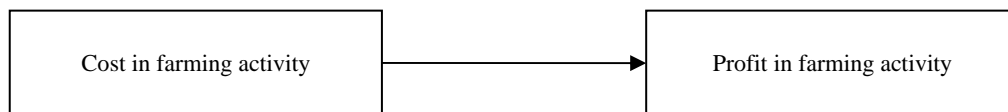


Figure 1. Relationship between cost and profit in farming activity.

Subjects

The sources for sampling are TKPM participants' telephone number from book of TKPM entrepreneurs of Selangor, TKPM participants' website, and recipients of *Skim Amalan Ladang Baik Malaysia* (SALM). The whole number of respondents was 335. The population was 913 TKPM participants in Malaysia. The sample size of farmers is 53.

Analysis Instrument

This paper analyzes the presentation of revenue from year 2009 to 2013 of non-probability sample of farmers by questionnaire survey. The materials usages in this analysis are from the research on contract agriculture in 2015 in Malaysia using quantitative method (Yusoff, 2015a). The research gathered primary data on food output via survey technique using questionnaire (Yusoff, 2015b). The questionnaire to accumulate data concerning cost and revenue of food output was conducted utilizing an interval scale. The interval scale employs a graded response to each of the statement in five numbers that is lower than or equivalent to RM50,000.00, RM50,001.00-RM100,000.00, RM100,001.00-RM150,000.00, RM150,001.00-RM200,000.00, and higher than or be equivalent to RM200,001.00. Each statement is then organized regarding the interpretation of the statement. Intra-class correlation was utilized to estimate the reliability of the questionnaire comprising two raters. The intra-class correlation is an analysis of the level to which raters give similar ratings to each individual or object rated. The phrase intra-class correlation was first developed to relate to an analysis

of uniformity between objects inside several groups or classes. In agreement or reliability analysis, the class is the person or object on which some scales are developed, and it is the uniformity of these scales inside each individual or object that is manifested by the coefficient. Some variations of the coefficient exist, but the one most likely to be utilized to estimate inter-rater agreement is the issue that considers differences in which level raters select for every *ratee*, and differences in the arrangement of *ratees* and does not require that each *ratee* be rated by each rater. Intra-class correlation considers two sorts of forecasted agreement, namely, the agreement between one rater and another single rater which is classified as a single measure in the output and the agreement between the average of raters' scales and the average of scales by another, similar group of raters which is classified as average measure in the output. The single analysis of intra-class correlation manifests the agreement among raters and consequently how well an assessment scale based on the scales of one rater is likely to agree with the scales by another rater. The average measures coefficient estimates agreement between standards of scales and is suitable only if assessments average the scales of two or more raters (Graham, Milanowski, & Miller, 2012). About 47 growers have been rated in intra-class correlation and the rate for the intra-class correlation coefficients consistency of cost is 0.608 and 0.939. The value for the intra-class correlation coefficients agreement of cost is 0.558 and 0.927. The value for the intra-class correlation coefficients consistency of revenue is 0.815 and 0.997. The value for the intra-class correlation coefficients agreement of revenue is 0.800 and 0.996. Intra-class correlation coefficient (2, 1) of cost in farming activity is equivalent to 0.558. This signifies that intra-class correlation coefficient (2, k), which in this case is intra-class correlation coefficient (2, 4), is equivalent to 0.927. Consequently, 92.7% of the variation in the mean of these raters is actual (Landers, 2011).

Data Analysis

Data analysis using IBM Statistical Package for the Social Sciences (SPSS) Statistic Version 19 encompassed linear regression analysis to achieve the objective. DeRosia (2015) reported that the benefit of SPSS is that the syntax enables multipliers to be processed all at once and it enables a corroboration of the assessment. According to Starkweather (2014), SPSS enables much quicker statistical estimations than by hand or with other statistical software. It is lack of difficulty of usage. Ramcharan (2006) showed that regressions are employed to quantify the connection between one variable and the other variables that are intended to explain it; regressions can also determine how strong and well determined the association is. Currently, running thousands of regressions has become common and easy. Beller and Baier (2013) signified that linear regression has some expectations. First, linearity, it is expected that the connection between the dependent variable and the predictor variables is linear, independence, the errors are independent of each other, normality, conditional on the predictors the dependent variable is normally scattered and homoscedasticity, conditional on the predictors the variance of the dependent variable is constant. If these presumptions are achieved, the linear regression function presents a precise summary of the linear dependencies among variables. It is evident that there is no non-linearity to identify because linearity is precisely stated in the presumptions. If the presumptions of normality and homoscedasticity are achieved, it does not matter where in the dispersion of the dependent variable one analyses the consequence of the predictors on the dependent variable - the consequence will constantly be identical. This signifies that the consequence is homogeneous throughout the dispersion of the dependent variable.

