CHAIN SYSTEM THE FORMULA WITH INCREASING COMMISSION

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ABSTRACT

In this paper I describe the formula which is useful to determine the profit or loss in chain business having variable commission. I also describe a formula which is helpful to calculate the profit for a participant according to number of members made participants by him in his chain.

Keyword-To Evaluate Total Profit Or Loss, Commission,

I. INTRODUCTION

I had published a article named CHAIN SYSTEM THE FORMULA recently in INTERNATIONAL JOURNAL OF MATHEMATICS TRENDS AND TECHNOLOGY in this paper we can find profit chain business system but in which the commission remains stable at all the stages.

I had also published a article named COMPLEX CHAIN SYSTEM THE FORMULA recently in INTERNATIONAL JOURNAL OF SCIENCE AND RESEARCH in this paper we can find profit of chain business in which not every participant necessarily make other members participant but the commission remains stable.

I had also published a article named CHAIN SYSTEM THE FORMULA WITH CHANGEABLE COMMISSION recently in INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH   AND EDUCATION in which every participant makes his own members in his chain and they get commission can be changed at different stages.

I had also published a article named COMPLEX CHAIN SYSTEM THE FORMULA WITH CHANGEABLE COMMISSION recently in INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY RESEARCH AND DEVELOPMENT in which not every participant necessarily to make other members in his chain and they get commission can be changed at different stages.

But now in this paper I describe a formula *Chain System The Formula With Increasing Commission* , for this formula we can find profit of chain business in which every participant makes his own members in his chain and they get commission can be changed at different stages. This also helps to find that a company is gaining or losing something with the chain business.

The members which participate in chain they can find their profit easily.

Procedure of commission change used in formula-

I will like to clear it with a example that is- Suppose if a person completes a task and gets A% commission of

starting price and then if second task is also completed by him then he will get { $\left(\dfrac{A*P}{100} \right)$ + A}

commission(where P is starting price) and { $\left(\dfrac{A*P}{100} \right)$ + 2A} commission for next task and so on.

The formulae are-

1.   Formula which find the chain's stages through a number of members those participate in the chain system

Total member = $\dfrac{(G^n - 1)}{(G - 1)}$

- "G" shows the type of group mean number of members which is to be participated by a member this his chain, that is a member can make only "G" number of members the participant.

- "n" number of stage.

2.   Formula for total profit =

$$\left(\frac{G^n-1}{G-1}\right)P - \left(\frac{G^n-G}{G-1}\right)\left(\frac{D}{(G-1)^2} + \frac{C}{(G-1)}\right) + (n-1)\left(\frac{DG}{(G-1)^2} + \frac{C}{(G-1)} + \frac{(n-2)D}{2(G-1)}\right)$$

- "P" shows the starting price mean the starting investment by each member.
- "C" showing starting commission mean the first profit gained a member after completing his first task.
- "D" Showing number of percent mean if the first profit gained a member after completing his first task like if he get A% commssion of starting price THEN $D = A$

3.   Formula for evaluating the commission= $(n-1)C + \left[\dfrac{(n-1)(n-2)}{2}\right]D$

II. METHODOLOGY

- If every member has put "G" member and every "G" member has to put "G" member toward then:-

- Total member = $\left(\dfrac{G^n-1}{G-1}\right)$

- Total profit =

- $$\left(\frac{G^n-1}{G-1}\right)P - \left(\frac{G^n-G}{G-1}\right)\left(\frac{D}{(G-1)^2} + \frac{C}{(G-1)}\right) + (n-1)\left(\frac{DG}{(G-1)^2} + \frac{C}{(G-1)} + \frac{(n-2)D}{2(G-1)}\right)$$
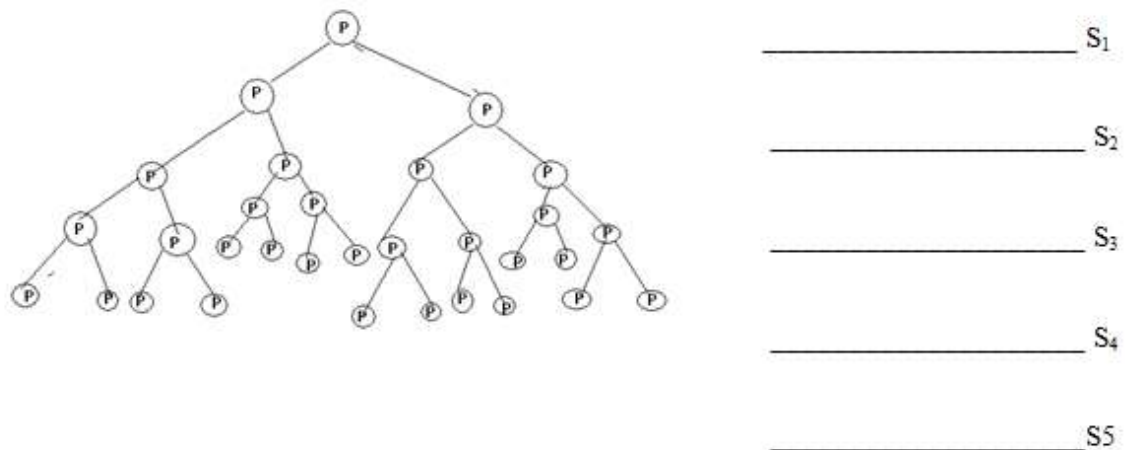
Where "P" is starting Price

