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Credit portfolio analysis using the Churn model – A case study[1]

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The main objective of this article is to present a credit portfolio analysis framework for small and medium-sized enterprises, which, if applied, may bring them significant competitive advantages. While several scientific results have been published on bank credit portfolio analysis in the past decades, the literature in the field rarely focuses on the SME sector, where there may be a significant customer risk. The proposed framework analyses customers' previous behaviours, and based on the available historical data, draws conclusions concerning their future behaviour. By using the Churn model it can be decided whether a customer falls into one or another customer category (is it a committed, enthusiast, satisfied customer, a customer building on habits or one that likes to switch frequently between suppliers). In the increasingly acute market competition, companies are losing windfall revenues and profits due to the fact that their customers switch to another provider. It is also not negligible that the cost of winning a new customer is significantly higher than that of retaining old customers. The results are relevant not only from a theoretical point of view, but also from a practical perspective, given that based on the analysis we shall build a decision-making instrument (credit portfolio analysis framework) which can be easily applied in practice.

Keywords: commercial credit portfolio, credit risk, Churn model, scoring model.

JEL code: G320.

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Introduction

The increasingly acute market competition determines companies, particularly those in developed countries, to pursue customer-oriented marketing policies. In saturated markets, market participants may even apply such strategies by which companies seek to attract customers from other competitors. In such situations it is essential to create customer loyalty programmes, which prevent customer attrition.

The *Churn model* is a perfect method for companies to identify customers prone to churn, and to include in their strategy actions for making them loyal customers (Kim–Yoon 2004).

The aim of our research is to map and to analyse the customer portfolio of MarsoRom Ltd. – the chosen case study company from Romania – in order to create added value for the business. An additional goal of our research is to elaborate a method, which can be easily adapted and used by other companies, too. The available historical data allows us to analyse the behaviour of customers so far, and enable us to draw conclusions with regard to their future behaviour. By using the Churn model it can be decided whether a customer falls into one or another customer category (is it a committed, enthusiast, satisfied customer, a customer building on habits or one that likes to switch frequently between suppliers).

Companies are losing windfall revenues and profits also due to the fact that their customers switched to another provider. At the same time, it is not negligible that the cost of winning a new customer is significantly higher than that of retaining old customers. Long-standing customers are willing to pay a higher price if they are able to benefit from a high-quality service for a long period of time; they will have lower handling costs and profits will increase over time. Our first hypothesis is that the Churn model can be easily applied for small and medium- sized enterprises (SMEs), it is a useful credit scoring tool, which is capable to create value for the company. We have developed a scoring system measuring customers' bankruptcy probability, which has low implementing costs. According to Reicheld and Sasser (1990), companies could increase their profits by up to 100%, if their customer

loyalty was 10% higher. Our second hypothesis is that if companies reduced the number of customers prone to attrition by 5%, their revenue could increase by at least 5%.

Finally, we elaborate a strategy which, based on the Churn model, will work on reducing by 5% the attrition of customers with a low bankruptcy probability.

The proposed analysis framework will be presented through this case study, but the method can be applied to any small and medium-sized enterprise concerning their own customers.

Literature review

Banks use complex scoring systems, and their operation is very difficult to understand correctly in the case of smaller banking institutions, often resulting in inappropriate implementations thereof (Han 2014). This is particularly true for the SME sector; therefore, it is required to elaborate a system that can successfully be applied in corporate practice.

As a result of intense competition in the industries, companies have to balance their net working capital as well as possible in order to be successful on the long run. Customer lending is one of its cornerstones, and if it happens irresponsibly, the company may become insolvent. If it provides fewer loans as recommended, it might lose customers (Lee et al. 2006).

Customers of products and services are well aware of the fact that commercial loans are always cheaper than bank loans (Giannetti et al. 2011), thus they always try to use up their credit limit as much as possible.

Credit scoring models

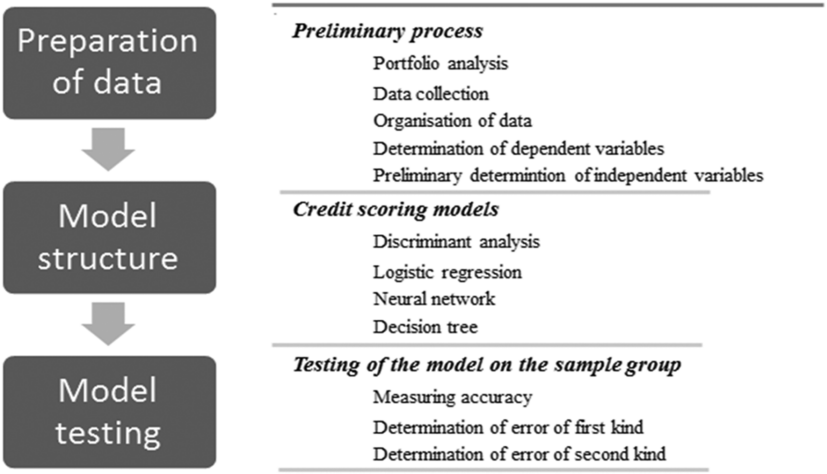
Credit scoring models are widely used especially by banks in order to measure credit risk (Mester 1997; Baesens et al. 2003). The aim of the models is to determine – based on the available customer data – whether a customer is creditworthy or not. Moreover, based on current available data, they try to establish the probability of a future non-payment.

The scoring model is the cornerstone of conscious lending. Today, keeping the credit portfolio at an acceptable quality level is unimaginable

without an accurate and automated risk analysis system. The continuous validation and development of scoring models is an important aspect as it either contributes to lowering the portfolio risk or it leads to a bigger portfolio at an unaltered risk-taking level (Crook et al. 2007).

The model assigns a non-paying probability to each customer, which will be a characteristic thereof. The banks themselves decide the cut-off point under which they do not give out loans. The data used in the model may come from the system of credit institutions (the credit applicant is blacklisted, with previous non-payments, etc.) or may be personal customer data (such as age, income, gender, number of dependent persons, average monthly expenses, etc.)

A pre-requisite of the scoring model is the uploading of a database with data significantly influencing the non-paying probability of credit applicants. The dependent variable indicating the occurrence of bankruptcy or non-payment must be determined within the sample group. This is a dummy variable, which may get two values: 0 or 1. It is recommended to think of the independent variables, which may be significant concerning the model (Figure 1).



Source: Wealth Management System Limited 2014

Figure 1. The process of building a scoring model

The method we chose and applied, namely that of logistic regression, shall be described in detail later in this paper. Following the elaboration of a model it is essential to test it, in order to identify errors of first and second kind. The misclassification of good customers as bad (n_{FP}), i.e. their rejection indicates an error of first kind, while the classification of bad customers as good indicates an error of second kind (n_{FN}).

Figure 2 shows the classification matrix with the correct and erroneous customer classifications. The general form of the matrix is as follows:

		Predicted/forecast value		
		Good	**Bad**	
Actual value	**Good**	n_{TP}	n_{FP}	n_P
	Bad	n_{FN}	n_{TN}	n_N
		n_T	n_F	n

Source: Wealth Management System Limited 2014

Figure 2. Classification matrix

There are two ways to improve the given model: we either increase the rejection rate of bad customers, or decrease the rejection rate of good customers. The "n" variable measures the classification accuracy of the joint classification of good and bad customers.

A scoring system can be drawn up also in case of larger corporations, provided that sufficient data is available, which influences non-payment.

In order to better understand what a function forming up a scoring system looks like, let's take a look at the Z-scoring model according to Altman, considered a benchmark scoring system by the literature (Kumar–Anand 2013):

$$Z = 1.2\ T_1 + 1.4\ T_2 + 3.3\ T_3 + 0.6\ T_4 + 0.999\ T_5$$

where

T1 = Working capital / Total assets – compares the amount of liquid assets to the size of the company;

T2 = Net profit / Total assets – measures the profitability of the company;

T3 = EBIT / Total assets – considers that the operating income as opposed to assets is important in terms of the long-term viability;

T4 = Equity / Debt – measures long-term payment capability;

T5 = Revenue / Total assets.

Table 1. Meaning of the scoring model according to Altman

Z score cut-off	Meaning of indicator	Observation
< 1.81	Bankruptcy	Danger zone, high probability of bankruptcy
1.81-2.99	Successful company	Difficult to estimate probability of bankruptcy
> 2.99	Stable company	Low probability of bankruptcy

Source: Kumar–Anand 2013

The Churn model

Companies usually make a distinction between voluntary churn and involuntary churn. Voluntary churn occurs due to a decision taken by the customer to switch to another company or service provider, involuntary churn occurs due to circumstances such as a customer's relocation to a long-term care facility, death, or the relocation to a distant location. In most applications, involuntary reasons for churn are excluded from the analytical models. Analysts tend to concentrate on voluntary churn, because it typically occurs due to factors of the company-customer relationship which companies control, such as how billing interactions are handled or how after-sales help is provided (Xin et al. 2009.14). Due to the unpredictability of involuntary churn, our study focuses on voluntary churn.

Reducing churn by 5% could increase future sales by 25-85% in a wide variety of sectors, such as insurance, banking, manufacturing or constructions (Ahmad–Buttle 2001), but this statement is true also for other industries. It is also much cheaper to retain an old customer than to attract a new one – this is one of the key concepts of marketing (Rosenberg–Czepiel 1984).

We distinguish between the following churn categories (Lazarov–Capota 2007):

• *Active:* the customer voluntarily switches to another provider. This may be due to the more favourable pricing policy of competitors, the customer's lack of satisfaction regarding the service provided, lack of information concerning the service, lack of customer loyalty rewarding, etc.

• *Accidental:* the customer relocates to another place, struggles with financial difficulties or becomes insolvent. Thus, the customer did not intend to switch providers.

• *Passive:* the customer goes bankrupt.

The essence of the Churn model is that the company, by analysing the behaviour of its customers, tries to define the circle of customers which will likely quit the service currently provided to them and switch to a competitor company. Identifying these customers and taking preventive measures is crucial in order to preserve the existing pool of customers. The already mentioned probability of non-payment is closely related to the Churn model, as the retention of customers does obviously not stand above all. Companies do not need to retain all of their customers. If the probability of non-payment is known, customised, preventive and cost-efficient measures and actions can be taken (Hadden et al. 2006).