Results of Analysis

Figures 2-6 indicate a linear pattern of scatter diagram showing a positive association between cost (independent variable) and profit (dependent variable) in agriculture activity for the period of 2009-2013. This shows that a greater cost is connected with greater revenue. The association between cost and profit during the period of 2009-2011 is very strong, while the association between cost and profit in years of 2012-2013 is modest. In cost and profit for the year from 2009 to 2013, greater costs go with greater degrees of revenue. Farmers with greater costs may have more revenue. There will be an association with greater costs per revenue (Buxton, 2008). Nevertheless, p -value for the year 2013 ($p = 0.059$) is not significant (higher than 0.05). When x -value (costs) is 6 (higher than or be equivalent to RM200,001.00) for the years 2009, 2010, 2011, and 2012, the y -value (profit) is 2 (RM50,001.00-RM100,000.00), while for the year 2013 if x -value (costs) is 6 (higher than or be equivalent to RM200,001.00), the y -value is RM100,001.00-RM150,000.00 (USF, 2016). The rates of profit are principally rising linearly as the rates of cost increase. It can be expected that a straight line presents an effective mathematical model of this association. The slope is β_1 (2009) which is equivalent to +0.202. This signifies that for every increase of one unit in X , the average rate of Y is calculated to increase by 0.202 units. Otherwise stated, for every increase of 1.0 thousand costs, the average of profit is calculated to increase by 0.202 million of Malaysian Ringgit. Consequently, the slope indicates the division of the yearly profit that is calculated to differentiate depending on the cost. The Y intercept is β_0 which is equivalent to +0.658. The Y intercept signifies the average rate of Y when X is equivalent to 0. Due to the profit is not able to be 0, this Y intercept has no realistic explanations (Prenhall.com, 2016).

The slope is β_1 (2010) which is equivalent to +0.200. This signifies that for every increase of one unit in X , the average rate of Y is calculated to increase by 0.200 units. Otherwise stated, for every increase of 1.0 thousand costs, the average of profit is calculated to increase by 0.200 million of Malaysian Ringgit. Consequently, the slope manifests the division of the yearly profit that is calculated to differentiate depending on the cost. The Y intercept is β_0 which is equivalent to +0.667. The Y intercept manifests the average rate of Y when X is equivalent to 0. Due to the profit is not able to be 0, this Y intercept has no realistic explanation. Figure 3 signifies the forecasting line of cost and profit for 2010. The slope is β_1 (2011) which is equivalent to +0.153. This signifies that for every rise of one unit in X , the average rate of Y is calculated to rise by 0.153 units. Otherwise stated, for every increase of 1.0 thousand costs, the average of profit is calculated to increase by 0.153 million of Malaysian Ringgit. Consequently, the slope manifests the division of the yearly profit that is calculated to differentiate depending on the cost. The Y intercept is β_0 which is equivalent to +0.756. The Y intercept manifests the average rate of Y when X is equivalent to 0. Due to the profit is not able to be 0, this Y intercept has no realistic explanation. Figure 4 signifies the forecasting line of cost and profit for 2011. The slope is β_1 (2012) which is equivalent to +0.129. This signifies that for every increase of one unit in X , the average rate of Y is calculated to increase by 0.129 units. Otherwise stated, for every increase of 1.0 thousand costs, the average of profit is calculated to increase by 0.129 million of Malaysian Ringgit. Consequently, the slope manifests the division of the yearly profit that is calculated to differ depending on the cost. The Y intercept is β_0 which is equivalent to +0.892. The Y intercept manifests the average rate of Y when X is equivalent to 0. Due to the profit is not able to be 0, this Y intercept has no realistic explanation. Figure 5 signifies the forecasting line of cost and profit for 2012 (Prenhall.com, 2016).

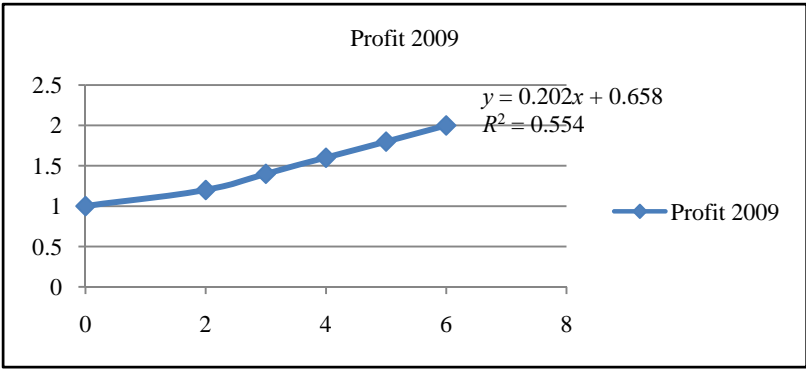


Figure 2. Relationship between cost and profit in farming in 2009.

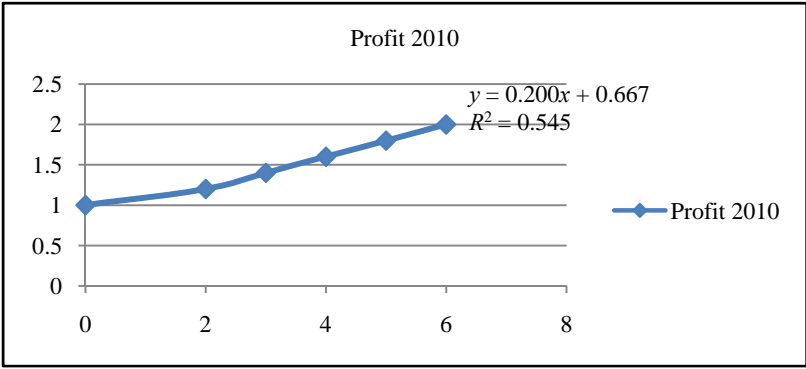


Figure 3. Relationship between cost and profit in farming in 2010.