"C" is commission

"n" is no. of Stages

"D" is no. Of %

- For example:- If every member has put 2-2 member for his chain, starting price is 500 Rs., Starting commission is 20% of starting Price, Total member is 31, then find out the profit?

Ans:-

Since Starting Price = 500 RS

Starting Commission = 20% of 500 RS

Then Starting Commission = 100 RS

Profit of S1 = 500 Rs

Profit of S2 = 2(500) -100 = 900 Rs

Profit of S3 = 4(500)-2(100)-120 = 1680 Rs

Profit of S4 = 8(500)-400-240-140 = 3220 Rs

Profit of S5 = 16(500)-800-480-280-160 = 6280 Rs

Total Profit = 12580 Rs.

By his methodology:-

Total member = 31

We know Total member = $\left(\dfrac{G^n - 1}{G - 1} \right)$

Since G = 2; then $\left(\dfrac{2^n - 1}{2 - 1} = 31 \right)$

$\Rightarrow$ $2^n = 32$

$\Rightarrow$ n = 5

We know total profit =

$$\left(\frac{G^n - 1}{G - 1} \right)P - \left(\frac{G^n - G}{G - 1} \right)\left(\frac{D}{(G-1)^2} + \frac{C}{(G-1)} \right) + (n-1)\left(\frac{DG}{(G-1)^2} + \frac{C}{(G-1)} + \frac{(n-2)D}{2(G-1)} \right)$$

Since G = 2; P = 500; n=5; C = 100; D=20

Total profit = $\left(\dfrac{2^5-1}{2-1}\right)500 - \left(\dfrac{2^5-2}{2-1}\right)\left(\dfrac{20}{(2-1)^2} + \dfrac{100}{(2-1)}\right) + (5-1)\left(\dfrac{20(2)}{(2-1)^2} + \dfrac{100}{(2-1)} + \dfrac{(5-2)20}{2(2-1)}\right)$
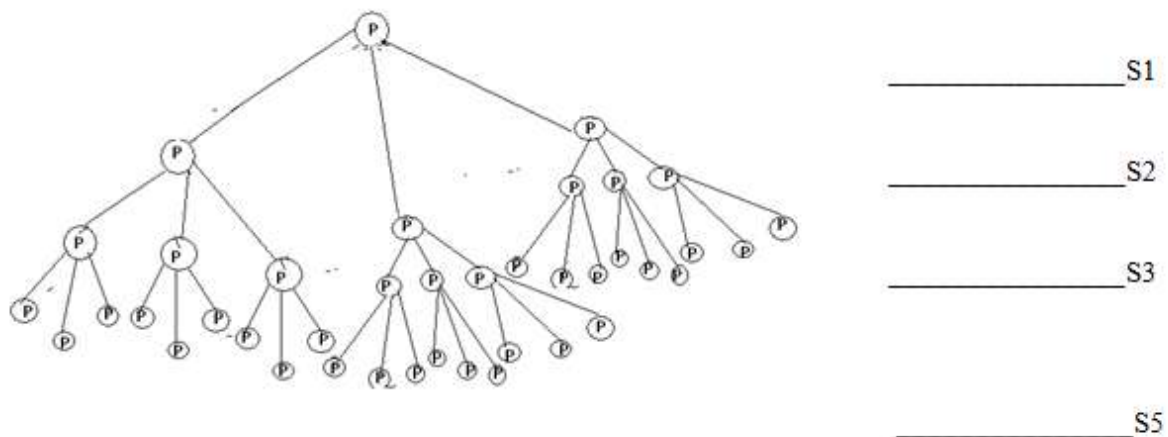
= 15500 - (30)(20+100) + (4)(40+100+30)

= 15500 – 3600 + 680

= 12580 Rs. Ans…………..

- For example:- If every member has put 3-3 member for his chain Starting price is 800 RS, Starting commission is 25 of Starting Price ; total member is 40. then find out the total profit?

Ans:-

Since Starting Price = 800 RS

Starting Commission = 25% of 800 RS

Then Starting Commission = 200 RS

Profit of S1 = 800 Rs

Profit of S2 = 3(800) -200 = 2200 Rs

Profit of S3 = 9(800)-3(200)-225 = 6375 Rs

Profit of S4 = 27(800)-9(200)-3(225)-250 = 18875 Rs

Total Profit = 28250 Rs.