The mission of the Churn model is thus to identify customers that are less loyal to the company and display an alternating behaviour. Making these customers loyal is a cheaper process than attracting new customers.

The application of the Churn model is widespread mainly among telecommunications companies, where customer churn is 30% per year. This results from the fact that the limits of switching to another provider are low. Nowadays the transaction cost switching to any other provider or supplier is very low, which brings about the intensification of competition and loyalty programmes offered by providers become important (Gropal–Meher 2008; Owczarczuk 2010).

Reinartz, Thomas and Kumar (2005) proved that if a company invests less in customer retention than in attracting new customers, this

will have a much more negative impact of profitability. With the expansion of the press and of internet access, it is more convenient and simple for customers to switch between providers and suppliers.

It is essential to define the duration of churn for each sector and company. While in the case of telecommunications the time interval for a customer to switch to another provider may be somewhere between a couple of days and a couple of weeks, in the wholesale sector this interval may well be a couple of months or even a year.

There are certain factors which directly influence or identify the reasons of churn, such as time elapsed from becoming a customer (the initial period is the most critical), customer dissatisfaction, defective products, late delivery of products, etc. (Owczarczuk 2010).

It is worth elaborating within the Churn model the different customer categories prone to churn so that these bring the highest yield for the amount invested. There are certain customers in which it is not worth making extra investments, as no significant added benefits will be obtained due to the high probability of non-payment.

When elaborating the strategy for retaining customers prone to churn, the following considerations must be taken into account (Verbeke et al. 2012):

· when selecting customers with a high probability of churn it is important to examine their profitability;

· in order to develop a cost-effective strategy, the appropriate customer groups should be targeted;

· customers that will either way switch to another provider need to be ignored;

· loyal customers, which will not switch to other providers by any means shall be treated cost-effectively during the strategy to be adopted.

The concept of Churn models underwent many changes in the past 15–20 years, and current models use a wide range of different customer data in their forecast. Interestingly, this development cannot be observed in modelling algorithms, these are still mostly using the models used in the beginning, such as logistic regression, decision trees and neural networks (Tsai–Lu 2009).

Research methodology

For developing the Churn model and showing its benefits, we used a case study research. We identified a few companies, which fitted our research goals, and we approached them. We have chosen as the case study company the MarsoRom Ltd., because they were willing to cooperate in our current research. We have interviewed the management for a better understanding of the company's current situation. We also had access to all the financial data, which was a necessary criterion in building our statistical model.

The case study company is a tyre distributor company, which given its core business, also deals with commercial lending, as it offers its customers the possibility to pay at a later stage. Such debit appears as *accounts payable* in the balance sheet of the customer company, and as *accounts receivable* in that of the selling company. The control and management of receivables is essential for a company with such profile as outstanding receivables can significantly affect liquidity and long-term profitability. Therefore, it is important to analyse each customer's creditworthiness, and if a customer is deemed as such, the maximum credit limit must also be established. In the SME sector there are often insufficient funds for outsourcing this task, and companies usually prefer to do this internally. With the use of historical data an analysis of the past behaviour of customers can be performed and conclusions can be drawn with regards the future. By using the Churn model it can be decided whether a customer falls into one or another customer category (is it a committed, enthusiast, satisfied customer, a customer building on habits or one that likes to switch frequently between suppliers). By using this model, a strategy can be developed for the prevention of customer attrition, and thus for the improvement of the company's efficiency. One of the issues raised is the control and management of accounts receivable, which mainly cause problems when they are no longer collectable. In such case it is essential to introduce a scoring system which facilitates the answering to the questions concerning the possible increase of the credit limit provided to existing customers, as well as helps to determine the creditworthiness of new customers. As it is

revealed by our analysis, the churn of existing customers results in a massive loss of revenue, and acquiring new customers is costlier than retaining existing customers. In the case of MarsoRom the churn rate of wholesale customers is 25.3%, which, although is less than that observed in the case of telecommunication companies, is outstanding in relation to the sector (the average churn in the sector is 15%).

Our goal is to draw up a list of customers potentially prone to churn using the methods presented above, and develop a strategy for the company analysed in the case study, which could decrease by 5% the churn rate. Afterwards we will determine the impact of the strategy on the profitability of the company and see whether it is worth adapting future strategies to this perspective.

Multivariable regression analysis

The characteristics of bivariate regression can be simply generalised to the simultaneous analysis of three or more variables. In such case the equation looks like this:

$$y = a_0 + a_1 X_1 + a_2 X_2 + ... + a_N X_N,$$

where

X_i – different regression variables;

a_i – regression coefficients.

Among independent variables not only continuous variables are permitted, but nominal (dummy) variables as well. The multivariate analysis, i.e. involving several variables in the analysis makes it more valuable and complex, as the data to be obtained is more versatile. However, it must be taken into consideration that in case of multiple variables the result is more difficult to interpret.

In the case of a multivariate analysis one of the most important factors is that X_i variables should be independent from each other, i.e. there should be no relation between variables. *It is called multicollinearity*. Variables related to each other should be excluded from the analysis. For the analysis of multicollinearity the determinant of the correlational matrix of variants can be used: in case of $R = 0$, the relation between variables is maximal, and for $R = 1$ the variables are independent (Fidy–Makara 2005).

The outlier as well as the limited number of cases may strongly influence the result of the analysis. In case of a multivariate analysis the rule of thumb regarding the number of cases is: the required number of cases should be at least six times higher than the number of X variables.

Logistic regression

The discriminant analysis bears a resemblance with the regression analysis in that it tries to express a dependent variable with the help of independent variants. In the case of the discriminant analysis we use categorical dependent variables besides continuous dependent variables. One of its disadvantages is also that it requires linearity, normality and preliminary group probabilities (Oravecz 2009).

As opposed to the discriminant analysis, the *logistic regression* dissolves the condition of the normal distribution of independent variables, and it is able to use qualitative criteria, and with it the weight of independent variables can also be obtained.

The basis of logistic regression is odds, which in the case of scoring models covers the:

$$\text{odds}_x = \frac{P_{\text{survivor/x}}}{1 - P_{\text{survivor/x}}}$$

quotient of the occurrence probability of survival and bankruptcy. The logit method uses the supposition that the logarithm of the odds ratio linearly depends on the explanatory variables:

X_j – independent variables;

β_j – regression parameters.

Binary logistic regression groups individuals to the defined area. This model is useful when the variable is dichotomous (e.g. either buys or not, either pays or is insolvent). Binary logistic regression can also be used for forecasting the probability of certain events.

$$\text{logit} = \ln(\text{odds}) = \beta^T x$$

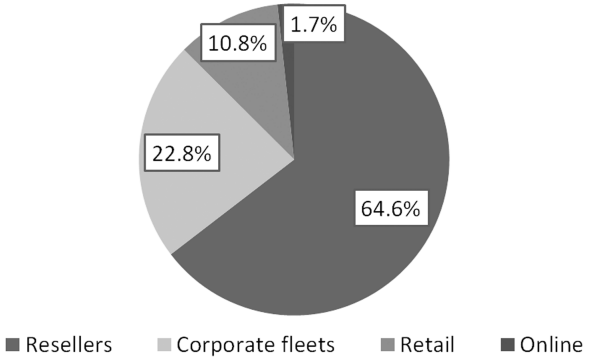
$$P(\text{solvent}) = \frac{e^Z}{1 + e^Z} = \frac{e^{\beta_0 + \Sigma(\beta_j x_j)}}{1 + e^{\beta_0 + \Sigma(\beta_j x_j)}}$$

The disadvantage of the logistic regression is that it reacts very sensitively to the correlations between independent variables, outliers

or missing values and it is inefficient on small samples (Lázár 2011). Nowadays the logit model is the most widely used classification method in the field of credit scoring. The main reasons for this are: it is easily interpretable, it performs well, and not only does it classify but it also estimates the probability of defaulting (Basel II. rule). Furthermore, the method does not require the normal distribution of explanatory variables, thus categorical dependent variables can be easily integrated in it (Oravecz 2009).

Presentation of data

In order to identify what events or financial indicators lead to bankruptcy or financial collapse we studied the 2013 client portfolio of the firm. The portfolio consists of resellers, corporate fleets, online sale and retail. There is no financial risk in selling in retail or online due to the cash payment, on the other hand the risk rises with granting credit limits to corporate clients and resellers.



Source: own design based on company data

Figure 3. Composition of MarsoRom's client portfolio in 2013 (%)

In 2013 the uncollectible receivables were five times bigger than in 2012. This statistic brought up the question of what leads to the insolvency of resellers and corporate clients. Table 2 enlists the statistical data used by the default prediction and Churn models.

Table 2. Data used in the scoring model

Data	Explanation
Default	The client went bankrupt or did not pay its debt
Churn	The client chose another supplier within a year
Credit limit	The amount of credit that the company extends to a client
100 day debt	The client hasn't paid its obligation for more than 100 days
Payment method	The way the client will pay for the product (ex. cash payment, check payment, bank transfer)
Client category	MarsoRom's client portfolio consists of the following categories: retail, resellers, online and corporate fleets
Quantity	Purchased quantity (RON)
Fixed assets	Fixed assets of the client from its balance sheet
Current assets	Current assets of the client from its balance sheet
Shareholder's equity	Shareholder's equity of the client from its balance sheet
Revenue	Client's revenue from its profit-loss statement

Source: own editing based on the data made available by the company and by the Ministry of Finances

In the case of the Churn model the dependent variable is the *churn* variable. When its value equals 1, it means that the companies that were MarsoRom's customers in 2012 were no longer its customers in 2013.

Furthermore, in the database we can also find the *credit limit* provided to customers. If a given customer guarantees repayment with a blank check, or has been the company's customer for a long period of time, then the company can purchase the products with delayed payment up to a given limit.

Accounts receivable over 101 days overdue are probably never going to be paid, as these usually characterise companies going through a difficult financial situation. Of course there are exceptions, as some customers do pay, but with a delay.

Payment terms indicate whether the given customer offers any guarantee for paying the debt. When developing the Churn model it may be relevant which *agent* was dealing with this customer, as the agreement concluding policy of agents may influence customer churn.

