Table 1. Parameters used for application of the model and their values and ranges

Parameters	Value /range
r rate of success of technologies	0.2
v rate of generation of new technologies	0.025
t rate or R&D proposals selected for R&D projects	1
p number of information packages per R&D project	3
m combinatory number of information packages	2
f rate of fading effect	0.5
E rate of external information contribute	0.1
N_o number of initial R&D projects (range)	10 -100
s rate of selection of innovative combinatory ideas for proposals (range)	$0.001 - 0.01$

For this reason we have considered, in a conservative view, a number of three information packages, associated to each project, for parameter p, and for parameter m an average number of two for information packages necessary to the generation of innovative ideas. Another parameter necessary for calculation concerns the fading effect on information packages generated in past cycles and including past external information. It has been considered that about 50% of past information is lost at each cycle. That means the total number of past information packages is halved at each cycle. The fading effect is then established to a value of 0.5 for the parameter f. The external contribution of information packages coming from scientific, technical or other types of information to the total information packages available for generation of R&D projects cannot be very high in respect to GRDK. For this reason, we suggest for the external contribution an indicative added value of 10% of the total information packages generated by GRDK establishing a value of 0.1 for parameter E. Finally, there are two variables that are used for the parametric study of the model application that concern the initial number N_o of R&D projects and the rate of selection of innovative ideas becoming R&D proposals and then R&D projects. Concerning the initial number N_o, we have considered a range from 10 to 100 projects. Considering the rate of selection s of potential combinatory number of ideas G, we have established a range between $0.001 - 0.01$, corresponding to values of ISE of 0.1% - 1%, to calculate the number of combinatory ideas valid for R&D proposals. In Table 1 we have summarized the values and ranges of the various parameters used for application of the model.

The variable parameters calculated in the application of the model will be:

I_T: total number of information packages available for starting a cycle
G: total number of potential combinatory ideas
P: total number of R&D project proposals
N: total number of R&D projects carried out in a cycle
T: number of new technologies entering in use
S: number of new successful technologies

Finally, we have considered a maximum number of cycles characterizing the effects of introduction of initial R&D projects N_o. Such number has been established to 5 cycles.

4   RESULTS OF THE MODEL APPLICATIONS

Before entering in presentation of results of calculations with the model, we would stress the fact that this model is not a real reproduction of the complex activity of R&D, but only a simulation in which quantitative results are only indicative depending on choice of parameters values that in fact are not resulting from any real statistical data but only from reasonable values suggested by experience. However, although the adopted simplification, the model may give an idea on generation or selection processes occurring in a real R&D activity in accord with experience. Model calculations have been simply implemented using an EXCEL® sheet. The calculation starts by introducing an initial number of R&D projects for the first cycle and calculating