



# PROCUREMENT MANAGEMENT

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# Background



- About 40 – 70% of cost of goods sold are from material costs
- Contributions of supply management are of high importance:
  - ▣ *Quality of supplied materials*
  - ▣ *Delivery consistency from supplier*
  - ▣ *Supplier willingness to deliver more frequently with smaller delivery quantity*
  - ▣ *Supplier involvement in developing new products*
  - ▣ *Supplier production and delivery flexibility*

# Activities Related Procurement Management



1. Design strategic relationships with suppliers
2. Selecting appropriate suppliers
3. Chose and implement appropriate technology to support procurement activities
4. Maintain procurement related data bases
5. Do purchase process
6. Evaluating supplier performance

# PURCHASING PROCESS

- 1. Recognition of needs**

*Need normally comes from a using department*

- 2. Description of the need**

*Cooperation is needed to avoid conflict in a later stage*

- 3. Identification and study of available suppliers**

*The number should be reduced to a workable group*

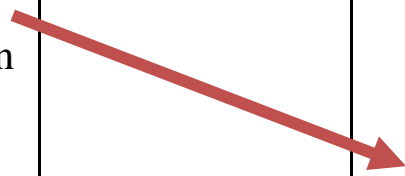
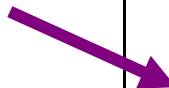
- 4. Supplier selection**

- 5. Preparation and issuance of the purchase order**

- 6. Follow up and expediting**

- 7. Receipt, Inspection, Invoice, Order Close**

<b>Supplier</b>	<b>Bagian pengadaan</b>	<b>Gudang</b>	<b>User</b>	<b>Keuangan</b>
<p>Kirim konfirmasi bisa tidaknya pesanan dipenuhi. Kalau bisa, kirim sesuai persetujuan.</p>	<p>Buat PO dan kirim ke supplier. Kirim copy ke gudang, user, dan keuangan.</p> <p>Lakukan monitoring dan expedite pengiriman bila perlu.</p>	<p>Terima barang dan lakukan inspeksi bersama bagian kualitas.</p>	<p>Buat PR / MR dan kirim ke bagian pembelian</p>	<p>Lakukan pembayaran</p>



**User mendefinisi kebutuhan barang / jasa**

**User mengkomunikasikan kebutuhan tersebut ke bagian pengadaan**

**Bagian pengadaan dan user menentukan model tender / lelang dan kriteria pemilihan supplier**

**Undang penawaran / proposal (RFQ / RFP)**

**Seleksi:**  
**Tahap 1: Lakukan seleksi awal berdasarkan aspek teknis**  
**Tahap 2: Evaluasi berdasarkan aspek finansial**

**Putuskan pemenang**

**Buat kontrak, buat dan kirim PO, monitor pengiriman, dan lakukan pembayaran**

**STEPS IN  
BIDDING  
PROCESS**

# SELECTING SUPPLIERS

Kriteria	Skor
Kualitas	3.5
Delivery	3.4
Performance history	3.0
Warranties and claim policies	2.8
Price	2.8
Technical capability	2.8
Financial position	2.5
Prosedural compliance	2.5
Communication system	2.5
Reputation and position in industry	2.4
Desire for business	2.4
Management and organization	2.3
Operating controls	2.2
Repair service	2.2
Attitudes	2.1
Impression	2.1
Packaging ability	2.0
Labor relations records	2.0
Geographical location	1.9
Amount of past business	1.6
Training aids	1.5
Reciprocal arrangements	0.6

**Criteria in  
Selecting  
Suppliers**



# Contoh Lain Kriteria Pemilihan Partner

(Diterapkan oleh Kodak Corporation)

- Amount of technical supports
- Number of innovative ideas
- Supplier's ability to communicate effectively on important issues
- Flexibility shown by suppliers
- Cycle time, responsiveness, and improvement shown
- Goals commonality with suppliers
- Level of trust that exists in dealings with the supplier
- Strength of the relationship at each point



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# **A MODEL FOR EVALUATION AND SELECTION OF SUPPLIERS IN GLOBAL TEXTILE AND APPAREL SUPPLY CHAINS**

**S. Gary Teng and Hector Jaramillo**

# Model evaluasi supplier yang umum digunakan

Beberapa penelitian terdahulu yang mendukung

- ***Simpson et al., 2002***

Hampir 50% perusahaan dari industri yang berbeda memiliki proses evaluasi supplier yang formal

