Third Homework- Data Analysis Course of Professor Murthi on Bass

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R-sq.	Adj. R-sq.	Ft.pval.	deg. frdm
1	1	$6.21e-40$	8

variable	coefficient	p-value
intercept	3000	$1.49e-30$
N_{t-1}	0.49	$3.33e-37$
N_{t-1}	$-5.0e-07$	$1.24e-32$

I used matlab for estimation and simulation of results and checking how predicted values are the same as the main value.

The table shows that the intercept and coefficients of both previous period market size, and its quadratic are significant. Also R-square showed considerable level of explanation almost all of variation is explained. Probably it is not real world, and the number is just created using equation.

Based on the following formula, MATLAB gave me the following values for m, p and q.

$m = (-b - sqrt(b^2 - 4*a*c))/(2*c)$;
$p = a/m$;
$q = p + b$;

As could be seen the innovator ratio is infinitesimal, yet immitator ratio is large. The size of the market is one million people.

Using $t = (log(q) - log(p))/(p + q)$; I calculated t value for the time to reach the peak of sales. The result was 10.17, mean the peak of daily sails was around 102,677 people per day on day 11.

Peak of sales was calculated using $s = m*(p+q)^2/(4*q)$ formula, showing that 126,510 would be the peak of the sales, assuming time would be continuous.

The sales forecasted in the for loop in MATLAB, and the plot of predicted versus the actual data is created.

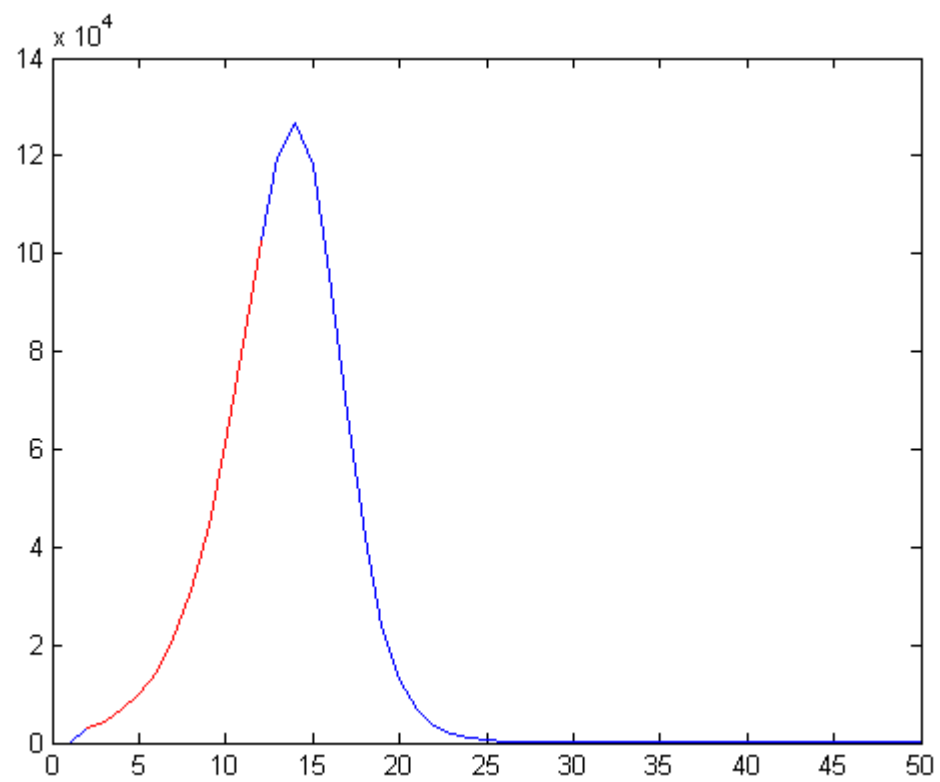| Market size	innovator ratio	immitator ratio
1.0e06	0.003	0.5

Figure 1: Figure of predicted versus actual sales, the red line shows the actual, and the blue line shows predicted sales