Биномиалды гипотезалар

Брак – 5 %

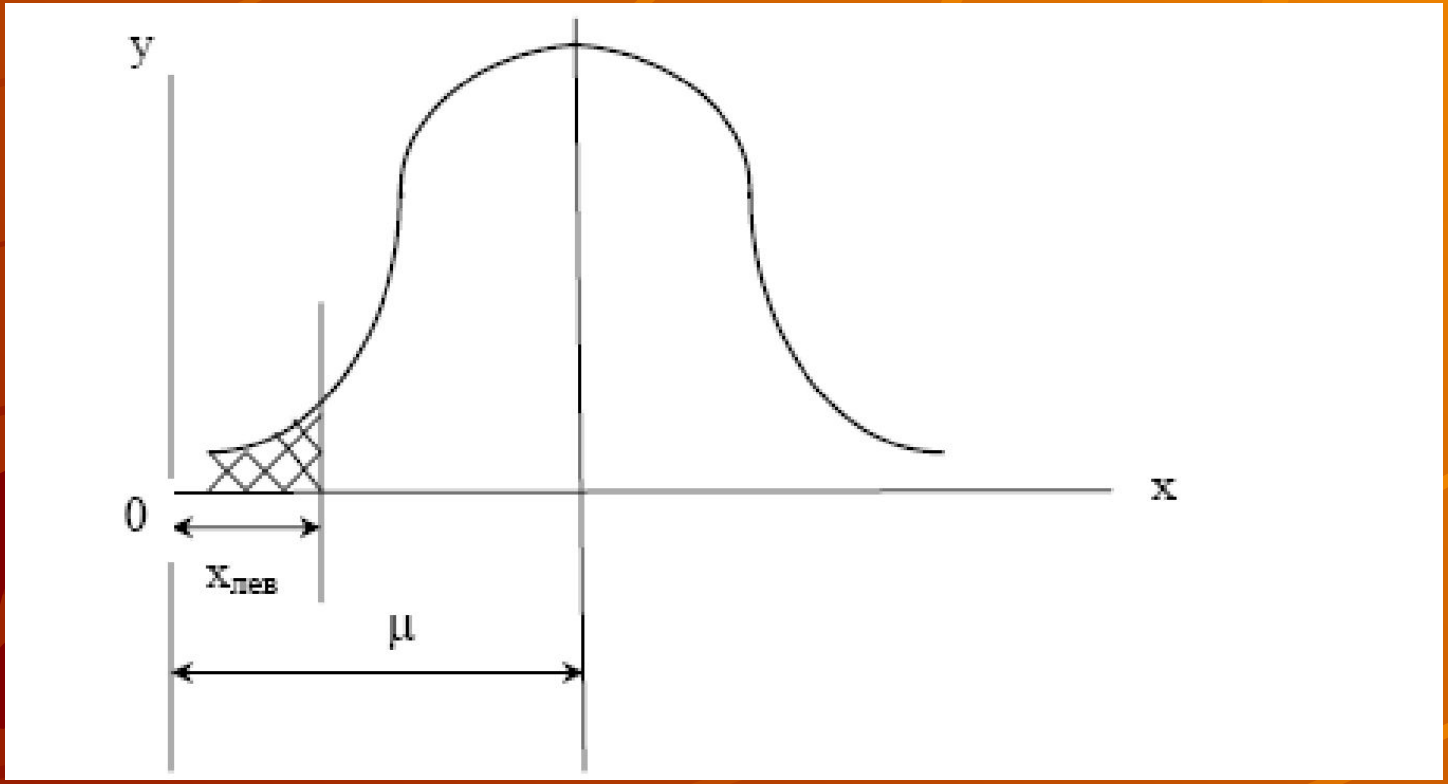
300 – 9

H0 : P=0,05

H1 : P<0,05

P/H1<P/H0

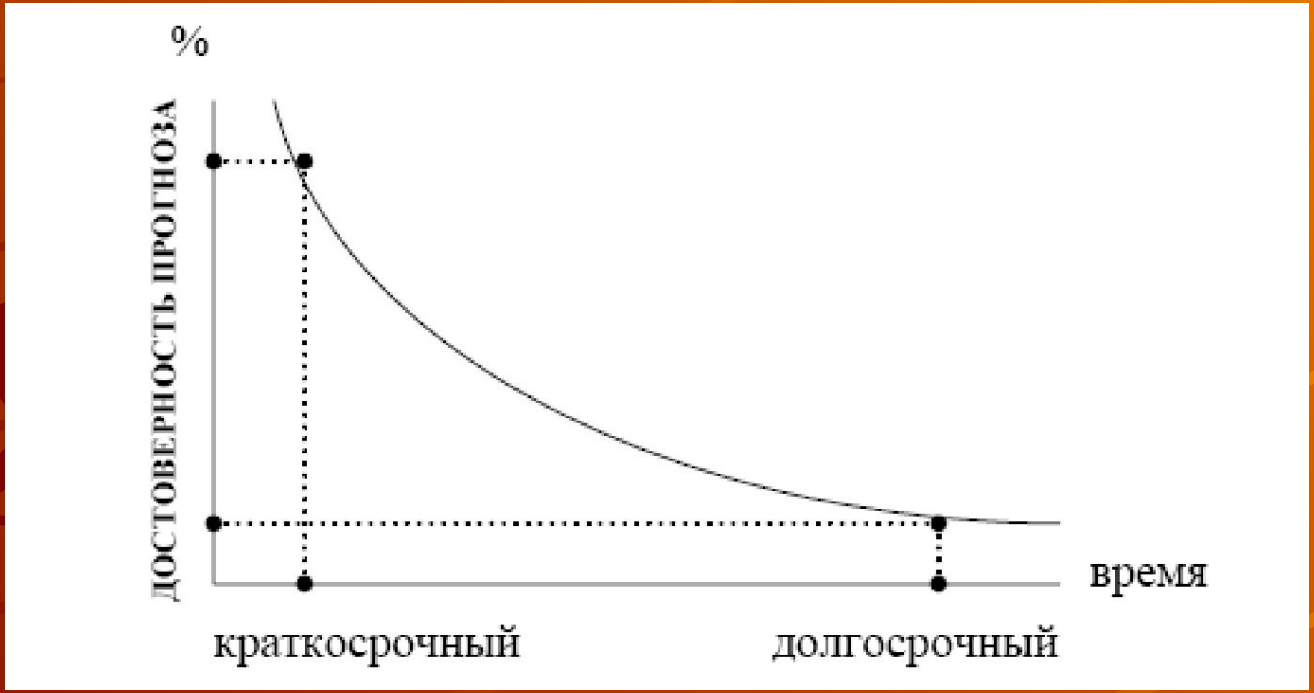
P/H1> P/H0