- ***Weber et al., 1991***

Faktor utama pada metode evaluasi supplier adalah quality, supplier certification, facilities continuous improvement, physical distribution and channel relationship

- ***Humpreys et al., 1998***

Terdapat 4 model evaluasi supplier yang digunakan untuk seleksi supplier, yaitu categorical model, weighted-point model, cost ratio model and dimensional analysis model

# Model seleksi supplier untuk textile/apparel SC

Ada 2 metode seleksi supplier yang sering dijadikan literatur :

## 1. Analytical Hierarchy Process (AHP)

(Saaty, 1980; Hill&Nydick, 1992; Barbarosoglu&Yazgac, 1997)

## 2. Analytical Network Process (ANP)

(Saaty, 1996)

Model dalam penelitian ini diadopsi dari **AHP, multiple attribute approach, “what-if” scenarios and sensitivity analysis.**

# Pengembangan model untuk evaluasi supplier

Model dirancang berdasarkan struktur hirarki dengan beberapa layer :

## 1. *Level 1*

- Terdiri atas 5 area (Saaty, 1966, menyebutnya sebagai *cluster*) yaitu ***delivery, flexibility, cost, quality dan reliability***.
- Setiap cluster memiliki bobot yang diberikan oleh buyers berdasarkan kebutuhannya.

## 2. *Level 2*

- Berisi ***faktor-faktor*** yang mempunyai pengaruh signifikan terhadap setiap cluster.
- Buyers juga harus memberi bobot pada setiap faktor sesuai kebutuhannya.

Index yang menunjukkan performansi supplier adalah :

***Total Supplier Score***

# Pengembangan model untuk evaluasi supplier

$$\begin{aligned} \text{Total supplier score} = & \\ & \text{delivery score} + \text{flexibility score} + \text{quality score} \\ & + \text{reliability score} - \text{cost score} \end{aligned}$$

Cluster score juga membutuhkan data berikut :

C = cluster weights

K = factor weights

DV = desired value

V = value that is computed by dividing a buyer score by DV

# Cluster untuk menjelaskan performansi supplier

## 1. **Delivery**, terdiri dari 4 faktor :

### a. **Geographic Location** ( $K_{gl}$ )

(4=very close, 3=close, 2=far, 1=very far)

### b. **Freight Terms** ( $K_{ft}$ )

(4=excellent, 3=good, 2=fair, 1=poor)

### c. **Trade Restriction** ( $K_{tr}$ )

(4=high, 3= moderate, 2=low, 1=free)

### d. **Total Order Lead Time** ( $K_{lt}$ )

(4=15-20 days, 3=21-25 days, 2=26-30 days, 1=more 30 days)

$$\text{Delivery score} = C_D [(K_{gl} * V_{gl}) + (K_{ft} * V_{ft}) - (K_{tr} * V_{tr}) + (K_{lt} * V_{lt})]$$

$C_D$  : weight of delivery cluster

$V_{gl}$ ,  $V_{ft}$ ,  $V_{tr}$ ,  $V_{lt}$  : value obtained for each factor dividing DV

# Cluster untuk menjelaskan performansi supplier

## 2. Flexibility, terdiri dari 5 faktor :

### a. Capacity ( $K_c$ )

(4=very high, 3=high, 2=acceptable, 1=low)

### b. Inventory Availability ( $K_{iv}$ )

(4=very high, 3=high, 2=acceptable, 1=low)

### c. Information Sharing ( $K_{is}$ )

(4=very high, 3=high, 2=acceptable, 1=low)

### d. Negotiability ( $K_n$ )

(4=very high, 3=high, 2=acceptable, 1=low)

### e. Customization ( $K_{cu}$ )

(4=very high, 3=high, 2=acceptable, 1=low)

$$\text{Flexibility score} = C_F [(K_c * V_c) + (K_{iv} * V_{iv}) + (K_{is} * V_{is}) + (K_n * V_n) + (K_{cu} * V_{cu})]$$

