

## Economic Viability of Milk Producing Units with intervention of Marketing Strategy in Rural Areas of Uttar Pradesh, India

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**Abstract:** This research is an attempt to explore a step ahead with the previous research. It will also redefine the definition of sustainability which is based on the viability of a unit over the time horizon. The objective of this paper is to determine the economic viability associated issues and impact of marketing strategy namely one (Complete control over the chain of production to marketing), two (Joint arrangement in marketing) and three (Wholesaler and retailer system of marketing) on economic viability of dairy farming. The data has been raised on the basis of a schedule prepared for the purpose from a cross section of the region using snow- ball technique. Analysis of data is based on an Econometric model. The finding of this research paper is that milk producing units in the region are economically viable. But this economic viability is influenced by marketing strategy Therefore, it concluded that the milk producing units opting marketing type one ((Complete control over the chain of production to marketing),) & the milk producing units opting marketing type two ((Joint arrangement in marketing)) in the region are Economically unviable but if the milk producing units opting marketing type three ((Wholesaler and retailer system of marketing),) in the region are Economically viable.

**Key words:** Dairy farming Economic Viability, Marketing strategy, Sustainability.

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### I. Introduction

Dairy farming has become an important non -farm income for millions of rural families and has assumed a most important role in providing employment and income generating opportunity. It is unique in more than one ways. The researches in this area, generally aim at breed improvement, feeding, milking, animal health care, etc. The economic aspect of researches generally evaluates cost and benefits. However, the economic viability of the small milk producing units, which make the bulk of milk supplies, is in question so few the researches in the area generally calculate economic viability on the basis of cost & total revenue of a particular time period. This research is an attempt to explore a step ahead with the previous research. It will also redefine the definition of sustainability which is based on the viability of a unit over the time horizon. The scopes of this study have covered in two phases. First phase is focused on the determination of economic viability and Second phase has studied impact of marketing strategy on economic viability of dairy farming in eastern region of Uttar Pradesh. The objective of this paper is to determine the economic viability associated issues and impact of marketing strategy namely one (Complete control over the chain of production to marketing), two (Joint arrangement in marketing) and three (Wholesaler and retailer system of marketing) on economic viability of dairy farming.

#### The Measurement of Economic Viability: A Review

There are the various empirical research studies which discussed about economic viability in taking different parameters. Measurement of economic viability of a firm depends on aim and objective of researcher. On the basis of literature It may be summarized that economic viability of firms has been measured by firms' net margin (Cain, P. *et al.* 2007), gross margin (Ergano, K & Nurfeta, A. 2006; Olagunju, F.I. *et al.* 2007 ); gross margin ratios (Somda, J. *et al.* 2005), net profit (Fox, P. *et al.* 2005; Aitawade, M.S. *et al.* 2005), Profit (Garrick, D. 2002, Hemalatha, B. *et al.* 2003), profitability ratios (Olagunju, F.I. *et al.* 2007), profitability (Niznikowski, R. *et al.* 2006), net return (Pasa, S.A. 1991; Gupta, J.N. and Agrawal, S.B. 1995; Buruah, D.K. *et al.* 1996; Chandra, A. and Agrawal, S.B. 2000) , and output- input ratio (Aitawade, M.S. *et al.* 2005). Therefore, it is clear that economic viability of a firm has been defined mainly in terms of profit, return and margin ratios. Moreover, maximizing production levels and profit are goals cherished by most smallholder dairy farms. It is thus important to understand the levels of performance that farmers achieve in the current milk production systems, and what the viability is of milk production and the farming system in general (Somda *et al.*, 2005).

Recently milk production in India is facing problem of higher input cost in the form of prices of cattle, cost on cattle feed, increase in labor cost, hence it is imperative to understand economic viability in the long run. Hence this study aims to understanding different parameters of economic viability that firm's capacity to sustain over the long period of time depends mainly on its economic viability. The economic viability measures the viability in economic terms viz. profit (profit ability to expand and grow).