By this Methodology:-

Total member = 40

We know total member = $\left(\dfrac{G^n-1}{G-1}\right)$

Since G = 3, then $\left(\dfrac{3^n-1}{3-1} = 40\right)$

⇨ $3^n = 81$

$\Rightarrow$ n = 4

We know total profit =

$$\left(\frac{G^n-1}{G-1}\right)P-\left(\frac{G^n-G}{G-1}\right)\left(\frac{D}{(G-1)^2}+\frac{C}{(G-1)}\right)+(n-1)\left(\frac{DG}{(G-1)^2}+\frac{C}{(G-1)}+\frac{(n-2)D}{2(G-1)}\right)$$

Since G = 3; n=4; P = 800; C=200; D=25;

Now total profit =

$$\left(\frac{3^4-1}{3-1}\right)(800)-\left(\frac{3^4-3}{3-1}\right)\left(\frac{25}{(3-1)^2}+\frac{200}{(3-1)}\right)+(4-1)\left(\frac{(25)3}{(3-1)^2}+\frac{200}{(3-1)}+\frac{(4-2)25}{2(3-1)}\right)$$

$$= (40)\,(800) -(39)(\left(\frac{25}{4}\right)+100) + 3(\left(\frac{75}{4}\right)+100+\left(\frac{25}{2}\right))$$
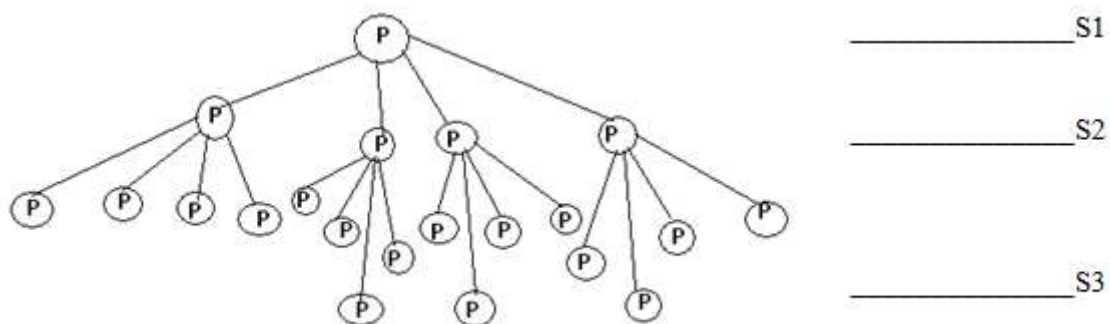
$$= 32000 - \left(\frac{16575}{4}\right)+\left(\frac{1575}{4}\right)$$

= 32000- 3750

= 28250 RS Ans…………

- For example:- If every member has put 4-4 member for his chain Starting price is 400, Starting commission is 20 % of starting price; total member is 21. then find out the total profit?

Ans:-

Since Starting Price = 400 RS

Starting Commission = 20% of 400 RS

Then Starting Commission = 80 RS

Profit of S1 = 400 Rs

Profit of S2 = 4(400) - 80 = 1520 Rs

Profit of S3 = 16(400)-4(80)-100= 5980 Rs

Total Profit = 7900 RS

- By this methodology:-

Total member = 21

We know total member = $\left(\dfrac{G^n - 1}{G - 1} \right)$

Since G = 4, then $\left(\dfrac{4^n - 1}{4 - 1} = 21 \right)$

$\Rightarrow \qquad 4^n = 64$

$\Rightarrow \qquad n = 3$

We know that total profit =

$$\left(\frac{G^n - 1}{G - 1} \right) P - \left(\frac{G^n - G}{G - 1} \right) \left(\frac{D}{(G-1)^2} + \frac{C}{(G-1)} \right) + (n-1) \left(\frac{DG}{(G-1)^2} + \frac{C}{(G-1)} + \frac{(n-2)D}{2(G-1)} \right)$$

Since G = 4; n = 3; P = 400; C = 80; D= 20;

Now total profit =

$$\left(\frac{4^3 - 1}{4 - 1} \right)(400) - \left(\frac{4^3 - 4}{4 - 1} \right) \left(\frac{20}{(4-1)^2} + \frac{80}{(4-1)} \right) + (3-1) \left(\frac{(20)4}{(4-1)^2} + \frac{80}{(4-1)} + \frac{(3-2)20}{2(4-1)} \right)$$