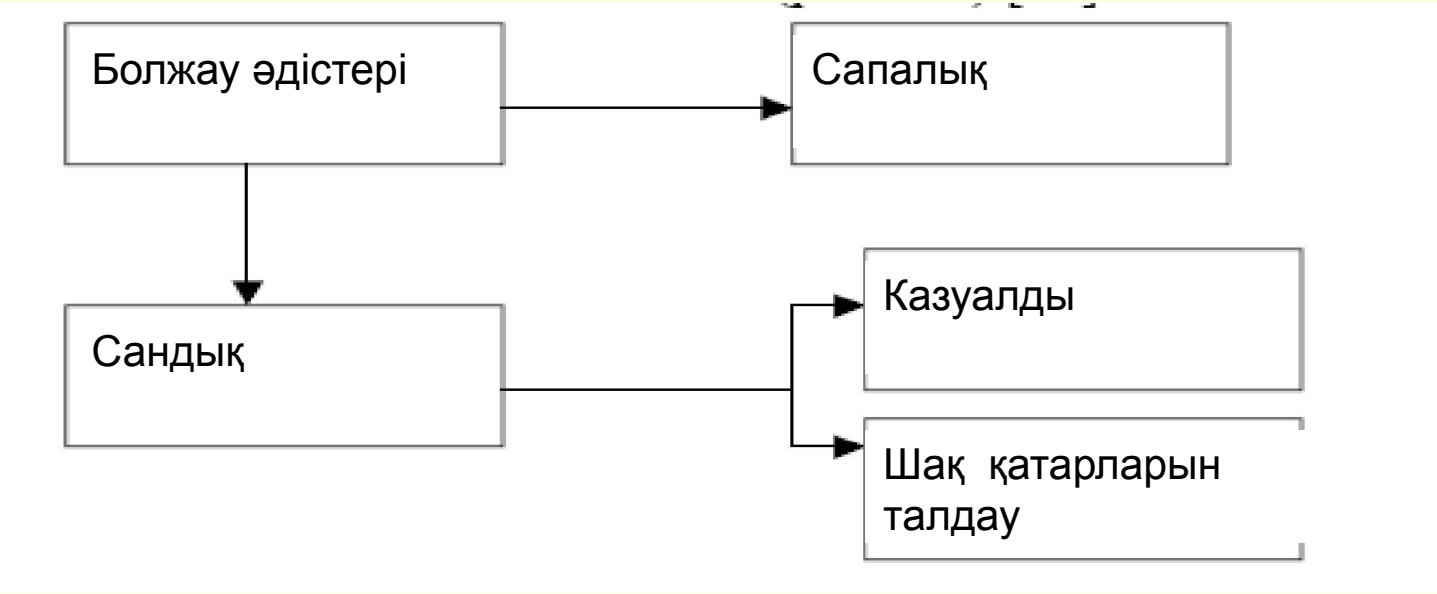

y
0
x
$x_{лев}$
μ

$$\chi^2 = \sum^{r} \frac{(m_i - n \cdot p_i)^2}{n \cdot p_i},$$

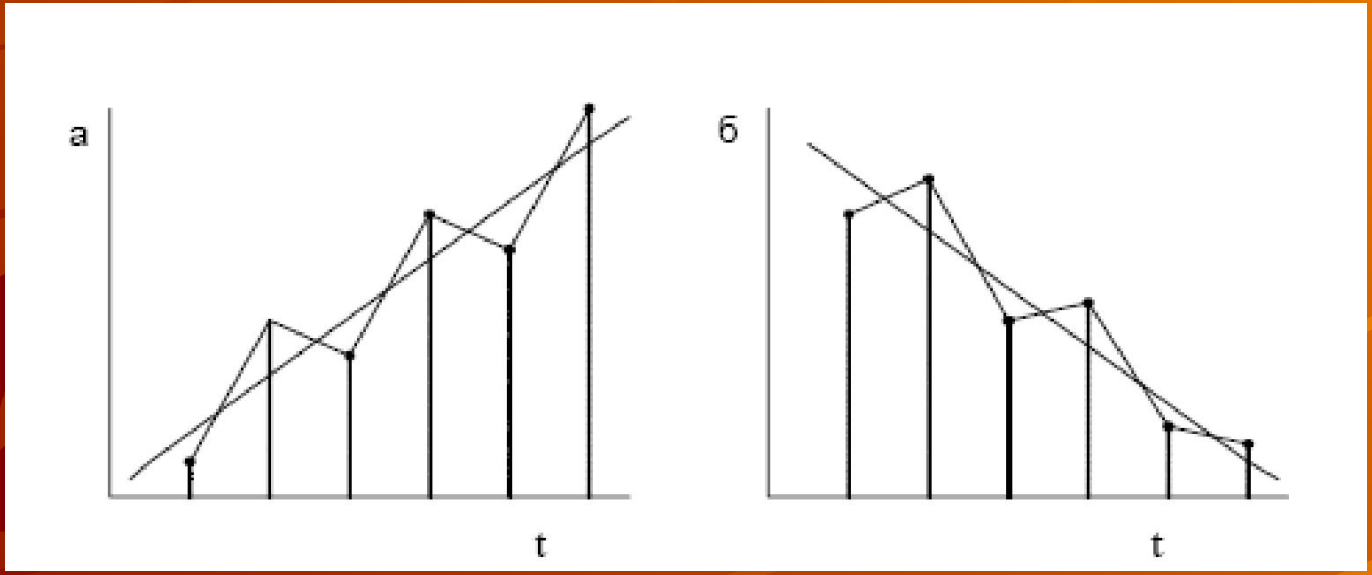
- $H_0 : P_1 = P_2 = P_3 = 1/3$
- $r=3$, $m_1=160$, $m_2=225$, $m_3=215$
- $n=\Sigma mi=600$
- $m_{орт}=600*1/3=200$
- $\chi 2=((160-200)2/200)+((225-200)2/200) + ((215-200)2/200)=12,25$
- $\chi 2_{кр}=9,2$
- $\chi 2>\chi 2_{кр}$