#### Objective

To meet the aim of the study following objectives are proposed

1. To Examine and to estimate economic viability measures the viability in economic terms viz. profit (profit ability to expand and grow), given the impact of moderating variables viz. Weighted Capital, Weighted Workers, Quantity of Output and Herd Size, on viability measures.
2. To analysis the economic viability of the unit affected by the type of marketing; namely one (Complete control over the chain of production to marketing), two (Joint arrangement in marketing) and three (Wholesaler and retailer system of marketing).

### II. Methodology

The study aims at understanding the viability issue specific to a region; therefore, it relies on primary data as no secondary data is available pertaining to the variables essential for study. The variables are of qualitative and quantitative nature both therefore a qualitative- quantitative- mix method is used. The data have been raised on the basis of a schedule prepared for the purpose from a cross section of the region using snow- ball technique.

**The Time Consideration**

A firm earning profit at a point of time may not be called viable or a firm incurring losses at some point of time may not be termed as unviable. If a firm is earning profit but the profit seems to be decreasing over period of time, it may incur losses in long term. If the losses of a loss-making firm are decreasing over period of time, it may earn profit in the long term. The rate of rate of change indicates the capability of the firm to continue a rate of change. Time is an important dimension to study change and direction of change. But this component has been neglected in the study of viability. Therefore, the direction of its change over period of time and the force behind this direction i.e. rate of rate of change are very important dimension of viability study that have been unexplored till now. The direction and magnitude of the three indicators taken together give different viability consideration.

Measurement of impact of time has always been a question. **Time has been measured in years, months or hours as an independent existence that only affects the variable as an exogenous variable and is not affected by the variable itself. However, the relativity of time measure enable us to believe that time should be measured in terms of the concerned variable itself for latent permissible rate of change.** A change not only depends on time but also on the magnitude of different factors of the system. For example, a firm having huge capital will need less time period to obtain a certain output level than that by a firm having less capital. Similarly time period required for obtaining certain change in output cannot be same for different size of herd, number of labourers, and level of output of dairy firm. These factors moderate the impact of time.

To segregate the impact of moderating variable from the impact of time on viability measures three concepts have been coined – **Absolute Viability, Relative Viability and Conditional Relative Viability.** *Absolute viability* is defined as the rate of rate of change in return in absence of moderating variables; *Relative viability* is defined as the rate of rate of change in return, incorporating impact of moderating variables together with time on the rate of rate of change in return; *Conditional relative viability* is defined as the rate of rate of change in return in presence of moderating variables but not incorporating impact of moderating variables the rate of rate of change in return. The relative viability measure captures the impact of both, moderating variables and time, on the rate of rate of change in viability measure. It is the best representative of the real scenario therefore; it has been accepted as the best among all three concepts.

**Variables and Measurement**

Variables	Definition	Measurement
<b>Viability Measures</b>		
Economic Viability	Financial capability of firm that enables it to grow and expand.	Captured by Profit ( $\pi$ ) : $\pi, d\pi/(\pi*dt), d^2\pi/dt^2$ Profit has been measured as difference between value of output (i.e. quantity of output and price)and total cast (Short term Capital + Average Annual diet + Annual Value of House + Annual Value of Animals + Annual Value of firm Machine + Annual Value of Dairy machines + Annual Expenditure on Water + Annual Wage)
<b>Moderator Variables</b>		
Weighted Capital	Capital Weighted by Type of Ownership	Annual Capital weighted by type of ownerships i.e. single, family, group, cooperative and government (weight assigned as 5, 4, 3, 2, 1 respectively)
Weighted Workers	Workers weighted by education level	Workers weighted by education level i.e. MA/MSc, BA/BSc, Intermediate, High School, Upper Primary and Primary (weight assigned as 7, 6, 5, 4, 3, 2, 1 respectively)
Quantity of Output Size of Herd		Output in terms of quantity No. of Animals owned by firm
<b>Qualitative Variables</b>		
<b>Situational Factors</b>	Marketing situation opted by firm	Firms are divided into three categories viz. firms opting marketing types one or two or three

**The Econometric Model**

In the present study, it has been proposed that viability of the Milk Producing Units is captured by rate of rate of change of the viability measure. Since, the nature of the data is cross sectional and it has been observed on only two points of time i.e. initial and present, find out rate of rate of change, change in viability measure has been regressed with change in time. The coefficient of change in time gives the rate of rate of change of the viability measure. The mathematical expression for above mention relationship is following-

$$dY = A + BdT \quad \dots\dots\dots (1)$$

Where,  $dY$  is change in viability measure and  $dT$  is change in time.

