

Underestimating risk leading to the collapse of a market leader in tourism

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Abstract. The topic of this paper, underestimating risk leading to the collapse of the market leader in tourism, is demonstrated on the example of the British travel agency Thomas Cook, which at one time was one of the oldest and largest travel agencies in the world. The aim of this paper is to analyze the development of the stock prices of Thomas Cook from May 13, 2018 to May 19, 2019 and the factors that had an impact on the share price of this company in the monitored period. The base source of data are the share prices of the travel agency Thomas Cook in the specified period from May 13, 2018 to May 19, 2019 published by MarketWatch. A statistical description of time series is used, a moving average trend line is displayed, and a cause-and-effect analysis evaluating the impact of the published information on the value of Thomas Cook's stocks is carried out. The general lesson for companies resulting from this contribution is that every negative event, announcement or piece of information has a negative impact on the value of a company's shares and a collapse could happen even to the leader of a given industry. The collapse of Thomas Cook provides lessons for companies doing business in tourism, so that in the event of a planned merger, a suitable company is selected, the company's funds are under control and development trends in the field are monitored.

Keywords: Thomas Cook, stock price, factors affecting stock price, bankruptcy

1 Introduction

Low-cost travel agencies and their unbeatable prices were certainly a blessing for customers, but older travel companies, which were forced to reduce their prices, did not manage to adapt, especially if they diversified their activities too much and lost their advantageous positions [1].

In the field of today's tourism, it is not possible to rely solely on case studies and tried and true practices. It is necessary to come up with new approaches that can deal with changes in conditions, such as when confronting the diversification of tourism risks and economies of scale [2].

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In order to gain a competitive advantage and maintain high market share, companies must constantly adapt, not only by introducing the latest available technologies, but also by creating their own innovations to increase business profitability and sustainability [3].

Changing the business model by introducing technological and sustainable components exposes companies to high risk. On the one hand, medium-sized companies are more flexible, the decision-making process is faster, and they can more easily adopt changes in management strategies, but on the other hand they are more vulnerable to market turbulence and dependent on constant cash flows [4].

There are many companies on the market that are growing much faster than the economy as a whole. Thus, there must be a number of companies whose growth rate is slower, or even shrinking and some are collapsing [5]. A typical example is Amazon's corporate victims, whose list expands almost every day. In the worst case, similar companies lie to themselves and those around them (including shareholders) that there's nothing wrong until the last moment. In the best case scenario, on the other hand, they admit their situation as soon as possible and try to save what they can.

Survival bias in credit risk modeling is a bias that leads to parameter estimates when a company's survival is ignored [6]. The results presented [7] suggest that systemic risk models should take into account the interconnectedness between economic entities, such as the banking and real estate and financial sectors, in a multi-layered approach. Stock prices have predictive power for future long-term economic activity [8].

I demonstrate on the example of the tourism industry, namely the company Thomas Cook. The world's oldest travel company Thomas Cook, a British travel agency with 19 million annual clients, which after 178 years of service has officially announced that it will liquidate its assets and file for bankruptcy, despite attempts to save the brand [1].

The story is well summed up by, for example, British newspaper The Guardian, stating that the company is collapsing after 178 years, caused by erroneous mergers, high debts and the internet revolution, along with uncertainty about Brexit. As other media point out, the final turning point was when the company failed to obtain a loan of £200 million. In May, the company reported a loss of £1.5 billion, mainly due to the write-off of an investment in MyTravel made in 2007. The merger was set to create a European giant and bring in cost savings of £75 million a year. However, the result was mainly higher debts [9].

The aim of the paper is to find out the development of the stock prices in the length of one year from May 16, 2018 to May 16, 2019 and to find out what factors influenced the share price in the examined period, where the statistical unit will be the travel agency Thomas Cook.

In order to meet the aim of the paper, the following research questions are set:

RQ1: What were the stock prices from May 13, 2018 to May 19, 2019?

RQ2: What factors influenced the stock prices during the monitored period?

