

## DEVELOPMENT OF MANAGEMENT DECISIONS IN THE CONDITIONS OF ECONOMIC RISK

Emiliya VAYSILOVA<sup>1</sup>

### ABSTRACT

The market conditions, in which contemporary businesses operate, provide entrepreneur freedom and opportunities for initiative. Despite of that, this environment is risky and insecure. Simultaneously, market globalization is a prerequisite for increasing that insecurity.

In such risky and strongly competitive environment the managers need to assess and make estimations of the economic activity as accurately as possible. It is the basis for optimal decision making that can be supported by business risk analysis using various methods.

This article discusses the application of business risk analysis using the Coefficient of Variation method. The application of such analysis is shown by indicative data regarding a hypothetical business company.

### Key words:

Business risk, Coefficient of Variation, Management decisions, Rate of safety

## 1 INTRODUCTION

In its essence, the term *risk* means *threat*, danger of occurrence of loss. Each economic activity involves various risks. That makes it necessary to reveal their sources, reasons and forms of manifestation in order to search for methods for their assessment and ways for their prevention or mitigation. Economic risk increases strongly in the conditions of instability and unsustainability of the environment, in which the economic activity is realized. And modern economic conditions are becoming ever more insecure and risky. Market globalization is a prerequisite for the development of that trend. It is indisputable that market economy provides for entrepreneur freedom and opportunities for initiative on the one part, but on the other part, in its deep essence it is insecure and risky.

In such a risky and highly competitive environment, company business activity has to be assessed and prognosticated by managers as realistically as possible which is a prerequisite for making optimal decisions. As a result of continuous research and analysis of company activities, it is necessary to make a preliminary assessment of risk

and to take measures to eliminate possible losses. Economic risk is associated with the fluctuations of gross profit.

The study of risk is a multifaceted activity that leads to some difficulties. Similar difficulties arise from the understanding of the separate components of risk, which are influenced by some factors:

- The risk manifests itself through its different characteristics and in different situations, which makes its identification and assessment very difficult.

- The risk is inherently a subjective item, because the perception of a risky situation varies in different individuals [2].

There are different points of view on the nature of risk, which is considered by some authors as a "possible hazard of accidental occurrence of adverse effects" [3]. This is the so called objective concept of risk.

Other authors are proponents of the subjective concept of risk. They say that risk has a specific nature because it manifests as a subjective assessment of activities and tasks by deliberate choice taking into account the possible alternatives of actions [4].

There is a third point of view regarding the concept of risk - its subjective-objective nature. Because risk is a product of a specific activity implemented under conditions of uncertainty and necessary choice, it is a choice of objective and subjective. Thus, the risk is always associated with both the choice of a given alternative and the assessment of the probability of occurrence of one or other effect [1].

Regardless of the treatment of the concept of risk, company management should explore the manifestation of different aspects of risk and on this basis make their solutions for future development of the company. As for the business risk, it should be stressed that adverse changes in market and economic conditions have a negative impact on financial results, and hence on company profitability. It is therefore necessary to study the factors affecting the profit and profitability.

Business risk is substantiated by the insecurity of production and sales originating from the nature of the specific economic activity, and depends on two groups of factors – external and internal. The external factors are not directly related to the business of the enterprise: they are political, social-economic, ecological, science-technical, etc. The internal factors originate from the economic activity: they arise from the administrative-management structure, personnel policy, the supply chain, etc.

Risk analysis is a main component to modern management in all business fields. It allows to characterize the general risk situation, in which the enterprise operates. Risk identification provides the opportunity to make a truthful estimation of the future development of the enterprise and define specific measures aimed for counteracting and safety. There are various methods existing in the economic theory and practice, by which it is possible to assess the business risk and thus provide a favourable basis for the development of sensible management decisions.

This work has aims to research the business risk in the operation of the enterprise. The purpose is to make a quantitative risk evaluation by using the statistical method of analysis known as "Percent Variation". Realization of the task assigned is done in two research stages where the first one is related to presentation of the theoretical aspects of the method, and the second one to the practical application of the Percent Variance method for business risk analysis.

