

Using CRM to mitigate operational risk

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Characteristic of Operational Risk

- Chain reaction effect

Event occurs

⇒ Physical loss happens which influences net profit

⇒ General public is informed through mass communication vehicles

⇒ Existing customers are leaving and new business volume is reduced

⇒ Embedded value has dropped or she just defaults

Characteristic of Operational Risk

- Rareness of event

It is a rare event but happens, and it is critical.

- Difficulty in probability calculation

Not sufficient accumulated data

- Difficulty in detection

Intentional concealment

small amount but leaking

Using CRM System – Detection

- Fraud detection system for each customer

It is for limit control, and prevention of crime.

For OR related event detection, aggregate by sales man or product

⇒ Regular report can detect abnormal trends

⇒ Investigate more details

Using CRM System – Detection

- Campaign management system

Target Segmentation / Trigger driven activity

For OR related event detection, define campaign for irregular or noteworthy behavior of customer

Example

Simultaneous change of address and phone number

⇒ To confirm the change, call center makes a call to previous number or DM center sends a mail to previous address intentionally

Using CRM System – Detection

- e-CRM

On line data transaction

Real time analysis

Mining, Campaign management are also real time.

Dynamic mining skill is useful for rapid detection of OR related events.

Security, Firewall, Over flow, Virus,...

Customer care is important.

Using CRM Concept - Measurement

- More than a loss itself

For each event, maximum effect should be known.

First, measurement for each category should be realized.

TOTAL LOSS MEASUREMENT

How much is the firm value?

SIMULATION of NET INCOME PROJECTION

How much do we need to continue the business?