The relationship between the price and economic activity of stocks is dealt with in a study [10]. This study show that stock prices have predictive power in future panel long-term economic activity. Empirical research by [11] presents a methodological approach to the transmission of impulses in capital markets and deals with the process of transmission of negative impulses in capital markets during the subprime crisis (contagion, dominance, crisis transmission and shocks). A significant and positive benefit of the research is the demonstration of how wavelet analysis can be used to examine the different reactions of financial markets. Investors consider volatility before investing, address capital market risks and measure market performance. Examining the capital market of the joint movement in Southeast Asia and analyzing the correlation of the conventional and Islamic indices in the regional and global equity sector were focused by [12]. The result shows that the

conventional or compound index in Malaysia is less volatile than the Islamic one, but on the other hand both control the correlation movement.

Stock price prediction is becoming an important practical aspect of the economic field of study. A framework for addressing these challenges and effectively predicting stock prices using learning models were proposed by [13]. The results show that the applied models outperformed other models in predicting stock prices under different circumstances based on several valuation metrics. Forecasting stock prices using different models partly suffers from problems such as low accuracy, slow convergence and complex network structures. A study [14] developed an echo state network (ESN) model to alleviate these problems. In terms of accuracy, ESN had a unique advantage in acquiring nonlinear data. The proposed ESN has been found to be an effective model that converges faster than others, predicts more accurately and makes time series analyzes easier. Another study, which deals with the large decline in stock prices in 22 emerging markets, was conducted by [15]. In the case of using the analytical report as a proxy for incoming information, it was found that most of the declines in emerging markets are not accompanied by information events and these declines are followed by price reversals.

A model economy consisting of interdependent real, money and stock markets was proposed [16]. The money market is influenced by the real money market through the standard equation LM. Information about specific companies has a dampened effect on the share prices of companies associated with business groups. The exceptional stock returns of these firms respond less sensitively to eccentric commodity price shocks than the concise profits of otherwise similar unrelated firms in the same country and commodity sensitive industry. The use of global commodity shocks means that we evaluate responses to common idiosyncratic shocks of equal magnitude, frequency, and observability. Further identification results from difference-by-difference tests using successful and closed exogenously failed control block transactions. Experts have concluded that the share prices of companies in business groups provide providers and managers of capital with less specific information about the companies [17]. The success of portfolio construction depends primarily on the future performance of stock markets. Recent developments in machine learning have provided significant opportunities to incorporate prediction theory into portfolio selection. However, many studies show that a single prediction model is not sufficient to achieve very accurate predictions and high returns. A new approach to portfolio construction using a hybrid model based on machine learning for stock prediction and a mean variance (MV) model for portfolio selection was published by [18]. The results obtained show that the proposed method is better than traditional methods (without stock prediction) and benchmarks in terms of returns and risks. Finding turning points in the stock market is a task of great importance and challenge. To achieve this goal, [19] decomposed the trend and cyclical components of stock prices with an autoregressive fractionally integrated moving average model that can simulate stationary fractional difference processes. Most importantly, compared to [15] testing the same data is that the Wavelet method more accurately detects turning points. Disclosure of non-financial information has been a trend in listed companies in recent decades. This implies the need to provide credibility of the information by verifying an independent expert who provides a guarantee for the published information. Ibex-35 companies maintain a growing trend in their social commitment and greater recognition of the transfer of verified information to various stakeholders of companies [20]. In addition, companies' efforts are appreciated positively by investors, especially in response to the level of assurance required of the guarantor in the sustainability report. A thorough study of the relevance of value-at-risk (LVaR) forecasts adjusted according to liquidity and expected shortfall (LES) was performed by [21]. The results provide evidence that liquidity risk is proving crucial for the quality of regulatory risk assessments in times of market turmoil. The Cornish-Fisher approximation was found to describe a reasonable choice for LVaR

predictions, while the extreme value approach results in corresponding LES predictions. A study [22] assessed the impact of drug development failures (DDS) on the share price of pharmaceutical companies, taking into account the company's financial situation, size and price trend before DDS. In conclusion, DDSs have a negative impact on a company's share price, but this risk can be minimized by investors choosing companies that meet certain criteria. The impact of tour operators' marketing strategies on the cost of sun and beach stays was quantified by [23]. The results confirmed the impact of travel agency variables on price through their brands, accommodation ownership, specific segments they target, awards and incentives, promotional space and pictorial elements in their brochures. Finally, significant differences were found between the analyzed objectives. The total output of the economy usually follows cyclical movements, which are accompanied by similar movements in stock prices. The common explanation depends on the demand side. It points out that the wealth of stock markets controls consumption, which in turn triggers production. A study [24] focused on the effects through the supply side of the economy. The results show that when a bank assesses creditworthiness by stock price, eccentric fluctuations in stock prices have little effect because they distort selection and hinder growth. If bankruptcy is dependent on the optimism on the stock market, the level of influence of stock owners does not matter. If optimism is widespread among stock investors, investment behavior also correlates through stock prices, leading to huge cycles of the real economy without long-term growth. When volatility is taken into account in managers' decisions, more prudent behavior takes place, which promotes growth.