It has been found in general that the regression of model (1) gives a very weak explanation of variation shows, as the Adjusted R<sup>2</sup> is very small. It has indicated change in time is not sufficient enough to explain variation of data. As it has been discussed above that effect of time on performance is moderated by some other variables. In

the present study Wcapital<sup>1</sup>, Wworkers<sup>2</sup>, OutputQ<sup>3</sup> and Herdsize<sup>4</sup> have been considered as moderator variables. The moderators variables are tried one by one to add to the explanatory power are tried. The intermediary models are-

$$dY = \alpha_0 + \alpha_1 W_{capital} + \beta_0 dT + \beta_1 (W_{capital} * dT) \dots\dots (2)$$

$$dY = \alpha_0 + \alpha_1 W_{capital} + \alpha_2 W_{worker s} + \beta_0 dT + \beta_1 (W_{capital} * dT) + \beta_2 (W_{worker s} * dT) \dots\dots (3)$$

$$dY = \alpha_0 + \alpha_1 W_{capital} + \alpha_2 W_{worker s} + \alpha_3 OutputQ + \beta_0 dT + \beta_1 (W_{capital} * dT) + \beta_2 (W_{worker s} * dT) + \beta_3 (OutputQ * dT) \dots\dots (4)$$

$$dY = \alpha_0 + \alpha_1 W_{capital} + \alpha_2 W_{worker s} + \alpha_3 OutputQ + \alpha_4 Herdsize + \beta_0 dT + \beta_1 (W_{capital} * dT) + \beta_2 (W_{worker s} * dT) + \beta_3 (OutputQ * dT) + \beta_4 (Herdsize * dT) \dots\dots (5)$$

### III. Result and Discussion

#### Relationship between Change in Profit and Time

**Table 1** studies the relationship between change in profit and time period for the Milk Producing Units. Model (1) shows a weak fit for the data (Adj. R<sup>2</sup> = 0.140). The minimum value of change in profit is 0.378 (P = 0.078). Impact of change in time period on profit change is negative (-7892.072). This finding may be generalized as the estimated of the coefficient different from zero. Since, the fit for data is weak; therefore moderating variables have been incorporated into the model to improve upon it.

Models (2), (3), (4) and (5) show that fit for data has improved due to the incorporation of moderating variables one by one (i.e. Wcapital, Wworkers, OutputQ and Herdsize respectively). Since model (5) shows highest fit for data (Adj R<sup>-2</sup> = 0.649), therefore, it has been selected for further explanation.

Model (5) shows that minimum value of change in profit is 0.392 (P=0.164). The impact of time period on change in profit is positive (12474.024). Meaning there by that change in profit will increase over period of time. This finding may be generalized as level of significance is very low (P= 0.004). The impact of Wcapital on change in profit is positive (1.718). Meaning there by that change in profit will increase with increase in Wcapital. This finding may not be generalized as level of significance is high (P=0.284). The effect of Wworkers on change in profit is positive (52969.452). It infers that change in profit will increase with increase in Wworkers. This finding may not be generalized as level of significance is high (P=0.369). The impact of outputQ on change in profit is negative (6375.390). It indicates that with increase in OutputQ, the change in profit will decrease. This finding may be generalized as level of significance is low (P=0.012). The impact of Herdsize on the change in profit is negative (2320.716). Meaning there by that with increase in Herdsize, the change in profit will decrease. The finding may not be generalized as level of significance is high (0.391). *F.I. Olagunju et al.(2007)* show that production of catfish is highly profitable and it is related to size of the enterprise. Jacques *Somda et al (2005)* suggested that a large stock of cattle does not guarantee increased viability, as small holders may face management and resource allocation problems. *Sukanta Biswas, A. Goswami and A. k. Mazumadar (2005)*. This study finds out that dairy farming is more acceptable among the small farmers, rather the small farmers depend more on dairy farming for their livelihood, whereas other categories of landholders took up livestock farming as subsidiary means of earning. Our findings do not substantiate them in general rather these findings have a perspective that need to be taken into account.

