Abstract: The main purpose of the research is to answer the question - do patterns of marketing practices (MP) exist in companies of different financial levels? Based on the international methodology of the Contemporary marketing practices project accomplish that data with net income from SPARK database we divided 129 companies by groups of growth rate net income and applying the KNN method analyse existent marketing practices patterns. As a result we find not random distribution, and establish the existence of MP patterns within the context of firm’s financial results. The results of the research can be useful for practitioners in marketing budget optimisation. Moreover, for scholars that will be a new research of marketing practices science, and we will know more about the nature of business marketing. Moreover, the research sheds light how methods of artificial intelligence can be used in management and marketing science.

Key words: marketing practices, marketing and finance, companies’ performance, KNN-method, CMP, Russia.
1. Introduction

The main purpose of the research is to answer the question - do exist patterns of marketing practices in companies of different financial levels? In other words can we find any similarities in marketing practices preferences in the group of companies combined by the net income growth rate? We are going to explore such interrelation by one of the classification method from the data mining. Today, with the development of disciplines such as data mining and machine learning, many statistical methods are of inter-disciplines character. However, despite the advantages of these methods, they are not as widespread among such sciences as management and marketing. For example, method KNN (k-nearest neighbors) was used in less than 2% managerial articles from the period since 1962 till nowadays (figure 1).

![Fig. 1 Subject areas of publications with KNN method (source Scopus, 3569 articles, period 1963-2016 years)](image)

The theoretical understanding in the literature shows a general cross-country relationship between marketing practices and firm efficiency. It is generally admitted that marketing creates value for a company, e.g. by selecting profitable clients segments, choosing an appropriate business model and strategic direction of the company. These are some of the most prominent reasons why marketing and company’s revenues are closely connected (Doyle, 2000; Rust et.al. 2004).

The literature on marketing practices additionally explains several patterns for developed and emerging markets:

1. Database technology is the main reason of increased effectiveness: companies should switch marketing attention from markets to customers (individuals) and use analytical marketing function - analyze clients flow. (Sheth and Sisodia, 2002; Rust and Chung, 2006)
2. Markets should be aimed not only at the customer acquisition but also at the customer retention. (Sheth and Sisodia, 2002)
3. Marketing is mostly characterized by delayed effect in time, implying companies should relate marketing activities with longer term effects (Dekimpe, Hanssens, 1995).
4. The consumer-company interrelation influence on the cumulative level of the marketing assets of the company. (Reinartz and Kumar, 2002)
2. Methodology

Data was integrated from two database: marketing practices information was from CMP Russia¹ (contemporary marketing practices research) and financial information (net income) from the SPARK database². The number of observations is 129 companies. The companies were ranged from 25% of the most unsuccessful companies to the group of the fourth quartile – 25% of companies with the highest net income growth rate. Data analysis was implemented with the help of RStudio statistics program 0.99.484 - 2009-2015.

Nearest-neighbor is a method of artificial intelligence. Classification is based on learning by analogy, that is, by comparing a given test tuple with training tuples that are similar to it. For the company with unknown financial quartile, a k-nearest-neighbor classifier searches the pattern space for the k training companies’ quartiles that are closest to the unknown tuple. (Han, 2012)

3. Results

To explore the data distribution we use graphical method in two-dimensional space (figure 2)³. In the bidimensional space there are points concentrated in one area. For example, the most successful companies, blue and green, are located in the second and third quadrants of transactional marketing. Furthermore, we can trace the positive correlation between marketing of data base and IT, between IM and NM, and between NM and IT-marketing.

¹ For more information about the CMP project (contemporary marketing practices), visit the website http://www.hse.ru/org/hse/man/cmp/
² For more information visit the website http://www.spark-interfax.ru/Front/Index.aspx. The database provides analytical information about companies, markets, industries in Russia, other CIS countries and Eastern Europe, South-East and Central Asia. The data contains information of more than 7 million Russian companies.
³ The legend: Y - is number of company quartile depending Growth rate Net Profit; TM - transactional marketing, DM - database marketing, IT - Internet technologies marketing, IM - interactive marketing, NM - network marketing (the description and the calculations of marketing practices see in Coviello, 1997)
The data was analysed with KNN method accounting the cross check of sub-samples. As a result, \( k=10 \) with maximum matching index was chosen (table 1).

**Table 1. Results of research implemented by KNN method with cross check**

<table>
<thead>
<tr>
<th>Method accuracy of “training” sub-sample</th>
<th>Matching index</th>
<th>K optimal</th>
</tr>
</thead>
<tbody>
<tr>
<td>76%</td>
<td>33%</td>
<td>10</td>
</tr>
</tbody>
</table>

Low matching index signifies that there is no general interrelation between types of marketing practices and net income growth rate. However, the accuracy of the method is higher than 25%, which means not random distribution.

Thus, we have proved the hypothesis about the difference of marketing practices sets in the companies with different Growth rate Net Profit. The description of choosing a direction by different financial groups will be included to the presentation. The presentation will cover what is typical for companies with high Growth rate Net Profit and what marketing practices are typical for companies from different quartiles.

4. References

Han J. (2012). Data mining : concepts and techniques /Jiawei Han, Micheline Kamber, Jian Pei. – 3rd ed. p. 703. ISBN 978-0-12-381479-1