Using CRM Concept - Measurement

- TOTAL LOSS

= Tangible loss + Change of embedded value

- Tangible loss

B/S P/L related amount

- Embedded value

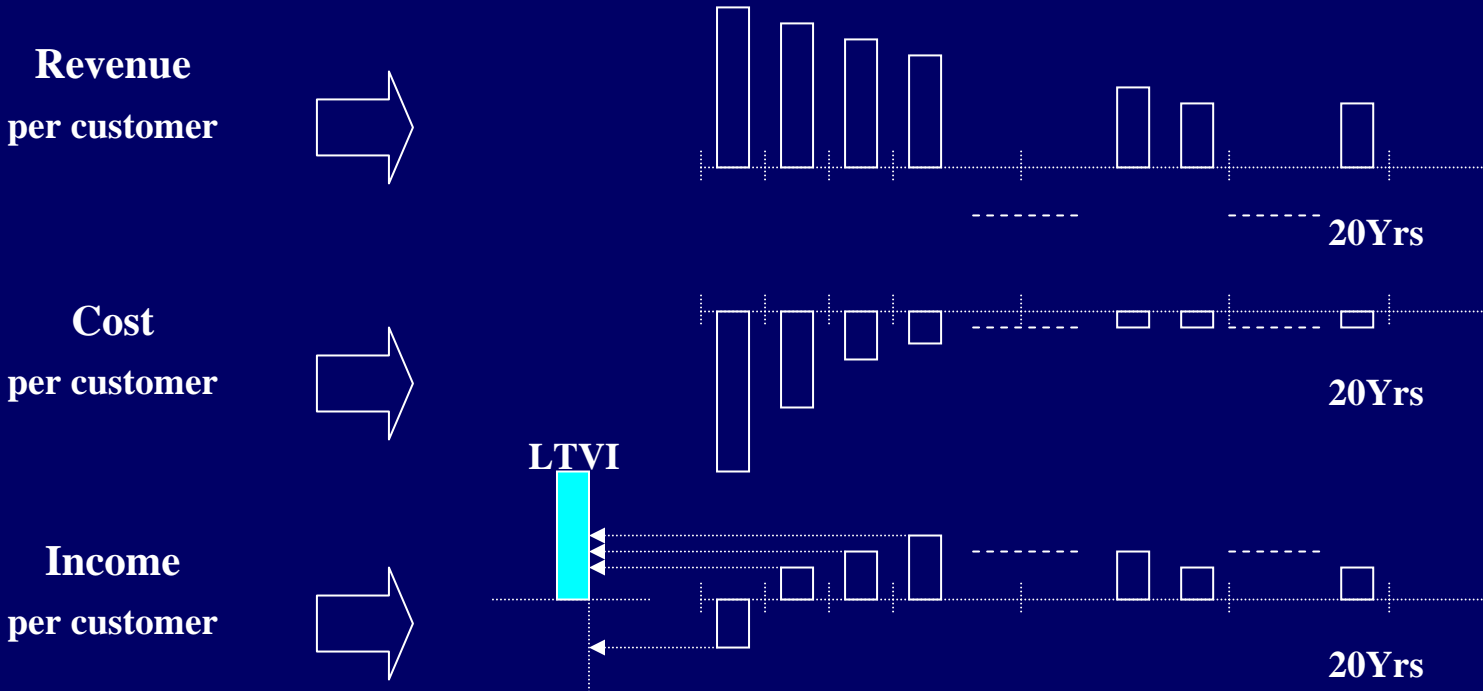
= Shareholders' Equity

+ SUM (LTV of existing customer)

+ SUM (LTV of new business customer)

Using CRM Concept - Measurement

- $LTV = PV(\text{Revenue}_i - \text{Cost}_i)$



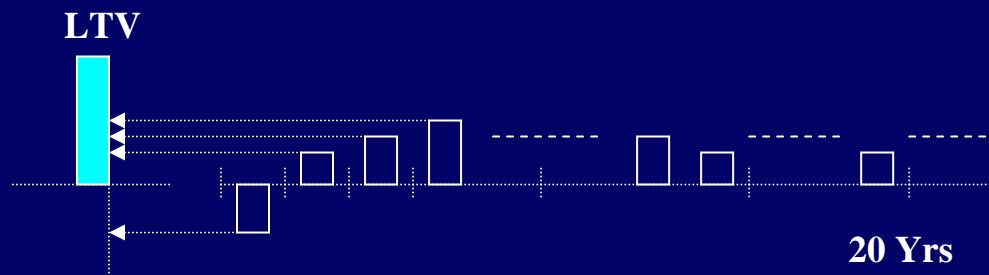
Using CRM Concept - Measurement

- LTV (Life Time Value) of a customer

$$= \text{SUM}_i (\text{LTP}_i \times \text{RET}_i / (1 + \text{discount rate})^i)$$

