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Thank you to **IDEXX Laboratories** for their financial support to reproduce the conference proceeding book.

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Logo Design
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based on the original design by Dr. Robert Dunlop

Changes in cost and revenue scales in present production streams

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In a simple economic model of current swine production farms, the objective is to maximize the difference between revenues and costs. This can be expanded to emphasize throughput by focusing on the number of pounds sold multiplied by the difference between the costs per pound and the revenue per pound. It is well recognized that the changes in the costs have increased markedly particularly feed and facility costs. This has resulted in a marked increase in emphasis on cost control, both through improvements in efficiencies, but also in the search for alternative feedstuffs.

It is almost universally accepted that though there may be some moderation in costs of production, the return to profitability will be achieved through an increase in the sales price for pigs. Thus not only will future production be characterized by increased costs of production, but also increased revenues. It is my thesis that the swine industry is much better equipped to address the effects of high feed costs than capitalize on the opportunities with higher pig prices.

It is very useful to break up the changes in costs and revenues by external, design and implementation effects. External changes, for instance on the price of corn are large, but impossible to manipulate. These external changes can be a force to modify the designs for production, such as the formulation of feeds or the designs of feeders. The failure to achieve planned outcomes such as timely delivery of feed or survival of pigs also affects the bottom line. The variation in the latter category of implementation can often exceed design effects, and yet are often not addressed. Moreover, failures to implement correctly will have even greater effects as the value of pigs increase.

I would argue that the changes in scale of costs and revenues results in an emphasis not only on costs and revenues, but also throughput. Let's re-examine the formula for profitability:

Profit = # **Lbs** (Revenue/# **Lbs** – Costs/# **Lbs**)

The variable of lbs shows up multiple times in this formula and has multiple effects. The first is the classical throughput of fact, of increasing the number of pounds sold for a unit of fixed costs. For instance we can look at this formula for a batch of pigs in a wean to finish barn. Throughput can be affected by three factors. It can be increased above target by selling overweight pigs. Overweight pigs are defined as those that are sold at a weight at which marginal gains do not cover marginal costs. In most systems this category is relatively small, and has been controlled more tightly since feed costs have increased. Conversely, there are three categories of pigs that result in reductions of throughput. They are pigs that died, those that are culled, and those that are sold below their optimal weight. This constitutes the greatest part of the variation in throughput seen.

The other effects of throughput are recognized when we admit that we do not have many true variable costs when the unit of production is pounds of pig or pork. The feed is often portrayed as a true variable cost, but this is far from true. For instance, a deviation from planned output due to mortality not only has an effect upon the number of pounds sold, it has a direct effect upon the costs per pound sold, as the remaining marketed pigs must carry more feed costs. Likewise, the number of culls and light weights affects the revenue per pound sold as these are discounted.

Thus we find that, as throughput for a fixed production stream decreases we see the effects in the costs per lb sold and the revenue per pound sold. It is quite consistent that, as we look at the implementation problems in a system, with a fixed design objectives and externally determined costs and revenues, throughput is the major factor. This is illustrated in Figure 1 where we see that it makes up 71% of the variation of profitability for a group when analyzed across 200 closeouts for 2007.

Throughput management is thus very important, but it will be magnified by changes in revenue. As pigs become more valuable we will see even a larger proportion of the profitability addressed by throughput. Figure 2 takes the same data set as in Figure 1, but it increases the base revenue by 25%. The proportion of the variation of profitability due to throughput is then increased from 71% to 82%.

This signals new opportunities and new threats and pig production under a new economic model. As the revenue side increases, failure to maintain populations and to maximize their value will cause real problems. The challenge will be to maintain and maximize these populations where possible. It will also entail reevaluating the quality of pigs entering the production stream with more aggressive segregation of those with high likelihoods of failure.

Figure 1: Proportion of variability of profits

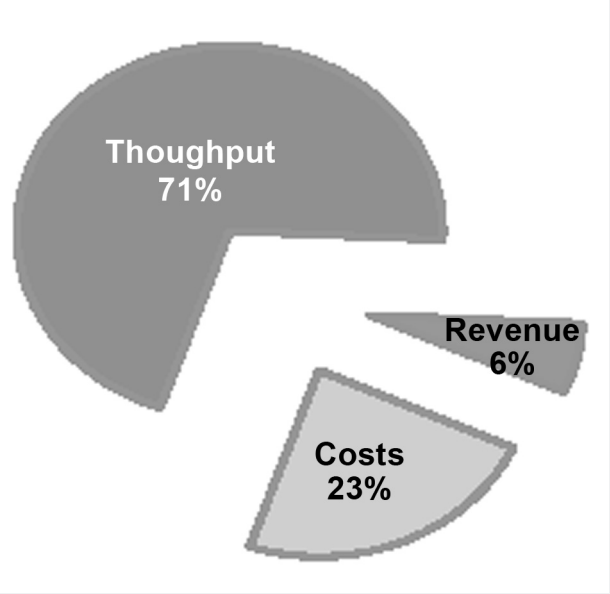

Figure 2: Proportion of variability of profits when revenue is increased