The impact of covariance variables – dTWcapital and dTWworkers, on the change in profit is negative (-0.628 and -24728.125 respectively), meaning there by that due to increase in Wcapital and/or Wworkers the time period required to obtain given change in profit, will decrease. The finding may be generalized as level of significance is low for both (0.001 and 0.000 respectively). The effect of dTOutputQ and dTHerdsize on the change in profit is positive (175.872 and 563.225 respectively). It infers that due to increase in OutputQ and/or Herdsize, the time period required to obtain given change in profit, will increase. The finding for dTOutputQ may not be generalized as level of significance for it is high (P=0.389) but, the finding for dTHerdsize may be generalized as level of significance for it is low (P = 0.021).

#### Impact of Marketing type one on Economic Viability

**Table 1.1** studies the relationship between change in profit and time period for the Milk producing Units opting marketing type one. Model (1) shows a weak fit for the data (R<sup>2</sup> = 0.405, Adj. R<sup>2</sup> = 0.401). The minimum value of change in profit is 1.717 (P = 0.000). The impact of time period on change in profit is negative (- 21147.966). Meaning there by that change in profit will decrease over period of time. This finding may be generalized as level of significance is zero. Since the fit for the data is weak, therefore, moderating variables have been incorporated to improve the fit for data.

Models (2), (3), (4) and (5) show that fit for data has improved due to the incorporation of moderating variables one by one i.e. Wcapital, Wworkers, OutputQ and Herdsize respectively. Model (5) shows highest fit for the data (Adj. R<sup>2</sup> = 0.920), therefore, it has been selected for further analysis.

<sup>1</sup>It is proposed that types of ownership of the unit affect the availability of resources to it. Weight assigned to capital weighted by type of ownership captures this concept. Therefore, weighted capital has been applied for calculation.

<sup>2</sup> As the education level of workers affects their efficiency. Therefore number of workers has been weighted by their level of education to capture the role of dexterity of the number.

<sup>3</sup> Quantity of output is the direct outcome of functioning of production agents of the Milk Producing Units. Its magnitude moderates the effect of time on the viability measures.

<sup>4</sup> Size of herd is the prime producing agent of the Milk Producing Units. Its magnitude has significant impact on the effect of time on the viability measures.

Model (5) shows that the mean value of change in profit is 1.096 ( $P = 0.008$ ). The impact of time period on the change in profit is negative (-19749.126). Meaning there by that the change in profit will decrease over period of time. This finding may be generalized as level of significance is low ( $P = 0.019$ ).

The impact of Wcapital on change in profit is positive (74.255). Meaning there by that with increase in Wcapital change in profit will increase. This finding may be generalized as level of significance is zero. The impact of Wworkers, OutputQ and Herdsize is negative (-159837.826, -106025.571 and -107509.529 respectively). Meaning there by that with increase in Wworkers, OutputQ and Herdsize, change in profit will decrease. The finding for Wworkers may not be generalized as level of significance is high ( $P = 0.251$ ) but the finding for OutputQ and Herdsize may be generalized because level of significance for both is zero.

The impact of dTWcapital and dTWworkers on change in profit is negative (-8.599 and -4347.311 respectively). It indicates that due to increase in Wcapital and/or Wworkers, the time period required to obtain given change in profit will decrease. This finding may be generalized for dTWcapital as level of significance for it is zero, but it may not be generalized for dTOutputQ because level of significance for it is high ( $P = .664$ ). The effect of dTOutputQ and dTHerdsize on the change in profit is positive (14686.847 and 10556.461 respectively). Meaning t here by that due to increase in OutputQ and Herdsize, the time period required to obtain given change in profit will increase. This finding may be generalized as level of significance is zero for both.

