

# mic Society and Humanities Vol. 1 No. 10, 2024<br> **Based on Monte Carlo simulation optimization research in**<br> **Based on Monte Carlo simulation optimization research in**<br> **Comporate production decision-making**<br>
Liu Dengsheng, *d Humanities Vol. 1 No. 10, 2024*<br> **corporate Carlo simulation optimization research in**<br> **corporate production decision-making**<br> **engsheng, Qin Sihao, Li Xiaomin ,Tang Xiaoqing,Wang Chunli**<br> *Guilin Tourism University, G* iety and Humanities Vol. 1 No. 10, 2024<br> **Liu Dengsheng, Qin Sihao, Li Xiaomin ,Tang Xiaoqing, Wang Chunli**<br>
Liu Dengsheng, Qin Sihao, Li Xiaomin ,Tang Xiaoqing,Wang Chunli<br> *Cuilin Tourism University, Guilin, Guangxi, Chi FR* Academic Education<br> **Guilin Tourism University, Guilin Tourism University, Guilin Tourism University, Guilin, Guangxi, China<br>
Pheng, Qin Sihao, Li Xiaomin ,Tang Xiaoqing,Wang Chunli<br>** *Guilin Tourism University, Guilin*

**Economic Society and Humanities Vol. 1 No. 10, 2024**<br> **Abstraction Monte Carlo simulation optimization recorporate production decision-making**<br>
Liu Dengsheng, Qin Sihao, Li Xiaomin ,Tang Xiaoqing,Wang C<br> *Guilin Tourism U* **Economic Society and Humanities Vol. 1 No. 10, 2024**<br> **Rased on Monte Carlo simulation optimization**<br> **Corporate production decision-makin**<br>
Liu Dengsheng, Qin Sihao, Li Xiaomin ,Tang Xiaoqing, Wan<br> *Guilin Tourism Univer* **Economic Society and Humanities Vol. 1 No. 10, 2024**<br> **programming Combind Carlo Simulation optimization recorporate production decision-making**<br>
Liu Dengsheng, Qin Sihao, Li Xiaomin ,Tang Xiaoqing,Wang C<br> *Guilin Tourism* **Based on Monte Carlo simulation optimization rescuestion**<br>
Corporate production decision-making<br>
Liu Dengsheng, Qin Sihao, Li Xiaomin ,Tang Xiaoqing,Wang Chu<br> *Guilin Tourism University, Guilin, Guangxi, China*<br>
Abstract: **Production decision-makin**<br> **Python Corporate production decision-makin**<br>
Liu Dengsheng, Qin Sihao, Li Xiaomin ,Tang Xiaoqing,Wan<br> *Guilin Tourism University, Guilin, Guangxi, China*<br>
Abstract: In this paper, we first sel **corporate production decision-making**<br>
Liu Dengsheng, Qin Sihao, Li Xiaomin ,Tang Xiaoqing,Wang<br> *Guilin Tourism University, Guilin, Guangxi, China*<br>
Abstract: In this paper, we first select<br>
relevant data, comprehensivel **Composition** Composition Control Composition-Thanking<br>
Liu Dengsheng, Qin Sihao, Li Xiaomin ,Tang Xiaoqing, Wang<br> *Guilin Tourism University, Guilin, Guangxi, China*<br>
Abstract: In this paper, we first select<br>
redevant dat **Liu Dengsheng, Qin Sihao, Li Xiaomin ,Tang Xiaoqing, Wang Chu** *Guilin Tourism University, Guilin, Guangxi, China*<br> **Abstract:** In this paper, we first select accurate assessment of the sup-<br> **relevant data, comprehensive Liu Dengsheng, Qin Sihao, Li Xiaomin ,Tang Xiaoqing, Wang Chun**<br> *Guilin Tourism University, Guilin, Guangxi, China*<br> **Abstract: In this paper, we first select** accurate assessment of the supplement of the supplement of **Example 10** Engymeny, Q and Sinal C. L.A Adomin , tang Xiaoqing, Wang Chu<br> *Guilin Tourism University, Guilin, Guangxi, China*<br> **relevant data, comprehensively use dynamic** It further discusses how<br> **programming combined production in case 1 is the most reasonable,** Abstract: In this paper, we first select<br>relevant data, comprehensively use dynamic<br>prediction of the superal experiment of the superal experaming combined with Monte Carlo<br>inspection, assembly, disman<br>simulation to establ Abstract: In this paper, we first select accurate assessment of the surelevant data, comprehensively use dynamic life further discusses how programming combined with Monte Carlo inspection, assembly, dismainimulation to es **Exercise the comprehensively use dynamic control in the production and a comprenent distasses a proportion of each situation to establish a model, and use launch strategies in Python programming to realize and visualize r Prevanti data, comprenensively use dynamic**<br> **decision-**<br> **decision-**<br> **decision-**<br> **definition-**<br> **definition-**<br> **definition-**<br> **definition-**<br> **definition, we use the entropy weight**<br> **definition, we use the entropy weig be fluiding the simulation** of establish a model, and use launch strategies in the pricharmon or establish and use all and the entire calculation process. For the metrics rates under a given defect of each situation, we u **to achieve the best production management Example 12 entine entine contests. For the metrics** and improve proof **each situation, we use the entropy weight** T **EXECTE CONCITE:** THE **ENDENDIFFERT STECTS** THE **ENDED**<br> **EN enterprise.** mancators of unterent untensions. Finally, it<br>
is concluded that the cost price required for it, as well as the four sproduction in case 1 is the most reasonable,<br>
finished product testit<br>
the defective rate is the lowest, **Production in case 1 is the most readured und the cost price required for the defective rate is the howest, and the dismantiling [6], and wasted production in case 1 is the most reasonable, the defective rate is the buyes Business Production In case 1 is the most reasonable,** the defective rate is the lowest, and the disman comprehensive score is the highest. It also product provides a reference for the production solve the decision-making provides a reference for the production<br>
decision-making of the enterprise, which can<br>
decision-making of the enterprise, which can<br>
to achieve the best production management<br>
to achieve the best production management<br>
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## **1.Introduction**

be flexibly adjusted according to the situation<br>
fo achieve the best production management<br>
effect, reduce the production loss of the the is in omissed detec<br>
enterprise,<br>
enterprise,<br>
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enterprise, to achieve the best production management<br>
effect, reduce the production loss of the there is no missed detection and<br>
enterprise. and bring greater benefits to the (2) The production process is stenterprise.<br>
(3) The deci effect, reduce the production loss of the there is no missed deter<br>enterprise, and bring greater benefits to the (2) The production pro<br>are no influencing fact<br>(3) The decision at each<br>experimenting; Entropy Weight Law; re enterprise, and bring greater benefits to the (2) The production process is<br>
are no influencing factors that<br> **Keyword:** Monte Carlo Simulation; Dynamic (3) The decision at each stage<br> **Rusiness Production Decisions** (3) T enterprise. The are no influencing factors that<br> **Exerce in the Carlo Simulation; Dynamic**<br> **Exerce in the continuity**<br> **Programming;** Entropy Weight Law; teturned product is complete<br> **Business Production Decisions**<br> **Ele** (3) The decision at each<br> **Programming;** Entropy Weight Law;<br> **Programming;** Entropy Weight Law;<br> **Electronics Complementation**<br> **Electronics companies face complex production**<br> **Electronics companies face complex producti** Keyword: Monte Carlo Simulation; Dynamic to the cost function; (4<br>
Programming; Entropy Weight Law; returned product is com<br>
Business Production Decisions the results of previous dee<br>
xeternal influence.<br>
I.Introduction<br>
E **Programming;** Entropy Weight Law; returned product is completely<br> **Business Production Decisions** the results of previous decisions<br> **Electronics companies face complex production**<br> **Electronics companies face complex pro Business Production Decisions** the results of previculation<br> **Electronics companies face complex production**<br> **Contained Constanting challenges, especially in the**<br> **Constanting density control of spare parts and the insp 1.Introduction**<br> **Electronics companies face complex production**<br> **2. Decision Analysis and Recision-making challenges, especially in the**<br> **Monte Carlo Simulation**<br> **quality control of spare parts and the inspection and 1. Introduction**<br> **Electronics companies face complex production**<br> **Electronics companies face complex production**<br> **Carlo Simulation**<br> **Carlo Simulation**<br> **Carlo Simulation**<br> **Carlo Simulation**<br> **Carlo Simulation**<br> **C** Electronics companies face complex production<br>
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Monte Carlo Simulat<br>
quality control of spare parts and the inspection<br>
of finished products. With the intensification of<br>
marke decision-making challenges, especially in the **Monte Carlo Simulation**<br>
quality control of spare parts and the inspection<br>
of finished products. With the intensification of<br>
market competition and the continuous<br>
memoremen quality control of spare parts and the inspection<br>of finished products. With the intensification of<br>market competition and the continuous<br>improvement of consumers' requirements for For the decision-making<br>product quality, of finished products. With the intensification of market competition and the continuous 22.1 Research Ideas improvement of consumers' requirements for For the decision-making product quality, how to efficiently and of the market competition and the continuous 2.1 Research Ideas<br>improvement of consumers' requirements for For the decision-making p<br>product quality, how to efficiently and of the production pro<br>accurately control the defective r mprovement of consumers' requirements for For the decision-making proble<br>
product quality, how to efficiently and of the production process,<br>
accurately control the defective rate has become<br>
the key to breakthrough. In th

