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ANALYSIS OF FINANCIAL HEALTH BY QUICK TEST AT ACCOMMODATION FACILITIES IN SLOVAKIA

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Abstract
The article is devoted to analyzing the impact of selected non-financial criteria for evaluating the financial health of accommodation facilities by using Quick test. The analysis is based on the financial statements of selected Slovak accommodation facilities for the years 2008 - 2011 and the financial situation has been selected by two variants of the Quick test. The connection between selected non-financial criteria and conditions of' financial health were analyzed by using appropriate statistical methods, that confirmed that the evaluating the financial health of accommodation has affected the size of the company - number of employees and the number of beds, that are typical characteristics of enterprises providing accommodation services.

Key words creditworthy models, Quick test, financial indicators, non – financial criteria

1. INTRODUCTION

Prediction of the financial situation of enterprises in financial business management plays an important role in the time of financial crisis. Predictive models are among the instruments of financial prediction and divided into creditworthy and bankruptcy. The essence of creditworthy models is selected financial ratios score entering the individual models. On the basis of a numerical scale, we can determine the level of the financial health of the company. Bankruptcy models are among the mathematics-statistical methods. They have greater representation in comparison with creditworthy models and the difference is in the fact that the creditworthy models are used for the significance of individual preference indicator weight, entering into the model and evaluate the financial situation with the possibility of the financial situation prediction of enterprises.

The group of creditworthy models are following:
- Argenti model (A-SCORE),
- Balance sheet analysis of Doucha,
- Quick test,
- Tamari risk index. (Kotulič et al. 2010, Růčková 2011, Zalai et al., 2010)

2. ANALYSIS OF QUICK TEST

Quick test (QT) is based on the transformation of individual ratio values of financial indicators for points. The points are assigned according to point scales, which are generally established by expert methods. The advantage is speed and simplicity, but it is only an approximate picture of the financial situation of enterprises. The model consists of four indicators (QT1-QT4), two of which are focused on the assessment of financial stability indicators and indicators for the assessment of the income status of the two. The methodology for assigning points to each indicator and total evaluation of model is different by different authors.

In the following table the comparison of the methodologies of individual indicators by selected authors is presented. In the lines M1 – M8 are the ways of calculation shown in the following breakdown: M1 – Růčková (2011, p. 81), M2 – Marinič (2008, p. 58-59), M3-Vochozka (2011, p. 116), M4 - Vochozka (2011, p. 117), M5 – Zalai et al. (2010, p. 121), M6 – Kotulič et al. (2007, p. 123), M7-Jenčová (2011, with 157-158), M8 - Horváthová - Bednárová (2012, p. 74 -75).

Table 1 Comparison of the methodology for the calculation of indicators on the QT

	QT1	QT2	QT3	QT4
M1	E/A	(FC –CB)/NCF	EBIT/A	NCF/TO
M2	E/A	(TD – CB)/NCF	EBIT/A	NCF/S
M3	E/A	L/NCF	NCF/S	EBIT/S
M4	E/A	(L + BL)/ NCF	Profit/A	NCF/S
M5	(E/TC).100	(FC – CB)/CFR	(CFR/TO).100	(EBIT/TC)*100
M6	(E/TC).100	(FC - FB)/CFR	(CFR/TR).100	(EBIAT/TC)*100
M7	(E/A).100	L/NCF	(NCF/TR).100	(EBIT/TC)*100
M8	(E/A).100	FC /NCF	(NCF/TR).100	(EBIT/A)*100

(Source: own processing according to the literature)

LEGEND:
E = Equity   FC = Foreign Capital = TD = Total Debts   TC = Total Capital = A = Assets
BL = Bank loans   CB = cash + accounts at banks = cash   TR = Total Revenue
L = Liabilities   S = Sales   P = Profit
NCF = netto cash flow = EAT + Depreciation   TO = Total Output
CFR = EBT + Depreciation ± Reserve
EBIT = EBT + Interest expense   EBIAT = EBIT (1-d)   d = rate of income tax

Vochozka (2011, p. 116-117) for a quick test (QT) describes two variants - the original variant of the QT and modified variant of QT (MQT), and the difference is in the fact that the resulting values are compared with the percentiles according to the industry, what is difficult for application in the calculations for MQT model. At the same time stating that in the original QT are awarded grades from 1-5, in a modified version of the MQT is defined by the point rating from 0 - 4.