Besides this we also provided the value of the customer's purchases from MarsoRom.

We also included in the table the balance sheet data made available by the Ministry of Finances. The table contains only those data, which are relevant from the models' point of view.

Presentation of the model

In order to have a clear insight of the default mechanism of certain clients, we have examined the correlation between the default of a client and other balance sheet or MarsoRom data. We can notice medium correlation between default and Credit limit/Sales/Payment delay, and low correlation between default and Revenue/Liabilities and Equity. The higher the credit default category of the client, the higher its credit risk is (Figure 4).

```
Correlation Coefficients, using the observations 1 - 571
(missing values were skipped)

5% critical value (two-tailed) = 0,0823 for n = 568

         Default Client_category    credit_limit           Sales
          1,0000          0,5732         -0,4088         -0,3126 Default
                          1,0000         -0,3993         -0,2691 Client_category
                                          1,0000          0,7868 credit_limit
                                                          1,0000 Sales

         Revenue     Liabilities          Equity   Payment_delay
         -0,1129         -0,0599         -0,0537          0,3101 Default
         -0,1422          0,0005         -0,1004          0,1284 Client_category
          0,2434          0,1926          0,1645         -0,1359 credit_limit
          0,1485          0,1360          0,0790         -0,1081 Sales
          1,0000          0,6299          0,7624         -0,0343 Revenue
                          1,0000          0,1381         -0,0151 Liabilities
                                          1,0000         -0,0156 Equity
                                                          1,0000 Payment_delay
```

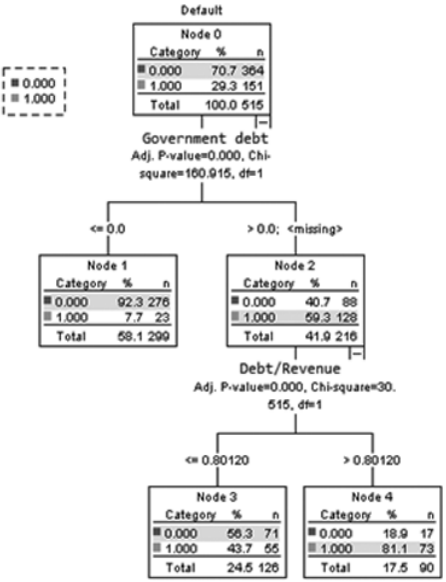
Source: company data analysed with Gretl software

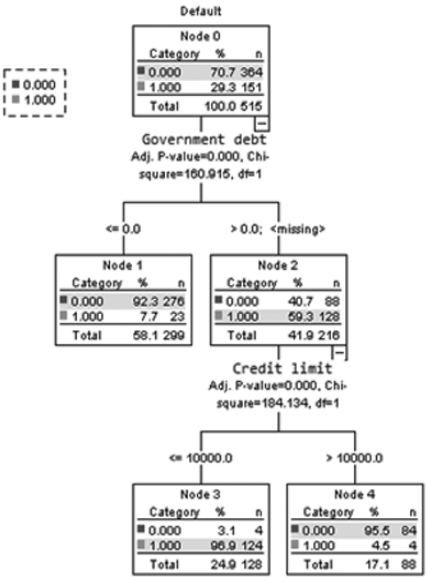
Figure 4. Correlation matrix

With the help of decision trees (Quinlan 1986), we have distinguished the clients by certain balance sheet characteristics. Figure 5 shows a significantly higher credit default risk among those clients, who failed to pay their taxes in time. Clients with delayed tax payment and debt/revenue ratio above 0.8 had an 81.1% default rate within the sample group. In case of clients with delayed tax payment and a debt/

revenue ratio lower than 0.8 the default rate is 43.7%. This means that a higher indebtedness leads to greater default probability.

Figure 6 describes the counterparty risk of clients from the tax indebtedness' and set credit limit's perspective. Those clients with delayed tax payments and low credit limit have a high risk of default (96.9% within the sample group). In case of clients with a higher credit limit than 10 000 RON, the default probability is significantly lower (4.5% in case of the sample group). This means that high credit exposure is limited to smaller credit limits within MarsoRom.





Source: company data analysed with SPSS software

Figure 5. Decision tree No. 1 **Figure 6. Decision tree No. 2**

Tables 3 and 4 show us the classification matrix of the two decision tree models. The first decision tree model could identify correctly 81.6% of the defaulted cases, while the second model had a 94% overall accuracy.

Table 3. Classification matrix (Decision Tree 1)

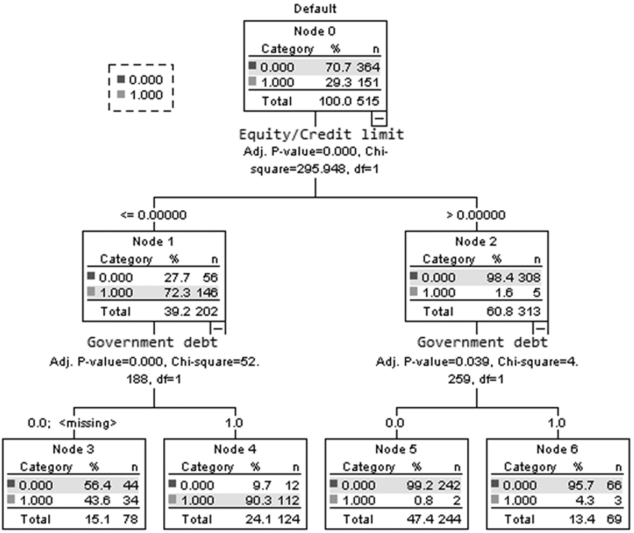
Observed	Predicted		
	0	1	Percent Correct
0	347	17	95.3%
1	78	73	48.3%
Overall Percentage	82.5%	17.5%	81.6%

Table 4. Classification matrix (Decision Tree 2)

Observed	Predicted		
	0	1	Percent Correct
0	360	4	98.9%
1	27	124	82.1%
Overall Percentage	75.1%	24.9%	94.0%

Source: company data analysed with SPSS software

Figure 7 shows how important the level of capital in terms of credit risk is. Those companies that are "neglected" by their owners are bound to default. Constant reinvestment of profit usually leads to a healthy functionality. In Romania negative capital does exist and shows disastrous results regarding counterparty risk (clients with negative private equity and accumulated government debts, had a 90.3% default rate within the sample group). This 3rd decision tree could identify with 90.3% accuracy the defaulting clients within the sample group (Table 5).



Source: company data analysed with SPSS software

Figure 7. Decision tree No. 3

Table 5. Classification matrix (Decision Tree 3)

Observed	Predicted		
	0	1	Percent Correct
0	352	12	96.7%
1	39	112	74.2%
Overall Percentage	75.9%	24.1%	90.1%

Source: company data analysed with SPSS software

Based on the above statistics, MarsoRom has elaborated a client categorisation system that has been embedded into the client relations policy of the company. Clients from category A are usually multinational or national companies that have satisfying capital and over 5 million RON revenue. Category B consists of those companies that are significantly smaller than their multinational counterparts and have lower than 60% debt per revenue ratio. Clients with ratings C or D have a higher credit risk exposure due to the increased debt/revenue ratio, low profit margin and low capitalization.

According to MarsoRom's client relations policy, companies rated E can only be served with cash payment; this is due to unsatisfactory capitalization and a high debt per revenue ratio (Table 6).

Table 6. Characteristics of the credit risk based client categories

Client categories	Annual Revenue	Private equity	Debt/Revenue ratio	Profit/Revenue ratio
A	> 5 000 000 RON	> 1 000 000 RON	< 40%	> 5%
B	500 000 – 5 000 000 RON	45 000 – 1 000 000 RON	< 60%	1% – 5%
C	> 100 000 RON	> 15 000 RON	60% – 80%	> 1%
D		15 000 RON – 50 000 RON	80% – 150%	
E		< 50 000 RON	>150%	< 1 %

Source: MarsoRom's client relations policy

We have managed to build up a scoring model based on client category, granted credit limit and overdue indebtedness. Using the *Ordinary Least Squares* (OLS) method, we have constructed the model presented in Figure 8. All independent variables are significantly

influencing the dependent variable, although we can notice heteroskedasticity and the lack of normal distribution.

```
Model 1: OLS, using observations 1-571
Dependent variable: Default

                   coefficient     std. error     t-ratio     p-value
  ------------------------------------------------------------------------
  const            -0,124320       0,0435855      -2,852     0,0045     ***
  Clientcategory    0,160756       0,0120648      13,32      1,97e-035  ***
  Creditlimit      -9,02315e-07    1,65732e-07    -5,444     7,75e-08   ***
  Overduedebt       4,20174e-06    6,09741e-07     6,891     1,48e-011  ***

Mean dependent var    0,325744   S.D. dependent var    0,469063
Sum squared resid     73,24485   S.E. of regression    0,359416
R-squared             0,415964   Adjusted R-squared    0,412874
F(3, 567)             134,6102   P-value(F)            7,51e-66
Log-likelihood       -223,9165   Akaike criterion      455,8329
Schwarz criterion     473,2225   Hannan-Quinn          462,6173

White's test for heteroskedasticity -
  Null hypothesis: heteroskedasticity not present
  Test statistic: LM = 179,785
  with p-value = P(Chi-square(9) > 179,785) = 5,61848e-034

Test for normality of residual -
  Null hypothesis: error is normally distributed
  Test statistic: Chi-square(2) = 17,6708
  with p-value = 0,000145491
```

Source: company data analysed with Gretl software

Figure 8: Scoring model built using Ordinary Least Squares

In order to eliminate the heteroskedasticity problem we have elaborated two models, one based on the *Weighted Least Squares* (WLS) and one model using *Heteroskedasticity-corrected*. Both models are existing ones (P-value is smaller than 0.05). The adjusted R-square for the WLS model is 39.9%, while for the Heteroskedasticity-corrected model is 53.5%. This means that the model can correctly explain 53.5% of the new observations (Figures 9 and 10).

In both cases the client category and the overdue debt shows linear relationship with credit default, while the credit limit is inversely proportional. This proves that greater credit limits are only granted to financially stable companies.

