The Economics of Supply, Demand and Total Revenue

In economics the law of demand states that as the price of a good or service increases, the demand for that good or service decreases (and vice versa). This is fairly self-evident to anyone transacting in the economy – the lower the price of something, the greater the number of people that find it affordable and desirable and decide to purchase it.

A consideration that any practice must take into account when wishing to increase fees is whether this will lead to fall in client numbers sufficient to offset the increase in fees. In order to establish this, one needs to take a **purely business standpoint i.e. one wishes to maximise revenue not clients (patients).** Inevitably the realities of veterinary practice, particularly in the case of welfare practices, frequently impose on the profession an obligation to maximise clients (patients) which, as will be illustrated, negatively affects total revenue and profitability.

In this illustration the practice supplies a service which is demanded by the clients. The higher the price of the service, the lower will be the quantity demanded as seen in the table below.

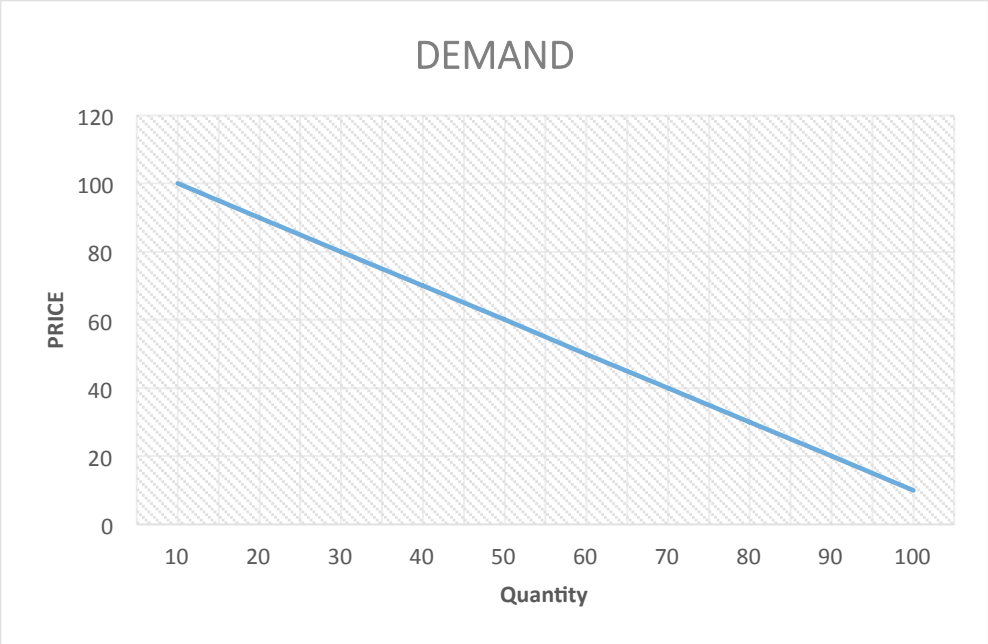
Table 1

Price	Quantity	Total Revenue=PQ
10	100	1000
20	90	1800
30	80	2400
40	70	2800
50	60	3000
55	55	3025
60	50	3000
70	40	2800
80	30	2400
90	20	1800
100	10	1000

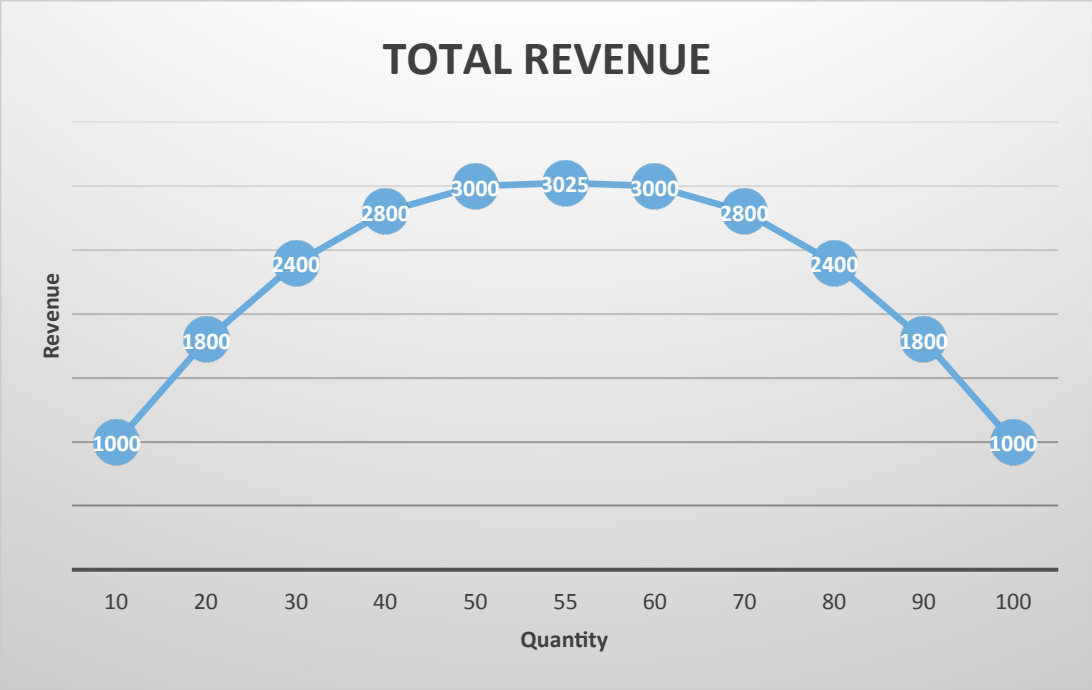
From the table above, if a practice prices a certain procedure at R 100, it can expect to sell ten of that service. Similarly, if it were to price the procedure at R 10, it could expect to sell 100 of that procedure.

