

# BUSINESS TRIZ ONLINE WINTER 2021

Using Business TRIZ Method to Improve the Speed of Checkout Process of Convenience Stores

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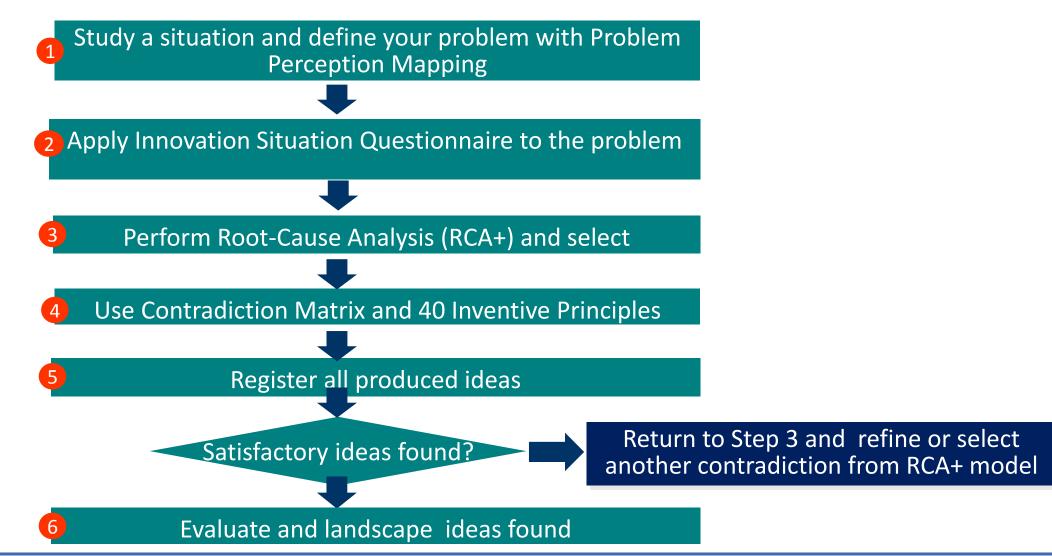
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# TRIZ Problem Solving Process: Simplified version







# Step 1: Problem Perception Mapping

Problem Description:

7-11's checkout is too slow, then customers are dissatisfied and lost.