After comparing the methodologies for the calculation of indicators, we come to the following conclusion – Slovak authors use percentages for indicators mentioned, QT1, QT2 and QT3. In terms of the methodology for the calculation of the indicator QT1 for all these authors are consensus.
The differences can be found in the total evaluation of a Quick test for these authors. Some Slovak authors [Zalai et al., (2010); Jenčová, (2011); Horváthová – Bednárová, (2012)] indicate that

the calculated indicators are assigned points from 1-5. The resulting rating is the sum of these points. The total point value of the model is moving at an interval of 4 to 20 points. The construction of a scale model shows that the financial situation of an enterprise is better, where the enterprise obtains a lower total number of points. Higher number of points predicts a worse financial situation of the enterprise.

Table 2 Evaluation for Quick test – way 1

INDICATOR	Intervals-points rating scale				
	1 point	**2 points**	**3 points**	**4 points**	**5 points**
QT1	≥ 30 %	≥ 20 %	≥ 10 %	< 10 %	< 5 %
QT2	≤ 3 years	≤ 5 years	≤ 12 years	> 12 years	> 30 years
QT3	≥ 10 %	≥ 8 %	≥ 5 %	< 5 %	< 2 %
QT4	≥ 15 %	≥ 12 %	≥ 8 %	< 8 %	< 4 %
Total evaluation	**4 - 6**	**6,1 - 10**	**10,1 – 14**	**14,1 - 18**	**18,1 - 20**
Financial situation	**very good**	**good**	**medium**	**bad**	**very bad**

(Source: processed by Jenčová (2011, p. 158-159))

Authors, such as Zalai et al. (2010) and Kotulič et al. (2007), indicate different scoring in comparison with the previous table and they assigned the highest number of points = 5 (conformity is only for the indicator 2) and other indicators are assigned by 5 points only if they achieved negative values, while Jenčová (2011) deals with identifies even stricter. According to Kotulič et al. (2007, p. 124) overall evaluation of model is based on the average of the marks. If the enterprise reaches an average mark of less than 2 is labelled as a creditworthy enterprise and if the average mark is greater than 3, then the company is going to be bankrupted.

Different perspective on the scoring of that model is presented in the following table.

Table 3 Evaluation for Quick test – way 2

	0 points	**1 point**	**2 points**	**3 points**	**4 points**
QT1	< 0	0 – 0,1	0,1 – 0,2	0,2 – 0,3	> 0,3
QT2	> 30	12 – 30	5 -12	3 - 5	< 3
QT3	< 0	0 – 0,08	0,08 – 0,12	0,12 – 0,15	> 0,15
QT4	< 0	0 – 0,05	0,05 – 0,08	0,08 – 0,1	> 0,1

(Source: processed by Růčková (2011, p. 81), Marinič (2008, p. 95))

The authors of the Růčková (2011, p. 81) and Marinič (2008, p. 96) state that the evaluation of enterprises is carried out in three steps, shown in the following table.

Table 4 Evaluation methodology of using the Quick test

Verbal description	Mathematical expressions	
1. Evaluation of financial stability	$FS = (QT1 + QT2)/2$	
2. Evaluation of revenue situation	$RS = (QT3 + QT4)/2$	
3. Evaluation of the overall situation	$OS = (FS + RS)/2$	
TOTAL EVALUATION	**> 3**	**creditworthy enterprise**
	1 – 3	**grey zone**
	< 1	**problems in financial management**

(Source: processed by Růčková (2011, p. 81), Marinič (2008, p. 96))

We can conclude that points moving in the range of 0 - 4 and are assigned in the opposite sense, as with previous authors, therefore the best values of the variables are assigned 4 points, the worst again 0 points.

The resulting evaluation of QT and MQT, which can be found at Vochozka (2011, s. 116, 118), is summarized in the following table.