In order to answer research question no. 1, a statistical description of the time series and causal analysis will be used. Research question 2 will be answered through cause-and-effect analysis (causal analysis).

2 Data and Methods

2.1 Data

The base source of data will be the share price of the Thomas Cook travel agency in the period from May 13, 2018 to May 19, 2019 published by [25]. Thomas Cook Group PLC stock price data presented on the MarketWatch website will be further processed in Microsoft's Excel program. The file will contain columns with the date, the price of the value of the stock stated in USD on the given date. In addition, reports published in the media for the monitored period relating to Thomas Cook will be used, and based on these reports, it will be monitored whether there has been a positive or negative development in the share price. These sources will include [9], [26], [27], [28].

2.2 Methods

We will use a statistical description of time series, calculate mode, median, mean average, variance, standard deviation, minimum and maximum share price of Thomas Cook travel agency in the period from May 13, 2018 to May 19, 2019. This data will be presented in a table. Next, a moving average trend line will be displayed to make it easier to detect the time series trend. It will be calculated as the average of a constant number of consecutive periods. It will be displayed using a chart in MS Excel.

The arithmetic mean of the Thomas Cook stock price is calculated using the arithmetic mean formula, I have a set of n values, I denote them x_1, x_2, \dots, x_n , so we get the average value by adding all x_i and dividing the result by n . I denote the average value by \bar{x} . Formula:

$$\bar{x} = \frac{x_1 + x_2 + \dots + x_n}{n} \tag{1}$$

Mode is the value most frequently represented in the Thomas Cook stock price set in the period from 13 May 2018 to 19 May 2019.

If the data set contains an odd number of items, to calculate the median (Me) of a given data set X of size N, which I denote by xi and at the same time the condition of ascending data sorting must be met to use the general formula:

$$Me(X) = x_{(N + 1)/2} \tag{2}$$

If the data set contains an even number of items to obtain the median, it is necessary to calculate the arithmetic mean of these values and the resulting value is the median of the data set. In this case, we would use the general formula:

$$Me(X) = \left\{ \frac{x_N}{2} + x_{\left(\frac{N}{2} + 1\right)} \right\} / 2 \tag{3}$$

Variance is defined as the average square deviation of the quantity from the mean. In this case, we will not use the variance of the basic set, but we will focus on the sample variance s². We have only a sample of data from the base set of the variable. Therefore, we use a modified variance formula for the number of observations n < 30:

$$s^2 = \frac{1}{n - 1} \sum_{i=1}^n (x_i - \bar{x})^2 \tag{4}$$

n ... number of observations, xi ... specific realization of the variable X, x ... simple arithmetic mean of the variable X.

The standard deviation is equal to the square root of the variance, we calculate it as follows:

$$\sigma = \sqrt{Var(X)} \tag{5}$$

We can substitute the value of variance with the formula for calculating the variance and thus obtain the formula:

$$\sigma = \sqrt{\frac{1}{N} \sum_{i=1}^N (x_i - \bar{x})^2} \tag{6}$$

The minimum will represent the lowest value of Thomas Cook's share price in the monitored period. The maximum will represent the highest value of Thomas Cook's share price in the monitored period.

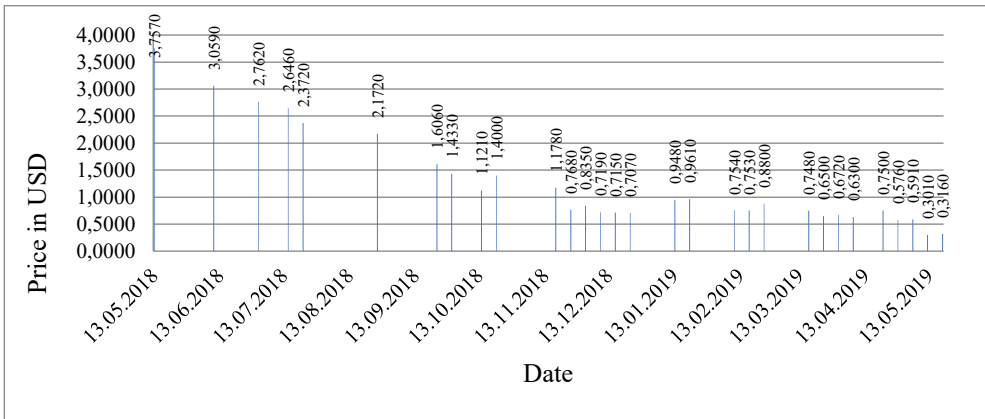
Calculations will be performed using functions in Microsoft Excel. Research question number 1 will be answered by the methods above.