Revenue received is quantity sold multiplied by the price, so in this particular example the total revenue that the practice receives from the procedure is the same irrespective of this pricing, being R 1,000 (either R 100 x 10 or R 10 x100). However if the practice were to price the procedure at R 55 it would sell 55 procedures, bringing the revenue received to R 3,025.

This can be illustrated in the demand graph below:



The total revenue curve derived from the demand curve above looks like the graph below.



The aim of any practice from a purely business point of view is find the price that results in the quantity demanded that maximises total revenue. In order to do this, the practice should pitch its price at R 55. Unfortunately things are not always that simple. How does the practice know where total revenue is maximised? The practice needs to determine if the price elasticity of demand is elastic (in which case a certain percentage change in price results in a greater but opposite percentage change in quantity demanded) or inelastic (in which case a certain percentage change in price results in a smaller but opposite change in quantity demanded). This can be read from both the total revenue and demand curves but is easier illustrated in the table above: If one increases the price from R 10 to R 20 (a 100% increase), quantity demanded falls from 100 units to 90 units (a 10%

decrease). **Because the percentage increase in price exceeds the percentage decrease in quantity demanded, total revenue increases from R 1000 to R 1800.** This is price inelastic demand. Price elastic demand can be seen when the percentage increase in the price results in a greater percentage decrease in quantity demanded and total revenue falls, such as when the price increases from R 90 to R 100 (an 11% increase) and quantity demanded falls from 20 units to 10 units (a 50% decrease). The latter leads to a fall in total revenue from R 1800 to R 1000.

Unfortunately there is no easy way to determine if demand is price elastic or price inelastic other than to measure the percentage decrease in quantity demanded in relation to the percentage increase in price. The closer that these percentages are, the closer one is to maximising total revenue. Refer to the table 2 to illustrate this point: Unitary elasticity (i.e. when demand is neither price elastic nor price inelastic in other words when the percentage change in price results in an equivalent opposite change in quantity demanded) occurs at the point of maximising of total revenue (9.09% on table 2 at a price of R 55). In the price range from R 10 to R 55 price elasticity of demand is inelastic indicated by the fact that the percentage decrease in quantity demanded is always lower than the percentage increase in price, resulting in rising revenue. In the price range R 55 to R 100 the price elasticity of demand is elastic, indicated by the fact that the percentage increase in price is lower than the percentage decrease in quantity demanded, resulting in falling revenues.

Remember that the aim is to increase revenue not quantity!

Remember also that we are talking about real increases in price i.e. price increases greater than inflation.

Table 2

Price	Quantity	TR=PQ		%Price change	% Quantity change
10	100	1000		100,00	-10,00
20	90	1800		50,00	-11,11
30	80	2400		33,33	-12,50
40	70	2800		25,00	-14,29
50	60	3000		10,00	-8,33
55	55	3025		9,09	-9,09
60	50	3000		16,67	-20,00
70	40	2800		14,29	-25,00
80	30	2400		12,50	-33,33
90	20	1800		11,11	-50,00
100	10	1000			

The Present Situation and How We Change It

The demand for veterinary services at the level of fees presently in operation, is likely price inelastic to a greater or lesser degree. Production animal practice likely sees a more price elastic demand than companion animal practice but this does not mean that it is elastic. The inelasticity of demand for companion animal products has been very effectively demonstrated by the retail of premium

brands of pet food through veterinary outlets. Significant numbers of people buy thousands of tons of pet food from veterinarians monthly. Demand is price inelastic as price increases very seldom lead to an equivalent (or greater) percentage decrease in purchases by the public, even though far lower priced products are available elsewhere. This group of purchasers place a great emphasis on quality which is the determining factor in their justification for the more expensive purchase. Should veterinarians not tap into this **"price inelasticity of quality"**?

Veterinarians can further influence a shift to greater price inelasticity by encouraging a greater uptake of such provisions as **pet medical aid**. One of the reasons for poor uptake of pet medical aid by clients is that they find pet medical expenses affordable in terms of their discretionary income (until a large unexpected bill occurs). **Clients tend to insure only for these big expenses probably because our fees are set too low for routine care to encourage them to take up pet medical aid.** With a medical aid clients' input on decisions about affordability is reduced. Without embracing pet medical aid to a greater extent, affordability (and price elasticity of demand) has a greater effect on treatment options.

Further ways that elasticity can be influenced to become more elastic are such methods as finding a niche market or providing a unique product or service or having a tangible quality differentiation from the opposition.