Using binary logistic we managed to eliminate the problem of non-linearity and we have built a model that could identify with 96.1% precision the defaulting counterparts (Figure 10).

```
Model 2: WLS, using observations 1-571
Dependent variable: Default
Variable used as weight: Clientcategory

                  coefficient    std. error    t-ratio    p-value
  ------------------------------------------------------------------
  const           -0,146371      0,0584275     -2,505     0,0125    **
  Clientcategory   0,174156      0,0143264     12,16      2,23e-030 ***
  Creditlimit     -1,41112e-06   2,17718e-07   -6,481     1,98e-010 ***
  Overduedebt      3,48305e-06   5,88533e-07    5,918     5,64e-09  ***

Statistics based on the weighted data:

Sum squared resid    252,3647   S.E. of regression   0,667149
R-squared            0,401924   Adjusted R-squared   0,398759
F(3, 567)            127,0132   P-value(F)           6,21e-63
Log-likelihood      -577,0992   Akaike criterion     1162,198
Schwarz criterion    1179,588   Hannan-Quinn         1168,983

Statistics based on the original data:

Mean dependent var   0,325744   S.D. dependent var   0,469063
Sum squared resid    75,46943   S.E. of regression   0,364833

Test for normality of residual -
  Null hypothesis: error is normally distributed
  Test statistic: Chi-square(2) = 9,61539
  with p-value = 0,00816665
```

Source: company data analysed with Gretl software

Figure 9. Weighted Least Squares model

```
Model 3: Heteroskedasticity-corrected, using observations 1-571
Dependent variable: Default

                  coefficient    std. error    t-ratio    p-value
  ------------------------------------------------------------------
  const           -0,144096      0,0136622     -10,55     7,20e-024 ***
  Clientcategory   0,153299      0,00807340     18,99     1,35e-062 ***
  Creditlimit     -1,17115e-07   5,47442e-08    -2,139     0,0328    **
  Overduedebt      5,55038e-06   5,00127e-07    11,10     4,94e-026 ***

Statistics based on the weighted data:

Sum squared resid    1034,358   S.E. of regression   1,350654
R-squared            0,537759   Adjusted R-squared   0,535313
F(3, 567)            219,8773   P-value(F)           1,37e-94
Log-likelihood      -979,8430   Akaike criterion     1967,686
Schwarz criterion    1985,076   Hannan-Quinn         1974,470

Statistics based on the original data:

Mean dependent var   0,325744   S.D. dependent var   0,469063
Sum squared resid    77,42552   S.E. of regression   0,369531

Test for normality of residual -
  Null hypothesis: error is normally distributed
  Test statistic: Chi-square(2) = 20,1929
  with p-value = 4,12247e-005
```

Source: company data analysed with Gretl software

Figure 10. Heteroskedasticity-corrected model

```
Model 4 : Logit, using observations 1-571
Dependent variable: Default
Standard errors based on Hessian

                  coefficient   std. error      z        slope
  ---------------------------------------------------------------
  const           -1,21387      0,632226     -1,920
  Clientcategory   0,590073     0,150918      3,910    0,000498103
  Creditlimit     -0,000141362  2,14548e-05  -6,589   -1,19329e-07
  Clientrevenue    3,26272e-06  6,76073e-06   0,4826   2,75418e-09
  Overduedebt      0,000109090  4,19496e-05   2,601    9,20871e-08

Mean dependent var   0,325744   S.D. dependent var   0,469063
McFadden R-squared   0,696476   Adjusted R-squared   0,682601
Log-likelihood      -109,3815   Akaike criterion     228,7629
Schwarz criterion    250,4999   Hannan-Quinn         237,2433

Number of cases 'correctly predicted' = 549 (96,1%)
f(beta'x) at mean of independent vars = 0,001
Likelihood ratio test: Chi-square(4) = 501,98 [0,0000]

           Predicted
              0     1
  Actual 0  368    17
         1    5   181

Excluding the constant, p-value was highest for variable 4 (Clientrevenue)
```

Source: company data analysed with Gretl software

Figure 11. Scoring model built using binary logistic (1)

This 4th model showed no sign of collinearity problem (Figure 12).

```
Variance Inflation Factors

Minimum possible value = 1.0
Values > 10.0 may indicate a collinearity problem

Clientcategory    1,205
   Creditlimit    2,923
 Clientrevenue    2,642
   Overduedebt    1,026

VIF(j) = 1/(1 - R(j)^2), where R(j) is the multiple correlation coefficient
between variable j and the other independent variables
```

Source: company data analysed with Gretl software

Figure 12. Scoring model built using binary logistic (2)

Results

As we mentioned it earlier, the customer churn for MarsoRom is 25.3%, which is considered high. The purpose of our analysis is to elaborate a strategy for bringing about a 5% decrease in customer churn.

This is important, as according to Ahmad and Buttle (2001), reducing customer churn by 5% can increase future sales by up to 80% in a wide range of sectors. Our second hypothesis is that by decreasing the customer churn of MarsoRom by 5%, a minimum of 5% increase in annual sales can be achieved.

In order to elaborate such a strategy, it is crucial to identify customers prone to churn. We applied logistic regression within the Churn model to identify customers likely to switch competitors. We applied the Churn model on the same sample group with a 99.3% processing rate (Table 7).

Table 7. Table summarising processed cases

Selected cases	**Included in the analysis**	1446	99.3
	Missing cases	10	0.7
	Total	1456	100.0
Number of cases not selected		0	0.0
Total		1456	100.0

Source: own calculations based on company data

Table 8 also helps in understanding the customer churn rate of the company, namely the above mentioned 25.3%. The company had 1456 customers in 2012, 366 of which either switched to another provider in 2013 or in some cases went bankrupt.

Table 8. Classification matrix

	Observed value		Forecast value		
			Churn		Correct classification
			0	1	
Step 0	Churn	0	1080	0	100.0%
		1	366	0	0.0%
	Cumulative probability				74.7%
The cut-off value is 0.3788					

Source: own calculations based on company data

By running the binary logistic regression presented in the section above, the model separated churn customers from loyal customers with

a 72.4% probability. It classified correctly 234 customers as customers prone to churn and 813 as loyal customers. It calculated with 267 errors of first kind and 132 errors of second kind (Table 9).

Table 9. Classification matrix after running the regression

	Observed value		Forecast value		
			Churn		Correct classification
			0	1	
Step 1	Churn	0	813	267	75.3%
		1	132	234	63.9%
	Cumulative probability				72.4%
The cut-off value is 0.3788					

Source: own calculations based on company data

The cut-off value was set at 0.3788 in order to be able to identify customers prone to churn with a higher probability. The probability of bankruptcy is directly integrated in the Churn model, as it also significantly influences churn. Therefore, prior to developing the model, we need to apply for each customer the already presented scoring model, in order to find out their probability of bankruptcy.

Forecast_value = -0.4731 + 3.5458 *Default* + (-0.000187 *Credit limit*) + (-0.0000015 *Stocks*) + (-0.000005 *Quantity)* + (-0.000000004 *Accounts receivable*)

The credit limit influences customer churn by an inversely proportional manner. If a customer has a high credit limit at MarsoRom, the likelihood that it will switch to another provider is lower, and besides, it also risks not receiving a credit limit at the new provider. Consequently, the credit limit creates a barrier in front of customer churn.

The higher the purchasing amount of a customer from MarsoRom, the less probable the customer will switch to another provider. The larger the stocks of a customer, the less likely it will switch to another provider. However, the higher its accounts receivable, the more likely it will switch to a competitor company (Table 10).

Customers prone to bankruptcy are automatically regarded as

prone to churn by the model, therefore it is essential to illustrate in the customer list whether or not that particular customer is prone to bankruptcy. According to the model, the company has a pool of almost 1000 loyal customers, which are not under bankruptcy proceedings.

Table 10. Independent variables in the equation

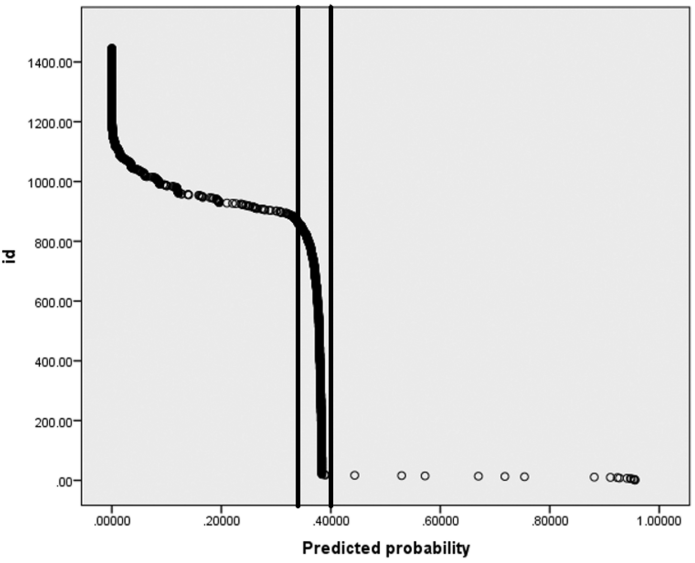
		B	S.E.	Sig.	Exp (B)
Step 1	Default	3.5458393999	0.997	0.000376	34.669
	Credit limit	0.0001870416	0.000	0.000000	1.000
	Quantity	0.0000050075	0.000	0.022664	1.000
	Accounts receivable	0.0000000443	0.000	0.002418	1.000
	Stocks	0.0000014891	0.000	0.002154	1.000
	Invariant	0.4731156095	0.072	0.000000	0.623

Source: own calculations based on company data

We have applied the developed Churn model to the 2013 customer portfolio of MarsoRom, and we obtained the distribution function presented in Figure 12. All cases located to the right of the vertical line are shown by the model as prone to churn. 100% of the cases from the sample group shown with a probability higher than 0.4% actually churned. The cases from the sample group located to the left of the lines churned with a probability of only 14%. Customers located between the two lines from the group of customers prone to churn.