What causes the problem

Big data collection

Frequent staff changes

Frequent make change

Coffee preparation takes time

Time-consuming for home delivery packaging

Unclear price

Too many business activities

Too few cash registers

Time-consuming when invoice paper is replaced

Time-consuming to find online shopping products

Unskilled clerk

Checkout is too slow

Poorly designed queuing lines

Time-consuming for clerk to heat food and picking it up

IBON Timeconsuming inquiry or ticket purchase Too many customers

Poorly designed checkout process

Time-consuming photocopying

Too many temptation commodities at the cash register

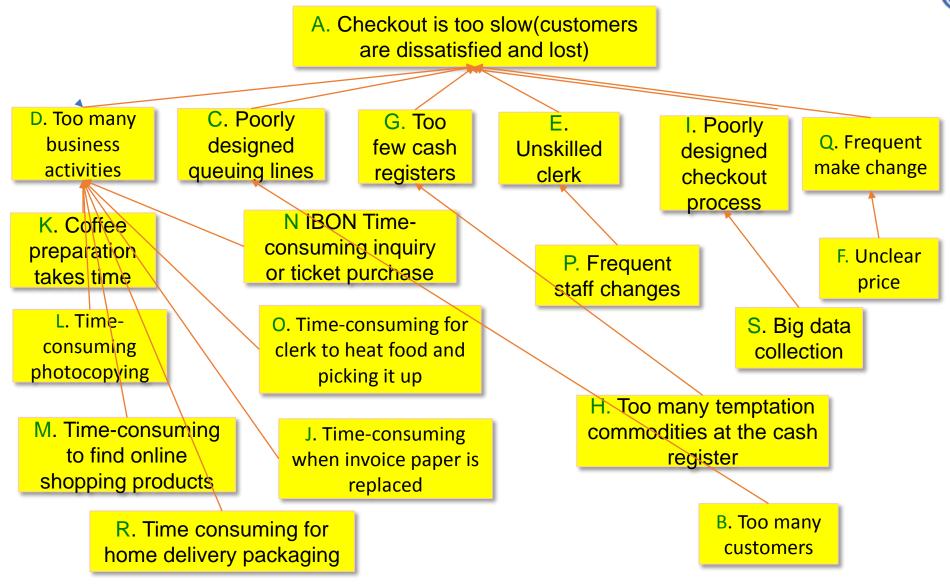




# The Lead-to Table

ID	Perception	Lead To	
Α	Checkout is too slow (customers are dissatisfied and lost)		
В	Too many customers	С	
С	Poorly designed queuing lines	Α	
D	Too many business activities	Α	
Ε	Unskilled clerk	Α	
F	Unclear price	Q	
G	Too few cash registers	Α	
Н	Too many temptation commodities at the cash register	С	
	Poorly designed checkout process	Α	
J	Time-consuming when invoice paper is replaced	D	
K	Coffee preparation takes time	D	
L	Time-consuming photocopying	D	
M	Time-consuming to find online shopping products	D	
N	IBON Time-consuming inquiry or ticket purchase	D	
0	Time-consuming for clerk to heat food and picking it up	D	
Р	Frequent staff changes	Е	
Q	Frequent make change	Α	
R	Time consuming for home delivery packaging	D	
S	Big data collection		





The Lead-to Fig.

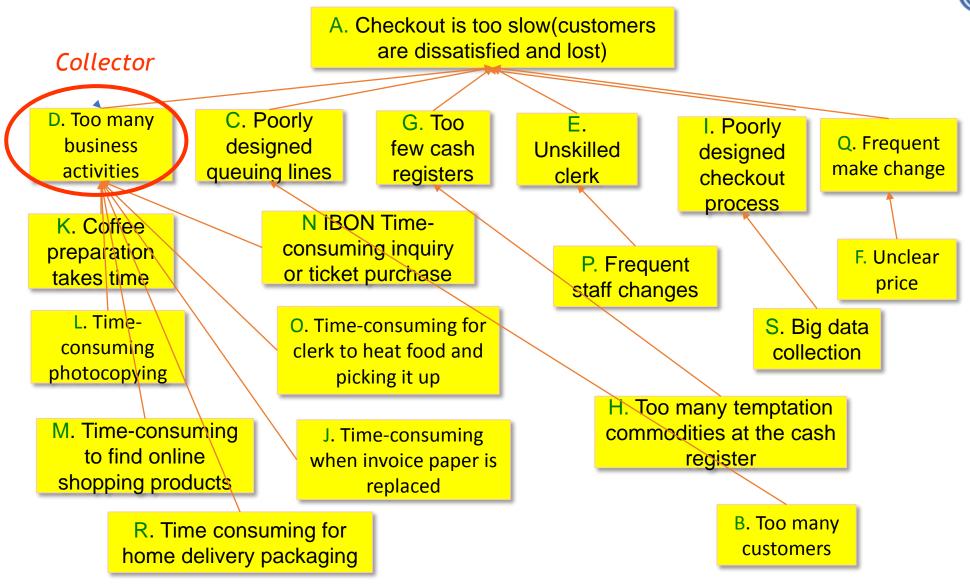




## The Lead-to Table

ID	Perception	Lead To	Score
Α	Checkout is too slow (customers are dissatisfied and lost)		5
В	Too many customers	С	0
С	Poorly designed queuing lines	Α	1
D	Too many business activities	A	6
Е	Unskilled clerk	Α	0
F	Unclear price	Q	0
G	Too few cash registers	Α	0
Н	Too many temptation commodities at the cash register	С	0
I	Poorly designed checkout process	Α	1
J	Time-consuming when invoice paper is replaced	D	0
K	Coffee preparation takes time	D	0
L	Time-consuming photocopying	D	0
M	Time-consuming to find online shopping products	D	0
N	IBON Time-consuming inquiry or ticket purchase	D	0
0	Time-consuming for clerk to heat food and picking it up	D	0
Р	Frequent staff changes	E	0
Q	Frequent make change	Α	0
R	Time consuming for home delivery packaging	D	0
S	Big data collection	I	0