$$= (21)(400) - (20) \left(\left(\frac{20}{9} \right) + \left(\frac{80}{3} \right) \right) + (2) \left(\left(\frac{80}{9} \right) + \left(\frac{80}{3} \right) + \left(\frac{10}{3} \right) \right)$$
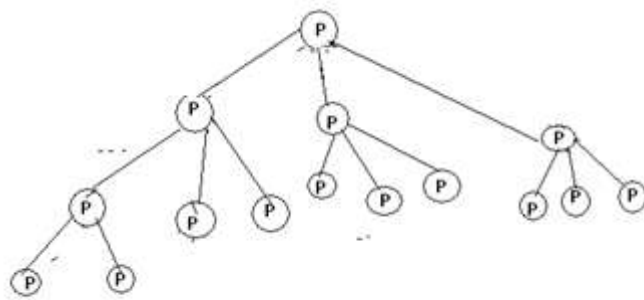
$$= 8400 - \left(\frac{5200}{9} \right) + \left(\frac{700}{9} \right)$$

$$= 8400 - 500$$

= 7900 RS Ans…………….

- For example:- If every member has put 3-3 member for his chain Starting price is 1000, Starting commission is 20% of starting price ; total member is 15. then find out the total profit?

Ans:-

Since Starting Price = 1000 RS

Starting Commission = 20% of 1000 RS

Then Starting Commission = 200 RS

Profit of S1 = 1000 Rs

Profit of S2 = 3(1000) -200 = 2800 Rs

Profit of S3 = 9(1000)-3(200)-220= 8180 Rs

Profit of S4 is = 2(1000) = 2000 Rs

Total Profit = 13980 Rs.

- By this methodology:-

Total member = 15

We know total member = $\left(\dfrac{G^n - 1}{G - 1} \right)$

Since G = 3, then $\left(\dfrac{3^n - 1}{3 - 1} = 15 \right)$

⇨ $3^n = 31$

If this does not express in power of "3" then a smaller number is choosen which can be expressed in power of "3" completely like 27;

⇨ $3^n = 27$

⇨   n = 3

"R" is equal to difference between them

R = 31-27 = 4

=> R = 4

We know that total profit =

$$\left(\frac{G^n-1}{G-1}\right)P - \left(\frac{G^n-G}{G-1}\right)\left(\frac{D}{(G-1)^2} + \frac{C}{(G-1)}\right) + (n-1)\left(\frac{DG}{(G-1)^2} + \frac{C}{(G-1)} + \frac{(n-2)D}{2(G-1)}\right)$$

Since G = 3; n = 3; P = 1000; C = 200; D=20;

Now some part of total profit =

$$\left(\frac{3^3-1}{3-1}\right)(1000) - \left(\frac{3^3-3}{3-1}\right)\left(\frac{20}{(3-1)^2} + \frac{200}{(3-1)}\right) + (3-1)\left(\frac{(20)3}{(3-1)^2} + \frac{200}{(3-1)} + \frac{(3-2)20}{2(3-1)}\right)$$

= 13000 – (12)(5+100)+(2)(15+100+5)

= 13000 –1260+240

= 11980 Rs   _____(1)

Now find out I = $\dfrac{R}{G-1}$

Now we arises three cases:-

Case 1:- If I < G then (IP) add in (1)

Case 2:- If I = G then (IP-C) add in (1)

Case 1:- If I > G then find out $\dfrac{I}{G} = X.$ __

and arises two cases more

Case 1:- If X < G then add (IP-XC) in (1)

Case 2:- If X≥ G then find out $\dfrac{X}{G} = Y.$ ____

       Then add [IP-XC-Y(C+R)] in (1)

Now I = $\dfrac{R}{G-1} = \dfrac{4}{3-1} = 2$
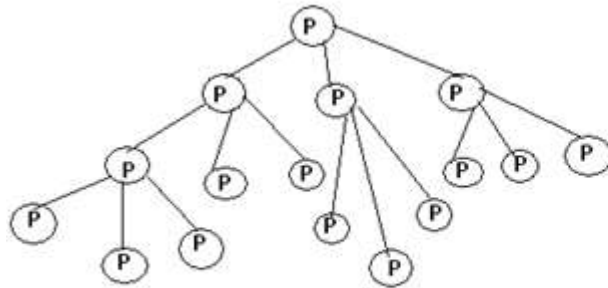
Since 2 < 3

       I < G

Then add 2(1000) in (1)   _____(By Case:1)

Total profit = 11980 + 2000 = 13980 Rs   Ans………….

- For example:- If every member has put 3-3 members for his chain, starting Price is 700 Rs. , Starting commission is 25% of starting price, total member is 16 then find out the total profit?

