APPLIED SYSTEMS ANALYSIS

Engineering Planning and Technology Management

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APPENDIX

NOTATION

Symbol	Meaning	Chapter
A	Matrix of Constraint Parameters	5
A_0	Parameter of Cost Function	4
AC_Y	Average Cost of Product	4
a	Constant in Utility Function	18
	Returns to Scale Parameter	4
a_i, a_{ij}	Parameters of Constraint Equations	5
	Parameters of Production Function	2
B	Vector of Constraints	5
B	Discounted Benefits	13
b	Constant in Utility Function	18
b_j	Constraint	5
C	Vector of c_i	5
C	Discounted costs	13
°C	Degree Centigrade	18
$C(Y)$	Cost Function for Product	4
CE	Certainty Equivalent	19

C_c	Closure Costs	13
C_f	Fixed Costs	14
C_k	Initial Capital Costs	6; 12
C_r	Annual Recurring Costs	12
C_v	Variable Costs	6; 14
CLR_j	Conditional Likelihood Ratio for O_j	15
c	Constant exponent	19
c_i, c_{ij}	Parameters of Objective Function (often costs)	5
c_o	Fixed Charge	5
$c(\mathbf{X})$	Input Cost Function	4
crf	Capital Recovery Factor	15
D_i	A Possible Decision	16
E	Event	15
$EV(\bullet)$	Expected Value of (•)	15; 16
e	Naperian number, 2.7183	11
F	Future Amount	11
°F	Degree Fahrenheit	18
$f(\bullet)$	Function of (•)	5
$f_s(K)$	Cumulative Return Function for State S	7
$G(\mathbf{X})$	Objective Function for Dynamic Programming	7
$g(\bullet)$	Production Function	2
$g_i(X_i)$	Return Function	7
$h(\bullet)$	Constraint Equation	3
I_i	Inventory in Period or Stage i	7
IRR	Internal Rate of Return	13
i	Interest Rate	13
K	State, in Dynamic Programming Normalizing Parameter for Multiattribute Utility Function	7 20
k	Number of Observations in a Test	17
k_i	Scaling Factors for Individual Dimensions of Multiattribute Utility	20

L	Lagrangean Equation Number of Locations Lottery	3 16 17
LEP	Lottery Equivalent/Probability	19
LI	Lottery Revised by Information	17
LR_N	Likelihood Ratio after N Obserbations	15
M	Number of Points in Utility Assessment	20
MC_i	Marginal Cost	4
$MF(\bullet)$	Monotonic Function of (•)	18
MP_i	Marginal Product	2
MRS_i	Marginal Ratio of Substitution of Product X_i for X_j	2
N	Number of Dimensions; Periods; Observations	4; 11; 15; 17
NPV	Net Present Value	11
O	Observation	15
O_{ij}	Outcome Conditional on D_i and E_j	16
OC_K	Opportunity Cost	6
OF	Objective Function	6
P	Present Amount	11
$P(\bullet)$	Probability of (•)	15–20
P_e	Response in Lottery Equivalent Method	19
$PF(\bullet)$	Preference Function	18
$PLT(\bullet)$	Positive Linear Transformation of (•)	18
PM	Preference Measure	18
P_j	Probability of E_j	16
P_k	Probability of TR_k	17
P(E/O)	Posterior Probability of Event given Observation	15
P(O/E)	Conditional Probability of Observation given that event has occurred	15
p_i	Price of Input X_i	4
R	Equal Annual Payment	11

R_i	Requirement for Period or Stage i	7
RTS	Returns to Scale	2
r	Returns to Scale parameter	4
	Discount Rate	11
r_{irr}	Internal Rate of Return	13
r_p	Return on Investment	12
S	Future Amount	11
	Number of Sizes	16
S_j	Slack Variable	3
SP	Vector of Shadow Prices	6
SV	Vector of Slack Variables	6
SWF	Social Welfare Function	21
s	Scaling factor	2
T	Number of Periods	16
TR_k	Test Result	17
$U(\bullet)$	Utility of $(\bullet)$	18
U_i	Utility to Individual i	21
u	Learning Curve Exponent	4
$V(\bullet)$	Value of $(\bullet)$	18
W	Vector of Dual Variables	5
w_i	Relative weight	2; 21
X	Vector of Resources Used in Design	2
X_b	Buying Price of a Lottery	19
X_s	Selling Price of a Lottery	19
X_i	Inputs to a Design	2
Y	Product of a System	2
Y_i	Product in Period i	7
Z	Dual Objective Function	5

Greek Symbol

λ_j	Lagrangean Multiplier	3

Special Mathematical Notation

$(\bullet)^*$	Best Value of $(\bullet)$
$(\bullet)_*$	Worst Value of $(\bullet)$
$\sim$	Is Indifferent to
$>$	Is Greater Than
$<$	Is Less Than
$\succ$	Is Preferred To
$\prec$	Is Preferred By

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Definitions are on pages marked with **boldface** type.