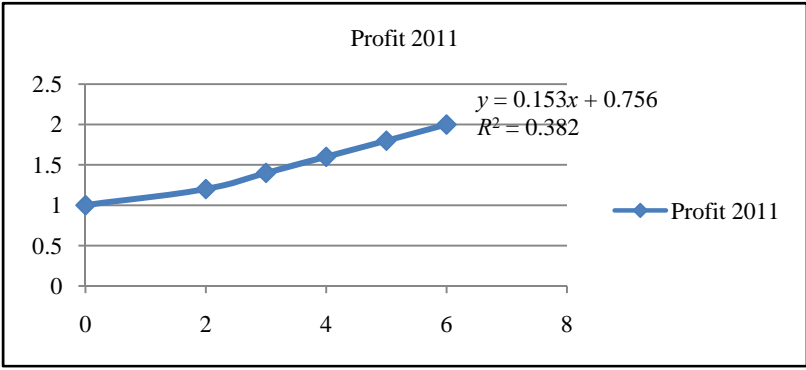


Figure 4. Relationship between cost and profit in farming in 2011.

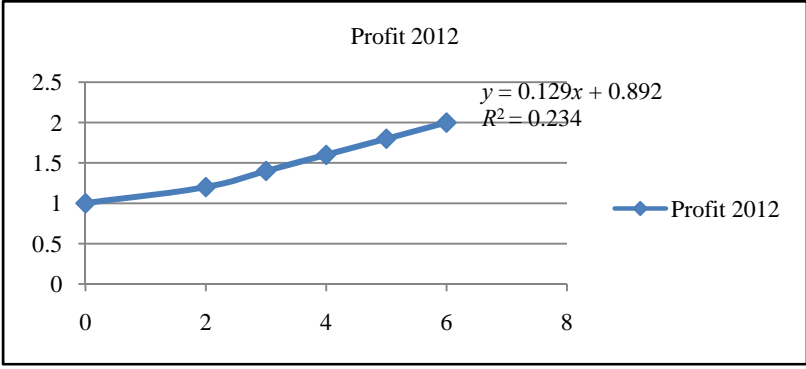


Figure 5. Relationship between cost and profit in farming in 2012.

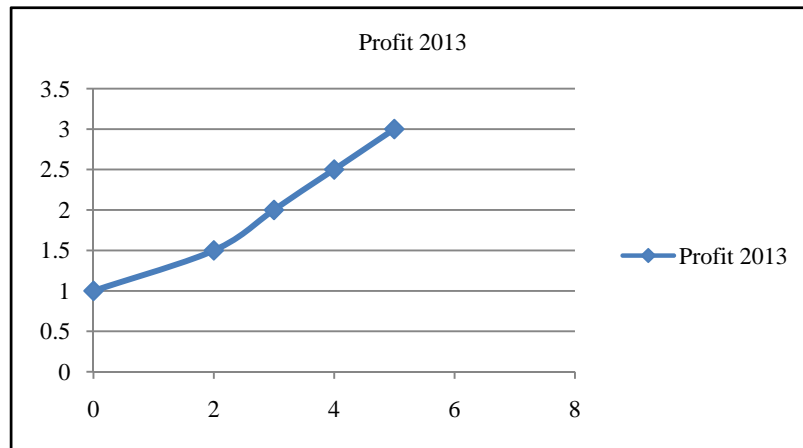


Figure 6. Relationship between cost and profit in farming in 2013.

Table 1 indicates that R^2 (2009) is 0.554 or 0.55. This signifies that merely 55% of the variance in profit is justified by its association with cost. That causes 45% of the variance in profit absolutely unjustified. Probably there are other determinants on profit that we are unconscious of (Hole, 2016). R^2 for the year 2010 is 0.545 or 0.55 that is identical with the year 2009. R^2 for the year 2011 is 0.382 or 0.38. This signifies that merely 38% of the variance in profit is justified by its association with cost. That causes 62% of the variance in profit absolutely unjustified. Presumptively, there are other determinants on profit that we are unconscious of. R^2 for the year 2012 is 0.234 or 0.23. This signifies that merely 23% of the variance in profit is justified by its association with cost. That causes 77% of the variance in profit totally unjustified. Probably there are other determinants on profit that we are unconscious of. R^2 for the year 2013 is 0.205 or 0.21. This signifies that merely 21% of the variance in profit is justified by its association with cost. That causes 79% of the variance in profit entirely unjustified. Presumptively, there are other determinants on profit that we are unconscious of.