By analyzing the cause and effect, we evaluate the impact of published information [27], from May 16, 2019, where Thomas Cook CEO Peter Fankhauser warned that the world's oldest travel company is struggling in an uncertain environment across all regions. In the previous year, the European heat wave weakened the demand for winter holidays, while British customers continued to delay travel and reservations from Germany weakened. Another report released by the BBC on September 24, 2018, the Thomas Cook travel agency blames the heat wave from the decline in its annual profit forecast. The result will be a table,

where the column will contain the date of the published information mentioned above, the price of the Thomas Cook share as of the given day, and a quantification of the % decrease in the price of the Thomas Cook share in connection with the said report. This procedure will answer research question number 2.

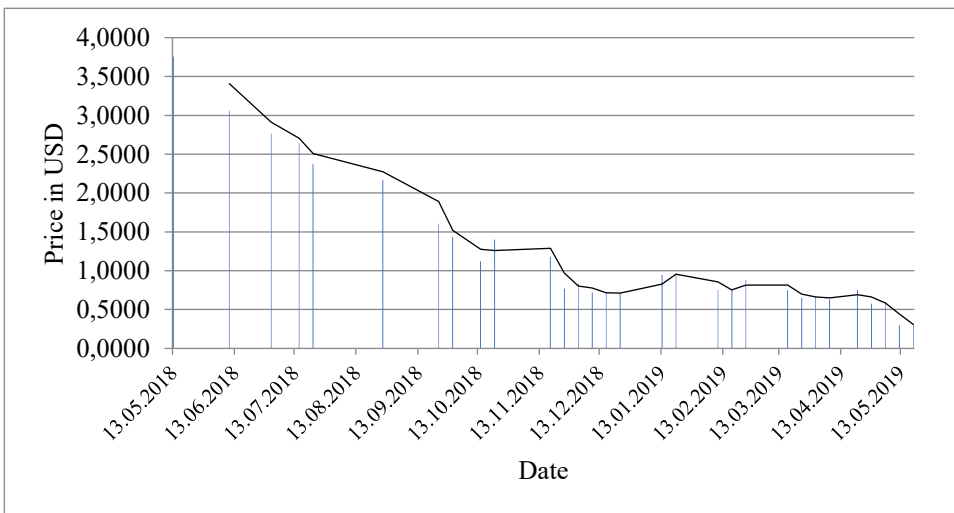
3 Results

Graph 1 presents an overview of the development of Thomas Cook's share prices from May 13, 2018 to May 15, 2019. The horizontal axis shows the date information and the vertical axis shows the value of the Thomas Cook Group PLC ADR stock price denominated in USD as of that date.



Graph 1. Overview of the development of Thomas Cook's share prices from May 13, 2018 to May 15, 2019
 Source: Own processing.

Graph 2 shows the line of the trend of the moving average of the development of Thomas Cook Group PLC ADR share prices in relation to the given date in the period from May 13, 2018 to May 19, 2019. From this chart it can be seen that the link between the trend of the moving average of Thomas Cook stock prices had a predominantly declining trend.



Graph 2. Moving average trend line
 Source: Own processing.

Table 1 presents information regarding the price of Thomas Cook shares in USD as of that date. The price of Thomas Cook shares in USD is monitored here in 30 cases in the period from May 13, 2018 to May 19, 2019. Based on the data in Table 1, the mode, median, arithmetic mean, variance, standard deviation, minimum and maximum are calculated.