Since Starting Price = 700 RS

Starting Commission = 25% of 700 RS

Then Starting Commission = 175 RS

Profit of S1 is = 700 Rs

Profit of S2 is = 2100-175 = 1925 Rs

Profit of S3 is = 6300-3(175)-200 = 5575 Rs

Profit of S4 is = 2100-175 = 1925 Rs

Total profit = 10125 Rs

- By this methodology:-

Total member = 16

We know total member = $\left(\dfrac{G^n - 1}{G - 1} \right)$

Since G = 3, then $\left(\dfrac{3^n - 1}{3 - 1} = 15 \right)$

$\Rightarrow$ $3^n = 33$

$\Rightarrow$ R = 6

$\Rightarrow$ $3^n = 27$

$\Rightarrow$ n = 3

We know that some part of profit =

$$\left(\frac{G^n - 1}{G - 1} \right)P - \left(\frac{G^n - G}{G - 1} \right)\left(\frac{D}{(G-1)^2} + \frac{C}{(G-1)} \right) + (n - 1)\left(\frac{DG}{(G-1)^2} + \frac{C}{(G-1)} + \frac{(n-2)D}{2(G-1)} \right)$$

Since G = 3; n = 3; P = 700; C = 175; D=25;

Now some part of total profit =

$$\left(\frac{3^3-1}{3-1}\right)(700) - \left(\frac{3^3-3}{3-1}\right)\left(\frac{25}{(3-1)^2} + \frac{175}{(3-1)}\right) + (3-1)\left(\frac{25(3)}{(3-1)^2} + \frac{175}{(3-1)} + \frac{(3-2)25}{2(3-1)}\right)$$

$$= (13)\,(700) - 12\left[\frac{25}{4} + \frac{175}{2}\right] + (2)\left(\frac{75}{4} + \frac{175}{2} + \frac{25}{4}\right)$$

$$= 9100 - (75 + 1050) + (50 + 175)$$

= 8200 Rs _____(1)

Now $I = \dfrac{R}{G-1} = \dfrac{6}{2} = 3$

$\qquad I = 3 \qquad\qquad$ Since I = G

Then [3(700)-175] add in (1) _____(By Case:2)

Total profit = 8200 + 1925 = 10125 Rs   Ans…………………..

- For example:- If every member has put 4-4 members for his chain, starting price is 500 Rs. , Starting commission is 40% of starting price, total member is 33 then find out the total profit?
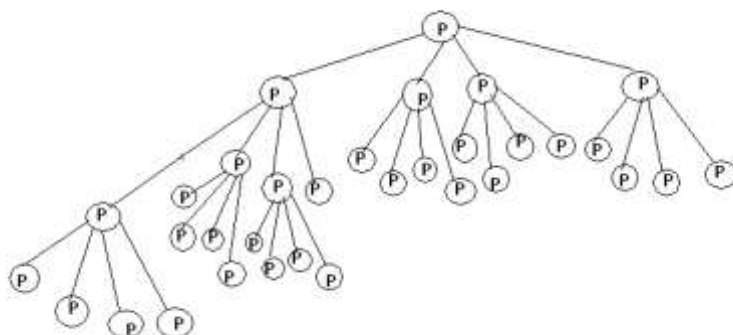
Since Starting Price = 500 RS

Starting Commission = 40% of 500 RS

Then Starting Commission = 200 RS

Profit of S1 is = 500 Rs

Profit of S2 is = 2000-200 = 1800 Rs

Profit of S3 is = 8000-800-240 = 6960 Rs

Profit of S4 is = 6000-600 = 5400 Rs

Total profit = 14660 Rs

- By this methodology:-

    Total member = 33

We know total member = $\left(\dfrac{G^n - 1}{G - 1}\right)$

Since G = 4, then $\left(\dfrac{4^n - 1}{4 - 1} = 33\right)$

$\Rightarrow$ $4^n = 100$

$\Rightarrow$ $R = 36$

$\Rightarrow$ $4^n = 64$

$\Rightarrow$ $n = 3$

We know that total profit =

$$\left(\frac{G^n - 1}{G - 1}\right)P - \left(\frac{G^n - G}{G - 1}\right)\left(\frac{D}{(G-1)^2} + \frac{C}{(G-1)}\right) + (n-1)\left(\frac{DG}{(G-1)^2} + \frac{C}{(G-1)} + \frac{(n-2)D}{2(G-1)}\right)$$

Since G = 4; n = 3; P = 500; C = 200; D= 40;

Now some part of total profit =

$$\left(\frac{4^3 - 1}{4 - 1}\right)(500) - \left(\frac{4^3 - 4}{4 - 1}\right)\left(\frac{40}{(4-1)^2} + \frac{200}{(4-1)}\right) + (3-1)\left(\frac{(40)4}{(4-1)^2} + \frac{200}{(4-1)} + \frac{(3-2)40}{2(4-1)}\right)$$

$$= 10500 - (20)\left(\left[\frac{40}{9}\right] + \left[\frac{200}{3}\right]\right) + (2)\left(\left[\frac{160}{9}\right] + \left[\frac{200}{3}\right] + \left[\frac{20}{3}\right]\right)$$