Table 1

Model Summary

Year	Model	<i>R</i>	R^2	Adjusted R^2	Standard error of the estimate
2009	1	0.744	0.554	0.522	0.30908
2010	1	0.739	0.545	0.510	0.32026
2011	1	0.618	0.382	0.343	0.34674
2012	1	0.484	0.234	0.183	0.42452
2013	1	0.453	0.205	0.155	0.56584

Table 2 indicates that ANOVA presents p -value lower than 0.05 for the years from 2009 to 2012. It can be assumed that the rate of profit earned by farmers per year shifts considerably in relation to the rate of cost in agriculture activity (Moravian College, 2016). In the instance of association, the null hypothesis is that the correlation is zero. In this instance, null hypothesis has been rejected as p -value is lower than 0.05 (2009-2012). In this instance, the p -rates were 0.001 (2009), 0.002 (2010), 0.006 (2011), and 0.049 (2012). Nevertheless, p -value for 2013 is greater than 0.05 which is in accordance with the null hypothesis (Tarleton, 2016).

Table 2
ANOVA

Year	Model	Sum of squares	df	Mean square	<i>F</i>	Sig.
2009	1 Regression	1.663	1	1.663	17.404	0.001
	Residual	1.337	14	0.096		
	Total	3.000	15			
2010	1 Regression	1.600	1	1.600	15.600	0.002
	Residual	1.333	13	0.103		
	Total	2.933	14			
2011	1 Regression	1.187	1	1.187	9.877	0.006
	Residual	1.924	16	0.120		
	Total	3.111	17			
2012	1 Regression	0.826	1	0.826	4.584	0.049
	Residual	2.703	15	0.180		
	Total	3.529	16			
2013	1 Regression	1.322	1	1.322	4.128	0.059
	Residual	5.123	16	0.320		
	Total	6.444	17			

Table 3 shows that for each cost increase in 2009, the model forecasts an increase of 0.202 profits in 2009. For each cost increase in 2010, the model anticipates an increase of 0.200 profits in 2010. For each cost increase in 2011, the model anticipates an increase of 0.153 profits in 2011. For each cost increase in 2012, the model anticipates an increase of 0.129 profits in 2012. For each cost increase in 2013, the model anticipates an increase of 0.163 profits in 2013 (University of Fribourg, 2016). The slope for cost variable informs that the anticipated rate of farmers' profit increases by around 0.202 Malaysian Ringgit for each one Malaysian Ringgit increase in cost. The slope for cost variable describes that the forecasted rate of farmers' profit increases by approximately 0.200 Malaysian Ringgit for each one Malaysian Ringgit increase in cost. The slope for cost variable portrays that the forecasted rate of farmers' profit increases by approximately 0.153 Malaysian Ringgit for each one Malaysian Ringgit increase in cost. The slope for cost variable portrays that the forecasted rate of farmers' profit increases by around 0.129 Malaysian Ringgit for each one Malaysian Ringgit increase in cost (University of Washington, 2016).

Table 3
Coefficients

Year	Model	Unstandardized coefficient		Standardized coefficient	<i>t</i>	Sig.	95.0% confidence interval for B	
		β	Standard error				Lower bound	Upper bound
2009	1 (Constant)	0.658	0.162	0.744	4.073	0.001	0.311	1.005
	Cost 2009	0.202	0.048		4.172	0.001	0.098	0.305
2010	1 (Constant)	0.667	0.173	0.739	3.854	0.002	0.293	1.040
	Cost 2010	0.200	0.051		3.950	0.002	0.091	0.309
2011	1 (Constant)	0.756	0.169	0.618	4.460	0.000	0.397	1.115
	Cost 2011	0.153	0.049		3.143	0.006	0.050	0.256
2012	1 (Constant)	0.892	0.214	0.484	4.170	0.001	0.436	1.349
	Cost 2012	0.129	0.060		2.141	0.049	0.001	0.257
2013	1 (Constant)	0.937	0.283	0.453	3.314	0.004	0.338	1.537
	Cost 2013	0.163	0.080		2.032	0.059	-0.007	0.333

Significance rates for the years 2009, 2010, 2011, and 2012 are lower than 0.05, thus rejecting the null hypothesis. Nevertheless, the significance rate for the year 2013 was greater than 0.05 which is in accordance with the null hypothesis. At the 0.05 level of significance, there is adequate proof to assume that the slope of the farmer regression line is zero. For the year 2009, there is 95% confidence that the slope of the regression line is approximately between 0.098 and 0.305. Otherwise stated, there is 95% confidence that for each cost in 2009, their mean profit increases roughly RM98.00 and RM305.00. For the year 2010, there is 95% confidence that the slope of the regression line is approximately between 0.091 and 0.309. Otherwise stated, there is 95% confidence that for each cost in 2010, their mean profit increases approximately RM91.00 and RM309.00. For the year 2011, there is 95% confidence that the slope of the regression line is roughly between 0.050 and 0.256. Otherwise stated, there is 95% confidence that for each cost in 2011, their mean profit increases roughly RM50.00 and RM256.00. For the year 2012, there is 95% confidence that the slope of the regression line is roughly between 0.001 and 0.257. Otherwise stated, there is 95% confidence that for each cost in 2012, their mean profit increases roughly RM1.00 and RM257.00 (Virginia Commonwealth University, 2016).