## 2 THEORETICAL ASPECTS OF THE COEFFICIENT OF VARIATION METHOD

One of numerous available methods assisting management decision-making in the conditions of business risk is the Percent Variance method. By this method it is possible to calculate the variation percentage of sales, revenues, financial result and profitability of the enterprise for a given period of time. Normally, such analysis is applied as regards the main economic activity.

Calculation of the percent variance ( $V_{\%}$ ) is done by the following formula:

$$V_{\%} = \frac{\sigma}{\bar{q}} \times 100$$

where:

$\sigma$  – average standard deviation of sales;

$\bar{q}$  – average amount of sales for the period.

Variation of sales around their average amount for a given period of time is measured by the average standard deviation ( $\sigma$ ), calculated by the formula:

$$\sigma = \sqrt{\frac{\sum (q_i - \bar{q})^2}{n}}$$

where:

$q_i$  – natural volume of sales for the relevant year;

$n$  – number of years.

By the Percent Variance method, the standard deviation of sales is presented as a relative value expressed as a percentage. In order to achieve a more realistic analysis result it is better to research a period of 3 to 7 years. It is widely accepted that the higher the variation value the higher the insecurity of sales is, and hence a higher risk exists for the enterprise.

In cases where the enterprise has multi-product structure (more than one product is being produced), it is necessary to calculate the percent variation for each product separately. Subsequently, the weighted average variation percentage of sales is determined for the enterprise as a whole ( $\bar{V}_{\%}$ ), using the formula:

$$\bar{V}_{\%} = \sum_{i=1}^m V_i \times D_i$$

where:

$d_i$  – natural or expressed in value structure of production – the relative share of the given product into the total quantity sold or into the total of revenue from sales;

$m$  – number of product types.

## 2 APPLICATION OF THE PERCENT VARIANCE METHOD FOR RESEARCHING THE BUSINESS RISK

The practical realization of the Percent Variance method is shown in the following example:

Production enterprise "BBB" LLC produces four products – "A", "B", "C" and "D". The data about these product sales realized during the last five years, are shown on Table 1.

Година	Обем продажби (бр.)			
	Продукт "А"	Продукт "В"	Продукт "С"	Продукт "Д"
1	537	342	137	168
2	498	369	157	175
3	516	320	145	167
4	528	276	98	134
5	564	295	113	125

The variation of sales should be determined as percentage for the five-year period, by product types, and for the enterprise as a whole. The calculations for each product are shown on Tables 2, 3, 4 and 5.

Таблица 2

Година	$q_i$	$q_i - \bar{q}$	$(q_i - \bar{q})^2$
1	537	49.40	2440.36
2	498	10.40	108.16
3	437	-50.60	2560.36
4	481	-6.60	43.56
5	485	-2.60	6.76
Сума	2438		5159.20

$$\sigma = \sqrt{\frac{5159.2}{5}} = 32.12$$

$$V_{\%} = \frac{32.12}{487.6} \times 100 = 6.59$$

Таблица 3

Година	$q_i$	$q_i - \bar{q}$	$(q_i - \bar{q})^2$
1	342	21.60	466.56
2	369	48.60	2361.96
3	320	-0.40	0.16
4	276	-44.40	1971.36
5	295	-25.40	645.16
Сума	1602		5445.20

$$\sigma = \sqrt{\frac{5445.2}{5}} = 33$$

$$V_{\%} = \frac{33}{320.4} \times 100 = 10.30$$

Таблица 4

Година	$q_i$	$q_i - \bar{q}$	$(q_i - \bar{q})^2$
1	137	7.00	49.00
2	157	27.00	729.00
3	145	15.00	225.00
4	98	-32.00	1024.00
5	113	-17.00	289.00
Сума	650		2316.00

$$\sigma = \sqrt{\frac{2316}{5}} = 21.52$$

$$V_{\%} = \frac{21.52}{130} \times 100 = 16.55$$

Таблица 5

Година	$q_i$	$q_i - \bar{q}$	$(q_i - \bar{q})^2$
1	168	14.20	201.64
2	175	21.20	449.44
3	167	13.20	174.24
4	134	-19.80	392.04
5	125	-28.80	829.44
Сума	769		2046.80

$$\sigma = \sqrt{\frac{2046.8}{5}} = 20.23$$

$$V_{\%} = \frac{20.23}{130} \times 100 = 13.15$$

The structure of sales by product type, based on sales over the five-year period, was computed and presented in Table 6.