**Accudentic Education**<br> **accuration optimization research in**<br> **accuration-making**<br> **in , Tang Xiaoqing, Wang Chunli**<br> *Guilin, Guangxi, China*<br>
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accurate assessment of the supplier's rejects rate.<br>
It further discusses h **Example 19 Academic Education**<br> **Example 10 Academic Education**<br> **ion optimization research in**<br> **ion decision-making**<br> **ion**<br> *Guilin, Guangxi, China*<br>
<br>
accurate assessment of the supplier's rejects rate.<br>
It further di 24<br> **ion optimization research in**<br> **ion decision-making**<br> **ion decision-making**<br> **ion figure and market**<br> *Guilin, Guangxi, China*<br>
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accurate assessment of the supplier's rejects rate.<br>
It further discusses how to optim **COLORET CONCITED:**<br> **COLORET ATTES INTERENT CONCITED STATE STATE STATE STATE STATE STATE STATE STATE ACTION SCULPT STATE ACTION accurate assessment of the supplier's rejects rate.<br>
It further discusses how to optimize the ion optimization research in**<br> **in ,Tang Xiaoqing,Wang Chunli**<br> *Guilin, Guangxi, China*<br>
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accurate assessment of the supplier's rejects rate.<br>
It further discusses how to optimize the<br>
inspection, assembly, dismantling **1 decision-making**<br>
in ,Tang Xiaoqing,Wang Chunli<br> *Guilin, Guangxi, China*<br>
accurate assessment of the supplier's rejects rate.<br>
It further discusses how to optimize the<br>
inspection, assembly, dismantling and market<br>
lau **THE CESIOII-HIAKING**<br>
in , Tang Xiaoqing, Wang Chunli<br> *Guilin, Guangxi, China*<br>
accurate assessment of the supplier's rejects rate.<br>
It further discusses how to optimize the<br>
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Guilin, Guangxi, China<br>
accurate assessment of the supplier's rejects rate.<br>
It further discusses how to optimize the<br>
inspection, assembly, dismantling and market<br>
launch strategies in the

decision-making of the enterprise, which can<br>
be flexibly adjusted according to the situation<br>
following assumptions about<br>
to achieve the best production management<br>
effect, reduce the production loss of the there is no m **in , Tang Xiaoqing, Wang Chunli**<br>
Guilin, Guangxi, China<br>
accurate assessment of the supplier's rejects rate.<br>
It further discusses how to optimize the<br>
inspection, assembly, dismantling and market<br>
launch strategies in t **In , Iang Xiaoqing, Wang Chunli**<br> *Guilin, Guangxi, China*<br>
accurate assessment of the supplier's rejects rate.<br>
It further discusses how to optimize the<br>
inspection, assembly, dismantling and market<br>
launch strategies i Grutin, Guangxi, China<br>
accurate assessment of the supplier's rejects rate.<br>
It further discusses how to optimize the<br>
inspection, assembly, dismantling and market<br>
launch strategies in the production process to<br>
reduce co accurate assessment of the supplier's rejects rate.<br>It further discusses how to optimize the<br>inspection, assembly, dismantling and market<br>launch strategies in the production process to<br>reduce costs and improve product qual accurate assessment of the supplier's rejects rate.<br>It further discusses how to optimize the<br>inspection, assembly, dismantling and market<br>valuench strategies in the production process to<br>reduce costs and improve product qu accurate assessment of the supplier's rejects rate.<br>It further discusses how to optimize the<br>inspection, assembly, dismantling and market<br>launch strategies in the production process to<br>reduce costs and improve product qual It further discusses how to optimize the<br>inspection, assembly, dismantling and market<br>launch strategies in the production process to<br>reduce costs and improve product qualification<br>rates under a given defective rate[1].<br>Thi inspection, assembly, dismantling and market<br>launch strategies in the production process to<br>reduce costs and improve product qualification<br>rates under a given defective rate[1].<br>This data is derived from question B of the launch strategies in the production process to<br>reduce costs and improve product qualification<br>rates under a given defective rate[1].<br>This data is derived from question B of the 2024<br>National Mathematical Contest in Modelin reduce costs and improve product qualification<br>rates under a given defective rate[1].<br>This data is derived from question B of the 2024<br>National Mathematical Contest in Modeling for<br>College Students, including the content i rates under a given defective rate[1].<br>This data is derived from question B of the 2024<br>National Mathematical Contest in Modeling for<br>College Students, including the content in Table<br>1, as well as the four stages of parts This data is derived from question B of the 2024<br>National Mathematical Contest in Modeling for<br>College Students, including the content in Table<br>1, as well as the four stages of parts assembly,<br>finished product testing, de National Mathematical Contest in Modeling for<br>College Students, including the content in Table<br>1, as well as the four stages of parts assembly,<br>finished product testing, defective product<br>dismantling[6], and waste replacem College Students, including the content in Table 1, as well as the four stages of parts assembly, finished product testing, defective product dismantling[6], and waste replacement in the problem onecision-making process. 1, as well as the four stages of parts assembly,<br>finished product testing, defective product<br>dismantling[6], and waste replacement in the<br>production decision-making process. In order to<br>solve the problem and ensume the si thus the roduct testing, detective product<br>dismantling[6], and waste replacement in the<br>production decision-making process. In order to<br>solve the problem and ensure the simplification<br>and operability of the model, we make dismantling[6], and waste replacement in the<br>production decision-making process. In order t<br>solve the problem and ensure the simplificatio<br>and operability of the model, we make the<br>following assumptions about the problem: soive the problem and ensure the simplineation<br>and operability of the model, we make the<br>following assumptions about the problem: (1)<br>The test results are completely reliable, and<br>there is no missed detection and false det and operabiny of the model, we make the<br>following assumptions about the problem: (1)<br>The test results are completely reliable, and<br>there is no missed detection and false detection;<br>(2) The production process is static, tha there is no missed detection and laise detection;<br>
(2) The production process is static, that is, there<br>
are no influencing factors that change with time;<br>
(3) The decision at each stage is linearly related<br>
to the cost fu (2) The production process is static, that is, there<br>are no influencing factors that change with time;<br>(3) The decision at each stage is linearly related<br>to the cost function; (4) The quality of the<br>returned product is co

# **Programming**

are no influencing factors that change with time;<br>
(3) The decision at each stage is linearly related<br>
to the cost function; (4) The quality of the<br>
returned product is completely determined by<br>
the results of previous dec (3) The decision at each stage is linearly related<br>to the cost function; (4) The quality of the<br>returned product is completely determined by<br>the results of previous decisions, and there is no<br>external influence.<br>**2. Decis** to the cost function; (4) The quality of the<br>returned product is completely determined by<br>the results of previous decisions, and there is no<br>external influence.<br>2. Decision Analysis and Research based on<br>Monte Carlo Simula returned product is completely determined by<br>the results of previous decisions, and there is no<br>external influence.<br>2. Decision Analysis and Research based on<br>Monte Carlo Simulation and Dynamic<br>Programming<br>2.1 Research Ide the results of previous decisions, and there is no<br>external influence.<br>2. Decision Analysis and Research based on<br>Monte Carlo Simulation and Dynamic<br>Programming<br>2.1 Research Ideas<br>For the decision-making problems at each s external influence.<br>
2. Decision Analysis and Research based on<br>
Monte Carlo Simulation and Dynamic<br>
Programming<br>
2.1 Research Ideas<br>
For the decision-making problems at each stage<br>
of the production process, we need to<br>
c 2. Decision Analysis and Research based on<br>Monte Carlo Simulation and Dynamic<br>Programming<br>2.1 Research Ideas<br>5 For the decision-making problems at each stage<br>of the production process, we need to<br>comprehensively evaluate t 2. Decision Analysis and Research based on<br>
Monte Carlo Simulation and Dynamic<br>
Programming<br>
2.1 Research Ideas<br>
For the decision-making problems at each stage<br>
of the production process, we need to<br>
comprehensively evalua Monte Carlo Simulation and Dynamic<br>Programming<br>2.1 Research Ideas<br>For the decision-making problems at each stage<br>of the production process, we need to<br>comprehensively evaluate the defect rate of<br>spare parts and finished pr **2.1 Research Ideas**<br> **2.1 Research Ideas**<br>
For the decision-making problems at each stage<br>
of the production process, we need to<br>
comprehensively evaluate the defect rate of<br>
spare parts and finished products, the cost of 2.1 Research Ideas<br>For the decision-making problems at each stage<br>of the production process, we need to<br>comprehensively evaluate the defect rate of<br>spare parts and finished products, the cost of<br>testing and dismantling, an 2.1 Research Ideas<br>For the decision-making problems at each<br>of the production process, we nee<br>comprehensively evaluate the defect r<br>spare parts and finished products, the c<br>testing and dismantling, and other factor<br>high-de



