

The Possibility of MCE Application in the Case of Different Supplier-customer Relationships' Types

Ekaterina Khitilova^{1 +}

¹ Moravian University College Olomouc, Czech Republic

Abstract. The article is oriented to the area of procedures selection for new suppliers. The aim of article is conclusion about suitability MCE application in the case of different types of supplier-customer relationships. A single illustrative case study is used as form of article. The comparison of evaluation results with MCE application is used as method of article. The result of article is simulated evaluation results in the case of selected supplier-customer relationships' types with MCE application and conclusion about the suitability of MCE application.

Keywords: MCE, supplier-customer relationship, evaluation criterion, scoring-model

1. Introduction

At present, building a strong and flexible supply chain is considered fundamental for a successful business. There are several methods of supplier evaluation. A scoring model is seen as one from the basic methods. There are several views on the choice of evaluation criteria. The type of supplier-customer relationship is the basic factor to the choice of evaluation criteria and evaluation procedure selection. Nowadays, there are different classifications of supplier-customer relationships. In this article is described one from basic classifications. The importance of evaluation criteria is influenced by type of supplier-customer relationship. MCE is scoring model for new suppliers' evaluation in the first stage. According [1] the current business conditions can be characterized by the following: cooperation supplements or replaces competition; global customers require more "tailored" products and services.

2. Materials and Methods

2.1. Classification the Supplier-Customer Relationships in the First Stage

Author of this article regards the classification by Masella and Rangone as essential. Other classifications are described in [2]. On the Figure 1 are present basic classification dimensions.

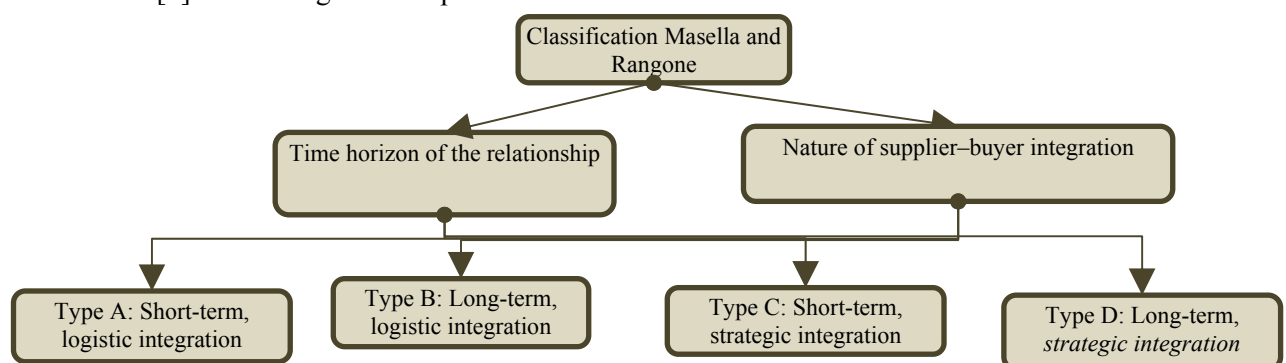


Fig 1: Classification of supplier-customer relationships types, [2]

In this article are compared A type, B type and D type relationships for MCE application suitability.

2.2. Selected Form of Research

[3,4] distinguish five types of case studies: Research (exploratory) - Descriptive (descriptive) - Illustrative - Experimental – Explanatory. In terms of the design, case studies can be divided into single type

⁺ Corresponding author. Tel.: + 420773949122; +420587332364
E-mail address: ekaterina.khitilova@mvso.cz.

and multiple type (comparative). [3] To present the results of this paper, the format of a single illustrative case study was chosen. Single illustrative case study using changed data from a real middle-sized enterprise. These data will help to compare results of supplier evaluation with MCE application in the case of different types of relationship.

2.3. Research Questions

The research question of this paper is: for what type of relationship is the suitable MCE scoring model?