$$= 10500 - (20)\left[\frac{640}{9}\right] + (2)\left[\frac{820}{9}\right]$$

$$= 10500 - 1240$$

$$= 9260 \text{ Rs} \underline{\qquad\qquad\qquad}(1)$$

Now $I = \dfrac{R}{G - 1} = \dfrac{36}{4 - 1} = 12$

     $12 > 3$ Since I > G

Then we find out $\dfrac{I}{G} = ?$

$$\frac{I}{G} = \frac{12}{4} = 3$$

Since 3 < 4

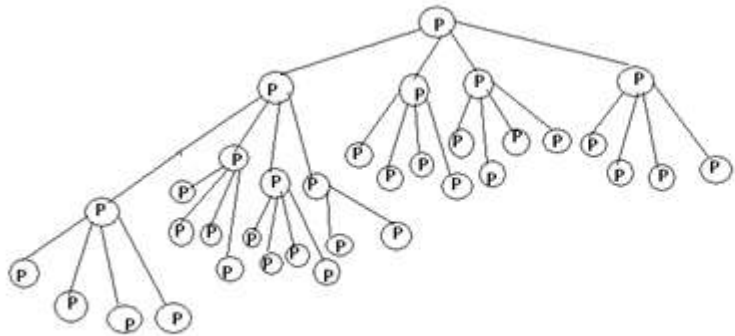Then add IP – 3C in (1) $\underline{\qquad\qquad}$ (By Case:3.1)

Mean (12)(500)-3(200)

= 6000-600

     = 5400 Rs

Add in (1)

Total profit = 9260 + 5400 = 14660 Rs   Ans…………………….

- For example:- If every member has put 4-4 members for his chain, starting price is 1000 Rs. , Starting commission is 50% of starting price, total member is 35 then find out the total profit?

Since Starting Price = 1000 RS

Starting Commission = 50% of 1000 RS

Then Starting Commission = 500 RS

Profit of S1 is = 1000 Rs

Profit of S2 is = 4(1000)-500 = 3500 Rs

Profit of S3 is = 16(1000)-4(500)-550 = 13450 Rs

Profit of S4 is = 14(1000)-3(500) = 12500 Rs

Total profit = 30450 Rs   Ans………………….

- <u>By this methodology</u>:-

Total member = 35

We know total member = $\left(\dfrac{G^n - 1}{G - 1} \right)$

Since G = 4, then $\left(\dfrac{4^n - 1}{4 - 1} = 35 \right)$

⇨ $4^n = 106$

⇨   R = 42

⇨ $4^n = 64$

⇨   n = 3

We know that total profit =

$$\left(\frac{G^n-1}{G-1}\right)P-\left(\frac{G^n-G}{G-1}\right)\left(\frac{D}{(G-1)^2}+\frac{C}{(G-1)}\right)+(n-1)\left(\frac{DG}{(G-1)^2}+\frac{C}{(G-1)}+\frac{(n-2)D}{2(G-1)}\right)$$

Since G = 4; n = 3; P = 1000; C = 500; D=50;

Now some part of total profit =

$$\left(\frac{4^3-1}{4-1}\right)(1000)-\left(\frac{4^3-4}{4-1}\right)\left(\frac{50}{(4-1)^2}+\frac{500}{(4-1)}\right)+(3-1)\left(\frac{50(4)}{(4-1)^2}+\frac{500}{(4-1)}+\frac{(3-2)50}{2(4-1)}\right)$$

$$= 21000 - (20)\left(\left[\frac{50}{9}\right]+\left[\frac{500}{3}\right]\right)+(2)\left(\left[\frac{200}{9}\right]+\left[\frac{500}{3}\right]+\left[\frac{25}{3}\right]\right)$$

$$= 21000 -(20)\left[\frac{1550}{9}\right]+(2)\left[\frac{1775}{9}\right]$$

=21000-3050

= 17950 Rs   _____(1)

Now $I = \dfrac{R}{G-1} = \dfrac{42}{4-1} = 14$

    14 > 4   Since I > G

       Now $\dfrac{I}{G} = \dfrac{14}{4} = 3.5$

Since 3 < 4

    X<G

Then add in (1) (IP-XC) _____(By Case:3.1)

Mean 14000-3(500)
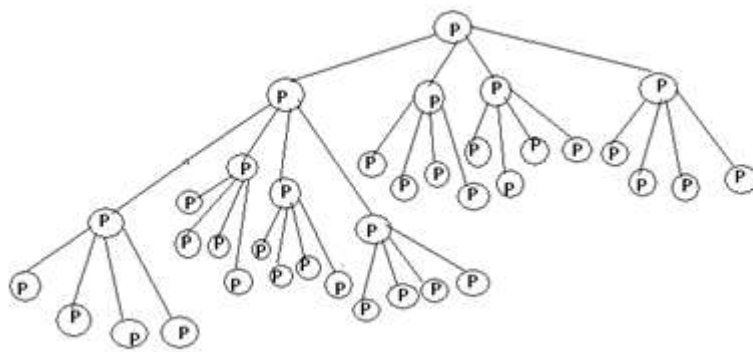
= 14000-1500

    = 12500 Rs

Add in (1)

Total profit = 17950 + 12500 = 30450 Rs. Ans……………………….