*Economic Society and Humanities Vol. 1 No. 10, 2024*

		<b>Academic Education</b> Publishing House											
												Economic Society and Humanities Vol. 1 No. 10, 2024	
								Table1. The Situation Encountered by Enterprises in Production					
Parts & Accessories 1 Circum				Parts & Accessories 2			Finished\product				Non-conforming finished products		
stance		Defecti- The unit						Cost of Defective The unit Cost of Defective Assembly Cost of		The		SwapDismantling	
	verate		price of detection	rate	price of detection		rate	costs	detection market loss			costs	
		the purchase			the purchase					price			
$\mathbf{1}$	10%	4	$\overline{2}$	10%	18	3	10%	6	3	56	6	5	
$\overline{c}$	20%	$\overline{4}$	$\overline{2}$	20%	18	3	20%	6	3	56	6	5	
3	10%	$\overline{4}$	$\overline{2}$	10%	18	3	10%	6	3	56	30	5	
$\overline{\mathcal{L}}$	20%	$\overline{\mathcal{L}}$	1	20%	18	$\mathbf{1}$	20%	6	$\overline{2}$	56	30	5	
5	10%	$\overline{4}$	8	20%	18	$\mathbf{1}$	10%	6	2	56	10	5	
6	$5\%$	4	$\overline{2}$	$5\%$	18	3	$5\%$	6	3	56	10	40	
												Phase4: $S_4$ indicates the status of whether to	
2.2	<b>Model</b>	<b>Analysis</b>		for	<b>Dynamic</b>							process the returned non-conforming products,	
Programming												and the decision variable $d_4$ is the method of	
		2.2.1 Decision-making stages and analysis										processing. The cost of handling returned	
(1) Stage Breakdown non-conforming finished products is $C_4$ : The decision-making objective at each stage is							(4)						
$C_4 = C_r \cdot N_r$ to minimize the total cost at that stage. We In this context, $C_r$ represents the cost of return													
decompose the cost of each stage, and set the processing, and $N_r$ represents the number of													
state $S_t$ to represent the state of the t-th stage, returns.													
and the decision variable $d_t$ to represent the						After analyzing each phase, we then calculate							
	decision-making of the t-th stage[8]. The status,						the total cost $C_t$ for each scenario in the						
	cost calculations and decisions at each stage are						nroblem <sup>.</sup>						

## **Programming**

2 20% 4 2 20% 18 3 20% 6 3<br>
3 10% 4 2 10% 18 3 10% 6 3<br>
4 20% 4 1 20% 18 1 20% 6 2<br>
5 10% 4 8 20% 18 1 10% 6 2<br>
6 5% 4 2 5% 18 3 5% 6 3<br>
2.2 Model Analysis for Dynamic process the returned non-c-<br>
Programming and the deci 3 10% 4 2 10% 18 3 10% 6 3 30<br>
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5 10% 4 8 20% 18 1 10% 6 2 56<br>
6 5% 4 2 5% 18 3 5% 6 3 56<br>
6 5% 4 2 5% 18 3 5% 6 3 56<br>
2.2 Model Analysis for Dynamic process the returned non-conf<br>
Programmin 4 20% 4 1 20% 18 1 20% 6 2<br>
5 10% 4 8 20% 18 1 20% 6 2<br>
6 5% 4 2 5% 18 3 5% 6 3<br> **2.2 Model Analysis for Dynamic** process the returned non-**c**<br> **Programming** 2.2.1 Decision-making stages and analysis for **Dynamic** process 5 10% 4 8 20% 18 1 10% 6 2 5%<br>
6 5% 4 2 5% 18 3 5% 6 6 3 5%<br>
Place-1:  $S_4$  indicates the statured non-coni<br> **Programming**<br>
2.2. **Model Analysis for Dynamic** process the returned non-coni<br> **Programming**<br>
2.2. Decision-mak **2.2 Model Analysis for Dy**<br> **2.2 Model Analysis for Dy**<br> **Programming**<br>
2.2.1 Decision-making stages and analysis<br>
(1) Stage Breakdown<br>
The decision-making objective at each sto<br>
to minimize the total cost at that stage<br> 2.2 Model Analysis for Dynamic Phase4:  $S_4$  indicates the statuted programming<br>
Programming and the decision variable d<sub>4</sub><br>
2.2.1 Decision-making stages and analysis and the decision variable d<sub>4</sub><br>
(1) Stage Breakdown no **Example 10**<br> **Example 2.2.1 Decision-making stages and analysis<br>
2.2.1 Decision-making objective at each stage is<br>
(1) Stage Breakdown<br>
The decision-making objective at each stage is<br>
to minimize the total cost at that s Programming**<br> **Progression-making stages and analysis**<br>
2.2.1 Decision-making stages and analysis the consisting. The cost of halo<br>
(1) Stage Breakdown<br>
The decision-making objective at each stage is  $C_4 = C_r \cdot N_r$ <br>
to min 2.2.1 Decision-making stages and analysis processing. The <br>
(1) Stage Breakdown<br>
the decision-making objective at each stage is  $C_4 = C_r \cdot N_r$ <br>
to minimize the total cost at that stage. We In this context, C<br>
decompose the (1) stage Breakdown<br>
in-conforming<br>
the decision-making objective at each stage is<br>
to minimize the total cost at that stage. We<br>
decompose the cost of each stage, and set the<br>
state S<sub>t</sub> to represent the state of the t-t In this context,  $C_r$  represent the cost at mat stage. We in this context,  $C_r$  represent the state  $S_t$  to represent the state of the t-th stage, and sect in the decision variable d<sub>t</sub> to represent the  $A$  and  $A$  and  $A$ are<br>compose ine cost of each stage, and set ine processing, and  $N_r$  represent<br>tate  $S_t$  to represent the state of the t-th stage, returns.<br>and the decision variable  $d_t$  to represent the After analyzing each phase, w<br>dec

2 elecision variable d<sub>t</sub> to represent the<br>
n-making of the t-th stage[8]. The status, the total is<br>
leulations and decisions at each stage are problem:<br>
ws:<br>  $C_t$  =  $\therefore$  Regarding its status,  $S_1$  represents the Finall state  $S_t$  to represent the state of the 1-th stage,<br>decision variable d<sub>t</sub> to represent the After analyzing each phase,<br>decision-making of the t-th stage[8]. The status, the total cost  $C_t$  for each<br>cost calculations and and the decision variable d<sub>t</sub> to represent the<br>decision-making of the t-th stage[8]. The status, the total<br>cost calculations and decisions at each stage are<br>problem:<br>as follows:<br> $C_t$  =<br>Phase 1: Regarding its status,  $S_1$ decision-making of the t-th stage [s]. The status, the total cost  $C_t$  for each<br>as follows:<br>as follows:<br>as follows:<br>as follows:<br>as follows:<br>as follows:<br>as follows:<br>as the status of whether to inspect components 1 and 2,<br>cost calculations and decisions at each stage are<br>
are problem:<br>  $C_t = C_1 + C_2 + C_3$ -<br>
Phase 1: Regarding its status,  $S_1$  represents the<br>
state of whether to inspect Components 1 and 2, for each stage, which re<br>
and the de 2 is variable 2 is whether to conduct the inspection of the inspection of the inspection. The cost of the inspection variable  $d_1$  is whether to expected cost when conduct the inspection. The cost  $C_1$  for adopted under Final Primally, we construct the<br>state of whether to inspect Components 1 and 2,<br>and the decision variable  $d_1$  is whether to expected cost when t<br>conduct the inspection. The cost  $C_1$  for adopted under the state.<br>inspe