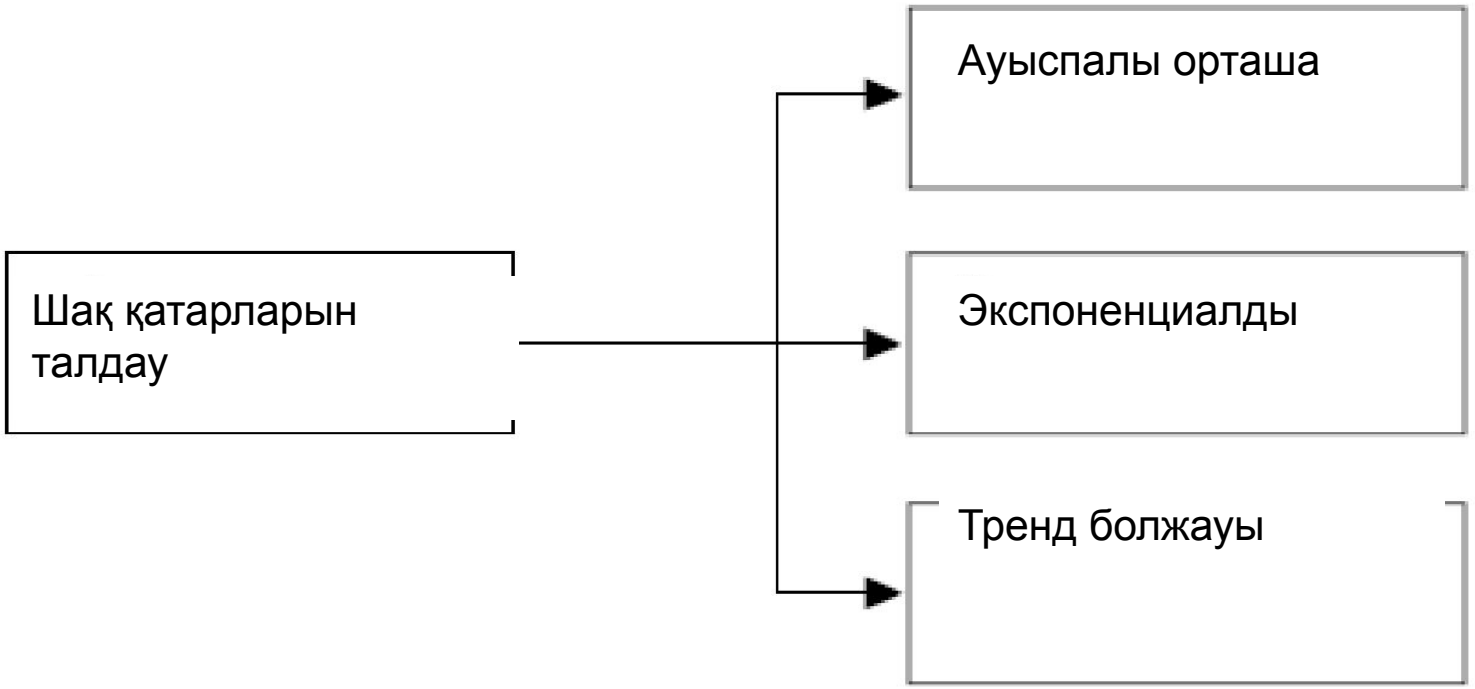
Болжау әдістері




Болжау әдістері
Сапалық
Сандық
Казуалды
Шақ қатарларын талдау

Өнімнің өмірлік циклы

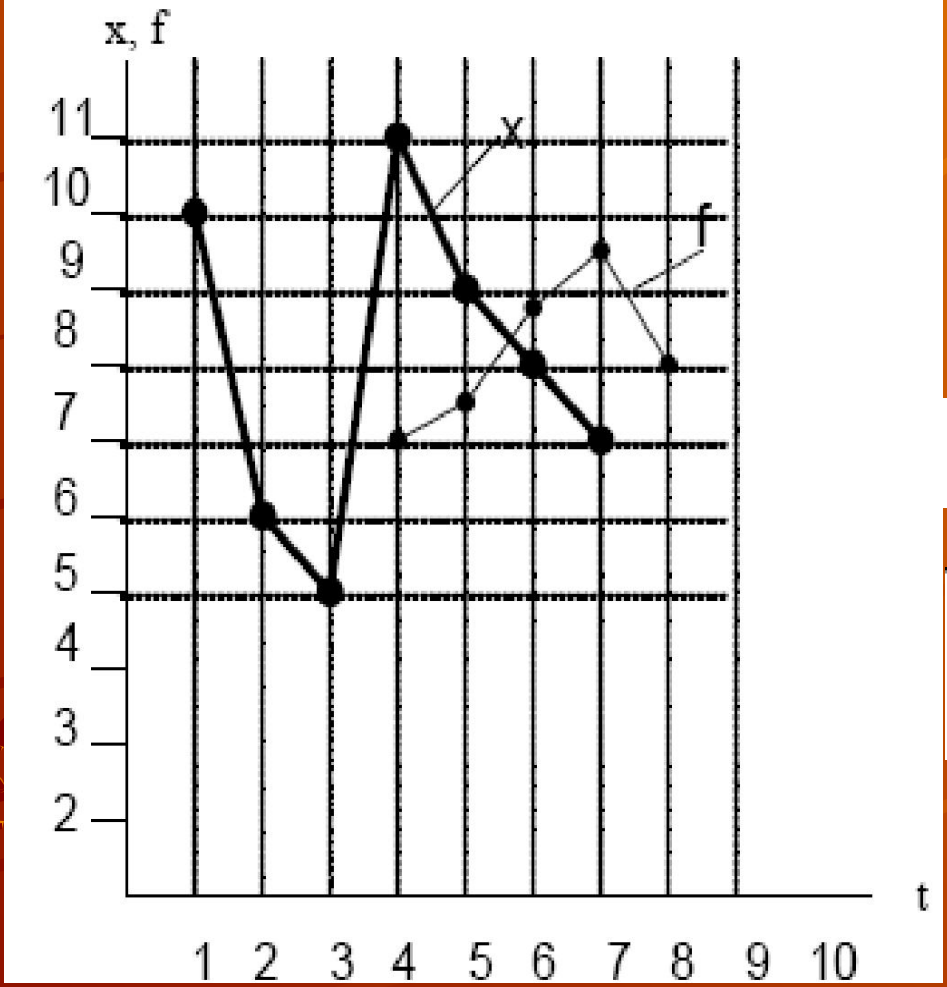



Шақ қатарларын талдау
Ауыспалы орташа
Экспоненциалды
