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COMMUNICATIVE EFFECT ASSESSMENT OF REGIONAL INNOVATION MANAGEMENT AUTHORITY WITH MODELS TREND

Communicative effect of the regional governing body of innovation trend estimate using the dynamic models of economic processes. Communicative effect can determine the share of entrepreneurs in the region participating in the proposed communication activities. Number of innovation active enterprises has a close correlation relationship with the number of entrepreneurs who informed of the activities of the regional center for research and forecasting technological development and regional agency of innovations promotion in regional administration.

By modeling the share of entrepreneurs who take part in the innovation-oriented activities fit Gompertz curve.

$$\hat{y} = ka^{b^t},$$

where a, b — positive options, morover $b < 1$;

k — assymptote functions.

It is proposed to get three forecasts: optimistic, realistic and pessimistic.

Depending on funding for Communication Programs, active or passive, of the regional agency of innovations promotion depends, as will increase the share of innovation-active businesses.

Assymptote functions Gompertz — $k = 1$, because the plan is to cover 100% of entrepreneurs` Communicative activities for innovative activity. To determine the parameters of the model building and its graphics set the initial conditions:

1. Optimistic forecast. In this case, will receive sufficient funding to carry out all planned activities and communications is expected to achieve maximum effect, 100% coverage of innovative business communications over the year. Suppose that within six months 50% of entrepreneurs will be covered by measures of regional agency of innovations promotion and for the year - 90%.

Then to determine the model parametrs $\hat{y} = ka^{b^t}$ obtain the system with

two unknown ($k = 1$, as discussed above):

$$\begin{cases} 0,5 = a^{b^6} \\ 0,9 = a^{b^{12}} \end{cases}.$$

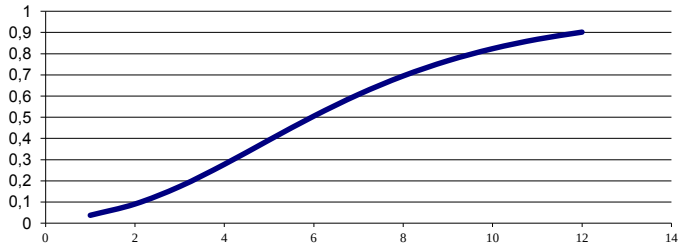
For the resolution of the system to logarithm both equations

$$\begin{cases} \ln 0,5 = b^6 \ln a \\ \ln 0,9 = b^{12} \ln a \end{cases},$$

or

$$\begin{cases} -0,69 = b^6 \ln a \\ -0,105 = b^{12} \ln a \end{cases}.$$

Synce the last system we obtain $b^6 = 0,152$. Hence $b = 0,73$. Substitute b in the first equation and get the latest system $\grave{a} = 0,011$. Picture 1 shows the graph of Gompertz curve $\hat{y} = 0,011^{0,73^t}$ optimistic for the development of communicative activities of the regional body to promote innovation.



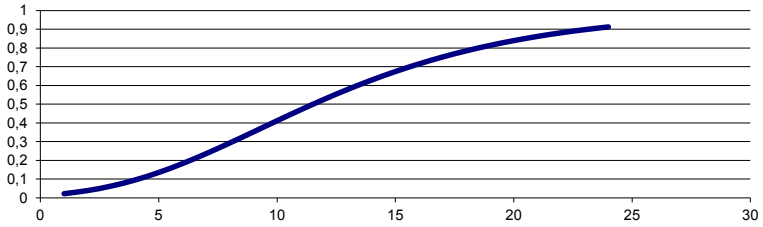
Picture.1. Gompertz curve in the optimistic case of communications

2. Realistic forecast. In this case, expect the maximum coverage period regional agency of innovations promotion communications innovation entrepreneurs in the region will be two years. To determine the model parameters Set the initial conditions: for the year will be covered 50% of entrepreneurs in the region, two years - 90%. Then the system of equations is as follows:

$$\begin{cases} \ln 0,5 = b^{12} \ln a \\ \ln 0,9 = b^{24} \ln a \end{cases}.$$

Solve the system in the previous example and get the value simulation parameters $b = 0,85,\ a = 0,011$. Picture 2 shows the graph of Gompertz curve

$\hat{y} = 0{,}011^{0{,}85^t}$ for realistic development of the communicative activities of the regional agency of innovations promotion.

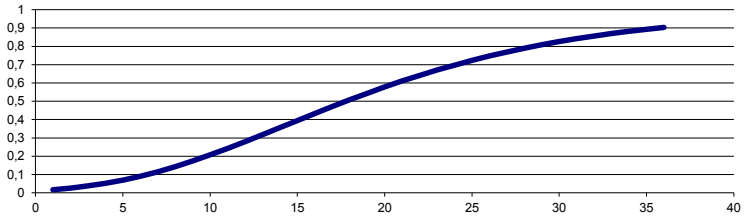


Picture.2. Gompertz curve in the realistic case of communications

3. The pessimistic forecast. Hopefully the lack of funding and passive communicating regional agency of innovations promotion. To determine the curve peremetriv Gompertzian assume that 50% of entrepreneurs will be covered through innovative measures 1,5, and 90% in 3 years Then the system for determining peremetriv model will be as follows:

$$\begin{cases} \ln 0{,}5 = b^{18} \ln a \\ \ln 0{,}9 = b^{36} \ln a\,. \end{cases}$$

The silution of system $b = 0{,}9,\quad \grave{a} = 0{,}011.$ Picture 3 shows the graph of obtained model $\hat{y} = 0{,}011^{0{,}9^t}$ for the pessimistic case.



Picture.3. Gompertz curve in the pessimistic case of communications.