Table 1 A comparison of evaluation Quick test and modified Quick test

The results of QT	Evaluation	The results of MQT	Evaluation
$1 \leq QT < 2$	creditworthy enterprise	$3,5 \leq MQT \leq 4$	very good enterprise
$2 \leq QT \leq 3$	grey zone	$2,5 \leq MQT < 3,5$	good enterprise
$3 < QT \leq 5$	enterprise in bankruptcy	$1,5 \leq MQT < 2,5$	the average enterprise
		$0,5 \leq MQT < 1,5$	weak enterprise
		$0 \leq MQT < 0,5$	very weak enterprise

(Source: processed by Vochozka (2011, s. 116 a 118))

The quick test consists of four indicators, the first two indicators of which are focused on the assessment of financial stability and the other two on the assessment of the status of the income of the enterprise.

In the previous part of this paper different variants of this model have been compared, published in various professional resources.

For further processing, two variants of Quick test (QTM2 and QTM5) have been chosen due to differences in the methodology for the evaluation of the Quick test.

A variant of the QTM5 is based on a 5-point scale assessment of indicators, which are assigned in such a way that, in the overall evaluation of the financial situation of an undertaking the higher number of points indicates a negative assessment of the financial situation. The overall evaluation of the financial situation, it is provided for up to 5 zones (financial situation-very good, good, medium, bad, very bad).

The model QTM2 uses different scoring indicators ranging from 0 to 4 points and an overall evaluation is as follows:

QTM2 = [(QT1+QT2)/2 + (QT3+QT4)/2]/2

For the overall evaluation of the financial situation for the RTM5 are created by 3 zones:
- zone for creditworthy enterprise (the value of RTM5 should be greater than 3 points),
- the grey zone (enterprises which reached evaluation in the range of 1 to 3 points),
- zone for enterprises that have achieved evaluation less than 1 point and have problems in financial management.

A Quick test for the modification of the **M2:**

RTM2 = E/A + (TD - CB)/NCF + EBIT/A + NCF/S

A Quick test for the modification of the **M5:**

RTM5 = (E/TC).100 + (FC – CB)/CFR + (CFR/TO).100 + (EBIT/TC).100

When comparing the models RTM2 and RTM5, we can say that the difference is only for one indicator (RTM2 – NCF/S and RTM5 – (CFR/IT)) and other indicators are the same.

3. MATERIALS AND METHODS

Article deals with analysis of the financial health of accommodation facilities by using the Quick test (QTM2 and QTM5) and deals with searching contexts between selected non-financial indicator and the financial health status of the selected enterprises.

The population set consists of accommodation facilities in Slovakia, which are based on the statistical classification of economic activities NACE Rev. 2 section I – Accommodation and catering services and sections 551 – hotel and similar accommodation. The research sample was created by a random selection of the population and consists of 46 enterprises, which financial statements for the period 2008-2011, will become the basis for the assessment of the financial situation by using Quick test.

Processing of evaluation financial health has been implemented in MS EXCEL. For prediction of the financial health development non-linear regression analysis was applied using STATISTICA V.10.

For analysis were selected 4 non-financial indicators such as the legal form, the class of accommodation, the number of employees and the number of beds in accommodation. Using statistical CHÍ-square test was verified the existence of contexts between selected non-financial indicators and financial health status evaluated by using RTM2, RTM5 and RTM5-2

4. RESULTS AND DISCUSION

Assessment of the financial situation for the research sample is brought in the following graphical view.
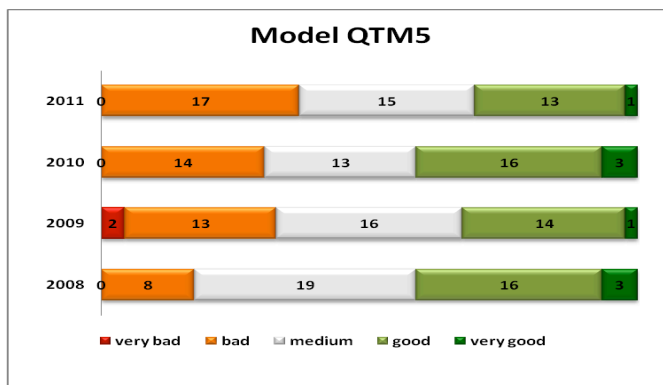