Тренд болжауы

t	1	2	3	4	5	6	7
x	10	6	5	11	9	8	7

$$f_k = \frac{1}{N}\sum^{N} x_{k-i}$$

t	1	2	3	4	5	6	7	8
x	10	6	5	11	9	8	7	-
f	-	-	-	7,0	7,3	8,3	9,3	8,0



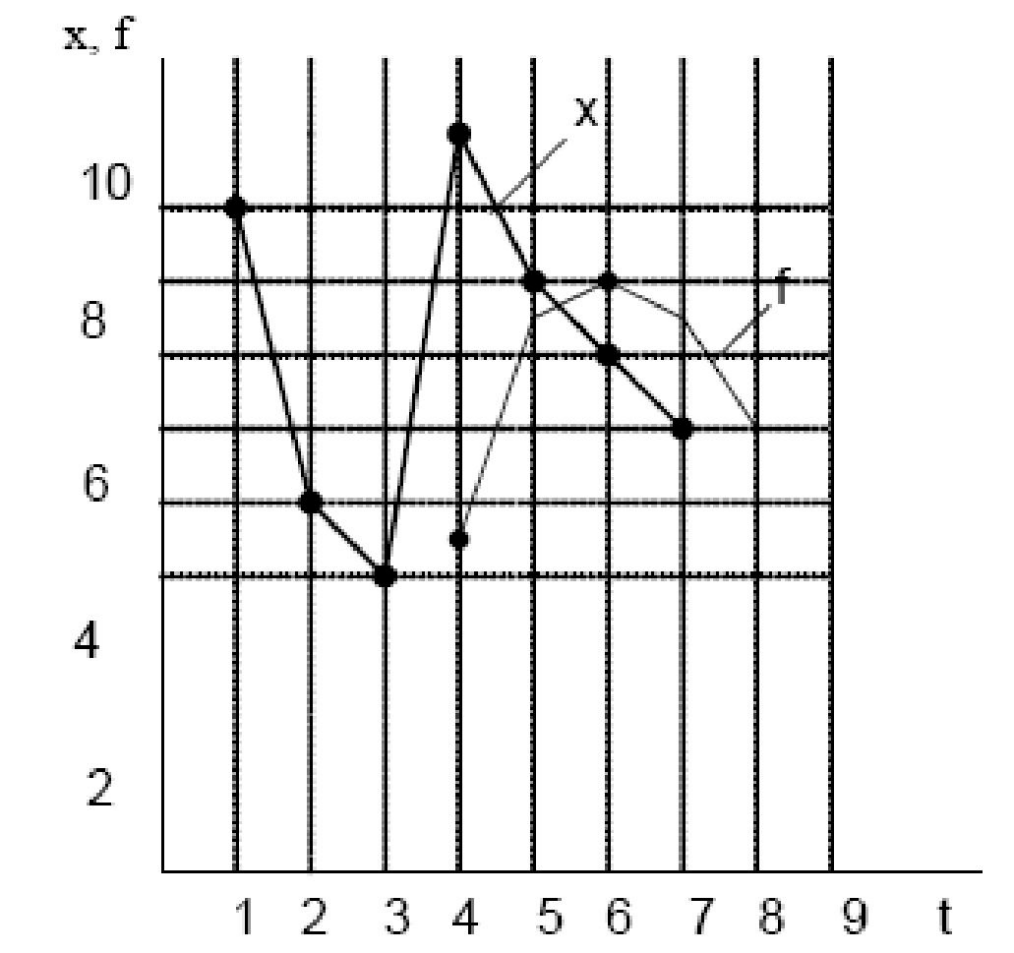
$$f_{k\,max/min} = f_k \pm \nu_s \cdot s_x$$