Table 2 shows that mean value of profit of the milk producing units opting marketing type one is negative (-2444.8378) and the rate of change in their profit is positive (0.0029). Meaning there by that these units is incurring loss and the loss is increasing. The absolute, relative and conditional viabilities are negative (-21147.966, -19745 and -19749.126). As the relative viability measure is more real than others, it may be said that units' loss is increasing decreasingly. Therefore, it can be concluded that the milk producing units opting marketing type one in the region are economically unviable.

### **Impact of Marketing Type two on Economic Viability**

**Table 1.2** studies the relationship between change in profit and time period for the Milk producing Units opting marketing type two. Model (1) shows a weak fit for data (Adj.  $R^2 = 0.003$ ). The mean value of change in profit is -1.143 ( $P = 0.041$ ). The impact of time period on the change in profit is positive (3271.870). Meaning there by that change in profit will increase over period of time. This finding may not be generalized as level of significance is high ( $P = 0.281$ ). Since Model (1) shows a weak fit, therefore, moderating variables have been included to improve the fit for data.

Models (2), (3) and (4) show that fit for data has improved due to the incorporation of moderating variables i.e. Wcapital, Wworkers and OutputQ respectively. Model (5) shows that due to the incorporation of Herdsize as moderating variable, the fit for data has not been changed but some variables have been excluded from regression, Model (4) shows highest fit for data (Adj.  $R^2 = 1.000$ ), therefore, it has been selected for further analysis.

Model (4) shows that the minimum value of change in profit is 6.049. The impact of time period on change in profit is positive (144471.729). Meaning there by that the change in profit will increase over period of time. This finding may be generalized as t-value is 6.466 rejecting the hypothesis of equality of the coefficient with the zero. The effect of Wcapital and Wworkers on change in profit is negative (-18.166 and -2131131.132 respectively). It indicates that with increase in Wcapital and Wworkers, the change in profit will decrease. This finding is generalized. The impact of OutputQ on the change in profit is positive (21713.596). Meaning there by that with increase in OutputQ the change in profit will increase. This finding may be generalized.

The impact of dTWcapital and dTWworkers on the change in profit is positive (1.396 and 68053.969 respectively). It indicates that the time period required to obtain the given change in profit will increase due to increase in Wcapital and Wworkers. This finding may be generalized. The impact of dTOutputQ on the change in profit is negative (-15767.808). Meaning there by that the time period required to obtain the given change in profit will decrease due to increase in Output Q. This finding may be generalized.

Table 2 shows that mean value of profit of the milk producing units opting marketing type two is negative (-20124.3750) and the rate of change in their profit is positive (0.1875). Meaning there by that these units is incurring loss and the loss is increasing. The absolute, relative and conditional viabilities are positive (3271.870, 144452.8 and 144471.729 respectively). As the relative viability measure is more real than others, it may be said that the units' loss is increasing increasingly. Therefore, it can be concluded that the milk producing units opting marketing type two in the region are economically unviable.

### **Impact of Marketing Type three on Economic Viability**

**Table 1.3** studies the impact of marketing Type three on Economic Viability. Model (1) shows a weak fit for data (Adj.  $R^2 = 0.062$ ). The minimum value of change in profit is 0.346 ( $P = 0.077$ ). The impact of time period on the change in profit is negative (-2803.967). It indicates that the change in profit will decrease over period of time. This finding may be generalized as level of significance is low ( $P = 0.001$ ). Since fit for the data is weak, therefore, moderating variables have been incorporated to improve the fit for data.

Models (1), (3), (4) and (5) shows that fit for data has improved due to the incorporation of moderating variables one by one i.e. Wcapital, WWorkers, OutputQ and Herdsize respectively. Model (5) shows highest fit for the data ( $R^2 = 0.709$ ), therefore it has been selected for further analysis.