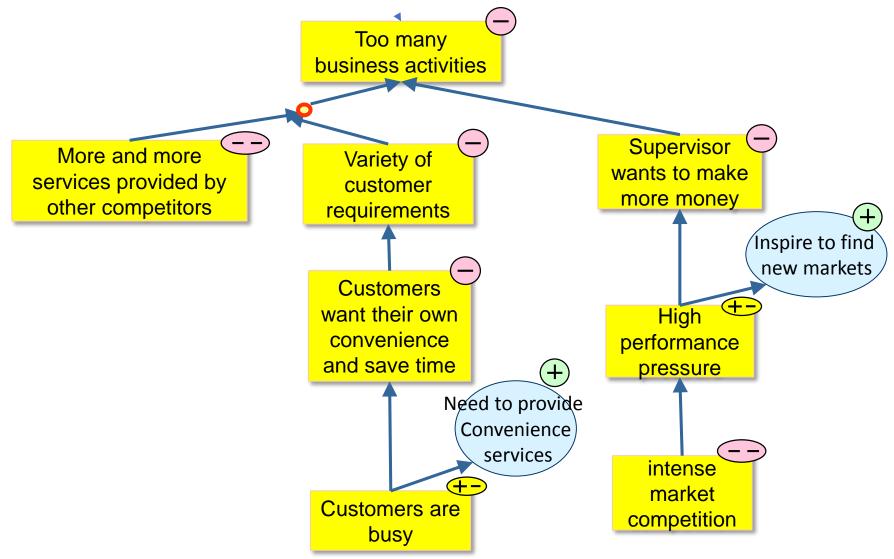
The Lead-to Fig.



QUESTION	ANSWER					
1.Describe the existing innovative situation in free words:	7-11's checkout is too slow, then customers are dissatisfied and lost.					
2.Describe a system (product) which has to be improved (limit it to those parts which can be changed by you):	1.Product, customer, clerk, process, moving line, business activities 2.Quick checkout					
3.Describe a key problem and the goal of improvement:	Too many business activities					
4.Present a list of principal demands and requirements to the future solution (5-10 requirements). Try to be as specific as possible:	<ul><li>1.10 seconds to complete the checkout.</li><li>2. Friendly service attitude</li></ul>					
requirements). Try to be as specific as possible.	<ul><li>3. The number of staff cannot be increased.</li><li>4. The revenue cannot be reduced</li></ul>					
	<ul><li>5. The cost cannot be increased15%.</li><li>6. Increase customer satisfaction</li></ul>					
5.Are there any known solutions to solve the problem/challenge presented? If yes, mention them and specify why each of them cannot be used in your situation:	<ol> <li>Add a quick checkout counter</li> <li>Off-peak specials</li> <li>Self-service coffee discount</li> <li>Maneuver to increase manpower</li> </ol>					
6.Are there any ideas on the improvement that have been proposed? Describe ideas which have been already obtained (if any). Specify against each idea why it can not be used:	Business simplification     Special business franchise store.					



## Step 3a: Root Conflict Analysis





# Step 3b: Ranking Contradictory Problems in Priority

Ranking Contradictory Problems (Binary Problems Ranking)

No	Problems	1	2	SCORE
1	Customers are busy		+1	+1
2	High performance pressure	-1		-1

Contradictory Problems Priority

No	Problems	SCORE
1	Customers are busy	+1
2	High performance pressure	-1





### Contradiction recognition

	Contradiction	Positive effect/Negative effect
1	Customers are busy	Need to provide Convenience services /Customers want their own convenience and save time
2	High performance pressure	Inspire to find new markets /Supervisor wants to make any money

#### **Positive / Negative effect parameter**

- 1. Activity Effectiveness. 2. Activity Variability. 3. Activity Expense. 4. Activity Time.
- 5. Activity Complexity. 6. Activity Convenience. 7. Activity Safety. 8. Activity Reliability.
- 9. System Effectiveness. 10. System Variability. 11. System Variability. 12. System Time.
- 13. System Complexity. 14. System Convenience. 15. System Safety. 16. System Reliability.
- 17. System Reliability. 18. External Risk.
- 19.External Risk . 20.External Risk . 21. Information Flow.
- 22. Feedback. 23. Material Flow.
- 24. Harmful Effects to System. 25. Harmful Effects from System.
- 26.Adaptability /Versatility.
- 27. Organizational Tension. 28. Organizational Stability.
- 29. Customer tension. 30. Customer Stability.
- 31. Environment Stability.