$C_F$  : weight of flexibility cluster

$V_c, V_{iv}, V_{is}, V_n, V_{cu}$  : value obtained for each factor dividing DV



# Cluster untuk menjelaskan performansi supplier

3. **Cost**, terdiri dari 3 faktor :

a. **Suppliers' Selling Price ( $K_{sp}$ )**

(4=high, 3=acceptable, 2=low, 1=very low)

b. **Internal Cost ( $K_{ic}$ )**

(4=high, 3=acceptable, 2=low, 1=very low)

c. **Ordering and Invoicing ( $K_{oi}$ )**

(4=excellent, 3= good, 2=fair, 1=poor)

$$\text{Cost score} = C_c [(K_{sp} * V_{sp}) + (K_{ic} * V_{ic}) - (K_{oi} * V_{oi})]$$

$C_c$  : weight of cost cluster

$V_{sp}$ ,  $V_{ic}$ ,  $V_{oi}$  : value obtained for each factor dividing DV

# Cluster untuk menjelaskan performansi supplier

## 4. **Quality**, terdiri dari 4 faktor :

### a. **Continuous Improvement Program (K<sub>ip</sub>)**

(4=high, 3=moderate, 2=acceptable, 1=poor)

### b. **Customer Service (K<sub>cs</sub>)**

(4=very high, 3=high, 2=acceptable, 1=poor)

### c. **Certifications (K<sub>ct</sub>)**

(4=excellent, 3= good, 2=fair, 1=poor)

### d. **% of On-time Shipments (K<sub>ot</sub>)**

(4=very high, 3=high, 2=moderate, 1=low)

$$\text{Quality score} = C_Q [(K_{ip} * V_{ip}) + (K_{cs} * V_{cs}) + (K_{ct} * V_{ct}) + (K_{ot} * V_{ot})]$$

$C_Q$  : weight of quality cluster

$V_{ip}$ ,  $V_{cs}$ ,  $V_{ct}$ ,  $V_{ot}$  : value obtained for each factor dividing DV

# Cluster untuk menjelaskan performansi supplier

## 5. **Reliability**, terdiri dari 4 faktor :

### a. **Feeling of Trust ( $K_t$ )**

(4=very high, 3=high, 2=moderate, 1=low)

### b. **Countrys' Political Situation ( $K_{ps}$ )**

(4=excellent, 3=good, 2=fair, 1=poor)

### c. **Currency Exchange Situation ( $K_{ce}$ )**

(4=very favorable, 3=favorable, 2=neutral, 1=non favorable)

### d. **Warranty Policies ( $K_{wp}$ )**

(4=very favorable, 3=favorable, 2=neutral, 1=non favorable)

$$\text{Reliability score} = C_R [(K_t * V_t) + (K_{ps} * V_{ps}) + (K_{ce} * V_{ce}) + (K_{wp} * V_{wp})]$$

$C_R$  : weight of reliability cluster

$V_t, V_{ps}, V_{ce}, V_{wp}$  : value obtained for each factor dividing DV

# The supplier performance evaluation matrix

					Supplier	Supplier	Supplier	
	Cluster	Weight	Factors	Weight	DV	A	B	C
Delivery	$C_D$		Geographic location	$K_{gl}$				
			Freight terms	$K_{ft}$				
			Trade restrictions	$K_{tr}$				
			Total order lead time	$K_{lt}$				
Flexibility	$C_F$		Capacity	$K_c$				
			Inventory availability	$K_{iv}$				
			Information sharing	$K_{is}$				
			Negotiability	$K_n$				
Cost	$C_C$		Customization	$K_{cu}$				
			Supplier's selling price	$K_{sp}$				
			Internal cost	$K_{ic}$				
Quality	$C_Q$		Ordering and invoicing	$K_{oi}$				
			Continuous improv. programs	$K_{ip}$				
			Customer service	$K_{cs}$				
			Certifications	$K_{ct}$				
Reliability	$C_R$		Percent of on-time shipments	$K_{ot}$				
			Feeling of trust	$K_t$				
			Country's political situation	$K_{ps}$				
			Currency exchange situation	$K_{ce}$				
			Warranty policies	$K_{wp}$				

SCORE

Notes: DV = desired value

Table I.

Proposed decision matrix  
for supplier selection

# A case study for supplier evaluation



Three suppliers located in different geographical regions. They are :

- Supplier A (Mexico),
- Supplier B (South America), and
- Supplier C (China).