These outcomes differ from MacDonald, O'Donoghue, McBride, Nehring, Sandretto, and Mosheim (2007) who discovered that smaller farmsteads incline to obtain greater values for milk than greater farmsteads. However, charge dissimilarity inclines to overpower this benefit: greater farmsteads, particularly those with more than 1,000 cows, are accomplishing economic profits while smaller farmsteads are achieving negative net profits. In turn, dissimilarity in profits is encouraging investment decisions that are changing output to greater farmsteads. Several little farmsteads actualize economic revenues in that the rate of output surpasses total charges comprising operational charges, capital retrieval charges, and the cost of capital of the working time. Charges differ with productivity for a given set of material charges and shifts in material values or technological invention could change the charge. Farmsteads in lower size categories are not incorporating the cost of capital of investment in capital and the worker's time. Big dairy farmsteads are profiting revenues in nimiety of the owners' time and capital charges. Many present smaller performances are economically practicable and will continue for a long time, and structural transforms will expend over a prolonged term of time.

Ike and Chuks-Okonta (2014) declared that the designation of the profitability of any commerce company continually contains the concern of the charge structure and the profit result as a natural growth in the commerce. The sum charge of output totaled to N294,207.15. Motivated by this sum, the sum variable charges justified N288,297.82 or 97.99%, causing merely 2.01% to be divided by the fixed charge items. The mean small-scale aquaculture fish grower produced a total profit of N484,140.63 with total surplus of N195,922.82 and a net farmstead profit of N190,013.48. Total surplus is the variation between sum profit and sum variable charge, while net farmstead profit is the variation between total surplus and sum fixed charge and the result implies the profitability of a company. Latruffe and Mann (2015) showed that part-time growers because of their limitation on farmstead labor supply may not engage in highly profitable companies. The fact that part-time growers incline to participate in outputs with low financial profits to labor has been proved with empirical finding when profit per labor was employed as the proxy of financial profits to worker. Growers may be forced to engage in a low productive company for structural causes, for example complicated soil and climatic situations in the farmstead location or low land availability and high land values. High productive companies are labor intensive and reciprocally, those growers forced to select low productive companies would have a nimiety of labor.

Feed charge is the greatest charge in the whole of the agriculture systems. The greatest feed charge in big-scale farmstead is because of the fact that they buy a great volume of condense feeds than smallholder dairy farming. The bought feed charges for comprehensive dairy agriculture systems differ from 93% to 94%. The smallest bought feed charge is studied for BD-2DP that is about 60%. This variance is because of the fact that large and conventional farmsteads largely depend on by-products gathered from public land and buy lower feeds than comprehensive farmsteads. The cooperative community located in the intensive agriculture region provides good veterinary and artificial insemination (AI) amenities with minimum fee that makes the utility cheaper for the intensive growers. The charges for veterinary amenities (treatment and medicine) and AI amenities are the greatest for the little-scale conventional farmsteads and the smallest charges for big-scale intensive farmsteads (US\$4.3 and US\$0.6/100 kg ECM, respectively). The lower charges with regard to big-scale intensive farmsteads are connected with good access to veterinary and AI amenities. The charges connected to machinery usage for dairy farming differ greatly ranging from US\$0.4 in conventional smallholder agriculture systems (BD-2KG) to US\$3.4/100 kg ECM in big-scale extensive system (BD-14DP). The big-scale intensive farmstead has considerably cheaper building charge (0.1 US\$) than big-scale extensive farmstead (US\$2.9/100 kg ECM). The main cause for such dissimilarity is the economy of scale as the big-scale farmstead has the benefits of employing proportionately less space for a higher number of dairy cows resulting in the successful usage of barn capacity. Other charges including insurance, tax, VAT balance, and other dairy materials vary from US\$0.9 to US\$3.6/100 kg ECM. The little-scale conventional system (BD-2KG) has much greater charges for land, worker, and capital that is US\$1.0, US\$16.1, and US\$1.0/100 kg ECM, respectively compared to US\$0.5, US\$4.4, and US\$0.7/100 kg ECM, respectively for land, worker, and capital for BD-22SG. In output factors, worker charge is the single greatest charge items all of the agriculture system. The little-scale farmsteads in the conventional system have greater worker charges than in other agriculture systems. This is because of very high cost of capital from family worker because all the family members are involved in catering for just two cows. In intensive dairy agriculture system of Sirajgonj, both little- and big-scale farmsteads use proportionately less land, because those agriculture systems use primarily bought concentrates over the year, specifically from May to November, when animals are constrained to be kept at home because of yearly floods and extreme rainfall. In connection with the charge of land per 100 kg ECM, the little-scale intensive farmstead has the smallest charge than other farmsteads. The land output is connected to charge and profits, thus, smallholder farmsteads in intensive agriculture system have lower charge for land and subsequently have greater profit from land. The charges of worker, the big-scale intensive farmstead (BD-22SG) pays proportionately much higher salaries for the employed worker than for the family worker. The lower worker usage by BD-22SG generates lower charge per 100 kg ECM and greater worker output. The positive farmstead profit is because of elimination of the cost of capital for land, worker, and capital (Uddin et al., 2010).