Based on these calculations, the weighted average variation rate is also calculated ( $\bar{V}_{\%}$ ):

$$\bar{V}_{\%} = 6.59 \times 0.4666 + 10.30 \times 0.2828 + 16.55 \times 0.1148 + 13.15 \times 0.1358 = 9.67$$

Таблица 6

Продукт	Количество продажби (бр.)	Относителен дял
A	2643	0.4666
B	1602	0.2828
C	650	0.1148
D	769	0.1358
Сума	5664	1.0000

As a result of the conducted analysis, the following conclusion can be made:

- the product with the best stability of sales is product A, as the percent variance for it is the lowest;
- the product of the lowest safety is product C - the percent variance for it is the highest;

- the percent variance for the enterprise as a whole is 9.67%.

In order to achieve the most accurate business risk evaluation it is necessary to calculate also the percent of safety (Z %). The latter is compared to the percent of variation of goods. If the percent variation is higher than the percent safety there is a real danger of the drop in sales to be greater than the percent of safety. To calculate the percent of safety in this particular case, additional information is needed. For the accurateness of such research it is required to calculate the percent of safety for the entire period, i.e. to find the weighted average percentage for the period. In this case, we are going to demonstrate the calculations for the last year only. The necessary information is shown on Table 7.

Таблица 7

Изделие	А	В	С	Д	Общо
Показатели					
Обем на производство и продажби (бр.)	564	295	113	125	1097
Продажна цена (euro)	12	8	6	7	-
Приходи от продажби (euro)	6768	2360	678	875	10681
Променливи разходи за единица (euro)	6.02	9.70	3.50	3.75	-
Общ размер на променливи разходи (euro)	3398	2862	396	469	7125
Общ размер на постоянни разходи (euro)	-	-	-	-	2960
Общи разходи (euro)	-	-	-	-	10085
Счетоводна печалба (euro)	-	-	-	-	596

We are going to determine the percent of safety on the basis of its dependence on the Operating Leverage (OL).

$$OL = \frac{a + \pi}{\pi} \qquad Z\% = \frac{100}{OL}$$

where:

$\pi$  - profit.

After making the calculations, the following has been established:

OL = 5.97,

Z% = 16.75%.

In this case, the percent of safety is higher than the percent of variation, which is the basis to conclude that the enterprise is not facing real threats, i.e. there is low rate of business risk available.

## 4 CONCLUSION

Business risk analysis is extremely valuable for making of various management decisions as launching new productions, closing down non-promising productions, investment decisions, etc. The presented method for that type of analysis is in itself not sufficient to provide a complete idea of the existing economic situation. Despite of that, in the short-term one can obtain from it useful information about the effectiveness of the usual economic activity and the business risk rate. Such information assists the managers in making decisions relating to the major economic parameters of the business activity.

The Percent Variance method, in combination with other means, could contribute for the development of more precise and more adequate management decisions.

## REFERENCES

- [1] Aleksandrova, M., Upravlennie na predpriemacheskia risk v protsesa na transformatsia na balgarskata ikonomika, Godishnik na SU „Sv. Kl. Ohridski”, Sofia, 2000.
- [2] Andronov, E., M. Boshnakova, Predpriemacheskiyat risk-ikonomicheski i upravleniski aspekti, Mezhdunarodna konferentsia, Kranevo, 2001.
- [3] Карась, Л., Принятие управленческих решений с учетом риска. Проблемы теории и практики управления, Москва, 1993.
- [4] Yates, J. Frank, Risk- taking behavior, Chichester: Jon Wiley, 1992
- [5] Rroupska, T., Analiz na zavisimostta "razhodi-obem-pechalba" pri mnogoproductova struktura na proizvodstvoto, sp "Schetovodstvo plyus", s.11-12, ORK "Misal", Sofia, Bulgaria, br.8/2015.
- [6] Savova K., The financial statements of entities as strategic and tactical guidelines in the development of accounting theory and practice, Удосконалення обліку, контролю і аналітичного забезпечення управління підприємством в умовах глобалізації економіки, Колективна монографія, Луцьк, 2017, p.103-112, IBSN 978-617-672-175-8