# Supplier A (Mexico)

<b>Cluster</b>	<b>Factors</b>	<b>Explanation</b>	<b>Score</b>
<b>Delivery</b>	<b>Geographic location</b>	Close to USA, possible to have frequent shipments of small quantities	4
	<b>Freight terms</b>	Exceeds the buyer's expectations regarding possible freight terms	4
	<b>Trade restrictions</b>	Supplier and buyer belong to NAFTA, so no trade restrictions	1
	<b>Total order lead time</b>	Total order lead time is shorter than its competitors	4
<b>Flexibility</b>	<b>Capacity</b>	It has reached its production limits	3
	<b>Inventory availability</b>	it's trying to implement JIT	2
	<b>Information sharing</b>	Supplier and buyer's communication channels are very good	3
	<b>Negotiability</b>	Based on buyer's perception, acceptable	2
	<b>Customization</b>	High level of specialization, difficult to change	1
<b>Cost</b>	<b>Supplier's selling price</b>	The increase of labor cost and a revaluation of Mexican currency	2
	<b>Internal cost</b>		2
	<b>Ordering and invoicing</b>	Its ordering and invoicing processes are within customer's expectations	4
<b>Quality</b>	<b>Continuous improv. programs</b>		3
	<b>Customer service</b>		3
	<b>Certifications</b>		3
	<b>Percent of on-time shipments</b>	Generally arrive on time	4
<b>Reliability</b>	<b>Feeling of trust</b>		3
	<b>Country's political situation</b>		4
	<b>Currency exchange situation</b>	Mexican currency exchange situation is not favorable to the US buyers	2
	<b>Warranty policies</b>		2

## Supplier B (South America)

<b>Cluster</b>	<b>Factors</b>	<b>Explanation</b>	<b>Score</b>
<b>Delivery</b>	<b>Geographic location</b>	Relatively close to the USA	3
	<b>Freight terms</b>		4
	<b>Trade restrictions</b>	It can ship products into USA duty-free	1
	<b>Total order lead time</b>	Total lead time has been reduced just slightly above the Mexican supplier	3
<b>Flexibility</b>	<b>Capacity</b>	There are expansion projects for the near future, and it has limited capacity currently	2
	<b>Inventory availability</b>	Willing to maintain high inventory	4
	<b>Information sharing</b>	Obsolete information systems	1
	<b>Negotiability</b>	Very high negotiability	4
	<b>Customization</b>		4
<b>Cost</b>	<b>Supplier's selling price</b>	Lower than Mexican, but higher than Chinese	2
	<b>Internal cost</b>	It's reducing their internal cost	2
	<b>Ordering and invoicing</b>	Below buyer's expectation	2
<b>Quality</b>	<b>Continuous improv. programs</b>	It only has occasional continuous improvement activities	2
	<b>Customer service</b>	Buyer's perception recently	3
	<b>Certifications</b>	It doesn't have an ISO 9000 certification	2
	<b>Percent of on-time shipments</b>	90% on time delivery	3
<b>Reliability</b>	<b>Feeling of trust</b>		2
	<b>Country's political situation</b>	Political stability	1
	<b>Currency exchange situation</b>	Favorable to the buyer	3
	<b>Warranty policies</b>	It offers to take full responsibility for non-conformities at this time	4

# Supplier C (China)

<b>Cluster</b>	<b>Factors</b>	<b>Explanation</b>	<b>Score</b>
Delivery	<b>Geographic location</b>	Far from US	1
	<b>Freight terms</b>	Insufficient control of its shipping process	1
	<b>Trade restrictions</b>	Moderate	2
	<b>Total order lead time</b>	Less competitive than supplier A and B	2
Flexibility	<b>Capacity</b>		3
	<b>Inventory availability</b>	Willing to maintain buyer desired inventory levels	4
	<b>Information sharing</b>	Deficient use of EDI	2
	<b>Negotiability</b>		4
	<b>Customization</b>	Has capacity above buyer's expectations and flexibility to manufacture products with special characteristics	4
Cost	<b>Supplier's selling price</b>	Cheap, exceeds buyer's expectation	1
	<b>Internal cost</b>	Very low	1
	<b>Ordering and invoicing</b>	Fair, but is expected to improve after China's access to the WTO	3
Quality	<b>Continuous improv. programs</b>	Continuous improvement has been enhanced by large investment in machinery and information systems	4
	<b>Customer service</b>	Still low	2
	<b>Certifications</b>	It's not ISO 9000 certified, but has certification from a US retail chain	2
	<b>Percent of on-time shipments</b>	Below expectations	2
Reliability	<b>Feeling of trust</b>	It often had in-transit delays in shipping process that represents its reliability	2
	<b>Country's political situation</b>	It's backed by a well established government	4
	<b>Currency exchange situation</b>	Very favorable to the buyer	4
	<b>Warranty policies</b>		2