The criteria for comparing the suitability of MCE are:

- Degree of uniqueness. What is the degree of difference the most suitable supplier from other suppliers? This requirement is satisfied if only the most suitable supplier has total value more than 1.
- Degree of using all evaluation groups of MCE. This requirement is satisfied if it requires the involvement of all evaluation groups.

The weights of evaluation groups in particular cases are determined by company's manager.

2.4. Selection Criteria of Evaluation

The most popular criteria of evaluation

The most popular criterion is quality, followed by delivery terms, price / cost, capacity, service management, technology, research and development, finance, flexibility, risk and safety, environmental management. The second most popular criterion is delivery conditions. Its attributes are presented as "fitness delivery date", "due respect", "degree of closeness", "delivery, and location", "delivery time", "reliability of supply", "geography". The third most popular criterion is the price/cost (63 articles or 80.77%) [5].

Evaluation criteria of the MCE (the method of complex evaluation) Scoring Model

Evaluation of new supplier includes the following evaluation groups: delivery time, the expertise of suppliers, costs, transportation, and flexibility of supplier [6].

2.5. Selecting Procedure

Scoring model

Scoring models are among the basic evaluation methods. A scoring model is based on score calculation of suppliers. The highest score determines the most suitable supplier. The total score of a supplier is the sum of the values all the evaluation criteria.[7].

MCE

MCE is the variant of scoring model, which has some own differences, such as orientation on different groups of suppliers, orientation on average values. Every supplier is compared with average final value in every evaluation group.

Advantages of MCE:

- Evaluation different types of business for one company,
- Evaluation inside really possibilities – orientation to average values.[7]

2.6. The Input Data

In the table 1 are presented the input data (groups of evaluation criteria and evaluation indexes) from middle sized enterprise.

Tab. 1: The input data from middle sized enterprise, [6]

Group	Evaluation criterion	Evaluation index	S1	S2	S3
Delivery time	Compliance the period of application of material element in the operating conditions and the average delivery time	The period of application of material element in the operating conditions	1	2	2
		Average delivery time	8	7	8
	Possibility transport vehicle to the supplier + time transportation	Possibility	1	0	1
		Time of transportation	6	0	5
		Possibility shorting lead times and associated	0	1	1

Group	Evaluation criterion	Evaluation index	S1	S2	S3
The expertise of supplier from the perspective of reference	conditions	Shorting lead times	0	15	10
		Associated increasing price	0	35	37
	Certification	Existence compulsory quality certificates	1	1	1
		Existence voluntary quality certificates	2	0	2
	Supplier position on markets	Time on market	5	3	4
foreign experience with the supplier	public information about the negative experiences	-1	0	0	
	public information about positive experiences	0	1	0	
Costs	Index the full cost of purchasing	Purchasing value	25	35	36
		Transport costs	5	5	5
		The cost of packaging	3	3	3
		The cost of storage	4	3	3
		Costs tariff	0	1	0
Transportation	Distance to supplier	Distance to supplier, km	11	12	12
Flexibility of supplier	Possibilities	Possibility of online orders	6	6	6
		The possibility of modification of the product under the company claim	1	0	1
		The communication options in creating custom-made product	1	1	0
		The possibility of transfer activity	1	1	1
	Associated costs	Associated costs	0	0	1

3. Results

In table 2 is presented result of evaluation in the case relationship type A.

Tab. 2: Result of evaluation in the case type A relationship. Own processing

Weight	Group	Evaluation criterion	Coefficient	S1	S2	S3
0,3	Delivery time	Compliance the period of application of material element in the operating conditions and the average delivery time	0,117	0,073	0,128	0,146
		Possibility transport vehicle to the supplier + time transportation	0,117	0,191	0,000	0,159
		Possibility shorting lead times and associated conditions	0,117	0,000	0,210	0,091
		Calculation		0,264	0,338	0,396
0,2	The expertise of supplier from the perspective of reference	Certification	0,083	0,107	0,036	0,107
		Supplier position on markets	0,083	0,104	0,063	0,083
		foreign experience with the supplier	0,083	-0,083	0,083	0,000
		Calculation		0,128	0,182	0,190
0,25	Costs	Index the full cost of purchasing	0,25			
		Calculation		0,296	0,233	0,231
0,15	Transportation	Distance to supplier	0,15	6	6	6
		Calculation		0,141	0,154	0,154
0,0	Flexibility of supplier	Possibilities	0,00	0,00	0,00	0,00
		Associated costs	0,00	0,00	0,00	0,00
		Calculation		0,131	0,00	0,00
The evaluation result				0,829	0,906	0,972