$$f_{k\,max} = 7 + 1{,}9 \cdot 1{,}52 = 9{,}9$$

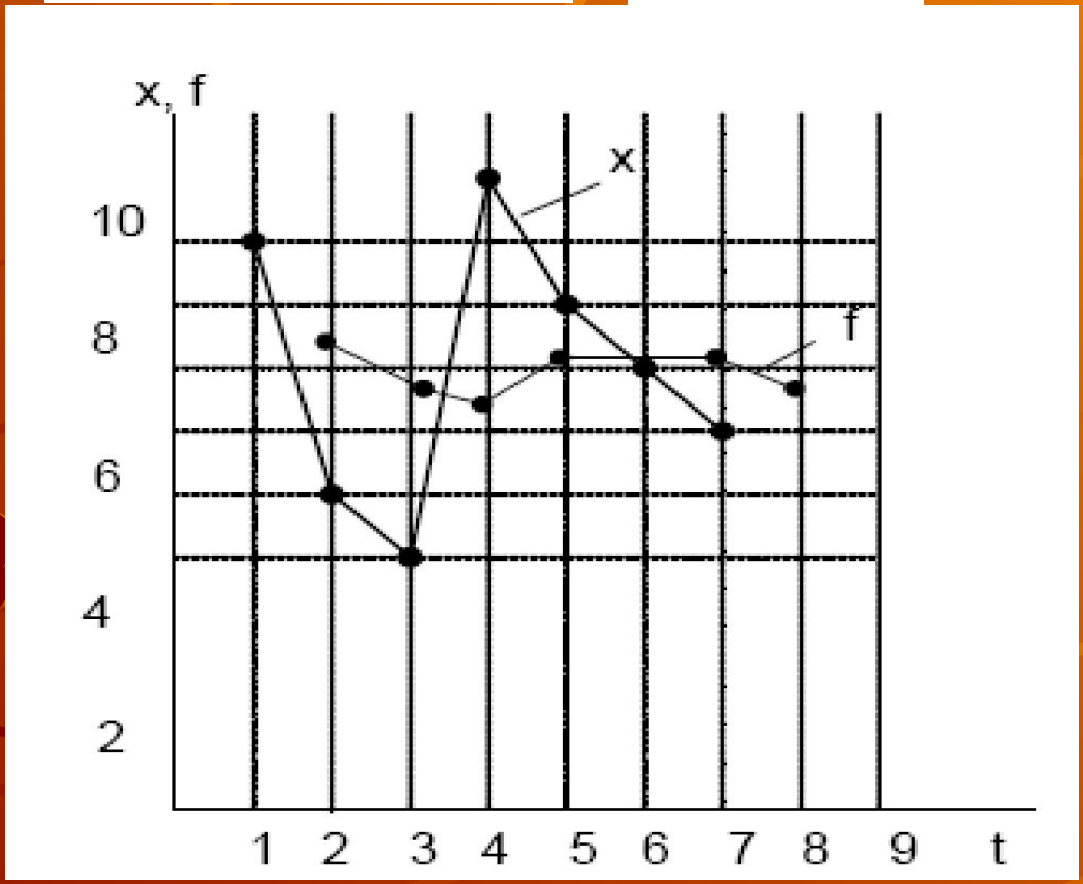
$$f_{k\,min} = 4{,}1.$$

$$f_k = \frac{\sum^{n} \xi_i \cdot x_{k-i}}{\sum \xi_{k-i}}$$

t	1	2	3	4	5	6	7	8
x	10	6	5	11	9	8	7	-
f	-	-	-	5,8	8,7	9,2	8,6	7,5


x, f
10
8
6
4
2
x
f
1 2 3 4 5 6 7 8 9 t

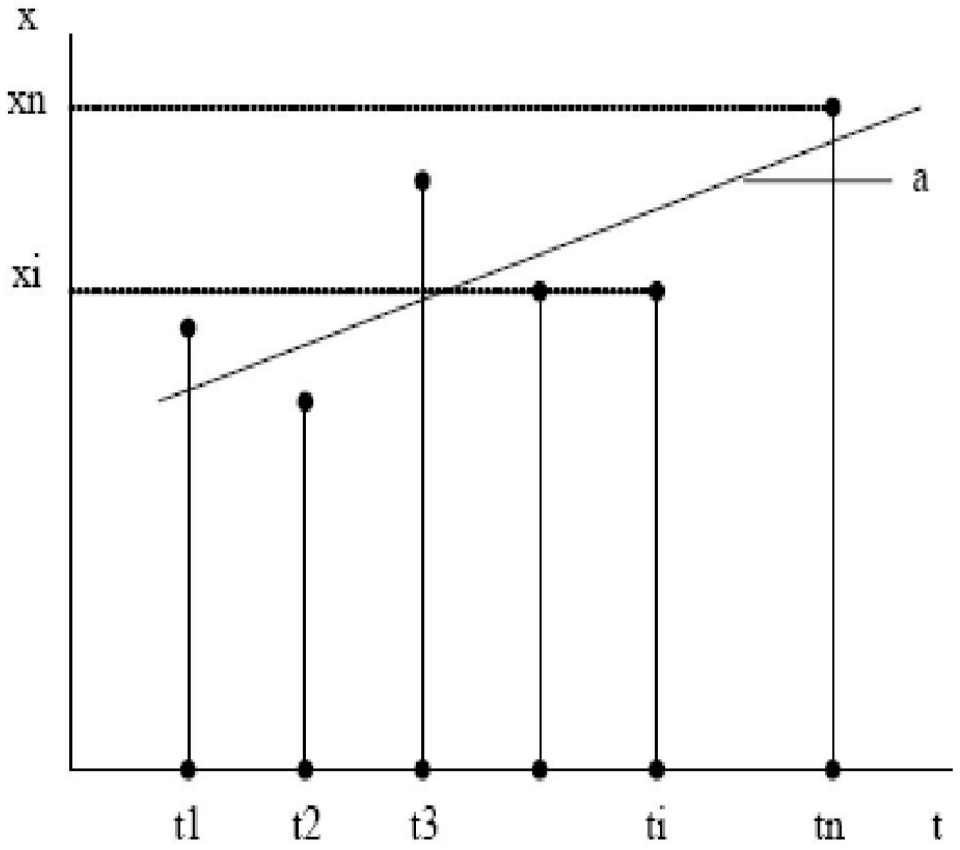
$$f_k = f_{k-1} + \beta\,(x_{k-1} - f_{k-1}) \qquad (0 < \beta < 1)$$