Forming of customer groups prone to churn

In Table 11 we presented the churn groups created among the company's customer portfolio in 2014. In the first column we included the name of the group taking into consideration the estimated behaviour of the customers of the group. Customers prone to bankruptcy form a distinct category, which is associated with a 100% churn probability. The second column includes the churn probabilities predicted by the model, while the third column includes the probabilities of bankruptcy. In column 3 we included the bankruptcy probability observed in the given sample group in 2013. The last column shows the number of customers in the given group.



r data

Figure 12. The distribution of the predicted probability of customer churn in the logistic regression

Table 11. Churn groups in the 2014 customer portfolio

Customer category	The groups formed in terms of the predicted churn values	Probability of bankruptcy in the 2014 customer portfolio	Probability of churn within the sample group (2013)	Number of customers in the 2014 customer portfolio
Prone to bankruptcy	0.4 – 1	88.5%	100%	26
Prone to churn	0.3838 – 0.4	0.0%	70%	63
Alternating	0.383 – 0.3838	0.0%	47%	386
Enthusiast	0.3788 – 0.383	0.0%	44%	815
Loyal customer	0 – 0.3788	0.2%	14%	1253

Source: own editing based on the Churn model

Consequently, we can affirm that in the 2014 customer portfolio of MarsoRom there are 1253 "loyal" customers with a churn probability less than 14%. The model identified 1201 customers which will likely

switch to another supplier with a 50% probability. There are 63 customers with a higher churn probability of 70%; 0.1% of the customer portfolio is in danger of going bankrupt, but this group is irrelevant from the perspective of strategy development and it is important to differentiate these customers from those prone to churn but which are profitable.

The possible practical application of the above models: marketing strategy developed for different churn groups

By applying the above presented model to the company, the manager can become aware of the quality of its customers, and this information can also play a key role when taking strategic decisions.

Let's analyse the above customer groups according to the purchased amount. We can observe that customers identified as "enthusiasts" according to the Churn model have a 44% probability of switching to another provider. We further broke down this category according to the annual purchased amounts, obtaining a group which purchased products from MarsoRom in the 1000-2500 RON amount interval and another category with annual purchases between 2500 and 4500 RON. There are alternating customers which purchases between 700-1000 RON and there are customers prone to churn with purchases up to 700 RON (Table 12).

Table 12. The churn formed according to purchase value

Customer category	Churn probability	Number of customers	Annual purchase value (RON)	Recommended strategy	Drawing of lots
Prone to churn	70%	340	100 – 700	–	
Alternating	47%	190	700 – 1000	Recommendation I-II-III.	
Enthusiast1	44%	395	1000 – 2500	Recommendation I-II.	X
Enthusiast2	44%	229	2500 – 4500	Recommendation I.	X

Source: own editing based on the Churn model

In case of customers prone to churn we did not consider it was worth elaborating a separate marketing strategy, as compared to the

average traded volume of the company, these customers purchase very small amounts and have a very high probability of churn, therefore a customer loyalty programme aimed at this group would be too costly. While MarsoRom receives a significant amount of marketing support from tyre manufacturers, including flyers, giveaways or other advertisement packages, the appropriate distribution of these marketing materials would generate significant windfall revenue, if they were forwarded to the appropriate loyal customers, which are also willing to purchase in larger volumes. Table 12 also includes which types of offers should be presented to which customer group. The strategy includes a gift programme based on a draw of lots, in which ten Formula 1 GOLD Tickets would be given away for the Hungarian Grand Prix. The customers eligible to participate in the draw are those who purchased products from MarsoRom for an amount above 3000 RON. Formula 1 gift would have a validity of 2 years and half of their cost would be borne by MarsoRom together with other manufacturers supporting the Hungarian Grand Prix, based on an agreement.

The offer packages mentioned in the strategy are included in Table 13. In order for the customer to benefit from the bonuses given after reaching the specified amount and by paying in time, it has to make a single purchase of the volume specified in the respective offer and pay in time.

Table 13. Parameters of the applied strategies

	Expected amount to be purchased (RON)	Bonus for the amount	Bonus for timely payment
Offer No. III	2 000	0.5%	0.05%
Offer No. II	3 000	0.6%	0.07%
Offer No. I	5 500	0.7%	0.08%
	10 000	0.9%	0.10%
	50 000	1.1%	0.12%
	100 000	1.3%	0.15%

Source: own editing based on the churn avoidance strategy developed

When calculating the benefits of the chosen strategy we estimated – based on historical company data – that 60% of the targeted customers would use any of the offers.

According to our calculations, by the end of 2014, MarsoRom will have 315 new loyal customers. This number meets the expected 5% decrease in customer churn. As the model only identified customers with relatively low purchases, the benefit of the strategy expressed in terms of revenue closely meets the expected 5% increase. Therefore, our hypothesis has been only partially confirmed.

If the churn avoidance strategy would be supplemented with a system for measuring the level of customer satisfaction towards the company's services, a 10% increase in revenues would be easily achievable, based on prior research on customer satisfaction (Taylor–Baker 1994). Thus, in the first year, the presented churn avoidance strategy is responsible for 4.7% of the revenue (Table 14).

Table 14. Breakdown of future expected revenue and expenditures, 2014–2016 (RON)

	2014	2015	2016
Total revenue	3 170 000	2 674 500	2 005 875
Gross profit (11%)	348 700	294 195	220 646
Total bonus for amounts	28 550	23 988	17 991
Total bonus for timely payment	2 402	1 345	1 008
Cost of Formula 1 tickets	6 000	6 000	0
Net profit	311 749	262 863	201 647
NPV net profit			**667 946**

Source: own editing based on the strategy developed

The present value of the cash-flow of the net profit of three years resulting from the churn avoidance strategy is 687 432 RON.

The practical development opportunities of the Churn model in the case of the company analysed

In order to identify with higher probability those customers that are prone to churn and which make high-volume purchases, it is worth

keeping a record of customers' complaints or eventual remarks concerning the products and services of the company. By using a survey, customers prone to churn could be easier to identify. This obviously requires a high rate of processed data in order to bring results. Further independent variables directly influencing customers churn need to be looked for.

For the future, it is worth applying the Churn model together with other methods as well, such as the discriminant analysis. The database is also worth expanding with as much data as possible in order for the model to produce data as accurate and relevant as possible.

Conclusions and further research possibilities

In conclusion we can affirm that our first hypothesis is confirmed, because following and adapting the presented steps of the model, it can be easily, and almost cost freely implemented in a small and medium-sized company. For running the model, the company willing to use the presented method, should purchase the statistical analysis software, and should invest in human resource that will run it. The mentioned costs are significantly lower than the presented benefits of the model.

We also can affirm that the Churn model created an added value for the company, as it identified with almost 50% probability the customers characterised by an alternating behaviour or which are less loyal. Without the model and the churn avoidance strategy applied, the case study company would suffer annual revenue losses of up to 1.5 million RON. Due to the model and the related strategy, an added value of 687 432 RON is generated for MarsoRom, which clearly shows the benefits of applying the above presented model within the company.

While our second hypothesis is confirmed only partially, the difference between the expected and calculated growth of revenue is only 0.3% for the case study company, which could be lower in the case of other enterprises. The Churn model implies the application of the scoring model as well, as the probability of bankruptcy of companies also largely influences churn. In the scoring model we have only focused on the quantitative characteristics of a client. To further

develop the model, qualitative information can also be crucial in the understanding of default probability. The quality of management, company strategies, client portfolio, product portfolio, suppliers and market position can also give us valuable data regarding default probability. By further improving the scoring model, the outstanding accounts receivable of the company could also be reduced. The analysed company deals with customer management and credit limit setting for customers on a daily basis. The credit scoring model qualifies each customer, thus it could facilitate daily customer evaluation processes and improve the accuracy of customer classification into the relevant non-paying customer categories. Competition is intense also in the Romanian tyre market, so for the future, the main priority for each company will be the retention of loyal and profitable customers. By elaborating such a model, MarsoRom could achieve a great deal of competitive advantage and strengthen its position on the Romanian tyre market.

Further development of the Churn model still has a great potential, as the company has several customers which purchase high volumes while having a high churn probability, although the model was unable to identify them. A method for the identification of these customers in the future could be carried out by the company by keeping a record of customer complaints and remarks and by conducting customer satisfaction surveys regarding the quality of the products and services provided by the company. The joint effects of different marketing strategies and Churn model outcomes could also be themes for future research. For a full proof of our hypotheses, further research should test our case study findings on a statistically relevant sample using questionnaires.

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Ethical issues in the companies' buying practice

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Ethics is a critical element of business relationship. This is often narrowed down to corruption in the context of purchasing management, however it is a much more complex problem. Since the large scale research projects of the 1990s only a few studies have been devoted to investigate this topic. This paper aims to identify current ethical issues in purchasing and examines perceptions on ethical issues. A literature review, which helped in the questionnaire development, will be provided and the survey results will be presented. Results suggest that although the awareness of environmental and social aspects has grown, the perceptions of the existence of ethical issues have not changed in the last decades. An important message is that the hypernorms of multinational companies help to standardise ethical issues and link them to CSR and environmental aspects. Perceptions of ethical issues are likely to be affected by communication and professional knowledge weaknesses as well.

Keywords: ethics, purchasing, ethical issues, survey.
JEL code: M14.

Introduction

Business ethics is a wide-spread research field as its theoretical importance and practical relevance to the well-being of a society is well known. Some of the more important questions of this field are: 1) the internationality of business ethics, 2) the occurrence of different ethical issues related to different company stakeholders and/or functions, and 3) the process of ethical decision making. Our paper focuses on the second

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question in a specific field and will investigate ethical issues in purchasing and supplier relationship management. In an economy the purchasing volume of the largest companies represent a substantial buying power, which is concentrated in much fewer hands than in customer markets. The volume of public procurement is also significant. As a consequence, a relatively small number of companies and public entities would be capable of significantly influencing the ethical climate of business in a country. In order to put our study in proper context, we briefly take a look at all three previously mentioned questions.