Figure 1 Evaluation of the financial situation using QTM5
(Source: own processing)

Very bad financial situation zone had only 2 enterprises in 2009. The number of enterprises in the zone of bad financial situation grew gradually. In 2008 there were only 8 such enterprises, in 2011 their number increased to 17, representing a 112.5% increase compared to 2008. Assessment of the financial situation was the highest for medium zone in 2008, where such enterprises were 19 (41.3% of the research sample). In the following years, their number decreased by 3 enterprises, and their number grew to 15 in 2011. 16 enterprises were in a good financial situation in 2008 and 2010, representing a 34.78 % proportion of the total number of enterprises. In a very good financial situation there were 3 enterprises in 2008 and 2010, in 2009 and 2011 in this zone there was included only 1.
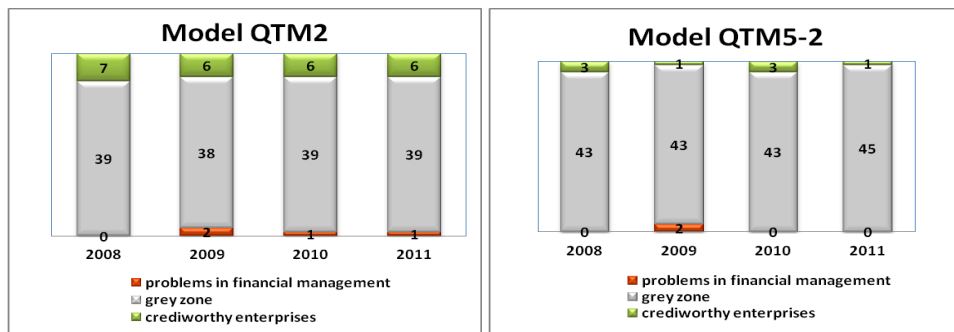
Figure 2 Evaluation of the financial situation using QTM2 and QTM5-2
(Source: own processing)

Interesting results were obtained by applying QTM2. The big surprise is 84.78% share of the undertakings included in the gray zone over the whole period. In this zone there were 39 enterprises. It was slight difference only in 2008, where their number decreased by 1 enterprise. The situation was stabilized in zone creditworthy enterprises. In 2008, this zone included 7 enterprises. In recent years, there were 6 enterprises that were roughly 13% of the total number of enterprises. The surprise in the assessment the financial situation of enterprises was that in the zone of problems in financial management was not any company in 2008. In 2009, only 2 enterprises belonged to this zone, in the following years the situation was the same (1 enterprise).

For the comparison of the results of the evaluation by using the QTM2 and QTM5, it was necessary to rethink 5-degree zone of QTM5 to 3-degree zone as QTM2. We have merged the financial situation as follows: zone "very good" of QTM5 as zone – creditworthy enterprises of QTM2. Into gray zone of QTM2 were included 3 zones of the QTM5 (good, medium, bad). The zone of very bad was assigned to the zone - problems in financial management. Assessment of the financial health enterprises using the QTM5-2 is approaching evaluation using the QTM2 what we could see in the previous graphic view.

Using regression analysis, we have compiled a non-linear models for the assessment of the financial situation for models RTM2 and RTM5 the average and median values of the financial situation enterprises the research sample.

Table 6 Overview of regression models for RTM2

Model		Regression model	p - value	R^2 (%)	Prediction	Zone
QTM2	Ø	$Y = 2,36 – 0,2X + 0,03X^2$	0,6432	58,63	2,11	2
QTM2	Me	$Y = 2,56 – 0,39X + 0,06X^2$	0,2582	93,33	2,19	2

(Source: own processing)

On the basis of results of applying of regression analysis, there could be concluded that the non-linear regression model of the median values for RTM2 reached a higher degree of variability than the non-linear model of the average values. P-value was not complied and regression models cannot be regarded as statistically significant. Prediction using the regression models included the research sample always into the gray zone, which ultimately can be considered average development within the group of enterprise engaged in the accommodation services.

