



DECISION SUPPORT SYSTEM PROTOTYPE FOR COMMERCIAL RISK MANAGEMENT

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Abstract: *Being aware of the commercial risks, of their influences towards participants of a commercial act is the key factor in minimizing the negative effects on partners. Once familiarizing these risks one can evaluate them and use protection techniques against their negative effects. In this paper we present a DSS (Decision Support System) prototype for the management of commercial risks. This system is based on a series of questioners through which the commercial risk is being estimated. In this manner the managers can take the optimum decision, based on the reports given (supplied) by system.*

Key words: *Decision Support Systems, commercial risks, risk management*

1. INTRODUCTION

The globalization of commercial activities has expanded trade between partners from different countries. These relationships are exhibited several risk factors. Measuring and minimizing the impact of these factors is a major concern of today's management.

Commercial risks in international transactions can decisively affect the existence of an organization. In these conditions the development and use of decision support systems for managing commercial risks can lead to timely identify and measure the impact of risk factors in commercial activities. This system can help management to make decisions in a timely manner to minimize the impact of risk factors on organization's activities.

Most of the recent research is focusing on general enterprise risk management (Hampton, 2009) and financial institution commercial risk management (Hull, 2009).

Other research regarding the commercial risks are centered in the field of air travel (Boksberger et al., 2007) and banks (Wang and Lin, 2009).

Research method used to develop the system prototype was practical experiment using DSS-UNIDEF framework (Brandas, 2007).

In our research the main commercial risks taken into consideration are:

- a) The deterioration of the buyer's financial status, a fact which makes it impossible for him to cope with the debts at the right time.

Evidently the most affected by this risk is the exporter. The evaluation of this risk can be made by analyzing the buyer's bankruptcy risk (of the importer), of its credit solvency and liquidity. The following methods can be used in determining the bankruptcy risk:

- the analysis of the bankruptcy risk based on the dates from the balance sheet;
- Altman model 3 with five variables (The Z model or "score");
- Canon-Holder model;
- Central Bank of France model;
- Romanian Commercial Bank model;

- Argenti A model.
- b) The non-paying risk.
Unlike the previous risk, this type of risk refers to the importer's refuse to pay the merchandise. It can be manifested in the following forms:
 - The buyer does not pay the merchandise.
 - The ill-faith of the buyer, when he claims imaginary technical defects of the imported product in order to avoid its contractual obligation to pay.
This is a risk undertaken by the exporter, who can suffer a partial or a total loss, as a consequence of the partial or total non-payment of the value of the goods delivered to the exporter.
- c) Transport risk.
Merchandise from internal or international circuits is exposed to various dangers which regard either arriving late on destination, either quality or quantity, as follows:
 - Rail transport risks;
 - Maritime transport risks;
 - Road transport risks.
- d) Price risk.
Undoubtedly all the constituent elements of an international economic transaction and of the buy-sell contract are important, but even so, the price is by far the most important, because in its level are being shown the expectations of the both exporter and importer. This type of risk consists of the probability that the contract's price is to modify at the moment of payment in report with the international price from the moment of contract signing. The exporter undertakes this type risk, when the contract's price is beneath the international price from the payment moment, and for the importer this risk consists from the fact that the contract price which is to be paid is higher than the international price from the moment of payment.

2. THE PROTOTYPE OF SYSTEM

Our research result is the prototype of Decision Support System for Commercial Risks Management (Comm-Risk Analyzer). In figure 1 we have illustrated the architecture of Comm – Risk Analyzer system prototype. Firstly, the information system must have an interface through which it can communicate with the user and collect data about commercial risks. The user, though out the internet fills the questionnaire used in order to estimate the commercial risk.

The supplied data are being introduced in the system's database. The system processes the data, after which information are being delivered throughout reports, based on which the company's management will take the necessary decisions to minimize or even eliminate the commercial risk.

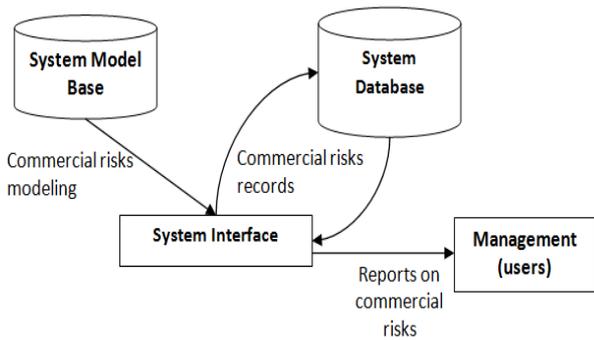


Fig. 1. Comm-Risk Analyzer architecture

The system is based on the quantitative method of evaluating risks throughout questionnaires. To quantify and estimate the commercial risk, the models database contains also the score based model. The scores can be configured in report to each company.

To implement the system we have chosen the PHP (Hypertext Preprocessor) technique. PHP is a powerful side script server to create dynamic and interactive websites. It is very used, free and an alternative for competitors like ASP Microsoft. It fits perfectly to develop web applications and can be directly included in the HTML code, often being used together with Apache (web server) on different operating systems. The system obtained results are the reports regarding: the price risk (figure 2), transport risk (figure 3) and non-paying risk.

Activity	Entity	Assurance	Scor	Failure rate	Scor	Scor	cif
Building	exportatorului	nu	3	0.00	0	3	RO8745900745
		da	3	0.00	0	3	RO8745900745
inginerie	importatorului	da	0	0.12	2	0	RO7589395003
		nu	0	0.12	2	0	RO7589395003
produsie	exportatorului	da	3	0.70	3	0	RO7857648395
		nu	3	0.70	3	0	RO7857648395
	importatorului	da	1	0.08	1	0	RO8653002235
		nu	2	0.00	0	3	RO9673872496
servicii financiare si alte servicii de afaceri	importatorului	da	1	0.10	1	3	RO8755777654
		nu	0	0.10	1	3	RO8755777654
transport si telecomunicatii	importatorului	da	1	0.05	1	0	RO8343663439
		nu	1	0.05	1	0	RO8343663439
turism	importatorului	da	0	0.34	3	3	RO8864664439
		nu	0	0.34	3	3	RO8864664439

Fig. 3. The Transport Risk Report

Scor	Facts	ID
0	Price variation	RO8864664439
	Increasing price	RO8745900745
	Inflation	RO7857648395
		RO8343663439
		RO8755777654
		RO9673872496
3	Price estimation	RO7589395003
		RO8653002235

Fig. 2. The Price Risk Report

3. CONCLUSION

Implementing a decision support system for the management of commercial risks represents a powerful tool for the management.

Using this system the companies may minimize the impact of commercial risks on commercial activities. As a future research, we want based on this prototype, to develop a simulator which can allow the simulation of commercial risks, taking into consideration multiple scenarios and risks estimation models.

4. REFERENCES

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