Conclusions and Suggestions

The study investigates the association between cost and profit in agriculture activity. The scatter diagram manifested a positive connection between cost (independent variable) and profit (dependent variable) in agriculture activity for the years from 2009 to 2013. For each cost increase in the period of 2009-2012, the model forecasts an increase of returns for every year. The rate of profit earned by farmers every year shifts considerably in relation to the rate of cost in agriculture activity. This study recommends common accounting

principles practices that will exercise bookkeeping and managerial accounting that can enhance farmstead administration and generate beneficial farmstead practices (Argiles & Slob, 2000). The existing instrument is similar to the Proposed International Accounting Standard on Agriculture (PIASA) that acts as principal to the advancements of accounting in European agriculture. The PIASA presents vital advancements. The first advancement connects to the interpretation, estimation, and demonstration of biological assets, farming yield and farming land, all of which are of great significance for the transformative abilities of farming commerce and creation of profit. Biological assets are interpreted as live animals and plants that are managed as an outcome of past occurrences, farming yield as the yielded output of biological assets expecting selling, processing or consuming and farming land as land that is utilized promptly to assist and maintain biological assets in farming activity. Moreover, useful differentiations are made among grown-up and imperfect biological assets and among consumable biological assets (to be yielded) and carrier biological assets (merely bear it for yield). Lastly, the acknowledgement that biological assets are commonly controlled in groups can be very useful in establishing benefit in practice. This instrument interprets obvious and easy estimations for farming assets. The demonstration of financial statements is less rigorous and difficult than in other instruments, for instance, Plan Comptable General Agricole (PCGA). Future research may be conducted on the use of compost fertilizer in increasing agricultural income in contractual farming and non-contractual farming.

References

- Abdul Fatah, F., & Von Cramon-Taubadel, S. (2015). Assessment of comparative advantage of rice production in Malaysia. *Tropentag*, September 16-18.
- Abdullah, F. A., & Abu Samah, B. (2013). Factors impinging farmers' use of agriculture technology. *Asian Social Science*, 9(3), 120-124.
- Argiles, J. M., & Slob, E. J. (2000). *New opportunities for farm accounting*. Retrieved from <http://www.econ.upf.edu/docs/papers/downloads/497.pdf>
- Arshad, N., & Abu Bakar, M. S. (1980). Integrated farming systems: A case study under the Federal Land Development Scheme. In R. S. V. Pullin, & Z. H. Shehadeh (Eds.), *Integrated agriculture-aquaculture farming systems*. Proceedings of the ICLARM-SEARCA Conference on Integrated Agriculture-Aquaculture Farming Systems, Manila, Philippines, August 6-9, 1979.
- Balamurugan, V., & Manoharan, M. (2013). Cost and benefit of investment in integrated broiler farming – A case study. *International Journal of Current Research and Academic Review*, 2(4), 114-123.
- Barrow, C. J., Weng, C. N., & Masron, T. (2009). Issues and challenges of sustainable agriculture in the Cameron Highlands. *Malaysian Journal of Environmental Management*, 10(2), 89-114.
- Becot, F. A., Conner, D. S., Kolodinsky, J. M., & Mendez, E. V. (2014). Measuring the costs of production and pricing on diversified farms: Juggling decisions amidst uncertainties. *Journal of the American Society of Farm Managers & Rural Appraisers*, 174-191. Retrieved from <http://ageconsearch.umn.edu/bitstream/197104/2/408-Becot.pdf>
- Beller, J., & Baier, D. (2013). Differential effects: Are the effects studied by psychologists really linear and homogeneous? *Europe's Journal of Psychology*, 9(2), 378-384. Retrieved from <http://ejop.psychopen.eu/article/view/528/html>
- Brumfield, R. G., Rimal, A., & Reiners, S. (2000). Comparative cost analyses of conventional, integrated crop management, and organic methods. *Production & Marketing Reports*, 10(4), 785-793.
- Buxton, R. (2008). *Statistics: Correlation*. Mathematics Learning Support Centre. Retrieved from <http://www.statstutor.ac.uk/resources/uploaded/correlation.pdf>
- Cloete, A. (2009). *Profitability analysis of abalone farming in Port Nolloth, in the Northern Cape Province, South Africa*. Final Project. Retrieved from <http://www.unuftp.is/static/fellows/document/adeleen09prf.pdf>
- DeRosia, E. D. (2015). *SPSS code for calculating the confidence interval of a Pearson correlation*. Retrieved from http://ederosia.byu.edu/blog/Eric_DeRosia/spss-code-for-calculating-the-confidence-interval-of-a-correlation/
- Fisher, T. (2012). *Cost accounting applied to farming in Southwest Michigan*. Honors Theses, Paper 2320. Retrieved from http://scholarworks.wmich.edu/cgi/viewcontent.cgi?article=3326&context=honors_theses