Table 7 Overview of regression models for RTM5

Model		Regression model	p - value	R²(%)	Prediction	Zone
RTM5	Ø	Y = 10,4946+ 0,9033X - 0,1141X²	0,6031	63,63	12,16	2
RTM5	Me	Y = 10,125+ 1,075X - 0,125X²	0,3078	90,53	12,38	2

(Source: own processing)

Based on the above calculations we conclude that the non-linear regression models cannot be considered as statistically reliable, they have not been respected values of p. The development in the following period for both regression models estimates the RTM5 inclusion into the gray zone.

ANALYSIS OF SELECTED NON-FINANCIAL CRITERIA

Next part of the article deals with the analysis of contexts between selected non-financial criteria and condition of the financial health of the selected enterprises. The first non-financial criteria is a legal form. The research sample has represented 56.5% of the limited liability company and 43.5% of joint stock companies. The second of non-financial criteria represented class of accommodation (number of stars).The third non-financial criteria is the size category, which was examined in terms of the number of employees and in terms of the number of beds for accommodation facilities.

Table 8 The distribution of enterprises by number of employees and by number of beds

Category of size enterprise	Number of employees	Number of enterprises	Category of facilities	Number of beds	Number of enterprises
Micro	4 – 9	5	Small	to 25	2
Small	10 – 49	22	Medium	25 - 99	11
Medium	50 – 249	17	Big	100 - 249	23
Large	250 - 499	2		over 250	10

(Source: own processing)

Using a statistical test Chi - square, there was tested if there is a connection between the selected non-financial criteria (legal form, class of accommodation, number of employees and number of beds) and condition of the financial health of hotel enterprises, that has been determined by Quick test. The results of this testing are given the next table.

Table 9 Evaluation of the relation between non-financial criteria and financial health

NON-FINANCIAL CRITERIA	MODEL	CHÍ – SQUARE TEST	P - value
Legal form	**RTM2**	**10,204**	**0,006**
	RTM5	5,687	0,058
	RTM5-2	**8,134**	**0,017**
Class of accommodation	RTM2	9,565	0,297
	RTM5	11,046	0,199
	RTM5-2	3,961	0,861
Number of employees	RTM2	5,057	0,536
	RTM5	**36,709**	**0,001**
	RTM5-2	7,467	0,280
Number of beds	RTM2	9,061	0,170
	RTM5	**19,151**	**0,004**
	RTM5-2	4,309	0,635

(Source: own processing)

On the basis of the results obtained, it can be concluded that the connection between selected non-financial criteria and evaluating the financial health using the Quick tests in selected Slovak accommodation **has not been demonstrated** for **non-financial criteria - class of accommodatio**n.

A statistically significant connection was demonstrated for **non-financial criteria - legal form** and the **financial situation** by using **RTM2 ($\chi2 = 10.204$, p = 0.006) and RTM5-2 ($\chi2 = 8.134$, p = 0.017)**. For non-financial criteria - **number of employees** was demonstrated statistically significant connection with **the evaluation of the financial health** enterprises using the model **RTM5 ($\chi2 = 36.709$, p = 0.001).** A significant connection was demonstrated between the non-financial criteria - **number of beds** and **condition the financial health** of accommodations by using **RTM5 model ($\chi2 = 19.151$, p = 0.004**).

5. CONCLUSION

In the article the evaluation of the financial health by selected creditworthy prediction model - the Quick test (two variants of this model - RTM2 and RTM5) was analyzed.

In the analysis of the connections between the non-financial criteria (the legal form, the number of employees, the class of accommodation and the number of beds) and the evaluation of the financial health by using the Quick test (QTM2, QTM5 and QTM5-2) there is a statistically significant connection demonstrated for the non-financial criteria – the legal form, the number of employees and the number of beds.

In conclusion we can conclude that Quick Test (its modify QTM5) as a model for prediction of the financial situation is recommended for Slovak enterprises providing accommodation services.

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