Model (5) shows that the mean value of change in profit is 1.909 ( $P = 0.000$ ). The impact of time period on the change in profit is positive (29857.371). Meaning there by that change in profit will increase over period of time. This finding may be generalized as the estimate of the coefficient is different from zero. The impacts of Wcapital and OutputQ on the change in profit are positive (0.080 and 29913.541 respectively). It indicates that with increase in Wcapital and OutputQ, the change in profit will increase. The finding may not be generalized for Wcapital as level of significance is high ( $P=0.964$ ) but may be generalized for OutputQ as level of significance is zero. The effect of Wworkers and Herdsize on the change in profit is negative (-986839.450 and -34354.578 respectively).

Meaning there by that change in profit will decrease with increase in Wworkers and Herdsize. The finding may be generalized as level of significance is zero for both.

The impact of dTWcapital and dTOutputQ on the change in profit is negative (-1.859 and -5696.687 respectively). It indicates that with increase in Wcapital and OutputQ, the time period required to obtain given change in profit will decrease. This finding may be generalized as level of significance is zero for both. The effect of dTWworkers and dTHerdsize on the change in profit is positive (152545.041 and 4342.001 respectively). Meaning there by that with increase in Wworkers and Herdsize, the time period required to obtain given change in profit will increase. The finding may be generalized as level of significance is zero.

Table 2 shows that mean value of profit of the milk producing units opting marketing type three is negative (-8771.6667) and the rate of change in their profit is also negative (-1.8961). Meaning there by that these units is incurring loss and the loss is decreasing. The absolute viability is negative (-2803.967) but relative and conditional viabilities are positive (29853.23 and 29857.371 respectively). As the relative viability measure is more real than others, it may be said that the units' loss is decreasing increasingly. Therefore it can be concluded that the milk producing units opting marketing type three in the region are economically viable.

#### **IV. Conclusions**

It can be concluded that milk producing units in the region are Economical viable. The economic viability of the unit affected by Under the divide of three types of marketing strategy, the economic viability of the unit affected by the type of marketing; namely one (Complete control over the chain of production to marketing), two (Joint arrangement in marketing) and three (Wholesaler and retailer system of marketing), only the units opting for the strategy three are economical viable.

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**Appendix**

**Table 1 Profit: Relationship between Change in Profit and Time Period**

Model	A	B	Constant	dI	Wcapital	Wworkers	OutputQ	Herdsiz	dTWcapital	dTWworkers	dTOutputQ	dTHerdsiz	R <sup>2</sup>	Adj R <sup>2</sup>	SEE
1	0.378	-7892.07	.378 ----- .078	-7892.072 -378 0.00									.143	.140	2.85684833
2	0.377381	-7015.44	.580 ----- .073	-7015.315 -336 0.04	-.741 -.040 .628				-.050 -.035 .813				.146	.138	2.86034962
3	-0.26931	7128.668	.610 ----- .008	7130.205 .341 -.131 0.021	-2.441 -.110 .455	-41538.186			-.164 -.113 .240	-17560.746 -.814 0.00			.639	.634	1.86422163
4	-0.20011	15551.87	.756 ----- .001	15554.693 .745 0.060 0.455	1.125 .051 -.840	11551.926	-8064.901		-.584 -.403 0.002	-22831.344 -1.058 0.750	63.314 .039		.651	.644	1.83945582
5	1.971061	12471.56	.392 ----- .164	12474.024 .597 0.092 0.004	1.718 .140 -.201 0.284	52969.452	-6375.390	-3008.992 -.045 0.391	-.628 -.434 0.001	-24728.125 -1.146 0.00	175.872 .154 0.389	563.225 .154 0.021	.658	.649	1.82630837