- For example:- If every member has put 4-4 members for his chain, starting price is 800 Rs. , Starting commission is 60% of starting price, total member is 37 then find out the total profit?

Since Starting Price = 800 RS

Starting Commission = 60% of 800 RS

Then Starting Commission = 480 RS

Profit of S1 is = 800 Rs

Profit of S2 is = 4(800)-480 = 2720 Rs

Profit of S3 is = 16(800)-4(480)-540 = 10340 Rs

Profit of S4 is = 16(800)-4(480)-540 = 10340 Rs

Total profit = 24200 Rs

- By this methodology:-

$$\text{Total member} = 33$$

We know total member = $\left(\dfrac{G^n - 1}{G - 1} \right)$

Since G = 4, then $\left(\dfrac{4^n - 1}{4 - 1} = 33 \right)$

$\Rightarrow$ $\quad$ $4^n = 112$

$\Rightarrow$ $\quad$ $R = 48$

$\Rightarrow$ $\quad$ $4^n = 64$

$\Rightarrow$ $\quad$ $n = 3$

We know that total profit =

$$\left(\frac{G^n - 1}{G - 1} \right) P - \left(\frac{G^n - G}{G - 1} \right) \left(\frac{D}{(G-1)^2} + \frac{C}{(G-1)} \right) + (n-1) \left(\frac{DG}{(G-1)^2} + \frac{C}{(G-1)} + \frac{(n-2)D}{2(G-1)} \right)$$

Since G = 4; n = 3; P = 800; C = 480; D=60;

Now some part of total profit =

$$\left(\frac{4^3-1}{4-1}\right)(800) - \left(\frac{4^3-4}{4-1}\right)\left(\frac{60}{(4-1)^2} + \frac{480}{(4-1)}\right) + (3-1)\left(\frac{(60)4}{(4-1)^2} + \frac{480}{(4-1)} + \frac{(3-2)60}{2(4-1)}\right)$$

$$= 16800 - (20)\left(\left[\frac{60}{9}\right] + \left[\frac{480}{3}\right]\right) + (2)\left(\left[\frac{240}{9}\right] + \left[\frac{480}{3}\right] + \left[\frac{10}{1}\right]\right)$$

$$= 16800 - \left[\frac{30000}{9}\right] + \left[\frac{3540}{9}\right]$$

$$= 16800 - 2940$$

$$= 13860 \text{ Rs} \qquad \underline{\hspace{3cm}}(1)$$

Now $I = \dfrac{R}{G-1} = \dfrac{48}{4-1} = 16$

$\qquad$ 16 > 4 $\qquad\qquad$ Since I > G

Now $\dfrac{I}{G} = \dfrac{16}{4} = 4$

$\qquad\qquad$ X=4

Since 4>3

So   X>G

Then $\dfrac{X}{G} = \dfrac{4}{4} = 1$

So Y=1

Then add (IP–XC–2YC) in (1) $\underline{\hspace{2cm}}$(By Case:3.2)

Mean (16)(800)-4(480)-(1)(540)

= 10340 Rs

Add in (1)

Total profit = 13860 + 10340

$\qquad\qquad\qquad$ = 24200 Rs

- For example:- If every member has put 4-4 members for his chain, starting price is 2000 Rs., Starting commission is 40% of starting price, total member is 41 than find out the total profit?
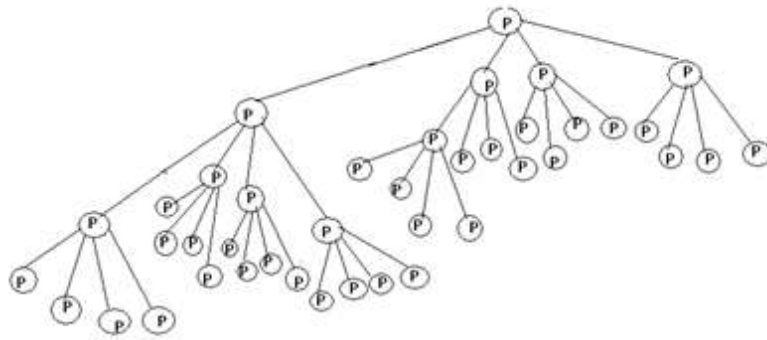
_____ S1

_____ S2

_____ S3

_____ S4

Since Starting Price = 2000 RS

Starting Commission = 40% of 2000 RS

Then Starting Commission = 800 RS

Profit of S1 is = 2000 Rs

Profit of S2 is = 4(2000)-800 = 7200 Rs

Profit of S3 is = 16(2000)-4(800)-840 = 27960 Rs

Profit of S4 is = 20(2000)-5(800)-840 = 35160 Rs

Total profit = 72320 Rs.