$$
P_1 = P_1 \cdot C_{d1} + P_2 \cdot C_{d2}
$$

and one weakers of spectra cost when the spectrum of expected cost when the state  $S_t$ :<br>
inspecting and assembling the components:<br>  $C_1 = P_1 \cdot C_{d1} + P_2 \cdot C_{d2}$  (1)<br>
In this context,  $P_1$  and  $P_2$  represent the defect<br>
r the mission of interesting and assembling the components:<br>  $C_1 = P_1 \cdot C_{d1} + P_2 \cdot C_{d2}$  (1) and  $C_{\xi_i} = m_i(C(S_t, a_t) + E[V_t(S_t)] = m_i(C(S_t, a_t)) + E[V_t(S_t)]$ In this context,  $P_1$  and  $P_2$  represent the defect<br>
In this context,  $P_1$  and  $P_2$  represent the defect<br>
rates of spare part 1 and spare part 2,<br>
inspection outs for these parts.<br>
inspection contes for these parts.<br>

$$
C_2 = P_f \cdot C_{df} \tag{2}
$$

 $C_1 = P_1 \cdot C_{d1} + P_2 \cdot C_{d2}$  (1)<br>
context,  $P_1$  and  $P_2$  represent the defect<br>
of spare part 1 and spare part 2,<br>
ively, while  $C_{d1}$  and  $C_{d2}$  represent the<br>
ion costs for these parts.<br>
2:  $S_2$  indicates the status Figure 1 T event is the program, we will also use<br>
In this context,  $P_1$  and  $P_2$  represent the defect<br>
respectively, while  $C_{d1}$  and  $C_{d2}$  represent the<br>
inspectively, while  $C_{d1}$  and  $C_{d2}$  represent the<br>
inspe m uns context,  $r_1$  and  $r_2$  represent the uccess of spare part 1 and spare part 2,<br>respectively, while  $C_{d1}$  and  $C_{d2}$  represent the overall cost in the end<br>inspection costs for these parts.<br>Phase 2:  $S_2$  indicate respectively, while  $C_{d1}$  and  $C_{d2}$  represent the correspectively, while  $C_{d1}$  and  $C_{d2}$  represent the inveval cost inspection costs for these parts. (2) Decision ana finished product is inspected, and the decisio Expectively, wince  $a_1$  and  $a_2$  repused the overall cost in the end.<br>
inspection costs for these parts.<br>
Phase 2:  $S_2$  indicates the status of whether the<br>
finished product is inspected, and the decision<br>  $C_2 = P_f \cdot C_{df$ mepoculous of unce pais.<br>
Thase 2:  $S_2$  indicates the status of whether the<br>
finished product is inspected, and the decision<br>
variable  $d_2$  is whether to conduct the inspection<br>
The cost of finished product inspection i First 2: 32 indicates the status of whether the<br>finished product is inspected, and the decision<br>variable  $d_2$  is whether to conduct the inspection<br>The cost of finished product inspection is  $C_2$ :<br> $C_2 = P_f \cdot C_{df}$  (2<br>In th this context,  $P_f$  represents the defect<br>finished product, and  $C_{df}$  represents t<br>inspecting the finished product.<br>ase 3:  $S_3$  indicates the status of whe<br>assemble the non-conforming f<br>ducts, and the decision variable e ext,  $P_f$  represents the defect rate of<br>
product, and  $C_{df}$  represents the cost<br>
g the finished product.<br>
3 indicates the status of whether to<br>
3 indicates the status of whether to<br>
(2) Defect<br>
the non-conforming finishe The cost of finished product inspection is  $C_2$ :<br>  $C_2 = P_f \cdot C_{df}$ <br>
In this context,  $P_f$  represents the defect rate<br>
the finished product, and  $C_{df}$  represents the c<br>
of inspecting the finished product.<br>
Phase 3:  $S_3$  i  $C_2 = P_f \cdot C_{df}$  (2) unqualitied spare I<br>  $C_2 = P_f \cdot C_{df}$  (2) Whether to dete<br>
the finished product, and  $C_{df}$  represents the cost (1) Detection cost:<br>
or of inspecting the finished product.<br>
Phase 3: S<sub>3</sub> indicates the sta In this context,  $P_f$  represents the defect rate of<br>the finished product, and  $C_{df}$  represents the cos<br>of inspecting the finished product.<br>Phase 3:  $S_3$  indicates the status of whether to<br>disassemble the non-conforming

$$
C_3 = C_a \cdot N_f \tag{3}
$$

10% 6 3 56 30<br>
20% 6 2 56 30<br>
10% 6 2 56 10<br>
5% 6 3 56 10<br>
5% 6 3 56 10<br>
ee4: S<sub>4</sub> indicates the status of wheth<br>
ees the returned non-conforming pro<br>
the decision variable d<sub>4</sub> is the meth<br>
essing. The cost of handling r 6 3 56 30 5<br>
6 2 56 30 5<br>
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6 3 56 10 40<br>
mdicates the status of whether 1<br>
returned non-conforming product<br>
sion variable d<sub>4</sub> is the method of<br>
The cost of handling returne<br>
ing finished products is C<sub>4</sub>:<br>
N<sub></sub>  $\frac{10\%}{20\%}$  6  $\frac{2}{2}$  56 30 5<br>  $\frac{10\%}{5}$  6  $\frac{2}{2}$  56 10 5<br>  $\frac{5\%}{5}$  6  $\frac{3}{2}$  56 10 40<br>
Phase4: S<sub>4</sub> indicates the status of whether to<br>
process the returned non-conforming products,<br>
and the decision var 20% 0 2 30 30 3<br>
10% 6 2 56 10 5<br>
5% 6 3 56 10 40<br>
Phase4: S<sub>4</sub> indicates the status of whether to<br>
process the returned non-conforming products,<br>
and the decision variable d<sub>4</sub> is the method of<br>
processing. The cost of h Finally, and the decision variable d<sub>4</sub> is the returned process the returned non-conforming products, and the decision variable d<sub>4</sub> is the method of processing. The cost of handling returned non-conforming finished produ

problem:

$$
C_t = C_1 + C_2 + C_3 + C_4 \tag{5}
$$

Example 11 For cost of handling returned<br>conforming finished products is  $C_4$ :<br> $C_4 = C_r \cdot N_r$  (4)<br>is context,  $C_r$  represents the cost of return<br>essing, and  $N_r$  represents the number of<br>ns.<br>contal cost  $C_t$  for each scena process the returned non-conforming products,<br>and the decision variable d<sub>4</sub> is the method of<br>processing. The cost of handling returned<br>non-conforming finished products is C<sub>4</sub>:<br> $C_4 = C_r \cdot N_r$ <br>In this context,  $C_r$  represen and the decision variable  $u_4$  is the method of<br>processing. The cost of handling returned<br>non-conforming finished products is  $C_4$ :<br> $C_4 = C_r \cdot N_r$  (4)<br>In this context,  $C_r$  represents the cost of return<br>processing, and  $N$ processing. The cost of handling returned<br>non-conforming finished products is  $C_4$ :<br> $C_4 = C_r \cdot N_r$  (4)<br>In this context,  $C_r$  represents the cost of return<br>processing, and  $N_r$  represents the number of<br>returns.<br>After analyz :

$$
V_t(S_t) = \min_{a_t} \{ C(S_t, a_t) + \mathbb{E}[V_{t+1}(S_{t+1}) | S_t, a_t] \} (6)
$$

fter analyzing each phase, we then c<br>
e total cost  $C_t$  for each scenario<br>
oblem:<br>  $C_t = C_1 + C_2 + C_3 + C_4$ <br>
mally, we construct the value function<br>
r each stage, which represents the m<br>
pected cost when the optimal stra<br>
opt th phase, we then calculate<br>for each scenario in the<br> $+ C_3 + C_4$  (5)<br>t the value function  $V_t(S_t)$ <br>ch represents the minimum<br>en the optimal strategy is<br>ate  $S_t$ :<br> $,a_t$ ) +  $\mathbb{E}[V_{t+1}(S_{t+1})|S_t, a_t]$ }(6)<br>will also use recursi In this context,  $C_r$  represents the cost of return<br>processing, and  $N_r$  represents the number of<br>returns.<br>After analyzing each phase, we then calculate<br>the total cost  $C_t$  for each scenario in the<br>problem:<br> $C_t = C_1 + C_2 + C_$ processing, and  $N_r$  represents the number of<br>returns.<br>After analyzing each phase, we then calculate<br>the total cost  $C_t$  for each scenario in the<br>problem:<br> $C_t = C_1 + C_2 + C_3 + C_4$  (5)<br>Finally, we construct the value function returns.<br>
After analyzing each phase, we then calculate<br>
the total cost  $C_t$  for each scenario in the<br>
problem:<br>  $C_t = C_1 + C_2 + C_3 + C_4$  (5)<br>
Finally, we construct the value function  $V_t(S_t)$ <br>
for each stage, which represents After analyzing each phase, we then calculate<br>the total cost  $C_t$  for each scenario in the<br>problem:<br> $C_t = C_1 + C_2 + C_3 + C_4$  (5)<br>Finally, we construct the value function  $V_t(S_t)$ <br>for each stage, which represents the minimum<br>ex the total cost  $C_t$  for each scenario in the<br>problem:<br> $C_t = C_1 + C_2 + C_3 + C_4$  (5)<br>Finally, we construct the value function  $V_t(S_t)$ <br>for each stage, which represents the minimum<br>expected cost when the optimal strategy is<br>adopt

