

# Supply Chain Risk Management (SCRM)

## Using the AHP method for supplier selection

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For several years, a Midwest manufacturer has been importing a key component essential to its assembly operation from a foreign supplier located in Wuhan, China.

The supplier has been an adequate business partner although deliveries from this supplier were occasionally late.

Delays have caused some disruption of the manufacturer's assembly operation. The Chinese supplier attributed the cause of its delivery delay to the inconsistent deliveries of its own supplier.

The manufacturer's vice president for supply chain management decided to identify other potential suppliers of the essential component. After several months of searching Internet/literature sources and interviewing colleagues at other domestic manufacturers, two additional potential foreign suppliers were identified.



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One of the potential suppliers is located in Sao Paulo, Brazil and the other in Kiev, Ukraine.

The manufacturer's vice president for supply chain management hired consultants to help evaluate and rank the potential suppliers.

A task force composed of both manufacturer executives and consultants having pertinent knowledge and experience was created.

The first job of the six members task force was to identify the pertinent criteria to be used in the supplier evaluation process.

Each of the foreign suppliers was willing to match the lowest component price quoted by their competitors. For this reason, price was not included in the set of criteria used for the evaluation.



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## Criteria:

- Supplier reliability (SR). This includes attributes such as: trust of supplier's management, potential for strikes and protection of client's proprietary information.
- Country risk (CR). This includes political risk, risk due to natural or man caused disasters and currency convertibility risk.
- Reliability of the transportation companies used to transport the components from the supplier location to the manufacturer (TR).
- Reliability of the supplier's suppliers (RSS).



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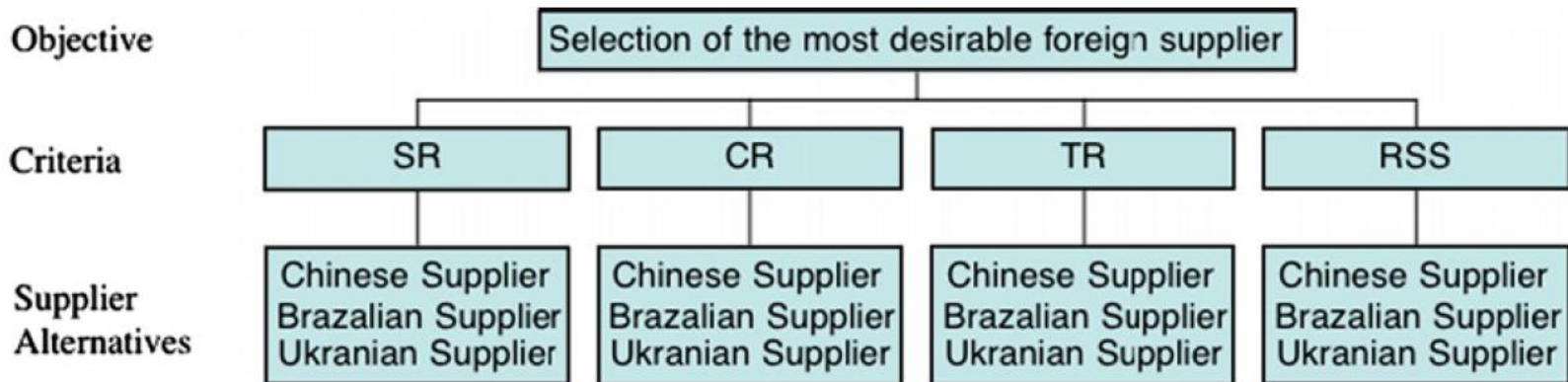


Fig. 1. Graphical representation of the foreign suppliers selection problem hierarchy.



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Table 4  
Summary of suppliers priorities for each criterion

	Chinese supplier				Brazilian supplier				Ukrainian supplier			
	SR	CR	TR	RSS	SR	CR	TR	RSS	SR	CR	TR	RSS
Chinese supplier	0.111	0.599	0.198	0.186	0.567	0.162	0.754	0.745	0.322	0.240	0.047	0.069
Brazilian supplier	0.120	0.544	0.179	0.161	0.613	0.147	0.682	0.644	0.267	0.309	0.139	0.195
Ukrainian supplier	0.095	0.629	0.416	0.386	0.631	0.120	0.485	0.471	0.274	0.252	0.100	0.143
Priority	0.109	0.591	0.264	0.244	0.604	0.143	0.640	0.620	0.288	0.267	0.095	0.136

The overall rank of each supplier is calculated by multiplying a criterion priority by a supplier priority for each criterion and summing the results for all the criteria. The final supplier ranking is given below.

Supplier	Ranking
Chinese	0.2126
Brazilian	0.5787
Ukrainian	0.2090



## References

- Levary, R. R. (2008). "Using the analytic hierarchy process to rank foreign suppliers based on supply risks." Computers & Industrial Engineering **55**(2): 535-542.