Table 1. Price of Thomas Cook shares stated in US dollars

Date	Stock price in USD	Date	Stock price in USD
13.05.2018	3.7570	23.12.2018	0.7070
10.06.2018	3.0590	13.01.2019	0.9480
01.07.2018	2.7620	20.01.2019	0.9610
15.07.2018	2,6460	10.02.2019	0.7540
22.07.2018	2.3720	17.02.2019	0.7530
26.08.2018	2.1720	24.02.2019	0.8800
23.09.2018	1.6060	17.03.2019	0.7480
30.09.2018	1.4330	24.03.2019	0.6500
14.10.2018	1.1210	31.03.2019	0.6720
21.10.2018	1.4000	07.04.2019	0.6300
18.11.2018	1.1780	21.04.2019	0.7500
25.11.2018	0.7680	28.04.2019	0.5760
02.12.2018	0.8350	05.05.2019	0.5910
09.12.2018	0.7190	12.05.2019	0.3010
16.12.2018	0.7150	19.05.2019	0.3160

Source: Own processing.

In Table 2, values for mode, median, arithmetic mean, variance, standard deviation, minimum and maximum are calculated using MS Excel. Mode, or in this case the value of the Thomas Cook share, which is most often represented in the data listed in Table 1, is not listed here, as no value of the Thomas Cook share occurs more than once. The median is 0.8015, which means that half of Thomas Cook's shares are less than 0.8015 USD and the other half of Thomas Cook's shares are more than 0.8015 USD. The arithmetic average shows the average value of the price of Thomas Cook stocks, which is 1.2260 USD. The variance is defined as the average square deviation of the Thomas Cook stock price expressed in USD from the mean value, representing the value of 0.772516 USD. The standard deviation represents the square root of the variance, i.e. 0.878928894. The minimum price of Thomas Cook shares in the monitored period is 0.3010 USD and the maximum value of Thomas Cook shares in the monitored period is 3.7570 USD.

Table 2. Formatting sections, subsections and subsubsections

Mode	Unavailable
Median	0.8015
Arithmetic mean	1.2260
Variance	0.772516
Standard deviation	0.878928894
Minimum	0.3010
Maximum	3.7570

Source: Own processing.

The cause and effect analysis evaluates the impact of the published information on the price of Thomas Cook stocks. On May 16, 2019 the CEO of Thomas Cook Peter Fankhauser warned that the world's oldest travel company is struggling in a precarious environment across all regions [27]. In the previous year, a heat wave across Europe weakened the demand for winter holidays, while British customers continued to delay travel and reservations from Germany weakened. As a result of the published story, from May 16, 2019, the value of Thomas Cook shares decreased by 40.04% by May 17, 2019. The value of the Thomas Cook shares as of May 16, 2019 was 0.5020 USD, as of May 17, 2019, the value of the Thomas Cook share was 0.3010 USD.

Another report that negatively affected the price of Thomas Cook's shares was published by the BBC on September 24, 2018, when the travel agency Thomas Cook blamed a heat wave for the decline in the annual profit forecast. As a result of the information published above on September 24, 2018, the value of Thomas Cook shares decreased by 10.71% by September 25, 2018. The value of the Thomas Cook share was worth 1.6057 USD as of September 24, 2018, but by the following day, the stock's value was already only 1.4338 USD.

Among the events that affected Thomas Cook's stock price was the fact that Thomas Cook reported a loss of £1.5 billion in May 2019, mainly due to the write-off of an investment in MyTravel made in 2007. The purpose of the merger was to create a European tourism giant and bring cost savings of up to 75 million GBP a year. This merger resulted in no cost savings, only higher debts. This event also had a great impact on the value of Thomas Cook shares, where for demonstration I will show the value from the beginning of the period, on May 13, 2018, when the value of Thomas Cook share was 3.7570 USD and almost a year later, on May 12, 2019 the value of a share of the same company was 0.3010 USD, thus decreasing in value by almost 92%.

The decline in Thomas Cook's stock price was further compounded by the fact that Thomas Cook did not catch up on travel trends in time, when travelers began to make greater use of the Internet and began to organize tours themselves using low-cost airlines and web-based accommodation services around the world.

During the last days of its operation, Thomas Cook had feverish negotiations with creditors and asked the British government for financial assistance. This financial assistance from the government was not approved. The company's management announced at the end of September 2019 that it had entered into forced liquidation.

4 Discussion

Based on the obtained results, we are able to answer research questions that were set out:

RQ1: What were the stock prices from May 13, 2018 to May 19, 2019?