1) One of the recently emerging challenges is the international business ethics, and with it the relativity or universality of certain ethical norms or issues. This comes from the increasingly international and global scope of businesses, as multinational companies face exposure to occasionally very different national cultures (Tan–Ko 2014). Theories that try to deal with these issues were already formulated in the 80s-90s (e.g. Donaldson 1989; Donaldson–Dunfee 1994) and eventually led to the thinking and research about hypernorms – norms that can be applicable at the global level for companies (Donaldson–Dunfee 1999a). As Donaldson and Dunfee (1999a) did not provide a formulation process, the development and testing of these hypernorms are still ongoing. Herold and Stehr (2010) identified 35 possible hypernorms derived from corporate codes of ethics and finally proposed 16 norms in five different areas: responsibility for employees, customers, suppliers, environment and society. Out of these 16 norms only one was specifically related to suppliers, namely that a company must pay its suppliers according to the terms of price and date agreed. This might indicate that the purchasing function of a company is more susceptible to national cultural effects and/or the field is still under-researched in this issue compared to other stakeholders of the firm.

2) As the study of Herold and Stehr (2010) indicates, different stakeholders and corporate functions may experience different ethical issues and problems. Contrasting with hypernorms, unethical behavioural patterns in these situations can be viewed as illegitimate

norms (Donaldson–Dunfee 1999b). As ethics is a critical element of supplier relationship management, research on ethical issues of purchasing has received considerable attention in management literature in the 1990s (e.g. Cooper et al. 1997; Carter 2000; Forker–Janson 1990). The following chapter provides an overview of these issues. These scholars have emphasized the importance of purchasing ethics, and the studies also provided a comprehensive picture on the key ethical issues as well as on their implications for business, values driving decisions in questionable purchasing situation (Plank et al. 1994) and approaches to enforce ethical behaviour (Handfield–Baumer 2006; Husser et al. 2014). According to our knowledge, after these studies no one has addressed this topic specifically, though the growing internalization – especially the recognition of low cost countries as suppliers – also raised a whole set of new ethical/social/environmental issues. These elements forced companies to ensure higher visibility and integrity with ethical rules and made them develop strict internal regulations and broader structures (education, codes etc.) to control their employees. All these may indicate that the potential ethical issues are more visible to purchasing and sales people and that the new ethical issues appeared during the last decades.

3) Occurring ethical issues will trigger the decision-making process of the affected individuals. This topic is not very well covered in the context of purchasing professionals, though it would be important to observe how people think it is related to what they do (Ho 2012). Ho (2012) provides a review of relevant studies. Nonetheless the examination of this question would overstep the boundaries of our paper, hence we do not go into details.

This paper aims to investigate current ethical challenges in purchasing and supplier relationship management in Hungary through the identification of key ethical issues faced by purchasers and the recognition of potentially new ethical issues. Our paper also intends to investigate whether the shift of focus in purchasing literature from ethics to CSR issues was parallel with the perceived presence of ethical and CSR dilemmas by practitioners.

As a first step a list of ethically questionable practices (issues) was created with the help of the literature review. Therefore, codes of conduct were analysed in order to find ethical issues that are new to the list based on the literature. With the help of an expert group (involving purchasing managers) a questionnaire was developed to measure the perceived presence of the listed ethical issues and to identify potential relations among ethical issues. The terminology of Cooper et al. (1997) is followed, hence the term 'ethical issue' marks ethical conflicts, unethical behaviours, ethical dilemmas, or situations which may give rise to ethical dilemmas. In the results and discussion section, beside descriptive statistics, we also applied ANOVA to compare the perceptions of purchasers and non-purchasers, as well as of respondents exposed or not exposed to public procurement. We used factor analysis to identify major groups of ethical problems that can be derived from individual ethical issues. The last chapter concludes the article and provides suggestions for further research.

Ethical issues in purchasing –
a review of the most important studies

Ethical issues have been the subject of increased academic interest. Four studies which tried to provide a comprehensive picture of ethical issues and not just focusing on one or a few, are highlighted.

Forker and Janson (1990) identified eight purchasing ethical issues: 1) exaggerating a buyer's or a supplier's problem to achieve a desired outcome, 2) giving preferential treatment to purchasers or suppliers that top management prefers, 3) allowing personalities to influence buying/selling transactions, 4) engaging in the practice of reciprocity, 5) offer/acceptance of free gifts, meals and trips, 6) seeking/giving information on competitors' quotes, 7) gaining competitive information unfairly, and 8) showing bias against salespeople who circumvent the purchasing department.

Cooper et al. (1997) formulated 44 ethical issues and tested their importance as purchasers perceived them through a survey. Based on the answers given mainly by American purchasers the following three

problems were ranked the highest: showing partiality toward suppliers preferred by upper management, allowing personalities to improperly influence the buying decision, and failure to provide prompt, honest responses to customer inquiries and requests. The ten most important ethical problems also consisted of the following (though in a slightly different order based on professional qualification): lack of knowledge or skills to competently perform one's duties; failure to provide products and services of the highest quality in the eyes of the internal/external customers; receiving gifts or entertainment that influence or appear to influence purchasing decisions; or failure to identify the customer's needs and to recommend products and services that meet those needs. A later study (Cooper et al. 2000) focused on intercultural differences and resulted in a different ranking of the 44 ethical problems when USA vs India were taken into account.

The study of Carter (2000) draws a general picture as the result of the joint research by CAPS (Center for Advanced Purchasing Research) and NAPM (National Association of Purchasing Management, USA). On one hand, based on the detailed review of the literature he summarizes the possible types of unethical activities in 21 points. On the other hand, in an empirical analysis he investigates the perception and appearance of these problems in practice among American purchasers and foreign suppliers. The study also describes an interesting classification of activities that can be considered problematic. One dimension is called 'deceitful practices', which includes behaviours such as gaining advantage by using obscure contractual conditions. The other dimension ('subtle practices') indicates such behaviours when e.g. the purchaser prefers a particular supplier.

In his later studies (Carter 2005; Carter–Jennings 2000, 2004) ethics is the part of social responsibility. The results of these studies played a big role in creating the NAPM/ISM code of conduct, hence seriously shaped the practice of the American companies.

The studies of Cooper et al. (1997, 2000) and Carter (2000) provided the most comprehensive sets of ethical issues, which were a

good source to prepare a full picture of the previous results. As current literature fails to provide additional support, we relied on them during our empirical research.

During the last decade only a few articles on ethics in purchasing were published. Most of these articles were focusing on determinants of ethical behaviour e.g. the differences between public and private sector procurement (Hawkins et al. 2011) or other contextual aspects (Saini 2010; Blome–Paulraj 2013; Husser et al. 2014).

Methodology

In order to be able to build a comprehensive picture of the perceived importance of ethical issues, two important phases were completed. First, the update of the collected ethical issues was done and then a questionnaire was developed.

The update of the ethical issues list

As studies on the changes of purchasing ethical issues are missing, we first relied on the secondary data analysis of purchasing and supplier codes of conduct to identify new issues. Many authors argue that the existence of a purchasing code of conduct, its standardized form and recommendations significantly influence ethical behaviour (Plank et al. 1994; Turner et al. 1995; Smeltzer–Jenning 1998; Handfield–Baumer 2006), though in itself a code of conduct is not able to solve all ethical problems. Besides giving guidance inside the company, external communication of the code of conduct towards the suppliers is also very important (Carter 2000; Saini 2010). Encouraged by these results, the public code of conduct was considered a source to update the sets of ethical issues discussed by Cooper et al. (1997) and Carter (2000).

We searched the Internet for codes of conduct that could be accessed publicly. As it was difficult to find a sufficient number of purchasing codes of conduct, supplier codes of conduct were also included in the sample. A total of 32 codes of conduct were identified, all of them published by multinationals firms (four of them were

Hungarian subsidiaries of multinationals). The codes of conduct were analysed by their structure and content. The list of companies is included in Appendix 1.

The review of the 32 codes of conduct indicated the increased role of sustainability issues in line with the publications mentioned above: the role of green and social responsibility issues was frequently highlighted. New ethical issues identified in the purchasing codes of conduct were the following (with the number of occurrence in brackets):

– on-time payment to the supplier (1);
– preparation of a contract based settlement with the supplier (1);
– buyers will not urge suppliers to support non-profit goals (1);
– neutrality with regard to political parties and candidates (1).

Supplier codes of conduct transmit expected ethical standards. By comparing their content to the lists of Cooper et al. (1997) and Carter (2000), the following new issues were found (with the number of occurrence in brackets):

– suppliers must create programs to ensure scouting and tackling ethical problems (3);
– suppliers must respect and protect the intellectual property rights (2);
– the supplier is not allowed to use the logo of the company (2);
– the supplier should pay off its suppliers (1).

These results indicate that only a few new ethical issues were raised in the codes (and the numbers of occurrence were low). However, sustainability-related issues were included in almost all codes of conduct.

Questionnaire development

To identify the presence of ethical issues in practice, a questionnaire was developed. To prepare the investigation, a list of ethical issues was required. A workshop of purchasing managers (members of the Hungarian CPO [Chief Purchasing Officers'] Club) was conducted to prepare the survey list. First, the lists of Cooper et

al. (1997) and Carter (2000) were reviewed and afterwards the issues identified with the help of the codes of conduct were considered. The expert group concluded to use 29 issues from the initial list based on Cooper et al. (1997) and Carter (2000). It added five more issues identified in the codes of conduct, namely: 1) forcing reciprocal buying, 2) the negotiating process does not take the cultural norms of the negotiating parties into account, 3) inaccuracy of records and reports, 4) purchaser insists upon supplier to support non-profit goals, and 5) allowing or tolerating illegal work to reduce costs. The expert group also took care of the translation and adaptation of the English expressions into Hungarian. As a result, a total of 34 ethical issues were suggested to be investigated in the survey as relevant ethical issues. These 34 issues were then evaluated by the respondents whether they qualify as a frequent ethical problem in their purchasing practice, measured on a 1-5 Likert scale (1 – not frequent problem, 5 – very frequent problem). The questionnaire can be found in Appendix 2.

The questionnaire was distributed electronically and on paper. The respondents were members of the Hungarian CPO Club, participants of postgraduate courses in purchasing and logistics organized by Corvinus University of Budapest, and members of an expanded professional mail list. A total of 106 responses were collected and only two responses had missing data. As the survey was anonymous, the representativity of the sample could not be established, though it represents a good basis for analysis as it allows us to compare the opinion of purchasers and purchasing managers, as well as public and company buyers' experience.

Results and discussion

In this part the survey results will be discussed, highlighting the differences of perception across the subgroups of the sample. Out of the 34 issues, Table 1 shows those which were felt as the most frequent problems by the respondents.