## Contradiction parameter recognition

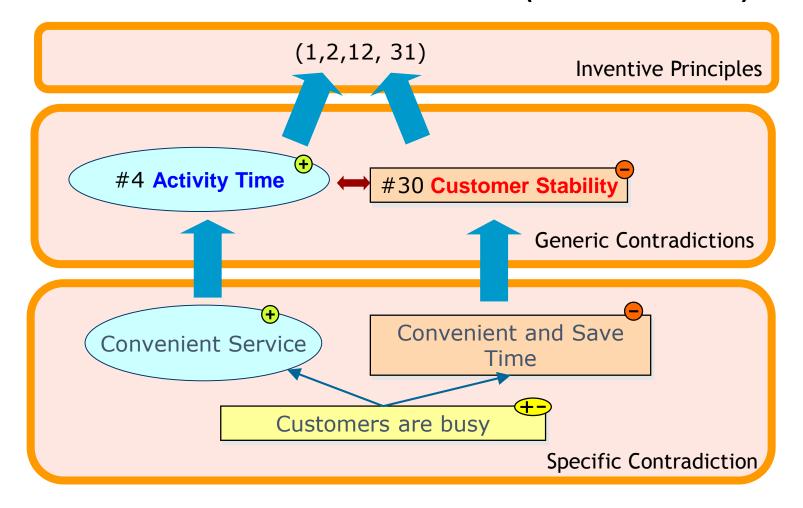
		Positive effect parameter/
	Contradiction	Negative effect parameter
		Need to provide Convenience services(4.Activity Time)/
1	Customers are busy	Customers want their own convenience and save time (30.Customer Stability)

#### **Positive / Negative effect parameter**

- 1. Activity Effectiveness. 2. Activity Variability. 3. Activity Expense. 4. Activity Time.
- 5. Activity Complexity. 6. Activity Convenience. 7. Activity Safety. 8. Activity Reliability.
- 9. System Effectiveness. 10. System Variability. 11. System Variability. 12. System Time.
- 13. System Complexity. 14. System Convenience. 15. System Safety. 16. System Reliability.
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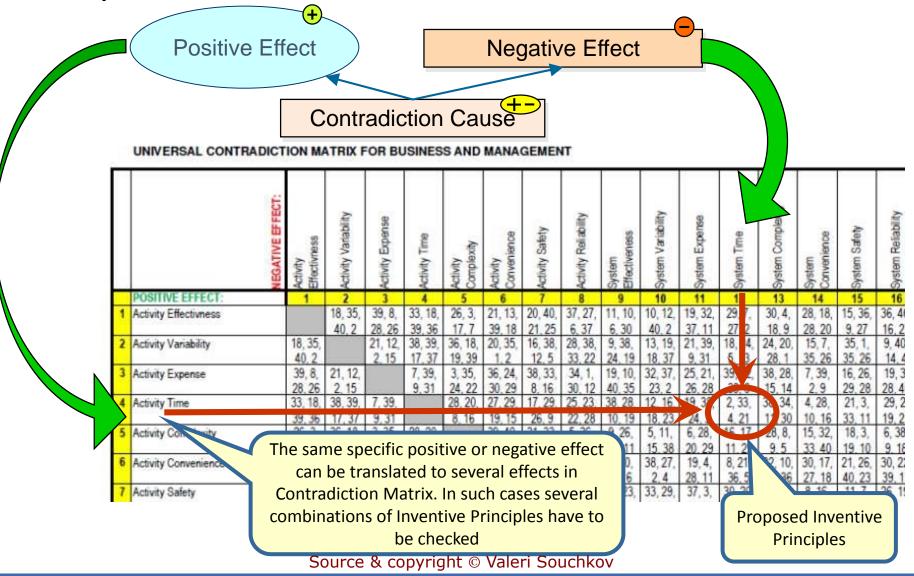