problem:<br>  $C_t = C_1 + C_2 + C_3 + C_4$  (5)<br>
Finally, we construct the value function  $V_t(S_t)$ <br>
for each stage, which represents the minimum<br>
expected cost when the optimal strategy is<br>
adopted under the state  $S_t$ :<br>  $V_t(S_t) = \min_{a_t} \$  $C_t = C_1 + C_2 + C_3 + C_4$  (5)<br>Finally, we construct the value function  $V_t(S_t)$ <br>for each stage, which represents the minimum<br>expected cost when the optimal strategy is<br>adopted under the state  $S_t$ :<br> $V_t(S_t) = min\{C(S_t, a_t) + \mathbb{E}[V_{t+1$ Finally, we construct the value function  $V_t(S_t)$ <br>for each stage, which represents the minimum<br>expected cost when the optimal strategy is<br>adopted under the state  $S_t$ :<br> $V_t(S_t) = min\{C(S_t, a_t) + \mathbb{E}[V_{t+1}(S_{t+1})|S_t, a_t]\}(6)$ <br>In the in the space of the control of the cost of the cost of the cost of the spaceted cost when the optimal strategy is adopted under the state  $S_t$ :<br>  $V_t(S_t) = min\{C(S_t, a_t) + \mathbb{E}[V_{t+1}(S_{t+1})|S_t, a_t]\}(6)$ <br>
In the program, we will als expected cost when the optimal strategy is<br>adopted under the state  $S_t$ :<br> $V_t(S_t) = min\{C(S_t, a_t) + \mathbb{E}[V_{t+1}(S_{t+1})|S_t, a_t]\}(6)$ <br>In the program, we will also use recursion, loops,<br>and other methods to determine the optimal<br>decisi adopted under the state  $S_t$ :<br>  $V_t(S_t) = min\{C(S_t, a_t) + \mathbb{E}[V_{t+1}(S_{t+1})|S_t, a_t]\}(6)$ <br>
In the program, we will also use recursion, loops,<br>
and other methods to determine the optimal<br>
decisions for each stage, in order to minimiz  $V_t(S_t) = min\{C(S_t, a_t) + \mathbb{E}[V_{t+1}(S_{t+1})|S_t, a_t]\}(6)$ <br>In the program, we will also use recursion, loops,<br>and other methods to determine the optimal<br>decisions for each stage, in order to minimize<br>the overall cost in the end.<br>(2) In the program, we will also use recursion, land other methods to determine the opt<br>decisions for each stage, in order to minin<br>the overall cost in the end.<br>(2)Decision analytic<br>1. Deciding whether to test spare parts: In In the program, we will also use recursion, loops,<br>
and other methods to determine the optimal<br>
decisions for each stage, in order to minimize<br>
the overall cost in the end.<br>
(2) Decision analytic<br>
D. Deciding whether to te and other methods to determine the optimal<br>decisions for each stage, in order to minimize<br>the overall cost in the end.<br>(2)Decision analytic<br>the cost spare parts in the production process, enterprises can choose to<br>test spa

product inspection is  $C_2$ :<br>
product inspection is  $C_2$ :<br>
imqualified spare parts 1 and 2, in<br>
represents the defect rate of<br>
consideration for two factors:<br>
is, and  $C_{df}$  represents the cost<br>
ished product.<br>
spare par decisions for each stage, in order to minimize<br>the overall cost in the end.<br>(2)Decision analytic<br>1. Deciding whether to test spare parts: In the<br>production process, enterprises can choose to<br>test spare parts 1 and 2, in or the overall cost in the end.<br>
(2)Decision analytic<br>
1. Deciding whether to test spare parts: In the<br>
production process, enterprises can choose to<br>
test spare parts 1 and 2, in order to reduce<br>
unqualified spare parts in (2) Decision analytic<br>
1. Deciding whether to test spare parts: In the<br>
production process, enterprises can choose to<br>
test spare parts 1 and 2, in order to reduce<br>
unqualified spare parts in the assembly process.<br>
Whether 1. Deciding whether to test spare parts: In the<br>production process, enterprises can choose to<br>test spare parts 1 and 2, in order to reduce<br>unqualified spare parts in the assembly process.<br>Whether to detect spare parts, the production process, enterprises can choose to<br>test spare parts 1 and 2, in order to reduce<br>unqualified spare parts in the assembly process<br>Whether to detect spare parts, the main<br>consideration for two factors:<br>(1) Detectio test spare parts 1 and 2, in order to reduce<br>unqualified spare parts in the assembly process.<br>Whether to detect spare parts, the main<br>consideration for two factors:<br>(1) Detection cost: the cost of each detection of a<br>spare unqualitied spare parts in the assembly process.<br>Whether to detect spare parts, the main<br>consideration for two factors:<br>(1) Detection cost: the cost of each detection of a<br>spare part.<br>(2) Defect rate: assuming that the def Whether to detect spare parts, the main consideration for two factors:<br>(1) Detection cost: the cost of each detection of a spare part.<br>(2) Defect rate: assuming that the defect rate is very low and the cost of testing is h



**Economic Society and Humanities Vol. 1 No. 10, 2024**<br>
(such as the rate of defective finished product, programming model to<br>
return loss, etc.) exceed the cost of detection. If decision at each stage of t<br>  $C_{d1, d2} < C_4$ **Economic Society and Humanities Vol. 1 No. 10, 2024**<br>
(such as the rate of defective finished product, programming model to determ<br>
return loss, etc.) exceed the cost of detection. If decision at each stage of the pro-<br> **Economic Society and Humanities Vol. 1 No. 10, 2024**<br>
(such as the rate of defective finished product, programming mode<br>
return loss, etc.) exceed the cost of detection. If<br>  $C_{d1, d2} < C_4$ , recommended not to test[2].<br>
2

**Economic Society and Humanities Vol. 1 No. 10, 2024**<br>
(such as the rate of defective finished product, programming model to deter-<br>
return loss, etc.) exceed the cost of detection. If decision at each stage of the pro-<br> **Economic Society and Humanities Vol. 1 No. 10, 2024**<br>
(such as the rate of defective finished product, programming model to<br>
return loss, etc.) exceed the cost of detection. If decision at each stage of  $C_{d1, d2} < C_4$ , r **Economic Society and Humanities Vol. 1 No. 10, 2024**<br>
(such as the rate of defective finished product, programming model to deter<br>
return loss, etc.) exceed the cost of detection. If decision at each stage of the product **Economic Society and Humanities Vol. 1 No. 10, 2024**<br>
(such as the rate of defective finished product, programming model to deter<br>
return loss, etc.) exceed the cost of detection. If decision at each stage of the pro-<br>
C **Economic Society and Humanities Vol. 1 No. 10, 2024**<br>
(such as the rate of defective finished product, programming model to detect<br>
return loss, etc.) exceed the cost of detection. If<br>
call,  $a_2 < C_4$ , recommend testing; **Economic Society and Humanities Vol. 1 No. 10, 2024**<br>
(such as the rate of defective finished product, programming model to d<br>
return loss, etc.) exceed the cost of detection. If decision at each stage of th<br>
C<sub>d1, d2</sub> < **Economic Society and Humanities Vol. 1 No. 10, 2024**<br>
(such as the rate of defective finished product, programmi<br>
return loss, etc.) exceed the cost of detection. If decision at<br>  $C_{d1, d2} < C_4$ , recommende not to test[2] **Economic Society and Humanities Vol. 1 No. 10, 2024**<br>
(such as the rate of defective finished product, programming model to return loss, etc.) exceed the cost of detection. If decision at each stage of the  $C_{d1, d2} < C_4$ **Economic Society and Humanities Vol. 1 No. 10, 2024**<br>
(such as the rate of defective finished product, programming model to deter<br>
return loss, etc.) exceed the cost of detection. If decision at each stage of the pr<br>
C<sub>d</sub> (such as the rate of defective finished product, programming model to detern<br>return loss, etc.) exceed the cost of detection. If decision at each stage of the pro<br>C<sub>d1,d2</sub> < C<sub>4</sub>, recommended not to test[2].<br>2. Deciding w such as the concerned minister product in the concerned product<br>
return loss, etc.) exceed the cost of detection. If decision at each stage of the  $C_{d1}$ ,  $d2 < C_4$ , recommended not to test[2].<br>
2. Deciding whether to tes Cann ross, enc., the commend testing; on the (3) Cost Calculation: Using the contrary, it is recommended not to test[2].<br>
2. Deciding whether to test the finished product:<br>
companies need to decide whether to test the for C<sub>d1</sub>,  $dz \sim c_4$ , recommend cessing, on the (3) example contrary, it is recommended not to test [2].<br>
2. Deciding whether to test the finished product: at each foread sesembled finished product or not, if not, the finished contrary, it is recommended not to test[2].<br>
2. Deciding whether to test the finished product:<br>
companies need to decide whether to test the for each steam of sesembled finished product or not, if not, the if S<sub>i</sub> is a ra