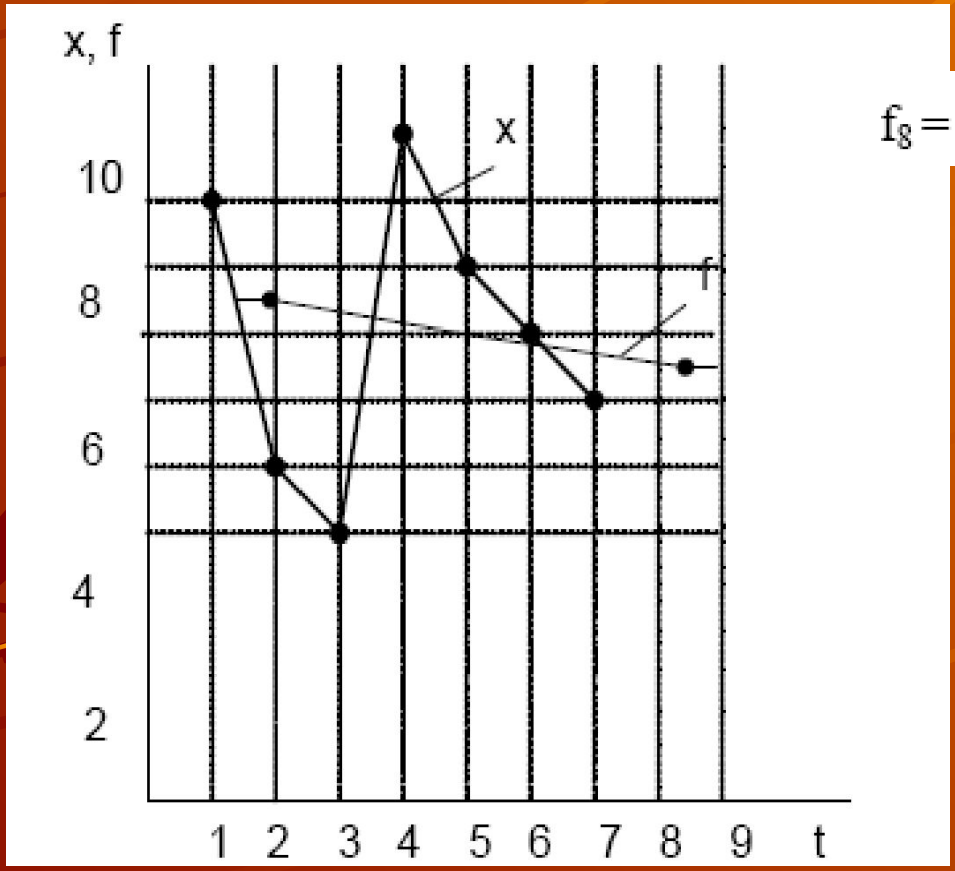
$x = at + B$

$$a \cdot \sum^{n} t_i + B_n = \sum^{n} x_i ,$$

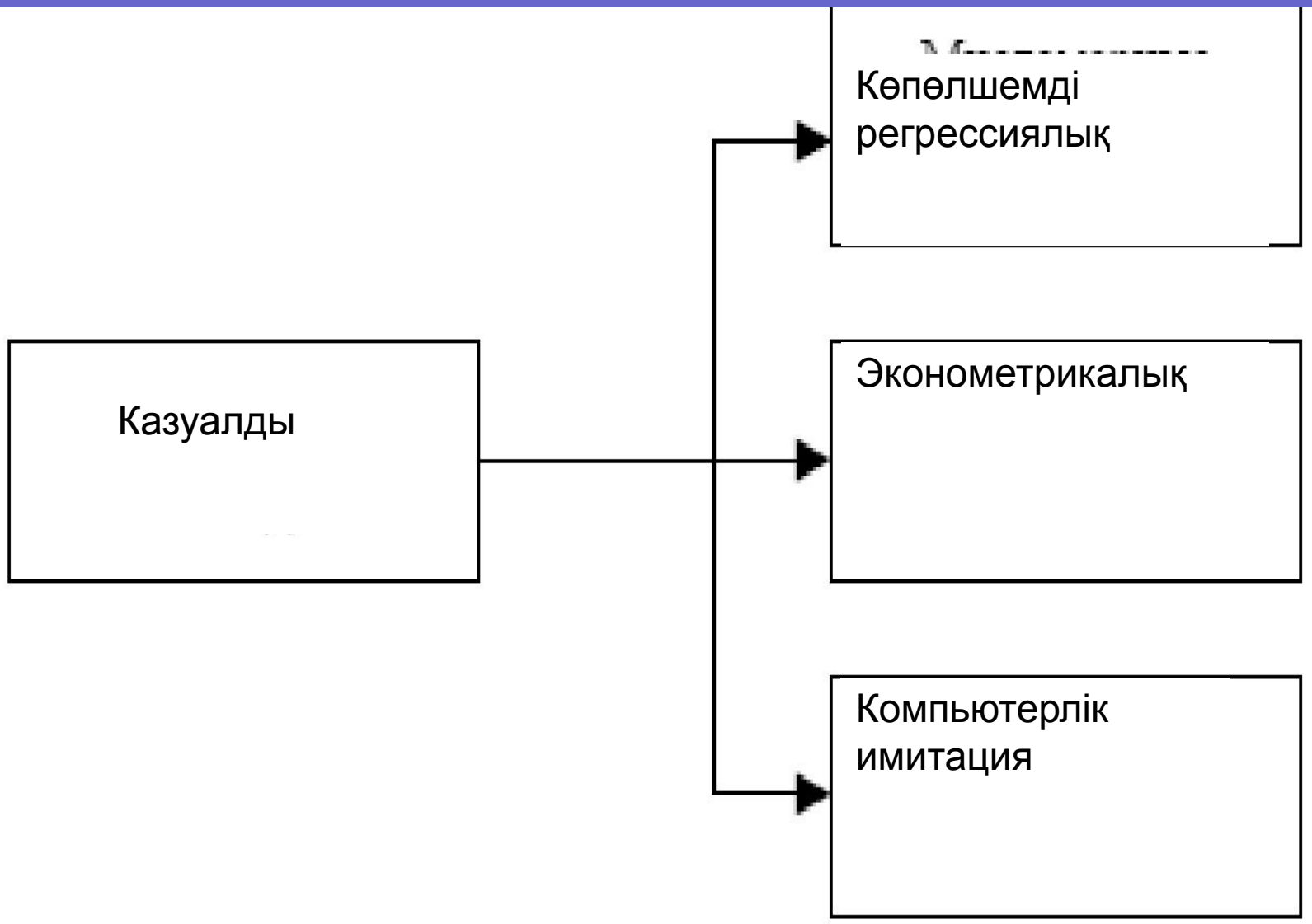
$$a \sum^{n} t_i + B \sum^{n} t_i x_i = \sum^{n} t_i x_i .$$