Table 1. Top purchasing ethical issues according to the respondents

Purchasing ethical issue	Mean	Standard deviation	Coefficient of variance
Showing partiality toward suppliers preferred by upper management	3.26	1.20	0.37
Writing specifications that favour a particular supplier	3.04	1.00	0.33
Allowing personalities to improperly influence the buying decision	3.01	1.19	0.39
Unfairly using the firm's purchasing clout to gain concessions from suppliers or others	2.97	1.25	0.42
Using less competitive prices or terms for buyers who purchase exclusively from the supplier	2.80	1.23	0.44
Lack of knowledge or skills to competently perform one's duties	2.77	1.21	0.44
Failure to provide prompt, honest responses to customer inquiries and requests	2.71	1.10	0.41
Failure to identify the customer's needs and recommend products and services that meet those needs	2.68	1.04	0.39
Failure to be objective with others in business dealings	2.57	1.13	0.44
Allowing a supplier to rebid after the closing date	2.56	1.24	0.49

Source: own research

It is worth comparing this ranking with the survey of Cooper et al. (1997). According to both analyses the most important issue was showing partiality toward suppliers preferred by upper management. If we take a look at the other issues, only a handful overlapped in the top places, namely the lack of professional knowledge or skill and the failure to identify the customer's needs. The issues from the bottom of the list (i.e. the least problematic ones) are shown in Table 2.

The issues at the bottom of the list are not frequent based on respondents' opinion. It is worth mentioning that the issues related to sustainability can be found here. We would like to highlight the following issue: "Allowing or tolerating illegal work in order to reduce costs". This is actually at the bottom of the ranking, but just made it there. Also, the standard deviation of the responses is high compared to other items: i.e. according to the majority of the respondents, this item is not problematic, though this opinion is far from being unanimous. It is also interesting that out of the five items added by the expert group to

Table 2. Least frequent purchasing ethical issues according to the respondents

Purchasing ethical issues	Mean	Standard deviation	Coefficient of variance
False or misleading representation of demand or interest in discussions with suppliers or others	1.98	1.09	0.55
Abuse of expense accounts	1.98	1.03	0.52
Allowing or tolerating illegal work in order to reduce costs	1.96	1.27	0.65
Unauthorised payments	1.92	1.05	0.55
Making disparaging remarks about suppliers, their products, or their employees or agents	1.84	0.94	0.51
Purchaser insists upon supplier to support non-profit goals	1.79	0.93	0.52
Conflicts of interest that involve working for a competitor, customer or supplier without prior management approval	1.73	0.90	0.52
Utilizing improper hazardous materials or procedures to reduce costs	1.62	0.95	0.58
Negotiating process does not take the cultural norms of the negotiating parties into account	1.49	0.77	0.52
Discriminating against small, disadvantaged, and minority-owned businesses in the supply base	1.46	0.92	0.63

Source: own research

the initial list based on Cooper et al. (1997) and Carter (2000), three items are at the bottom of the list.

Respondents missed many issues from the questionnaire. This is curious, because based on our earlier experience, the Hungarian purchasing experts are usually not open to answer these types of questions. These issues were the following:

– tolerating 'grey employment' (the employee officially earns only the minimum wage and gets the rest of the wage illegally);

– evaluation of product testing is distorted by subjective factors (not by the purchaser);

– the extension of the content during the negotiating rounds;

– generating fake competition in order to improve conditions of the actual supplier (make other would-be-suppliers compete unnecessarily);

– obligatory prescription of contractual conditions;

– ensuring transparency during the process (by using electronic tools);

– evaluating aspects are known beforehand (in case of not public procurement);

– the value of given word (oral statement) in business relationships;

– environment and working conditions;

– by creating ethical codes of conduct the multinational company wants to reduce its risks, but it is not interested in the ethical behaviour of the supplier. After accepting and signing the code of conduct, responsibility can be deflected onto the supplier.

Looking at the list one can feel the conflict among purchasing, the internal customer and the seller: they are not aware of the tools and way of thinking of the others.

Differences in the opinion of purchasers and non-purchasers

Out of the 106 respondents 81 were CPOs or purchasers. Their opinion was compared to the answers of 25 non-purchaser respondents in other positions through ANOVA. There is a pattern: the opinion of the purchasers (especially CPOs) is much more favourable. With the exception of seven issues they consider every other as less problematic. The biggest differences are shown in Table 3.

These differences reflect two problems. First, though the existence of double ethical standards seemed to decrease in corporate codes of conduct (Vörösmarty–Dobos 2011), in reality it still survives in some other aspects (e.g. the big difference in accepting gifts). The other problem is a communication problem. It can be assumed that in a buyer-supplier relationship the suppliers or the internal customers usually do not understand the way purchasing works and the methods it is using. It can be also assumed that the purchaser does not pay enough attention whether his or her requests were properly understood.

Differences in public procurement

There were 28 respondents in the sample who had exposure to public procurement. We compared their experience to the opinion of those respondents who did not have any contact with public procurement through ANOVA. Respondents with exposure to public

Table 3. Differences in the opinion of purchasers and non-purchasers

Issues	Purchasers	Non-purchasers	Difference	p-value
Receiving gifts or entertainment that influence or appear to influence, purchasing decisions	2.35	3.16	**-0.81**	0.004
Conflicts between opportunities for personal financial gain (or other personal benefits) and proper performance of one's responsibilities	2.14	2.88	**-0.74**	0.002
Unfairly using the firm's purchasing clout to gain concessions from suppliers or others	2.80	3.52	**-0.72**	0.012
Allowing a supplier to rebid after the closing date	2.40	3.08	**-0.68**	0.016
Allowing only certain suppliers to bid	2.30	2.92	**-0.62**	0.008
Conflicts of interest involving business or financial relationships with customers or suppliers that influence or appear to influence one's ability to carry out his or her responsibilities	2.10	2.72	**-0.62**	0.014
Misuse of sensitive information belonging to suppliers or others	1.90	2.48	**-0.58**	0.019
Forcing reciprocal buying	2.14	2.72	**-0.58**	0.030
Abuse of expense accounts	1.85	2.42	**-0.57**	0.018
Lack of knowledge or skills to competently perform one's duties	2.64	3.20	**-0.56**	0.044
Negotiating process does not take the cultural norms of the negotiating parties into account	1.37	1.88	**-0.51**	0.003

Source: own research

procurement perceived a significantly larger problem in the case of only one issue, namely „Writing specifications that favour a particular supplier" (mean of the public procurement group is higher than the rest by 0.42 points). In case of 24 issues, they thought that these aspects are less problematic in practice than respondents not related to public procurement. The difference is especially high for the issues shown in Table 4. This can be an effect of the strong legal regulation and environment.

Table 4. Responses based on public procurement exposure

Issues	Purchasing	Exposed to public procurement	Difference	p-value
Writing specifications that favour a particular supplier	2.92	3.36	**-0.44**	0.049
Failure to provide prompt, honest responses to customer inquiries and requests	2.83	2.36	**0.47**	0.050
Unauthorised payments	2.08	1.50	**0.58**	0.013
Allowing a supplier to rebid after the closing date	2.74	2.04	**0.70**	0.010

Source: own research

Factor analysis

The literature review, codes of conduct and the expert workshop proved that ethical dilemmas in purchasing are diverse. The study identified a broad set of ethical dilemmas with the 34 tested issues. To analyse the internal structure of these issues, a factor analysis was conducted. Table 5 shows that according to the KMO measure and Bartlett's test, the data are adequate for factor analysis.

Table 5. KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.893
Bartlett's Test of Sphericity	Approx. Chi-Square	1071.012
	df	153
	Sig.	.000

Source: own research

Table 6 displays the number of factors and the total variance explained. The number of factors was determined by the components with an eigenvalue over 1. This criterion gave us four factors in total. We assumed that ethical issues are not independent from each other, i.e. companies who have problems with a certain type of ethical issue, are more probable to have problems with other issues as well. Therefore, we used *oblique* rotation, which allows the factors themselves to be correlated.

The meaning of the factors can be deduced from the pattern matrix after the rotation. We chose the *promax* oblique rotation with a kappa value of 4 to get the results. When one applies promax rotation, an orthogonally rotated solution is again rotated to allow correlations among the factors. By this, small and moderate loadings are driven to zero, while larger loadings decrease as well, but not to zero. Promax is also a fast and inexpensive method to use (Tabachnick–Fidell 2007). We used a cut-off value of 0.4 for item loadings. Items that loaded on multiple factors with loadings of at least 0.4 were omitted as well and the factor analysis was rerun on the remaining items. The final results are shown in Tables 6 and 7.

Table 6 contains only the components with an eigenvalue over 1. It can be seen that the four factors explain 68% of total variance, which is a good result.

Table 6. Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	8.230	45.720	45.720	8.230	45.720	45.720	6.639
2	1.710	9.498	55.218	1.710	9.498	55.218	5.729
3	1.270	7.058	62.276	1.270	7.058	62.276	5.137
4	1.043	5.796	68.072	1.043	5.796	68.072	4.163

Source: own research

The identified four factors can be interpreted as a structure of ethical dilemmas (for the respective items and the factor loadings please refer to Table 7). *The first factor is about circumventing regulation and rules.* It contains eight ethical issues. These issues mean the breaching of certain rules or regulations in order to gain financial and other benefits. *The second factor is about favouritism/partiality/bias towards certain supplier(s).* Suppliers supposed to be equality treated, differentiation is to be made on performance or on predefined and accepted values (e.g. CSR). It contains five ethical issues representing those situations when the buyer or management violates the expectation of equal treatment. *The third factor represents the lack of competence.* It consists of three ethical issues, highlighting the importance of competent job fulfilment. Purchasing staff is supposed to

have the appropriate knowledge and skills to manage the supply base and the treatment of internal requirements. *The fourth factor is about improper information gathering.* It contains two ethical issues. Information is a sensitive resource. It can allow advantages and sharing certain information about business partners, which may result in competitive disadvantages to those parties.