2. Deciding whether to test the finished product:<br>
Companies need to decide whether to test the informal signals are assembled finished product or not, if not, the<br>
foreach scenario.<br>
decision to test the finished product Companies need to decide whether to test the<br>
singular finished product or not, if not, the<br>
finished product directly to the market. The<br>
decision to test the finished product mainly<br>
and product and product mainly<br>
mark thushed product directly to the market. The production sample, the expect<br>decision to test the finished product mainly Monte Carlo algorithm can be<br>depends on the following factors:<br>(1) Finished product defect rate: If th decision to test the timshed product mainly<br>
depends on the following factors:<br>  $\hat{C} = \frac{1}{N} \sum_{i=1}^{N} C(S_i)$ <br>
(1) Finished product defect rate is high, directly into the<br>
market will lead to a large number of<br>
substandar depends on the following factors:<br>
(1) Finished product defect rate: If the finished<br>
market will lead to a large number of  $\Sigma_{i=1}^{N}C(S_i)$  is the cost under sa<br>
market will lead to a large number of  $\Sigma_{i=1}^{N}C(S_i)$  is (1) Finished product defect rate: If the finished<br>
product defect rate is high, directly into the<br>
market will lead to a large number of<br>
substandard products sold, resulting in the loss<br>
of returns (including logistics c

loss.

product detect rate is high, directly into the<br>
substandard products sold, resulting in the loss<br>
substandard products sold, resulting in the loss<br>
of returns (including logistics costs, loss of<br>
corporate reputation, etc market will lead to a large number of<br>
substandard products sold, resulting in the loss<br>
of returns (including logistics costs, loss of<br>
corporate reputation, etc.).<br>
(2) Testing cost: the cost of finished product<br>
testin substandard products sold, resulting in the loss<br>
of returns (including logistics costs, loss of<br>
corporat reputation, etc.)<br>
(2) Testing cost: the cost of finished product<br>
testing is relatively high, companies need to<br> of returns (including logistics costs, loss of<br>
corporate reputation, etc.).<br>
(2) Testing cost: the cost of finished product<br>
testing is relatively high, companies need to<br>
balance the cost of testing and defective rate o corporate reputation, etc.).<br>
(2) Testing cost: the cost of finished product<br>
teating is relatively high, companies need to<br>
balance the cost of testing and defective rate of<br>
the entropy weight method is<br>
loss.<br>
loss.<br>
( (2) Iesting cost: the cost of finished product<br>testing is relatively high, companies need to<br>balance the cost of testing and defective rate of<br>indicators to evaluate<br>loss.<br>(3) Decision basis: Determine whether to test the testing is relatively high, companies need to<br>
balance the cost of testing and defective rate of<br>
loss.<br>
(3) Decision basis: Determine whether to test the<br>
(3) Decision basis: Determine whether to test the<br>
transformal in balance the cost of testing and detective rate of<br>
(3) Decision basis: Determine whether to test the<br>
(3) Decision basis: Determine whether to test the<br>
finished product by comparing the return loss<br>
that may occur if the finished product by comparing the term in the material of the material of the mislen and the product is not that may occur if the finished product is not tested with the cost of testing.<br>
3. Deciding whether to disassembl (3) Decision basis: Determine whether to test the<br>
finished product by comparing the return loss<br>
seconarios,<br>
that may occur if the finished product is not<br>
tested with the cost of testing.<br>
3. Deciding whether to disass the product by comparing the return loss<br>
that may occur if the finished product is not<br>
the cost of testing.<br>
3. Deciding whether to disassemble the<br>
13 Occiding whether to disassemble the<br>
text of disassemble the cost o that may occur if the finished product is not<br>tested with the cost of testing.<br>3. Deciding whether to disassemble the (1) Data Standardiza<br>unqualified finished products: If the defective Standardize the data<br>product are f tested with the cost of testing.<br>
3. Deciding whether to disassemble the (1) Data Standardization<br>
unqualified finished products are found in the process of finished<br>
product inspection, you can choose to scrap<br>
them or d 3. Deciding whether to disassemble the<br>
unqualified finished products: If the defective<br>
product inspection, you can choose to finished<br>
product inspection, you can choose to scrap<br>
them or dismantle them. After dismantli unqualitied timshed products: It the defective<br>
product inspection, you can choose to finished to eliminate the influence of<br>
product inspection, you can choose to scrap<br>
them or dismantle them. After dismantling, the<br>
sp products are tound in the process of timshed<br>
the mordismutile them and the process of scrap<br>
the mordismutile the scriptions of the distanting the<br>
spare parts will not be damaged, the company<br>
spare parts will not be da product inspection, you can choose to scrap<br>
them or dismantle them. After dismantling, the<br>
spare parts will not be damaged, the company<br>
can put these dismantled spare parts back into<br>
production, but the dismantling pr

24<br> **Particular Education**<br>
programming model to determine the optimal<br>
decision at each stage of the process[10].<br>
(3) Cost Calculation: Using the Monte Carlo<br>
sampling method, calculate the cost distribution<br>
at each sta 24<br> **Configurers Accole Times Publishing House**<br>
programming model to determine the optimal<br>
decision at each stage of the process[10].<br>
(3) Cost Calculation: Using the Monte Carlo<br>
sampling method, calculate the cost dist 24<br> **Constant Control Control Constant Control Constant Constant Constant Publishing House**<br>
programming model to determine the optimal<br>
decision at each stage of the process[10].<br>
(3) Cost Calculation: Using the Monte Car 24<br> **Solution**<br> 24<br> **Academic Education**<br>
programming model to determine the optimal<br>
decision at each stage of the process[10].<br>
(3) Cost Calculation: Using the Monte Carlo<br>
sampling method, calculate the cost distribution<br>
at each stag 24<br> **Example 19 Academic Educatio**<br>
programming model to determine the optima<br>
decision at each stage of the process[10].<br>
(3) Cost Calculation: Using the Monte Carl<br>
sampling method, calculate the cost distribution<br>
at e 24<br> **Propresof Accelering Education**<br>
programming model to determine the optimal<br>
decision at each stage of the process[10].<br>
(3) Cost Calculation: Using the Monte Carlo<br>
sampling method, calculate the cost distribution<br> 24<br>
Publishing House<br>
programming model to determine the optimal<br>
decision at each stage of the process[10].<br>
(3) Cost Calculation: Using the Monte Carlo<br>
sampling method, calculate the cost distribution<br>
at each stage an 24<br> **Contriguing House**<br>
programming model to determine the optimal<br>
decision at each stage of the process[10].<br>
(3) Cost Calculation: Using the Monte Carlo<br>
sampling method, calculate the cost distribution<br>
at each stage 24<br>
Publishing House<br>
programming model to determine the optimal<br>
decision at each stage of the process[10].<br>
(3) Cost Calculation: Using the Monte Carlo<br>
sampling method, calculate the cost distribution<br>
at each stage an **Example 19**<br>
programming model to determine the optimal<br>
decision at each stage of the process[10].<br>
(3) Cost Calculation: Using the Monte Carlo<br>
sampling method, calculate the cost distribution<br>
at each stage and estima decision at each stage of the process[10].<br>
(3) Cost Calculation: Using the Monte Carlo<br>
sampling method, calculate the cost distribution<br>
at each stage and estimate the expected total cost<br>
for each scenario.<br>
If S<sub>i</sub> is (3) Cost Calculation: Using the Monte Carlo<br>sampling method, calculate the cost distribution<br>at each stage and estimate the expected total cost<br>for each scenario.<br>If  $S_i$  is a random variable and denotes the<br>production sa

$$
\widehat{C} = \frac{1}{N} \sum_{i=1}^{N} C(S_i)
$$
\n(7)

where N is the number of samples simulated and  $\sum_{i=1}^{N} C(S_i)$  is the cost under sample  $S_i$ .<br>Through a large number of sample calculations,