**Table 1.1 Relationship between Change in Profit and Time for Marketing Type One**

Model	A	B	Constant	dI	Wcapital	Wworkers	OutputQ	Herdsiz	dTWcapital	dTWworkers	dTOutputQ	dTHerdsiz	R <sup>2</sup>	Adj R <sup>2</sup>	SEE
1	1.717	-21148	1.717 ----- 0.00	-21147.966 -636 0.00									.405	.401	3.09237691
2	3.285449	-15254.1	3.285449 ----- 0.944	-15251.803 -459 0.001	11.665 .504 0.00				-.926 -509 0.010				.475	.464	2.92438948
3	0.850617	7732.793	0.850617 ----- 0.157	7736.411 -534 233 0.021	5.981 -145 -.631	-51684.108			-.914 -502 0.001	-14514.086 -.685 0.036			.787	.780	1.87537866
4	-2.53208	2843.541	2.53208 ----- 0.498	2843.035 0.86 1.993 0.785	45.894 -1.845 0.00	-659338.894	-68839.202		-5.615 -3.086 0.00	26038.297 1.229 0.026	8891.694 2.068 0.00		.872	.866	1.46443737
5	-2.64171	-19745	2.64171 ----- 0.098	-19749.126 -594 0.019	74.255 3.208 0.251	-159837.826	106025571	107509529 -801 0.00	-8.599 -4.727 0.00	-4347.311 -205 0.664	14686.847 3.415 0.00	10556.461 1.359 0.00	.925	.920	1.12661820

**Table 1.2 Relationship between Change in Profit and Time for Marketing Type Two**

1	-1.143	3271.87	1.143 ----- 0.041	3271.870 146 281									.021	.003	2.01663467
2	-3.17482	-13006.2	3.17482 ----- 0.00	-13010.766 -582 0.00	-5.609 -.498 0.003				2.014 1.397 0.00				.658	.638	1.21478226
3	-3.7531	-10212	3.7531 ----- 0.00	-10216.747 -457 0.022	-3.383 -.300 0.146	-286555.180			1.679 1.165 0.00	12546.872 764 337			.684	.652	1.19149190
4	-4.63726	1444528	4.63726 ----- 0.00	14447.729 6.466	-18.166 -1.612	2131131132	21713.596 993		1.396 .968	68053.969 4.146	-15767.808 -6.822		1.000	1.000	.00000000
5	-4.91689	7709167	4.91689 ----- 0.00	77099.591 3.451	6.596 -1.136	-368822.441	40871.894 -1.869	3933.730 113	-4.99 -3.46			-4472.670 -2.444	1.000	1.000	.00000000

**Table 1.3 Relationship between Change in Profit and Time for Marketing Type Three**

1	0.346	-2803.97	0.346 ----- 0.077	-2803.967 0.001									.068	.062	1.92323846
2	0.027974	-2160.6	0.027974 ----- 0.00	-2160.834 -201 0.04	-7.451 -.568 0.00				.097 .111 0.09				.336	.322	1.63439879
3	-0.36022	6276951	0.36022 ----- 0.00	6277.433 584 0.027	-8.843 -.522 0.00	-65037.796			.196 .225 -.241	-21254.400 -.881 0.005			.502	.484	1.42637778
4	-2.49794	1702316	2.49794 ----- 0.00	17024.810 1.585 0.004	-9.866 -.753 0.00	-357996.629	13142.003		.478 .549 0.026	24462.509 1.013 0.069	-2347.987 -3.266 0.00		.560	.538	1.34989152
5	-4.12467	2985323	4.12467 ----- 0.00	29857.371 2.779 0.00	.080 -2.078 0.964	-986839.451	29913.541 1.657	-34354.578 -756	-1.839 -2.137 0.00	152545.041 6.320 0.00	-5696.687 -7.923 0.00	4342.001 1.804 0.00	.709	.690	1.10478359

**Table 2 the Economic Viability Measure: Profit**

		Marketing		
		One	Two	Three
Profit		-24447.8378	-20124.3750	-8771.6667
Profit Rate		.0029	.1875	-1.8961
Rate of Profit Rate	Absolute Viability	-21147.966	3271.870	-2803.967
	Relative Viability	-19745	144452.8	29853.23
	Conditional Relative Viability	-19749.126	144471.729	29857.371