- Forster, D., Andres, C., Verma, R., Zundel, C., Messmer, M. M., & Mader, P. (2013). Yield and economic performance of organic and conventional cotton-based farming systems - results from a field trial in India. *PLoS ONE*, 8(12), 1-15. doi: 10.1371/journal.pone.0081039
- Graham, M., Milanowski, A., & Miller, J. (2012). *Measuring and promoting inter-rater agreement of teacher and principal performance ratings*. Retrieved from <http://files.eric.ed.gov/fulltext/ED532068.pdf>
- Hassan, A. A., Nwanta, J., & Mohammed, A. (2005). Profitability analysis of poultry egg production in Kaduna State, Nigeria. *Nigerian Veterinary Journal*, 27(1), 8-16.
- Hole, G. (2016). *Research skills one, linear regression, v.10*. Retrieved from users.sussex.ac.uk/~grahamh/.../Linear%20RegressionHandout.docx
- Huat, K. K., & Tan, E. S. P. (1980). Review of rice-fish culture in Southeast Asia. In R. S. V. Pullin, & Z. H. Shehadeh (Eds.), *Integrated agriculture-aquaculture farming systems*. Proceedings of the ICLARM-SEARCA Conference on Integrated Agriculture-Aquaculture Farming Systems, Manila, Philippines, August 6-9, 1979.
- Ike, P. C., & Chuks-Okonta, V. A. (2014). Determinants of output and profitability of aquaculture fish farming in Burutu and Warri South West Local Government areas of Delta State, Nigeria. *Journal of Biology, Agriculture and Healthcare*, 4(28), 102-108.
- Ismail, M. M., Idris, N., & Hassanpour, B. (2013). Technical efficiency estimates of paddy farming in peninsular Malaysia: A comparative analysis. *Annals of Biological Research*, 4(5), 114-118.
- Kamarulzaman, N. H., Husin, H., Mohayidin, M. G., & Enchi, J. (2013). Buyers' preferences among pepper farmers in Sarawak. *Journal of Agribusiness Marketing*, 6, 1-13.
- Klumper, W., & Qaim, M. (2014). A meta-analysis of the impacts of genetically modified crops. *Plos ONE*, 9(11), 1-7. doi: 10.1371/journal.pone.0111629
- Kuboja, N. M., & Temu, A. E. (2013). A comparative economic analysis of tobacco and groundnut farming in Urambo District, Tabora Region, Tanzania. *Journal of Economics and Sustainable Development*, 4(19), 104-111.
- Landers, R. N. (2011). *Computing intraclass correlations (ICC) as estimates of interrater reliability in SPSS*. Retrieved from neocademic.com/2011/11/16/computing-intraclass-correlations-icc-as-estimates-of-interrater-reliability-in-spss/
- Latruffe, L., & Mann, S. (2015). Labour constraints on choosing profitable products for part-time farmers in Swiss agriculture. *BAE Bio-based and Applied Economics*, 4(2), 149-163. doi: 10.13128/BAE-16219
- MacDonald, J. M., O'Donoghue, E. J., McBride, W. D., Nehring, R. F., Sandretto, C. L., & Mosheim, R. (2007). *Profits, costs, and the changing structure of dairy farming*. Economic Research Report Number 47. Retrieved from http://www.ers.usda.gov/media/188030/err47_1_.pdf
- Mailena, L., Shamsudin, M. N., Mohamed, Z. A., & Radam, A. (2013). Optimality of input used, input demand and supply response of rice production: Experience in MADA Malaysia. *Journal of Economics and Sustainable Development*, 4(18), 71-76.
- Mburu, L. M., Gitu, K. W., & Wakhungu, J. W. (2007). A cost-benefit analysis of smallholder dairy cattle enterprises in different agro-ecological zones in Kenya highlands. *Livestock Research for Rural Development*, 19(7). Retrieved from <http://www.lrrd.org/lrrd19/7/mbur19095.htm>
- Miklovicova, J., Miklovicova, S., Ladislav, M., & Irena, F. (2013). Analysis of farms and commercial companies operating activities in Slovakia based on quantification of chosen investments method. *International Journal of Business and Marketing Management*, 1(1), 9-17.
- Mohamed Shaffril, H. A., Asmuni, A., & Ismail, A. (2010). The ninth Malaysian plan and agriculture extension officer competency: A combination for intensification of paddy industry in Malaysia. *The Journal of International Social Research*, 3(10), 450-457.
- Mohayidin, M. G. (1982). Small farmers' decisions: Utility versus profit maximization. *Pertanika*, 5(2), 141-153.
- Mohd Shafiai, M. H., & Moi, M. R. (2015). Financial problems among farmers in Malaysia: Islamic agricultural finance as a possible solution. *Asian Social Science*, 11(4), 1-16.
- Moravian College. (2016). *SPSS introduction – Chapter 8*. Retrieved from http://home.moravian.edu/users/soc/medwh02/0_DATA/ch8/ch8in.pdf
- Najim, M. M. M., Lee, T. S., Haque, M. A., & Esham, M. (2007). Sustainability of rice production: A Malaysian perspective. *The Journal of Agricultural Sciences*, 3(1), 1-12.
- Nemes, N. (2009). *Comparative analysis of organic and non-organic farming systems: A critical assessment of farm profitability*. Natural Resources Management and Environment Department. Rome: Food and Agriculture Organization of the United Nations. Retrieved from <http://www.fao.org/3/a-ak355e.pdf>