at each stage and estimate the expected total cost<br>for each scenario.<br>If S<sub>i</sub> is a random variable and denotes the<br>production sample, the expected cost  $\hat{C}$  of the<br>Monte Carlo algorithm can be expressed as:<br> $\hat{C} = \frac{1$ for each scenario.<br>
If S<sub>i</sub> is a random variable and denotes the<br>
production sample, the expected cost  $\hat{C}$  of the<br>
Monte Carlo algorithm can be expressed as:<br>  $\hat{C} = \frac{1}{N} \sum_{i=1}^{N} C(S_i)$  (7)<br>
where N is the number o If S<sub>i</sub> is a random variable and denotes the<br>production sample, the expected cost  $\hat{C}$  of the<br>Monte Carlo algorithm can be expressed as:<br> $\hat{C} = \frac{1}{N} \sum_{i=1}^{N} C(S_i)$  (7)<br>where N is the number of samples simulated and<br> production sample, the expected cost  $\tilde{C}$  of the<br>
Monte Carlo algorithm can be expressed as:<br>  $\tilde{C} = \frac{1}{N} \sum_{i=1}^{N} C(S_i)$  (7)<br>
where N is the number of samples simulated and<br>  $\sum_{i=1}^{N} C(S_i)$  is the cost under samp Monte Carlo algorithm can be expressed as:<br>  $\hat{C} = \frac{1}{N} \sum_{i=1}^{N} C(S_i)$  (7)<br>
where N is the number of samples simulated and<br>  $\sum_{i=1}^{N} C(S_i)$  is the cost under sample S<sub>i</sub>.<br>
Through a large number of sample calculations  $\hat{C} = \frac{1}{N} \sum_{i=1}^{N} C(S_i)$  (7)<br>where N is the number of samples simulated and<br> $\sum_{i=1}^{N} C(S_i)$  is the cost under sample S<sub>i</sub>.<br>Through a large number of sample calculations,<br>we obtain the optimal decision scheme with th where N is the number of samples simulated and  $\sum_{i=1}^{N} C(S_i)$  is the cost under sample  $S_i$ .<br>Through a large number of sample calculations, we obtain the optimal decision scheme with the we pected cost for each stage in WELT IT IS the number of samples simulated and  $\sum_{i=1}^{N} C(S_i)$  is the cost under sample  $S_i$ .<br>Through a large number of sample calculations we obtain the optimal decision scheme with the expected cost for each stage in e  $\Sigma_{i=1}$  C(S<sub>i</sub>) is the cost under sample S<sub>i</sub>.<br>Through a large number of sample calculations,<br>we obtain the optimal decision scheme with the<br>expected cost for each stage in each case.<br>2.4 **Entropy Weighting Method**<br>The Through a large number of sample calculations,<br>we obtain the optimal decision scheme with the<br>expected cost for each stage in each case.<br>2.4 **Entropy Weighting Method**<br>The entropy weight method is used for objective<br>indic we obtain the optimal decision scheme with the<br>expected cost for each stage in each case.<br>2.4 **Entropy Weighting Method**<br>The entropy weight method is used for objective<br>indicators to evaluate and synthesize the<br>indicators **2.4 Entropy Weighting Method**<br>
The entropy weight method is used for objective<br>
indicators to evaluate and synthesize the<br>
indicators for solving different decision-making<br>
scenarios, and the priority of the indicators i The entropy weight method is used for objective<br>indicators to evaluate and synthesize the<br>indicators for solving different decision-making<br>scenarios, and the priority of the indicators is<br>judged by calculating the entropy The contractive size the promotion that is value and indicators is value and indicators cale. The (8)<br>
(8)<br>
f the i-th is the tions cale of the i-th is is the tions cale. maliators to evaluate and synthesize the<br>indicators for solving different decision-making<br>scenarios, and the priority of the indicators is<br>judged by calculating the entropy value and<br>weight of the indicators for scoring[3

$$
x^{'}_{ij} = \frac{x_{ij} - \min(x_j)}{\max(x_j) - \min(x_j)}
$$
(8)

(3) Decision basis: Determine whether to test the finished product by comparing the return loss	scenarios, and the priority of the indicators is judged by calculating the entropy value and		
that may occur if the finished product is not	weight of the indicators for scoring[3].		
tested with the cost of testing.	(1) Data Standardization		
3. Deciding whether to disassemble the	Standardize the data of cost and other indicators		
unqualified finished products: If the defective	to eliminate the influence of the scale. The		
products are found in the process of finished	standardization formula is as follows:		
product inspection, you can choose to scrap			
them or dismantle them. After dismantling, the	$x'_{ij} = \frac{x_{ij} - min(x_j)}{max(x_i) - min(x_i)}$		(8)
spare parts will not be damaged, the company can put these dismantled spare parts back into	where $x_{ii}$ is the original value of the i-th		
production, but the dismantling process requires	scenario on the j-th indicator and $x_{ij}$ is the		
a certain cost. The decision to disassemble	normalized value.		
depends on the following factors:		<b>Table 2. Decision Handling Situations</b>	
(1) If the cost of dismantling is less than the	Scenario 1:	Scenario 2:	Scenario 3:
value of the dismantled parts, it is recommended	---- Scenario	---- Scenario	---- Scenario
to dismantle and recycle the parts for reuse.	Handling ----	Handling ----	Handling ----
(2) If the cost of dismantling is higher and the	Component 1	Component 1	Component 1
value of recovered spare parts is lower, it is			Inspection: Yes Inspection: Yes Inspection: Yes
recommended to scrap the unqualified finished	Component 2	Component 2	Component 2
products directly to save the cost of dismantling.			Inspection: Yes Inspection: Yes Inspection: Yes
(3) Decision basis: Calculate whether the benefit	<b>Final Product</b>	<b>Final Product</b>	<b>Final Product</b>
of dismantling is higher than the cost of	Inspection: No		Inspection: No   Inspection: No
dismantling[9].			Disassembly of Disassembly of Disassembly of
	Unqualified	Unqualified	Unqualified
<b>2.3 Monte Carlo Simulation Steps</b>	Finished	Finished	Finished
(1) Sample Generation: Based on the actual	Products: No	Products: No	Products: No
production conditions, randomly generate a set	Scenario 2:	Scenario 2:	Scenario 2:
of samples to simulate the production data under	---- Scenario	---- Scenario	---- Scenario
six distinct scenarios. Each scenario represents	Handling ----	Handling ----	Handling ----
different operational conditions.	Component 1	Component 1	Component 1
(2) Dynamic Programming Application: For	<b>Inspection:</b> Yes		Inspection: No Inspection: Yes
each generated sample, run the dynamic	Component 2	Component 2	Component 2
51			







$$
E_j = -k \sum_{i=1}^m p_{ij} \ln(p_{ij}) \tag{9}
$$

of information of the indicator and is calculated<br>as follows:<br> $E_j = -k \sum_{i=1}^{m} p_{ij} ln(p_{ij})$  (9)<br>where  $p_{ij}$  is the proportion of standardized<br>values for the i-th program on the j-th indicator<br>and k is a constant.<br>(3) Determ  $E_j = -\kappa \sum_{i=1}^{n} p_{ij} \ln(p_{ij})$ <br>
where  $p_{ij}$  is the proportion of standardized<br>
values for the i-th program on the j-th indicator<br>
and k is a constant.<br>
(3) Determine the weights<br>
Calculate the weight of each indicator acc

$$
w_j = \frac{1 - E_j}{\sum_{j=1}^n (1 - E_j)}
$$
(10)

$$
S_i = \sum_{j=1}^n w_j \dot{x_{ij}} \tag{11}
$$

**3.** Calculate the weights<br>
(3) Determine the weights<br>
Calculate the weight of each indicator according<br>  $w_j = \frac{1-E_j}{\sum_{j=1}^n (1-E_j)}$  (10)<br> **2.5 Scoring and Sorting** programm<br> **2.5 Scoring and Sorting** programm<br>
The composi

Solution Results and Analysis<br>
Similar in the following scoring formula:<br>
Similar Similar and Analysis<br>
By utilizing Python programs and formulas for<br>
decision-making calculations and solutions, we<br>
have derived the decis  $S_i = \sum_{j=1}^{n} w_j \cdot x_{ij}$  (11) analysis<br>
olution Results and Analysis<br>
tililizing Python programs and formulas for<br>
sion-making calculations and solutions, we<br>
derived the decision handling for the<br>
wing six scenarios and c