The evaluation of results:

- Degree of uniqueness. This requirement is not satisfied.
- Degree of using all evaluation groups of MCE. This requirement is not satisfied. The flexibility of supplier is not important.

In table 3 is presented result of evaluation in the case relationship type B.

Tab.3: Result of evaluation in the case relationship type B. Own processing

Weight	Group	Evaluation criterion	Coefficient	S1	S2	S3
0,3	Delivery time	Compliance the period of application of material element in the operating conditions and the average delivery time	0,100	0,063	0,110	0,125
		Possibility transport vehicle to the supplier + time transportation	0,100	0,164	0,000	0,136
		Possibility shorting lead times and associated conditions	0,100	0,000	0,180	0,078
		Calculation		0,226	0,290	0,339
0,1	The expertise of supplier from the perspective of reference	Certification	0,033	0,043	0,014	0,043
		Supplier position on markets	0,033	0,042	0,025	0,033
		foreign experience with the supplier	0,033	-0,033	0,033	0,000
		Calculation		0,051	0,073	0,076
0,2	Costs	Index the full cost of purchasing	0,2			
		Calculation		0,237	0,186	0,185
0,25	Transportation	Distance to supplier	0,25	6	6	6
		Calculation		0,236	0,257	0,257
0,15	Flexibility of supplier	Possibilities	0,075	0,113	0,075	0,113
		Associated costs	0,075	0,084	0,056	0,084
		Calculation		0,197	0,131	0,197
The evaluation result				0,947	0,937	1,055

The evaluation of results:

- Degree of uniqueness. This requirement is satisfied.
- Degree of using all evaluation groups MCE. This requirement is satisfied.

In table 4 is presented result of evaluation in the case relationship type D.

Tab. 4: Result of evaluation in the case relationship type D. Own processing

Weight	Group	Evaluation criterion	Coefficient	S1	S2	S3
0,1	Delivery time	Compliance the period of application of material element in the operating conditions and the average delivery time	0,033	0,021	0,037	0,042
		Possibility transport vehicle to the supplier + time transportation	0,033	0,055	0,000	0,045
		Possibility shorting lead times and associated conditions	0,033	0,000	0,060	0,026
		Calculation		0,075	0,097	0,113
0,3	The expertise of supplier from the perspective of reference	Certification	0,1	0,129	0,043	0,129
		Supplier position on markets	0,1	0,125	0,075	0,100
		Foreign experience with the supplier	0,1	-0,1	0,1	0
		Calculation		0,154	0,218	0,229
0,25	Costs	Index the full cost of purchasing	0,25			
		Calculation		0,296	0,233	0,231
0,15	Transportation	Distance to supplier	0,15	6	6	6
		Calculation		0,141	0,154	0,154
0,2	Flexibility of supplier	Possibilities	0,1	0,150	0,100	0,150
		Associated costs	0,1	0,113	0,075	0,113
		Calculation		0,263	0,175	0,263
The evaluation result				0,929	0,876	0,990

The results evaluation:

- Degree of uniqueness. This requirement is not satisfied.
- Degree of using all evaluation groups of MCE. This requirement is satisfied.

4. Conclusion

MCE can be applied in the case with the requirement to immediate response. The groups of evaluation criteria include flexibility of supplier. This group of evaluation criteria is oriented to long-term relationship with supplier in the first instance. According the classification by Masella and Rangone MCE is the most suitable tool in the case Type B relationship. In the case of type A or D relationships MCE can be applied in limited scope.

5. Acknowledgement

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