# Step 4: Find the applicable inventive principle from the contradiction matrix (Business)





## Step 4a Contradiction Matrix







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15	System Relucity	36, 40, 16, 22	14,4	59, 3, 28, 40	29, Z 19, 22	8,58, 9,18	30, 22, 39, 17	10.4	10, T, 9, 4	1,39	32, L 36, 13	28, 27,	35, 34, E, 11	32,0	34, 21	10, 24		24, 25	34, 21, 33, 19	5,15 1,35	21.0	11.6, 21,18	9,31, 23,2	1, 10	23, 40, 38, 7	16, 21, 34, 31	28, 36, 6, 13	28, 9, 25, 4	14, 54, 27, 31	36, 34, 1, 25	18,12,	35, 21, 25, 21
17	Fish	4,21, 34,25	16,3	18,1	39, 21, 40, 22	23, fd, 38, 28	9,1.6.	36, 19. 21, 27	21.27. 6.1	32, 6, 29, 1F	36,11.	17, 3, 35, 29	37, 33, 5, 11	21,36, 29,36	40,38, 29,14	39, 6,	24, 25		35, 21, 25, 7	30,28	10, 22,	10, 12,	25, 31, 30, 3	38, 32, 16, 16	10, 21	19, 20, 25, 11	31, 15	8, 33, 24, 20	27, 5, 19, 13	31, 1, 40,28	17, 38,	4, 33, 2, 38
18	Edward Flat.	33, 21, 11, 24	20, 38, 11, 15	11, 38, 16, 26	31, 32, 40, 27	33, 16, 36, 39	34, 11, 37, 9	4, 25, 36, 10	131,	30, 24, 25, 9	33, 14. 20, 37	33, 34, 21, 14	38, 17, 38, 14	34, 10, 37, 31	4.37, 19.2	40, 2, 37, 1	33, 19	21.7		25, 1 25, 16	10, 3, 15, 34	15, 25, 22, 13	37, 12. 21, 3	36, 12, 27, 36	11.4,	1, Z. 10, 30	27, 1	30, 29, 4, 37	15, 57,	30, 27, 28, 35	24, 4, 20, 1	11, 29,
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22	Feedback	14, 37,	28, 4,	30,9,	4.13.	19, 35,	1,25,	36,11,	15,29,	13, 25,	15,21,	3, 38,	40, 26,	25,25,	1.25,	32, 40, 30, 12	9,35, 23.2	26, 31,	37, 12,	15.18	4, 28, 27, 31	33, 39, 7, 28		14, 31,	37.5. 18.21	22, 30, 24, 37	15,14.	28.2.	5,12	35, 33,	5, 5, 23, 37	35, 10,
23	Historial Flow	11.4.	19, 12, 7, 10	22, 27, 34, 5	37,38,	8, 25, 21, 10	38, 39, 36, 27	20,25,	7.6.	1,20,	29,10	27, 30,	8, 5, 25, 12	1, 7,	32, f,	14, 36,	8, 14, 1, 15	38, 32,	38, 12, 27, 36	13, 3,	29, 13,	7, 22,	14, 31,	12.17	30, 2,	38, 8, 35, 30	21, 16. 9, 27	24. 38. 33. f	19, 16, 26, 38	25.32	90, 3,	2, 3, 13
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77	Versatility Departmentor	4,25,	14,34,	13, 14,	20, 9	26,9	2, 37	26, 39	19, 21 19, 18,	5,12,	40, 27,	16, 27,	3,14,	10, 20.	18, 17,	2.13.	21, 1,	8, 33,	27, 1	24.21	34, 6	12.14	28.2	9, 27 24, 38,	29, 23,	23, 36,	25, 17,	8,110	1.3	37, 3,	15.8	16, 21
	pl Yonakon Tiganizakon	37, 3 30, 6.	19, 5,	5,8,6	10,28	34, 14 20, 35,	16.2.	22,2	15.16	29, 11,	25, 26 39, 12	25, 28 17, 25,	27, 13 34, 2,	36,12	37, 23,	1, 34,	30, 4 16, 34,	27,6.	4,37 15, 17,	29, 7 34, 40.	38, 29	16, 33	23, 27	19,16,	7, 25,	10, 13 38, 7,	13,34.	12.12	16, 37	32,2	17, 40 26, 30,	13, 32,
2	of Stability Customer	4,9	11, 29	2, 39.	25,24	27, 30,	15,24 21, 23,	14, 10 24, 16	52, 10 6, 15	17,46	27, 17	38, 8	25,15	4.10.	6,37	2, 20.	27, 31 39, 34,	19, 13	10, 5 30, 21,	40, 38	30, 21	26, 24 87, 20,	7, 17	29, 36	25, 27	4.33	2.30,	18,37 97.3.	38, 14,	1, 10	29, 21 14, 6,	45, 3 22, 18,
29	Terateri Customer	35, 26	14, 35	17, 22	23,40	40, 16	25,28	2, 33	9.5	12, 27,	18,2	30, 16	31, 8	30, 35	25.8	18, 12	8, 25 18, 12	40, 28	28,31	33.1	24.2	4, 29	36,29 5.6	15,5	12, 32	25,38	17, 1	28, 13,	26,30.	14, 1,	5,1	4, 38
30	Sability	15,6	2,13 25,8	16, 35	12,31	13,31	16, 17 35, 17	25.4	33.40	34,34	37, 25 37, 38	23, 8	39,34 30, E.	40,16	31, 40	2,17	9,19	14, 11	20, 1	19, 15	25, 27	40, 19	28.37	11, 20	19, 31	30, 39	15.8	17, 40	29, 21	5.1 22.18	26, 18,	32, 25
25	Statilly	17,38	37,6	32.2	32,32	24, 15	24,36	5, 95	12, 28	37, 33	3,29	40, 30	1,14	35, 33	2,30	11	26,27	2,38	5,3	30,5	10, 35	2.41	11.4	13.8	17.24	19.9	16,21	15.8	40,5	4.38	32, 23	



