A Short Lesson On Marginal Productivity

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Marginal Product

- Marginal product is the additional output produced from hiring an additional worker. For instance, suppose I have a small pie company and I hire one worker that can produce a total of 5 pies. If I hire an additional worker, then total pie production increases to 8 pies. This means that the marginal product of the second worker is 3 pies (8 – 5). If I hire three workers and the total pie production is 11 pies, then the marginal product of the third worker is 2 pies.

Sample Table

Workers	Pies	Marginal Productivity
1	5	5
2	8	3
3	10	2
4	11	1

Example Continued

- As my firm hires more workers, the marginal product of each worker is decreasing (last column). This concept is known as diminishing marginal product of labor. This occurs because I am hiring more workers without increasing capital. So if my firm has just one oven, the extra labor can only increase output by so much.

Marginal Revenue

- As a firm, my goal is to maximize profits. Profits = Revenue – Costs. I would like to maximize revenue while minimizing costs. Each pie that is sold will bring my firm more revenue. Assume that everything that is produced is sold. If the price of each pie is $10 and I sell 5 pies, then my firm has a revenue of $50 (5x10). If I hire the first worker, my firm will gain $50. If I hire the second worker, then my firm will earn an additional $30. This concept is known as Marginal Revenue product. It is the Marginal Product multiplied by price.

Sample Table

Workers	Pies	Marginal Productivity	Price of each Pie	Marginal Revenue Product
1	5	5	$10	$50
2	8	3	$10	$30
3	10	2	$10	$20
4	11	1	$10	$10

Example Conclusion

- Now my firm has to decide how many workers to hire. Suppose I have to pay each worker $15. Should I hire the first worker? Yes! The first worker brings in $50 which is greater than the wage. Should I hire the fourth worker? No! The fourth worker brings in $10 while costing the firm $15. It would result in a loss. The firm should hire 3 workers.
- This concept illustrates how the price of output can determine labor decisions.