			သပ
	3. Solution Results and Analysis		
		By utilizing Python programs and formulas for	40
		decision-making calculations and solutions, we	
		have derived the decision handling for the	30
		following six scenarios and created a table 2:	
		By employing dynamic programming and the	20
		Monte Carlo method, we have optimized the	10
		decision-making at each stage for the six	
		production scenarios. The total costs for each	
	situation are as follows table 3:		$\overline{2}$ <b>Figure 1. Total Cost and Stand</b>
		<b>Table 3. Total Costs for Six Situations</b>	<b>Under Six Condition</b>
Situation	Average	Average Standard	
	<b>Total Cost</b>	Deviation	4. Reach a Verdict
1	12.40	2.91	Situation 1: With the highest
$\overline{c}$	13.81	3.91	demonstrates the best perform
3	15.05	10.30	control, detection costs, disasse
$\overline{4}$	17.69	12.73	and replacement losses.
5	13.20	4.37	Situation 2: The overall score is
6	46.88	2.89	due to not inspecting finished p
		From this, it can be concluded that Scenario 1	dealing with returned goods, res
		offers the most cost-effective and stable solution,	overall costs.
		making it the best option currently available.	Situation 3: Although the scores
		To ensure the results are more rigorous, we have	not dismantling substandard finis
		used the Entropy Weight Method to evaluate the	may not optimally control certain
		decision-making schemes for the six scenarios	Situation 4: The overall rating i
		comprehensively. The resulting judgment matrix	for scenarios with a more genero
		and scoring outcomes are as follows table 4,5:	Situation 5: The overall score is
		<b>Table 4. Entropy Weight Method Judgment</b>	due to the high cost of testing Co
	<b>Matrix</b>		Situation 6: The score is relative
	Judgment Matrix		high disassembly costs

**Table 4. Entropy Weight Method Judgment**<br> **Table 4. Entropy Weight Method Subsettion** Calculation 2: The over<br> **Table 4. Entropy Weight Method** to evaluate the mast cost-effective and stable solution, a situation 2: The o 17.69<br>
13.20<br>
4.37<br>
46.88<br>
2.89<br>
and replace<br>
Situation 2<br>
due to not<br>
dealing with<br>
cost-effective and stable solution,<br>
suits are more rigorous, we have<br>
suits are more rigorous, we have<br>
more dismany<br>
Situation 3<br>
suits

# **Matrix**









corporate decision-making. Calculate the weights of each indicator according<br>
Calculate the wight of each indicator according<br>  $w_j = \frac{1-E_j}{\sum_{j=1}^n (1-E_j)}$  (10) 6<br>
2.5 Scoring and Sorting<br>
The composite score for each program was<br>
calculated and the Shuation Complements Score<br>
1 8.45<br>
2 9.76<br>
3 12.88<br>
4 15.55<br>
5 9.59<br>
6 28.86<br>
Subsequently, we combined dynamic<br>
programming with the Monte Carlo method to<br>
simulate the entire sampling inspection process.<br>
The results ob



### 4. Reach a Verdict

Situation 1: With the highest overall score, it demonstrates the best performance in cost control, detection costs, disassembly expenses, and replacement losses.

Situation 2: The overall score is relatively low. due to not inspecting finished products and not Figure 1. Total Cost and Standard Deviation<br>
Figure 1. Total Cost and Standard Deviation<br>
Under Six Conditions<br>
4. Reach a Verdict<br>
Situation 1: With the highest overall score, it<br>
demonstrates the best performance in cost Figure 1. Total Cost and Standard Deviation<br>Under Six Conditions<br>4. Reach a Verdict<br>Situation 1: With the highest overall score, it<br>demonstrates the best performance in cost<br>control, detection costs, disassembly expenses,<br> Figure 1. Total Cost and Standard Deviation<br>
Figure 1. Total Cost and Standard Deviation<br>
Under Six Conditions<br>
4. Reach a Verdict<br>
Situation 1: With the highest overall score, it<br>
demonstrates the best performance in cos **Figure 1. Total Cost and Standard Deviatio**<br> **Figure 1. Total Cost and Standard Deviatio**<br> **Inder Six Conditions**<br> **4. Reach a Verdict**<br>
Situation 1: With the highest overall score,<br>
demonstrates the best performance in c Figure 1. Total Cost and Standard Deviation<br>
Under Six Conditions<br>
4. Reach a Verdict<br>
Situation 1: With the highest overall score, it<br>
demonstrates the best performance in cost<br>
control, detection costs, disassembly expen Figure 1. Total Cost and Standard Deviation<br>Under Six Conditions<br>4. Reach a Verdict<br>Situation 1: With the highest overall score, it<br>demonstrates the best performance in cost<br>control, detection costs, disassembly expenses,<br> **Example 15 Conditions**<br> **4. Reach a Verdict**<br>
Situation 1: With the highest overall score, it<br>
demonstrates the best performance in cost<br>
control, detection costs, disassembly expenses,<br>
Situation 2: The overall score is **4. Reach a Verdict**<br>Situation 1: With the highest overall score, it<br>demonstrates the best performance in cost<br>control, detection costs, disassembly expenses,<br>and replacement losses.<br>Situation 2: The overall score is rela 4. **Reach a Verdict**<br>Situation 1: With the highest overall score, it<br>demonstrates the best performance in cost<br>control, detection costs, disassembly expenses,<br>stand replacement losses.<br>Situation 2: The overall score is rel Situation 1: With the highest overall score, it<br>demonstrates the best performance in cost<br>control, detection costs, disassembly expenses,<br>situation 2: The overall score is relatively low,<br>due to not inspecting finished pro demonstrates the best performance in cost<br>control, detection costs, disassembly expenses,<br>and replacement losses.<br>Situation 2: The overall score is relatively low,<br>due to not inspecting finished products and not<br>dealing wi control, detection costs, disassembly expenses,<br>and replacement losses.<br>Situation 2: The overall score is relatively low,<br>due to not inspecting finished products and not<br>dealing with returned goods, resulting in higher<br>ove and replacement losses.<br>Situation 2: The overall score is relatively low,<br>due to not inspecting finished products and not<br>dealing with returned goods, resulting in higher<br>overall costs.<br>Situation 3: Although the scores are



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Economic Society and Humanities Vol. 1 No. 10, 2024<br>
processing returned goods lead to increased total based on effective termin<br>
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In summary, after establishing a model using DOI:10.27003/d Economic Society and Humanities Vol. 1 No. 10, 2024<br>
processing returned goods lead to increased total<br>
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dynamic programming, Monte Carlo methods,<br>
and the entropy weight method for analysis and<br>
solution, we have conducted a comprehensive<br>
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solution, we have conducted a comprehensive dynamic<br>
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production scenarios. Ultimately, it w and the entropy weight method for analysis and extraction drilling of solution, we have conducted a comprehensive dynamic<br>production, and evaluation of six Equipment Enginees production scenarios. Ultimately, it was found solution, we have conducted a comprehensive<br>
production senarios. Ultimately, it was found<br>
that Scenario I performs best in terms of overall<br>
that Scenario I performs best in terms of overall<br>
cost control, making it suit analysis, optimization, and evaluation of six<br>
production scenarios. Ultimately, it was found<br>
that Scenario 1 performs best in terms of overall<br>
cost control, making it suitable for production<br>
al. Interactive<br>
environmen production scenarios. Ultimately, it was found<br>that Scenario 1 performs best in terms of overall<br>cost control, making it suitable for production<br>environments that require strict quality control.<br>Based on the optimization r cost control, making it suitable for production<br>environments that require strict quality control.<br>Based on the optimization results, it is<br>recommended that enterprises prioritize the plan<br>from Scenario 1 in decision-making envronments that require strict quality control. Illumination<br>
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reconnmended that enterprises prioritize the plan<br>
from Scenario 1 in decision-making to achieve [4] [4] Che Based on the optimization results, it is<br>
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recommended that enterprises prioritize the plan<br>
the best economic benefits and quality control.<br>
the best economic benefits and quality control.<br>
average assiste recommended that enterprises proritize the plan<br>
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the best economic benefits and quality control.<br>
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Enterprises must adjust their decision-making method of Bayesian<br>
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Sciences, 1-25[2024-09-0<br>
reduce plans flexibly according to different production<br>
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the best production management outcomes,<br>
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reduce production losses, and bring significa conditions and cost budgets, in order to achieve<br>
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Some set the company.<br>
Tuan the best production management outcomes,<br>
reduce production losses, and bring significant [5] [5] Zhao Linna,<br>
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Conclusion: This study focuses o reduce production losses, and bring significant<br>
benefits to the company.<br>
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multi-stage, multi-scenario decision-making disaster,2020,39 benefits to the company.<br>
S. **Conluding remarks**<br>
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Heaven anisotrom and best on Bayesian<br>
multi-stage, multi-scenario decision-making disaster,2020,39(05):4<br>
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By simulating six different production [7][7] Li Hao, Chen Zhitao,<br>
seenarios[5], we have derived the optimal protecti processes for components and finished products.<br>
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stands out in terms of cost control and defect cost prediction methate<br>
rate reduction, and it has a high practical equipment. Dased on<br>
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