Thomas Cook's share price from May 13, 2018 to May 19, 2019 ranged from 3.7550 USD to 0.3160 USD. The median was 0.8015 USD, meaning that half of Thomas Cook's share price was less than 0.8015 USD and the other half of Thomas Cook's share price was greater than 0.8015 USD. The arithmetic mean shows the average value of the price of Thomas Cook, which was 1.2260 USD. The variance is defined as the average square deviation of the Thomas Cook stock price expressed in USD from the mean value, which was 0.772516 USD. The standard deviation represents the square root of the variance, i.e. 0.878928894 USD. The minimum price of Thomas Cook shares in the monitored period was 0.3010 USD and the maximum value of Thomas Cook shares in the monitored period was 3.7570 USD. The declining trend in the price of Thomas Cook shares in the monitored period is also described by [29] and [30].

In the monitored period from May 13, 2018 to May 19, 2019, the value of Thomas Cook shares had a declining trend, as share price ranged from 3.7550 USD to 0.3160 USD.

RQ2: What factors influenced Thomas Cook's stock prices during the monitored period?

Factors that influenced Thomas Cook's stock prices during the period from May 13, 2018 to May 19, 2019 include the information released by Thomas Cook CEO Peter Fankhauser, who warned that the world's oldest travel company is struggling in an uncertain environment across all regions. The result of the published information was a decrease in the value of stocks. Another report that negatively affected the price of Thomas Cook's shares was the press statement where the travel agency Thomas Cook blames a heat wave for the decline in the annual forecast of its profit. Other events that affected the price of Thomas Cook shares included the fact that Thomas Cook reported a loss of £1.5 billion in May 2019, mainly due to the write-off of the investment in MyTravel, which was made in 2007. Thomas Cook stock value was also damaged by the fact that Thomas Cook did not catch up to current trends in travel. Another factor that affected Thomas Cook's stock prices was the government's rejection of its request for financial assistance. About the aforementioned factors that affected the stock prices of Thomas Cook was published by [30].

During the monitored period, factors affecting Thomas Cook's stock prices included the release of information on Thomas Cook's problems, heat waves affecting the company's annual earnings forecast, loss reporting, failure to catch up to travel trends and the government's refusal of financial assistance. These factors had a negative impact on Thomas Cook's stock prices.

5 Conclusion

The aim of the paper was to analyze the stock prices of Thomas Cook from May 13, 2018 to May 19, 2019 and the factors that had an impact on the stock prices of this company in the monitored period. The goal of the paper was achieved. In the Results section, the share price of Thomas Cook was presented from May 13, 2018 to May 19, 2019, the time series of the share price in the monitored period was described, and the line showing the trend of the moving average of Thomas Cook share prices was shown. Furthermore, a cause and effect analysis was performed, which assessed the impact of the heat wave on the company's annual profit forecast, loss reporting, failure to capture travel trends and rejection of government financial assistance on Thomas Cook's share price.

The British company Thomas Cook was one of the oldest and largest travel agencies in the world and its services were used by millions of clients every year. In 2018, the company's revenues were reduced by a heat wave, which in May 2018 engulfed Europe and significantly reduced the demand for stays abroad. The following year, the British had little interest in holidays, mainly because of Brexit, because they feared a weakening of the pound sterling, which would make trips abroad more expensive. In 2018 and 2019, Thomas Cook faced other external problems; a change in the way people spent their holidays. Instead of organized beach vacations by travel agencies, they preferred to explore cities, destinations on their own, and used the services of low-cost airlines and private accommodation companies. The collapse of Thomas Cook at the end of September 2019 was mainly due to financial difficulties, erroneous mergers and the development of the Internet, as the company no longer had the funds to pay receivables from airlines and hotels.

Thomas Cook is a case in point that a collapse could happen to an industry leader. The collapse of Thomas Cook provides lessons for tourism businesses to select a suitable company in the event of a planned merger, to have the company's finances under control and to monitor developments in the industry. Another lesson is that any negative event, notice, piece of information has a negative impact on the value of a company's stock.

These conclusions apply generally to all companies from different fields and at different times.

The Results section listed the factors that influenced Thomas Cook's share price during the monitored period. In addition to these factors, there are a number of other factors that have influenced Thomas Cook's share price. Further research should focus on the cash flow in the company, as this indicator shows the viability of a company and further focus on the movement of working capital, because this item is able to shock otherwise profitable companies.

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