LTP_i : Maximum Life Time Profit of year i

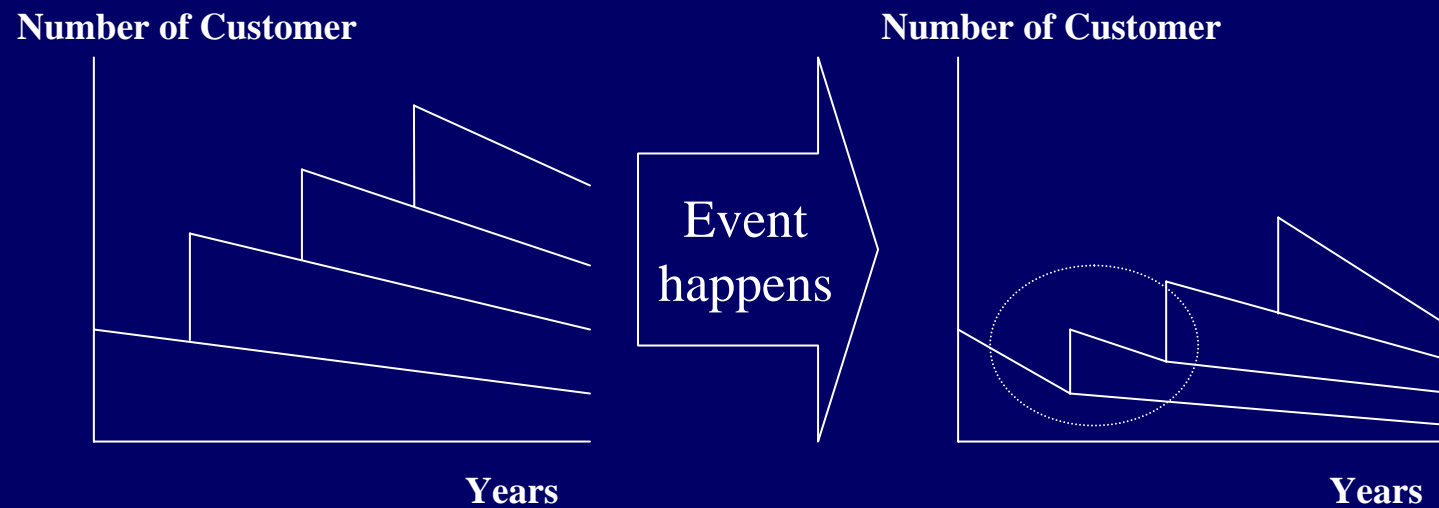
RET_i : Retention rate of year i



Using CRM Concept - Measurement

- Change of embedded value

By the effect of event, retention rate decreases and new business customers are reducing.



Using CRM Concept - Measurement

- Change of customer number - example

	volume	1	2	3	4	5	6	7	8	9	10
Exist	200	160	128	102	82	66	52	42	34	27	21
2003	55	55	44	35	28	23	18	14	12	9	7
2004	60		60	48	38	31	25	20	16	13	10
2005	70			70	56	45	36	29	23	18	15
2006	80				80	64	51	41	33	26	21
2007	90					90	72	58	46	37	29



	Risk Ad	1	2	3	4	5	6	7	8	9	10
Exist	200	96	54	34	25	19	15	12	10	8	6
2003	28	28	15	10	7	5	4	3	3	2	2
2004	42		42	27	19	15	12	9	8	6	5
2005	56			56	40	31	25	20	16	13	10
2006	64				64	49	39	31	25	20	16
2007	72					72	58	46	37	29	24

Using CRM Concept - Measurement

- Assumptions

Existing customer : 200,000

Share holders' equity : \$ 3,200,000

New customer projection

Yr	2003	2004	2005	2006	2007
'000	55	60	70	80	90

LTP_i and RET_i

i		1	2	3	4	5
LTP _i	exist	\$17	\$20	\$20	\$20	\$20
	New	-\$30	\$10	\$20	\$20	\$20
RET _i		80%	80%	80%	80%	80%

Using CRM Concept - Measurement

- Embedded Value

Shareholders' Equity : \$ 3,200,000

*Existing customer : \$ 7,712,000

*New business customer : \$ 3,691,000

Embedded Value : \$ 14,603,000

- Net Income projection

Yr	2003	2004	2005	2006	2007
\$ '000	1,895	2,100	2,182	2,330	2,562

*5Year present value / Discount rate : 12%

Using CRM Concept - Measurement

- Example : System failure

Duration : 8 hours

Tangible Loss

IT recover : \$ 500,000

opportunity cost : \$ 20,000

- Impact to embedded value factors

Yr	2003	2004	2005	2006	2007
Retention Decrease	35%	15%	10%	5%	0%
New Business Decrease	30%	20%	10%	3%	0%

Using CRM Concept - Measurement

- Embedded Value

	Before	After
Shareholders' Equity :	\$ 3,200,000	\$ 2,680,000
*Existing customer :	\$ 7,712,000	\$ 4,274,000
<u>*New business customer :</u>	<u>\$ 3,691,000</u>	<u>\$ 2,777,000</u>
Embedded Value :	\$ 14,603,000	\$ 9,731,000

=> 33.3% Dropped

*5Year present value / Discount rate : 12%

Using CRM Concept - Measurement

- Net Income Projection

(\$ '000)

Yr	2003	2004	2005	2006	2007
Before	1,895	2,100	2,182	2,330	2,562
After	1,191	956	796	901	1,306
Difference	704	1,144	1,386	1,429	1,256

=> Continuous impact

Using CRM Concept - Measurement

- Impact sheets

System failure	2003	2004	2005	2006	2007
Retention Decrease	35%	15%	10%	5%	0%
New Business Decrease	30%	20%	10%	3%	0%
Tangible Loss	\$ 520,000				

Fraud	2003	2004	2005	2006	2007
Retention Decrease	40%	30%	20%	10%	5%
New Business Decrease	50%	30%	20%	20%	20%
Tangible Loss	\$ 2,000,000				

=> 56 % reduced

Conclusion

- Measurement model setup
 - Investment effectiveness review
 - Knowledge accumulation
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