2) if G is a group in $\mathfrak{F}$*, then* $G_{\mathfrak{X}} = ker\, d_G$*;*

3) $A = \{gd_G : g \in G \wedge G \in \mathfrak{X}\}$*;*

4) If $\mathfrak{Y}$ *is a Fitting class with* $\mathfrak{X} \subseteq \mathfrak{Y} \subseteq \mathfrak{F}$*, and*
$A(\mathfrak{Y}) = \{gd_G : g \in G \wedge G \in \mathfrak{Y}\}$
then $A(\mathfrak{Y})$ *is a subgroup of* A*. The map* $A \to A(\mathfrak{Y})$ *defines a lattice isomorphism between the set of such Fitting classes* $\mathfrak{Y}$ *and the subgroup lattice of* A*.*

Retaining the notation of the above lemma, we say that $\mathfrak{X}$ admits the Fitting pair $(A, d_{|\mathfrak{F}})$, and remark that $(A, d_{|\mathfrak{F}})$ is a unique up to isomorphism [3]. Suppose that $\mathfrak{Y}$ is a Fitting class such that $\mathfrak{F}_* \subseteq \mathfrak{Y} \subseteq \mathfrak{F}^*$, that $\mathfrak{F}_*$ admits the Fitting pair $(A, d_{|\mathfrak{F}})$ and that n denotes the natural homomorphism from A onto $A/A(\mathfrak{Y})$. It is clear that $\mathfrak{Y}$ admits the Fitting pair $\left(A/A(\mathfrak{Y}),\ p_{|\mathfrak{F}}\right)$, where p assigns to each G in $\mathfrak{F}$ the homomorphism $d_G n$ from G into $A/A(\mathfrak{Y})$.

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USING OF LEAST SQUARE METHOD IN FORECASTING

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In the natural sciences, engineering and economics, frequently we deal with formulas based on the processing of statistical data or the results of experiments. One of the common methods for constructing such formulas is the least square method.

The purpose of the study is to establish a link between two estimates x and y from the statistical data representing the results of some studies, and to write them in a table.

Material and methods. The article considers the least squares method, which is based on the theory of local extremum for functions of several variables [1]. LSM is a very common method of processing observations, experimental and personal data. Here is a method of applying for solving learning problems, for self-study [2].

Results and their discussion. Let's pretend that there is linear dependence between *x* and y, $y = ax + b$, where *a* and *b* are coefficients to be found, *y* is theoretical value of ordinate. To find *a*, *b* we should apply the least squares method [1]. Points, which are built on the basis of experimental data, do not lie on a straight line. For the first point, $ax_1 + b + y_1 = \varepsilon_1$, for the second - $ax_2 + b + y_2 = \varepsilon_2$, for the latter - $ax_n + b + y_n = \varepsilon_n$.

Such values as $\varepsilon_1, \varepsilon_2, ..., \varepsilon_n$ are errors. In the geometric sense, this is the difference between the ordinate of a point on the line and the ordinate of the experimental point with the same abscissa. Errors depend on the selected position of the straight line, i.e. from *a* and *b*. It is required to choose *a* and *b* so that these errors are as small as possible in absolute value.

If the points on the graph are arranged like some parabola, then we can assume a quadratic dependence between *x* and *y*: $y = ax^2 + bx + c$.

The essence the least squares method is that unknown coefficients for recording the selected function are selected from the condition that the sum of error squares is minimal. If the sum of squares is minimal, then the errors will be small on average in absolute value.

Finding the equation of a straight line from empirical data is called straight line alignment, and finding the parabola equation is called parabola alignment. Other functions can also meet in economic calculations.

So, initially, the least squares method is considered for finding the parameters of the linear function $y = ax + b$.

Example [2]. The experimental data are given in the table:

Year, t	1	2	3	4	5	6	7
Profit	51	53	59	62	64	66	67

We should get and compare linear and quadratic dependences of profit during years of activity of the enterprise.

Solution. For the function $y = ax + b$, the system of equations for finding a and b has the form [1]:

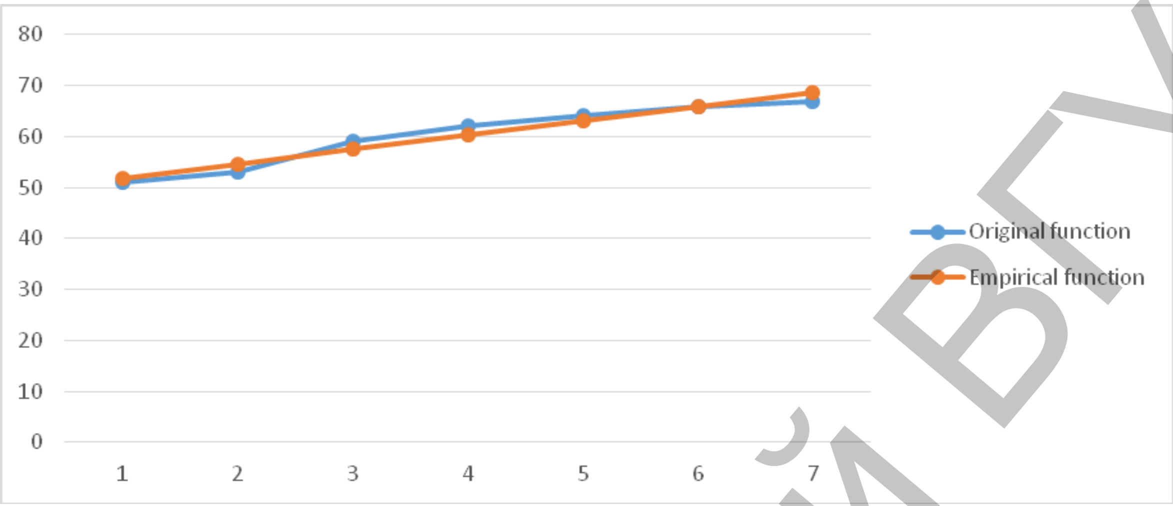
$$a\sum x_i^2 + b\sum x_i = \sum x_i y_i,$$