# The buyer's needs



- The buyer located in USA.
- It's looking for a supplier that can assume the entire manufacturing processes and provide **competitive prices**.
- It wants to reduce its current inventory level, so it prefers suppliers that can **provide frequent small quantity shipments** or vendor managed inventory service.
- It wants to make sure that the selected supplier has safety stocks at the levels that can **guarantee products' availability** whenever the company needs them.
- It emphasizes the importance of **fast** and **reliable deliveries** that can serve its **just-in-time system**.
- It's also looking for suppliers that can obtain a long-term and **stable partnership** with effective communication channels. So the suppliers must have a **good EDI system**.

# The evaluation and analysis of results

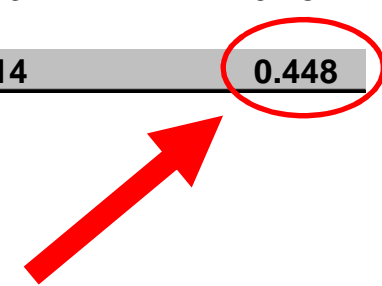
Cluster	Weight	Factors	Weight	DV	Supplier		Supplier		Supplier	
					A	Score	B	Score	C	Score
Delivery	0.22	Geographic location	0.3	3	4	1.333	3	1.000	1	0.333
		Freight terms	0.15	3	4	1.333	4	1.333	1	0.333
		Trade restrictions	0.2	2	1	0.500	1	0.500	2	1.000
		Total order lead time	0.35	4	3	0.750	3	0.750	2	0.500
						<b>0.168</b>		<b>0.146</b>		<b>0.028</b>
Flexibility	0.17	Capacity	0.2	2	3	1.500	2	1.000	3	1.500
		Inventory availability	0.25	4	2	0.500	4	1.000	4	1.000
		Information sharing	0.25	3	3	1.000	1	0.333	2	0.667
		Negotiability	0.18	3	1	0.333	4	1.333	4	1.333
		Customization	0.12	2	1	0.500	4	2.000	4	2.000
						<b>0.135</b>		<b>0.172</b>		<b>0.203</b>
Cost	0.25	Supplier's selling price	0.4	2	4	2.000	2	1.000	1	0.500
		Internal cost	0.4	2	3	1.500	2	1.000	1	0.500
		Ordering and invoicing	0.2	4	4	1.000	2	0.500	3	0.750
						<b>0.300</b>		<b>0.175</b>		<b>0.063</b>

Cluster's Weight \* [ $\sum$  (Factors' Weight \* Score)]

Supplier A / DV  
= 4/2 = 2

Cluster	Weight	Factors	Weight	DV	Supplier A		Supplier B		Supplier C	
					Score	Score	Score	Score		
						(0.300)		(0.175)		(0.063)
Quality	0.22	Continuous improv. programs	0.1	3	3	1.000	2	0.667	4	1.333
		Customer service	0.25	3	3	1.000	3	1.000	2	0.667
		Certifications	0.3	3	3	1.000	2	0.667	2	0.667
		Percent of on-time shipments	0.35	4	4	1.000	3	0.750	2	0.500
					<b>0.220</b>		<b>0.171</b>		<b>0.149</b>	
Reliability	0.14	Feeling of trust	0.3	3	3	1.000	2	0.667	2	0.667
		Country's political situation	0.25	3	4	1.333	1	0.333	4	1.333
		Currency exchange situation	0.3	4	2	0.500	3	0.750	4	1.000
		Warranty policies	0.15	3	2	0.667	4	1.333	2	0.667
					<b>0.124</b>		<b>0.099</b>		<b>0.131</b>	
					<b>0.347</b>		<b>0.414</b>		<b>0.448</b>	

So, choose supplier C



# MANAGING RELATIONSHIPS WITH SUPPLIERS

# Classifying Items for Relationship Design

Tingkat kesulitan	Tinggi	<b>Bottleneck suppliers</b> Sulit mencari substitusi Pasar monopoli Supplier baru sulit masuk	<b>Critical strategic suppliers</b> <input type="checkbox"/> Penting / strategis <input type="checkbox"/> Substitusi sulit	
	Rendah	<b>Non-critical suppliers</b> Ketersediaan cukup Item-item cukup standar Substitusi dimungkinkan Nilainya relatif rendah	<b>Leverage suppliers</b> <input type="checkbox"/> Ketersediaan cukup <input type="checkbox"/> Substitusi dimungkinkan <input type="checkbox"/> Spesifikasi standar <input type="checkbox"/> Nilainya relatif tinggi	
		Rendah	Tingkat kepentingan	Tinggi