- <u>By this methodology</u>:-

Total member = 41

We know total member = $\left(\dfrac{G^n - 1}{G - 1} \right)$

Since G = 4, then $\left(\dfrac{4^n - 1}{4 - 1} = 41 \right)$

$\Rightarrow \qquad 4^n = 124$

$\Rightarrow \qquad R = 60$

$\Rightarrow \qquad 4^n = 64$

$\Rightarrow \qquad n = 3$

We know that total profit =

$$\left(\frac{G^n - 1}{G - 1} \right)P - \left(\frac{G^n - G}{G - 1} \right)\left(\frac{D}{(G - 1)^2} + \frac{C}{(G - 1)} \right) + (n - 1)\left(\frac{DG}{(G - 1)^2} + \frac{C}{(G - 1)} + \frac{(n - 2)D}{2(G - 1)} \right)$$

Since G = 4; n = 3; P = 2000; C = 800; D=40;

Now some part of total profit =

$$\left(\frac{4^3-1}{4-1}\right)(2000)-\left(\frac{4^3-4}{4-1}\right)\left(\frac{40}{(4-1)^2}+\frac{800}{(4-1)}\right)+(3-1)\left(\frac{40(4)}{(4-1)^2}+\frac{800}{(4-1)}+\frac{(3-2)(40)}{2(4-1)}\right)$$

$$= 42000 - (20)\left(\left[\frac{40}{9}\right]+\left[\frac{800}{3}\right]\right)+(2)\left(\left[\frac{160}{9}\right]+\left[\frac{800}{3}\right]+\left[\frac{20}{3}\right]\right)$$

$$= 42000 - (20)\left[\frac{2440}{9}\right]+(2)\left[\frac{2620}{9}\right]$$

$$= 42000 - 4840$$

$$= 37160 \text{ Rs} \qquad \underline{\hspace{4cm}}(1)$$

Now $I = \dfrac{R}{G-1} = \dfrac{60}{4-1} = 20$

$\qquad$ 20 > 4 $\qquad\qquad$ Since I > G

$\qquad\qquad$ Now $\dfrac{I}{G} = \dfrac{20}{4} = 5$

$\Rightarrow \qquad$ X = 5

$\Rightarrow \qquad$ 5 > 4

$\Rightarrow \qquad$ X > G

$\qquad$ Then $\dfrac{X}{G} = \dfrac{5}{4} = 1.25$

Then Y = 1

Then add in (1) {(IP – XC – Y(C+D)} $\underline{\hspace{2.5cm}}$(By Case:3.2)

Mean (20(2000) – 5(800) -840)

= 35160 add in (1)
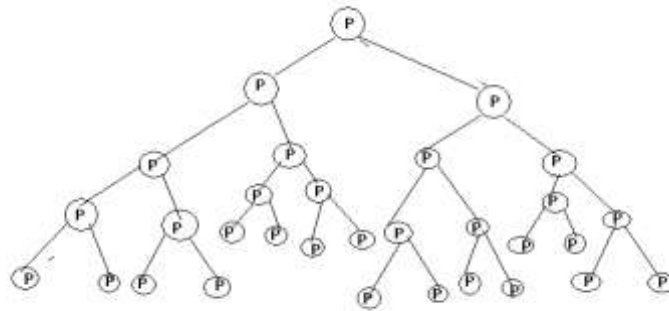
Total profit = 37160+35160= 72320 Rs Ans………………..

For calculating commission = (n-1)C+$\left[\dfrac{(n-1)(n-2)}{2}\right]D$

For example: If a member has a task of making 2 participants and he have now a total of 31 participants in his chain, if Starting price is 1000 Rs., starting commission is 60% of starting price,then find out the total commission = ?

Sol.

Ts

Since Starting Price = 1000 RS

Starting Commission = 60% of 1000 RS

Then Starting Commission = 600 RS

Since total member is 31

We know total member = $\left(\dfrac{G^n - 1}{G - 1} \right)$

Since G = 2; then $\left(\dfrac{2^n - 1}{2 - 1} = 31 \right)$

⇨ $2^n = 32$

⇨ $n = 5$

We know total commission = $(n-1)C + \left[\dfrac{(n-1)(n-2)}{2} \right] D$

Since n=5, C=600, D=60,

$$= (5\text{-}1)600 + \left[\dfrac{(5-1)(5-2)}{2} \right] 60$$

$$= (2400) + (360)$$

$$= 2760 \text{ Rs.} \quad \text{Ans} \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots$$

II. CONCLUSION

With this formula we can very easily find the profit or loss earned by a company with varying commission. It is very useful to Multiple National Marketing Companies which do this type of business and this type of companies can find easily their profit or loss.

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