- Nkang, N. M., Ajah, E. A., Abang, S. O., & Edet, E. O. (2007). Investment in cocoa production in Nigeria: A cost and return analysis of three cocoa production management systems in the Cross River State cocoa belt. *Journal of Central European Agriculture*, 8(1), 81-90.
- Oni, N. O., Osuntoki, N. B., Rahaman, A., & Amao, O. D. (2013). Profit maximization among dry season vegetable farmers. *African Journal of Mathematics and Computer Science Research*, 6(4), 72-76. doi: 10.5897/AJMCSR 12.056
- Panda, L. N., & Mishra, S. (2013). A project report on "status of dairy farming in Odisha". *International Journal of Innovative Research & Development*, 2(5), 221-233.
- Prenhall.com. (2016). Chapter 13: Simple linear regression. Retrieved from http://www.prenhall.com/behindthebook/0136149901/pdf/Levine_CH13.pdf
- Ramcharan, R. (2006). Regressions: Why are economists obsessed with them? *Finance and Development*, 43(1). Retrieved from <http://www.imf.org/external/pubs/ft/fandd/2006/03/basics.htm>
- Sallih, K. (2005). *Mussel farming in the state of Sarawak, Malaysia: A feasibility study*. Final Project 2005, The United Nations University Fisheries Training Programme. Retrieved from <http://www.unuftp.is/static/fellows/document/kusuadi05prf.pdf>
- Soha, M. E. (2014). The partial budget analysis for sorghum farm in Sinai Peninsula, Egypt. *Annals of Agricultural Sciences*, 59(1), 77-81. doi: 10.1016/j.aos.2014.06.011
- Starkweather, J. (2014). *Module 1. Familiarization with SPSS*. Research and Statistical Support. Retrieved from http://www.unt.edu/rss/class/Jon/SPSS_SC/Module1/SPSS_M1.htm
- Tarleton. (2016). *Basic correlation/regression analysis in SPSS*. Retrieved from faculty.tarleton.edu/.../SPSS%20Tutorials/Basic%20Correlation%20and%20...
- Terano, R., Zainalabidin, M., & Golnaz, R. (2013). Farm management analysis in paddy Granary areas in enhancing on-farm income. *Agris on-line Papers in Economics and Informatics*, 5(1), 73-81.
- Tey, Y., Darham, S., Mohd Noh, A. F., & Idris, N. (2010). Acreage response of paddy in Malaysia. *Agricultural Economics*, 56(3), 135-140.
- Thennakoon, M. T. C. P., & De Silva, D. A. M. (2012). Market window analysis: A case of tobacco, paddy and big onion farmers in Galewela, Sri Lanka. *Sabaragamuwa University Journal*, 11(1), 95-108.
- Uddin, M. M., Sultana, M. N., Ndambi, O. A., Hemme, T., & Peters, K. J. (2010). A farm economic analysis in different dairy production systems in Bangladesh. *Livestock Research for Rural Development*, 22(7). Retrieved from <http://www.lrrd.org/lrrd22/7/uddi22122.htm>
- United States Agency for International Development. (2010). *Profit Zambia impact assessment*. Final Report. Retrieved from http://pdf.usaid.gov/pdf_docs/Pdacr843.pdf
- University of Fribourg. (2016). *Module 2 – Simple linear regression*. Retrieved from <http://www.unifr.ch/appecon/assets/files/Bachelorcourses/einfache-lineare-regression.pdf>
- University of Washington. (2016). *Regression analysis – University of Washington*. Retrieved from <http://staff.washington.edu/glynn/regspss.pdf>
- USF. (2016). *Scatter plots*. Retrieved from <http://www.coedu.usf.edu/main/departments/sped/propel/documents/microsoftword-scatterplots.pdf>
- Virginia Commonwealth University. (2016). *Simple linear regression in SPSS*. Retrieved from http://www.people.vcu.edu/~wsstreet/courses/314_20033/SPSS.Reggression.pdf
- Wong, L. C. Y. (2007). *Development of Malaysia's agricultural sector: Agriculture as an engine of growth?* Retrieved from http://www.isis.org.my/attachments/386_Territorial_Disputes_in_East%20Asia.pdf
- Wongnaa, C. A., & Awunyo-Vitor, D. (2013). Profitability analysis of cashew production in Wenchi municipality in Ghana. *Botswana Journal of Agriculture and Applied Sciences*, 9(1), 19-28.
- Yusoff, N. (2015a). The implementation of food production permanent park and farmers' income. *American International Journal of Research in Humanities, Arts and Social Sciences*, 11(3), 195-200.
- Yusoff, N. (2015b). Food production and management in Malaysia. *International Journal of Humanities and Social Science Invention*, 4(8), 41-48.