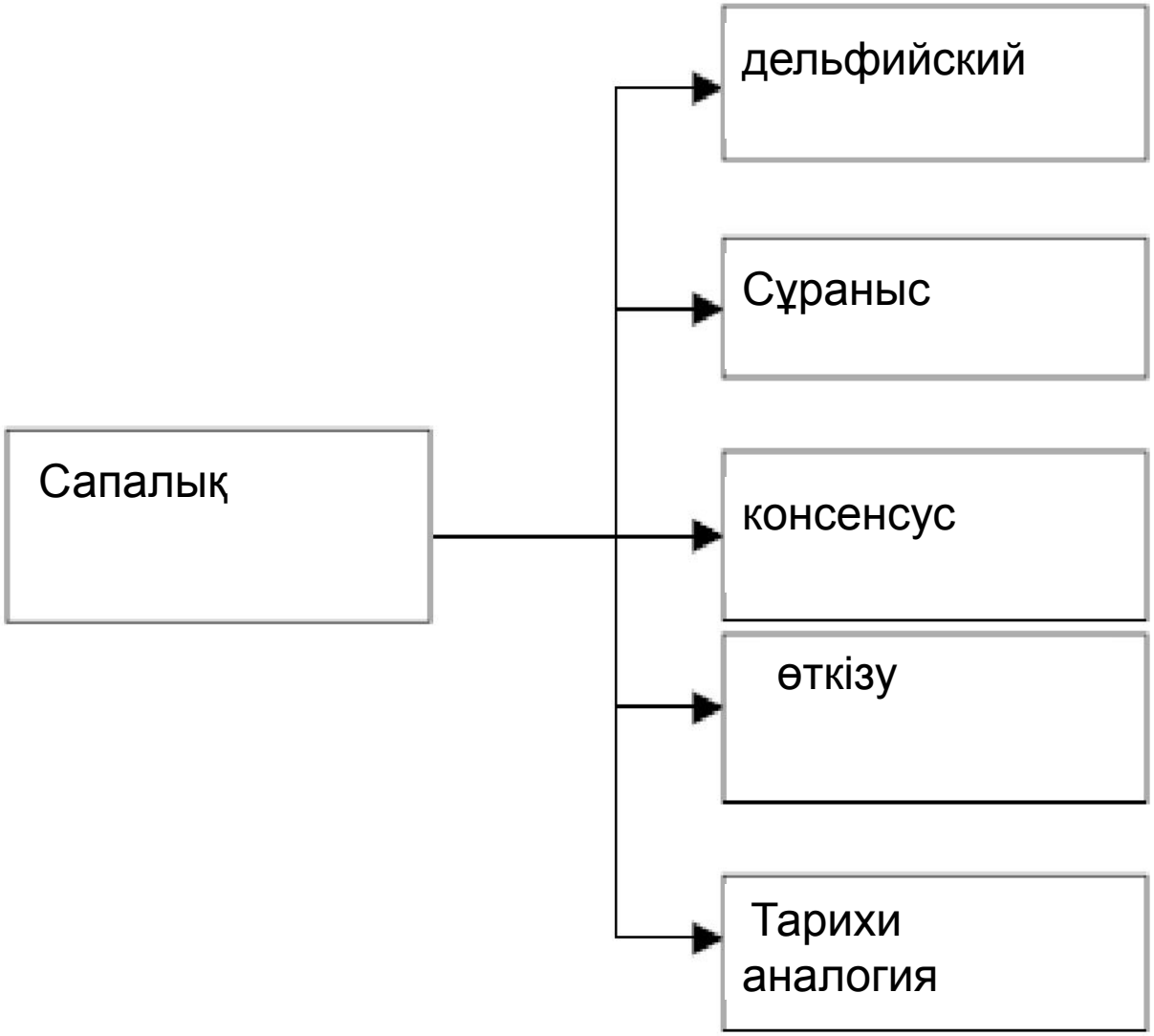


t_i	x_i	$t_i \cdot x_i$	t_i^2
1	10	10	1
2	6	12	4
3	5	15	9
4	11	44	16
5	9	45	25
6	8	48	36
7	7	49	49
$\Sigma = 28$	$\Sigma = 56$	$\Sigma = 233$	$\Sigma = 140$



$f_8 = -0{,}04 \cdot 8 + 8{,}14 = 7{,}82.$


Көпөлшемді регрессиялық
Казуалды
Эконометрикалық
Компьютерлік имитация


дельфийский
Сұраныс
Сапалық
консенсус
өткізу
Тарихи
аналогия