$$a\sum x_i + bn = \sum y_i.$$

We made the table in Microsoft Excel:

i	x_i	y_i	x_i^2	$x_i y_i$	Emp. F.
1	1	51	1	51	51,82
2	2	53	4	106	54,64
3	3	59	9	177	57,46
4	4	62	16	248	60,28
5	5	64	25	320	63,1
6	6	66	36	396	65,92
7	7	67	49	469	68,74
Sum	28	422	140	1767	421,96

Then, we found $a=2,82$ and $b=49$. The required dependence has the form:
$y = 2{,}82x + 49$. Linear dependence is shown on the next diagram (Picture 1):



Picture 1 – Linear dependence

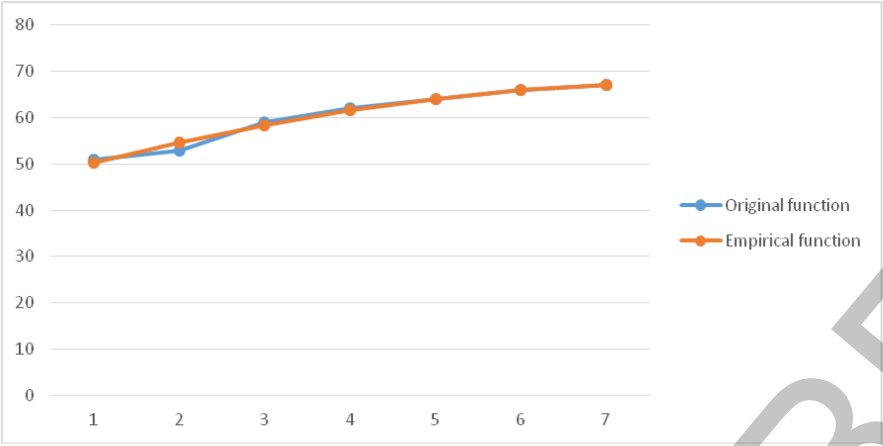
The correlation coefficient is 0,973013, which indicates a very strong interdependence of the variables. In turn, the coefficient of determination is 0,946754, which indicates the existence of a close functional conjunction. On the next step, we will make the presence of a quadratic dependence research $y = ax^2 + bx + c$ with the same data. There is the system of equations for finding coefficients of the function

$$y = ax^2 + bx + c \text{ [1]: } \begin{cases} a\sum x_i^4 + b\sum x_i^3 + c\sum x_i^2 = \sum x_i^2 y_i, \\ a\sum x_i^3 + b\sum x_i^2 + c\sum x_i = \sum x_i y_i \\ a\sum x_i^2 + b\sum x_i + cn = \sum y_i. \end{cases}$$

We made the table in Microsoft Excel:

i	x_i	y_i	x_i^2	x_i^3	x_i^4	$x_i y_i$	$x_i^2 y_i$	Emp. F.
1	1	51	1	1	1	51	51	50,209
2	2	53	4	8	16	106	212	54,636
3	3	59	9	27	81	177	531	58,421
4	4	62	16	64	256	248	992	61,564
5	5	64	25	125	625	320	1600	64,065
6	6	66	36	216	1296	396	2376	65,924
7	7	67	49	343	2401	469	3283	67,141
Sum	28	422	140	784	4676	1767	9045	421,96

$a= -0{,}321$ and $b=5{,}39$, $c=45{,}14$. The required dependence has the form:
$y = \ \ 0{,}321x^2 + 5{,}39x + 45{,}14$. Graph of quadratic dependence (Picture 2):



Picture 2 – Quadratic dependence

Conclusion. This article illustrates the application of LSM using Microsoft Excel programs. Finally, the revealed better dependence, allows making a forecast for the future, based on the data of statistical observations.

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ON THE COVER-AVOID PROPERTY OF INJECTORS OF FINITE GROUP

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Throughout this paper, all groups are finite. The notations and terminologies are standard as in [1, 2]. Let $\mathbb{P}$ be the set of all primes, $\pi \subseteq \mathbb{P}$, and $\pi' = \mathbb{P}\backslash\pi$. We denote by S^{π} and $\mathsf{E}_{\pi'}$ the classes of all π-soluble groups and all π'-groups respectively.

Recall that a class of groups F is called a *Fitting class* if F is closed under taking normal subgroups and products of normal F-subgroups. For any a nonempty class F of groups, a subgroup V of G is said to be F-maximal if $V \in \mathsf{F}$ and $U = V$ whenever $V \leq U \leq G$ and $U \in \mathsf{F}$. A subgroup V of a group G is said to be an F-injector of G if $V \cap N$ is an F-maximal subgroup of N for every subnormal subgroup N of G. Recall that a nonempty set F of subgroups of a group G is called a *Fitting set of G* [3], if the following three conditions hold:

(1) If $T \trianglelefteq S \in \mathsf{F}$, then $T \in \mathsf{F}$;

(2) If $S \in \mathsf{F}$ and $T \in \mathsf{F}$, $S \trianglelefteq ST$ and $T \trianglelefteq ST$, then $ST \in \mathsf{F}$;