# Supplier Relationship Portfolio

Tingkat kesuitan	Tinggi	<b>Bottleneck suppliers</b> Penyederhanaan / standarisasi item	<b>Critical strategic suppliers</b> <input type="checkbox"/> Strategic partnership, focus ke keunggulan strategis
	Rendah	<b>Non-critical suppliers</b> <b>Rendah</b> Simplifikasi proses, focus ke harga per unit	<b>Leverage suppliers</b> <input type="checkbox"/> Pelihara bargaining power terhadap supplier
		Rendah	Tinggi

**Tingkat kepentingan**

# E-PROCUREMENT

# E-Procurement

- Allow you to select a supplier in an open environment or an exclusive supplier in a closed environment.
- Allow you to make a sole purchase of your required products/materials, or make a joint-purchase with other buyer members.
- Allow you to set up a reorder point in relation with a level of inventory. The system can then automatically issue a purchase order for you.
- Allow you to purchase a product or material by way of bargaining, bidding or fixed-pricing.



# Examples

The Volkswagen Group developed a website in 2000 in which includes applications on:

1. Online enquiries
2. Online negotiation
3. Online catalogue
4. Capacity management

The group manages almost all of their annual spending, which is more than 50 billion Euros, via the Internet.

**Garuda Indonesia**

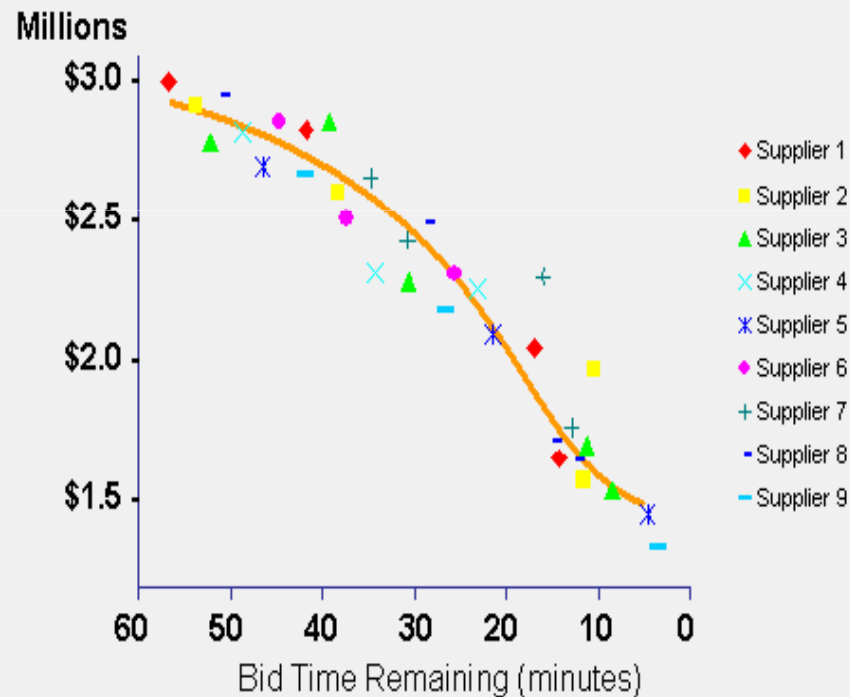
<http://www.garuda-indonesia.com/eauction/index.php>

**Thai Government Purchasing**

<http://www.gprocurement.go.th/>


# E-PROCUREMENT CASE 1

## Competitive Reaction During Auction



## AIRLINE EXAMPLE

- Number of supplier: 9
- Number of bids: 46
- Materials Sourced: Mixed consumables
- Negotiation format: Reverse Auction
- Duration: 30 minutes with two 5-minute extensions



**Tidak ada rahasia kesuksesan. Sukses adalah hasil dari persiapan, kerja keras, dan belajar dari kegagalan.**

**There are no secrets to success. Success is the result of preparation, hard work, learning from failure.**

**Colin Powell**