

$$(P)MP > = (1 - P)ML$$



EINSTEINS OF DISTRIBUTION

Scientists use Quantitative Analysis to Revolutionize Distribution

Marginal Analysis and Statistical Probability of Sale

Single Period Optimum Stocking Decision - The Newsboy Problem

Solved: **The NGS/6000 Magazine Category Management System**

The optimal copies draw decision, using marginal analysis, occurs at the point where the benefits derived from increasing the number of copies by one more copy are less than the cost for that copy. In other words, the most profitable number of copies is when the profit from the last copy sold is equal to or greater than the lost if the last copy remains unsold.

Example: You buy a magazine for .70 and sell it for \$1.00 so you make .30 gross profit on a copy. In our formula we use "mean average deviation" to forecast a sale of 37.5 copies

$$MP > = ML$$

MP is the Marginal Profit (your selling price - your cost)

ML is the Marginal Loss (your handling and/or carrying cost)

Copies to be Sold	Probability of This Net Sale	Probability of Selling These Copies
35	0.10	1 to 35 100%
36	0.15	36th 90%
37	0.25	37th 75%
38	0.25	38th 59%
39	0.15	39th 25%
40	0.10	40th 10%
41	0.00	41st or more 0%

Cost are limited to what it cost you to handle the copies (pick, deliver, stack, merchandise, and return) and carrying cost (the float between when you pay and when you get paid).

Formula Calculation

$$P > = 10/30 + 10$$

$$P > = .25$$

Marginal Analysis is when we are dealing with probabilities of occurrence. Then we are looking at expected profits and expected losses. By introducing probabilities into our equation we formulate:

Copies Sale	Probability of that Sale	Probability of Selling These Copies	Expected Profit of that Copy	Expected Loss of that Copy	Net
35	0.10	35th 100%	.30	.00	.30
36	0.15	36th 90%	.27	.01	.26
37	0.25	37th 75%	.225	.025	.20
38	0.25	38th 50%	.15	.05	.10
39	0.15	39th 25%	.075	.075	.00
40	0.10	40th 10%	.03	.09	-.06
41	0.00	41st or more 0%	.00	.10	-.10

$$(P)MP > = (1 - P)ML$$

P is the probability of a copy being sold

1 - P is the probability of the copy NOT being sold

Solving for P we get $P > = ML/MP + ML$ which says that we should keep increasing the number of copies of draw so long as the probability of selling that copy is greater or equal to the ratio of $ML/MP + ML$.

This example indicates that after 39 copies you start losing money on each copy so the optimum draw quantity should be 39.

Using copy range percent multiplier protects rack space for the title.

Put a \$1.6 million dollar investment to work for you