## Step 4a Find Inventive Principles

		29 Customer Tension	30 Customer Stability	31 Environment Stability
3	Activity Expense	2,39, 17,22	3,25,16,35	36,30,32,2
4	<b>Activity Time</b>	1,31,23,40	1,2,12, 31	27,35,7,1
5	Activity Complexity	27,39,40,16	7,33,13,31	5,34,24,16

\*1,2,12, 31 are the proposed inventive principles



# Step 5: Solutions

#	Ideas
1	Customized product sets
2	Department of fast delivery
3	On sale for off-peak time
4	Waiting-time shown on internet





## Step 6: Evaluation and ideas landscaping

Idea#	Ideas	1.Check out in 10 s	2.Kindly attitude	3.Number of staff	4.Revenue	5.Cost increase below 15%	6.Satisfaction	Total score	Final rank
	Weight - >	9	4	5	8	7	10		
1	Customized product sets	1	-1	1	0	1	1	27	1
2	Dep. of fast delivery	1	1	-1	1	-1	1	19	2
3	On sale for off-peak	1	1	1	-1	1	0	17	3
4	Waiting-time shown online	1	-1	1	1	-1	0	11	4



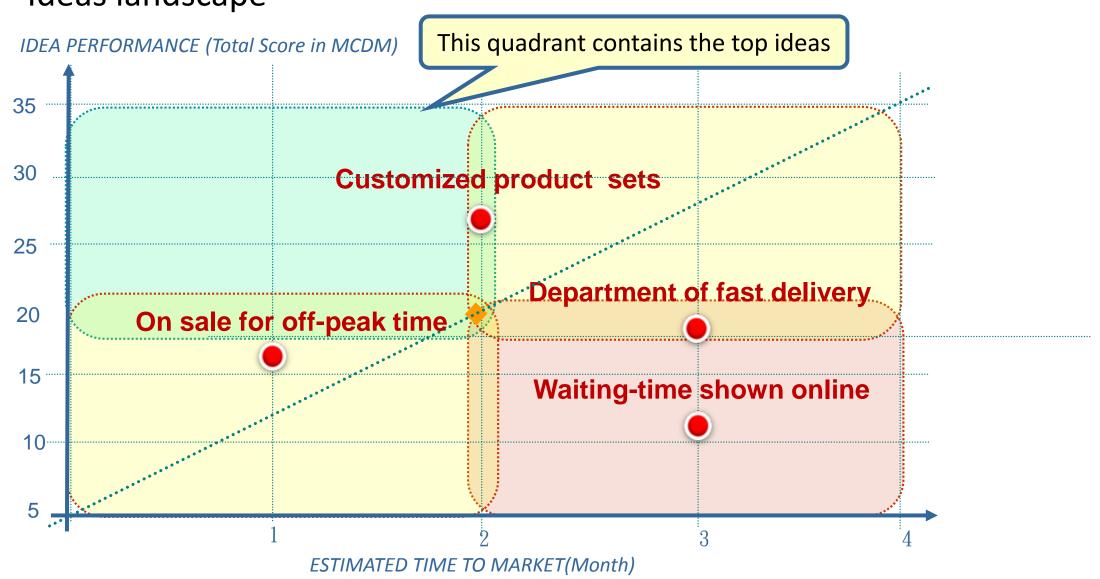


## Estimating Time to Market (ETM)

NO.	Ideas	Time to market
1	Customized product sets	2 months
2	Department of fast delivery	3 months
3	On sale for off-peak time	1 month
4	Waiting-time shown online	3 months



## Ideas landscape





## Original order of ideas

No	Ideas
1	Customized product sets
2	On sale for off-peak time
3	Department of fast delivery
4	Waiting-time shown online



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