Table 7. Pattern Matrix

	Component			
	1	2	3	4
7. Misuse of proprietary information belonging to employers or suppliers	.721			
11. False or misleading representation of demand or interest in discussions with suppliers or others	.602			
22. Abuse of expense accounts	.680			
23. Anti-trust or trade restraints issues	.757			
24. Unauthorised payments	.738			
25. Utilizing improper hazardous materials or procedures to reduce costs	.793			
S33. Purchaser insists upon supplier to support non-profit goals	.484			
S34. Allowing or tolerating illegal work to reduce costs	.643			
C1.Writing specifications that favour a particular supplier		.790		
C4. Using less competitive prices or terms for buyers who purchase exclusively from the supplier		.872		
C3. Allowing only certain suppliers to bid		.546		
12. Conflicts between opportunities for personal financial gain (or other personal benefits) and proper performance of one's responsibilities		.506		
20. Showing partiality toward suppliers preferred by upper management		.837		
27. Lack of knowledge or skills to competently perform one's duties			.747	
28. Failure to identify the customer's needs and recommend products and services that meet those needs			.889	
29. Failure to be objective with others in business dealings			.759	
9. Improper methods of gathering information from suppliers				.857
10. Improper methods of gathering competitors' information				.884

Source: own research

Conclusions

The aim of this paper was to identify new aspects of ethical issues in purchasing and to get a glimpse of the practitioners' perception. The main conclusions of our study can be summarised as follows.

Based on the review of the codes of conduct it was possible to identify some new issues which were not covered by previous research. However, the frequency with which these dilemmas were mentioned in the codes of conduct was low. The survey results showed low frequency for these issues as well. This may indicate that the major issues remained more or less the same during the last decades, despite the major economic changes and crises.

The perception of environmental and social issues was mixed. While environmental and social issues were indicated as missing elements, the incorporated issues were not indicated as significant. This could be the effect of legal regulations (e.g. public procurement) and the compliance programs of multinational companies. As purchasing and supplier codes of conduct were developed containing CSR and green aspects beside ethical issues, the international issues of ethics, CSR and green purchasing are known and connected. A further research may investigate the role of hypernorms (drafted in purchasing and supplier codes of conduct) at the extension of ethical issues towards sustainability issues. It would also be worth investigating the standardization of ethical and sustainability issues in purchasing due to hypernorms.

The internal structure of the identified ethical issues formed four groups: 1) the circumvention of regulation and rules in order to gain financial and other benefits, 2) favoritism/partiality/bias towards certain supplier(s), 3) lack of competence and 4) improper information gathering.

Earlier research found that ethical issues can be different in international comparison. Our investigation may suggest that not only the nationality of the purchaser, but the origin of the source may also cause problems: a firm with a mostly European supplier base faces other challenges than a company with global (especially low cost

country) supplier base (e.g. child labour is surely not a problem of the EU suppliers, however many codes of conduct indicated it as a major principle).

Our investigation led us to suppose a communicational gap among management fields as well. The different fields appeared to have different perceptions of ethical issues due to their different position in the user-buyer-supplier interface. This may indicate that regulations, compliance programs and codes of conduct promoted the awareness of certain ethical issues in general, but the lack of knowledge of management practices reinforces the perception of ethical problems (this is valid for the user, the sales and the purchasing management as well).

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Appendices

Appendix 1. List of company codes of conducts

1. IBM
2. Siemens
3. Thyssenkrupp
4. Grundfos
5. Colgate
6. Bayer
7. Volvo
8. Premier Inc
9. DSM
10. Sanofi-Aventis
11. BASF
12. Johnson and Johnson
13. Forest Laboratories Inc
14. HSBC
15. HP
16. Citi Group
17. Richmont
18. Tantaline
19. Sony
20. Sharp
21. AXA
22. Southwest
23. Apple
24. Arcadia Group
25. Philip Morris
26. RWE
27. SKF
28. Fiat
29. McDonalds'
30. Danone Group
31. Vodafone
32. Philips

Appendix 2. The questionnaire of the research

1. Please indicate your current position:
a/ Purchasing director/manager
b/ Purchaser/buyer
c/ Sales
d/ Other: …….

2. You are involved in:
□ Public procurement
□ Partly public procurement
□ Purchasing (without public procurement obligation)

3. Are you the member of the Hungarian CPO club?
□ Yes □ No

4. In your opinion/experience to what extent are the following ethical issues present in current business (purchasing) practice? Please indicate on a 1 to 5 scale (5 as very often and 1 if the item is not existing)!

1. Writing specifications that favour a particular supplier	1	2	3	4	5
2. Allowing a supplier to rebid after the closing date	1	2	3	4	5
3. Allowing only certain suppliers to bid	1	2	3	4	5
4. Using less competitive prices or terms for buyers who purchase exclusively from the supplier	1	2	3	4	5
5. Failure to provide prompt, honest responses to customer inquiries and requests	1	2	3	4	5
6. Making disparaging remarks about suppliers, their products, or their employees or agents	1	2	3	4	5
7. Misuse of proprietary information belonging to employers or suppliers	1	2	3	4	5
8. Misuse of sensitive information belonging to suppliers or others	1	2	3	4	5
9. Improper methods of gathering information from suppliers	1	2	3	4	5

10. Improper methods of gathering competitors' information	1	2	3	4	5
11. False or misleading representation of demand or interest in discussions with suppliers or others	1	2	3	4	5
12. Conflicts between opportunities for personal financial gain (or other personal benefits) and proper performance of one's responsibilities	1	2	3	4	5
13. Conflicts of interest involving business or financial relationships with customers or suppliers that influence or appear to influence one's ability to carry out his or her responsibilities	1	2	3	4	5
14. Conflicts of interest that involve working for a competitor, customer, or supplier without prior management approval	1	2	3	4	5
15. Misuse of company assets or property	1	2	3	4	5
16. Insider trading or other security trading problems	1	2	3	4	5
17. Receiving gifts or entertainment that influence or appear to influence, purchasing decisions	1	2	3	4	5
18. Allowing personalities to improperly influence the buying decision	1	2	3	4	5
19. Unfairly using the firm's purchasing clout to gain concessions from suppliers or others	1	2	3	4	5
20. Showing partiality toward suppliers preferred by upper management	1	2	3	4	5
21. Succumbing to low-balling, balt and switch, and backdoor selling practices	1	2	3	4	5
22. Abuse of expense accounts	1	2	3	4	5
23. Anti-trust or trade restraints issues	1	2	3	4	5
24. Unauthorised payments	1	2	3	4	5
25. Utilizing improper hazardous materials or procedures to reduce costs	1	2	3	4	5
26. Discriminating against small, disadvantaged and minority owned business in the supply base	1	2	3	4	5

27. Lack of knowledge or skills to competently perform one's duties	1	2	3	4	5
28. Failure to identify the customer's needs and recommend products and services that meet those needs	1	2	3	4	5
29. Failure to be objective with others in business dealings	1	2	3	4	5
30. Forcing reciprocal buying	1	2	3	4	5
31. Negotiating process does not take the cultural norms of the negotiating parties into account	1	2	3	4	5
32. Inaccuracy of records and reports	1	2	3	4	5
33. Purchaser insists supplier to support non-profit goals	1	2	3	4	5
34. Allowing or tolerating illegal work to reduce costs	1	2	3	4	5

Please indicate if any ethical issue is missing from the list!

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The relationship between R&D and higher education – What lies ahead for Europe?

ISTVÁN LÁBAS[1] – ÉVA DARABOS[2]

The aim of this study is to present the measures to be taken in the field of higher education from the Europe 2020 Strategy programme's most important elements, considering them from the competitiveness point of view. We highlighted both the EU and the national objectives in terms of R&D expenditures and the number of 30-34 years old age group with higher education qualifications, and we have surveyed the results achieved so far and the trends experienced regarding performance, based on the most recent data. According to the statistical data, it can be stated that the GDP-proportional expenditures relating to research and development have increased modestly over recent years, but they lag behind the 3% defined in the Strategy, with only Finland, Denmark and Sweden having fulfilled the EU expectations. In most countries, significant progress has been made towards reaching the declared target of 40% of the population obtaining a higher education qualification. In 2013, the performance of the 28 union countries lagged behind the Europe 2020 Strategy's objective of 40% by 2.9 percentage points; this reinforces the assumption that an ever-increasing proportion of the European population are graduates and this fact lays the foundation for economic growth based on knowledge and innovation.

Keywords: Europe 2020 Strategy, GDP, higher education, research and development, number of students.

JEL codes: N33, O3, O57.

Introduction

The study deals with changes concerning the numbers of students in higher education; it presents data on a regional level as well as an international comparison. It examines how research and development expenditures have changed in individual countries, and to what extent

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this has contributed to the growth of the economy. The research is based on statistical data from the years 2009-2013 which marks, on one hand, the elaboration and assessment of the Lisbon Strategy and, on the other hand, the launching of the Europe 2020 Strategy. At the same time, irrespectively of the stated objectives, the international financial crisis had a significant effect on the creation of both programs, although these effects cannot be separated numerically. In Hungary, in the 2000s, the accession to the EU meant that the tasks relating to the introduction of the Bologna Process had to be carried out in line and accordance with the programs mentioned above.

The first Lisbon Strategy was accepted in 2000 with the main objective that the EU should become the most competitive region in the world by 2010. To this end, a program of concrete goals was drafted[3]. However, it had already become apparent in the first half of the decade that, due to the different states of development of the member states, the results regarding growth and employment are quite mixed (Losoncz 2007) and the main goals of competitiveness, as well as the research and development target, cannot be fulfilled (Kőrösi 2012). Consequently, the program has been modified several times and in 2002 an agreement was reached that member states should spend 3% of the GDP on R&D by 2010 (Sapir et al. 2004; Mosconi 2015).

In 2003, the Council of Ministers of Education established indicators[4], with the goal that the community could get explicit

[3] (1) Establishing a knowledge-based society and economy, (2) dynamic economic growth, (3) ensuring economic competitiveness in the global market (4) sustainability, protection of the natural environment, and (5) social cohesion, establishing total employment as far as possible.

[4] (1) Decreasing the EU average rate of early school leavers from 18.8% to 10%; (2) in addition to improving the proportion of women, increasing the number of individuals with mathematical, natural science and technical qualifications by an average of 15%; (3) increasing the rate of individuals with higher and secondary education qualifications from 75% to 85% on average; (4) improving reading-comprehension of 15-years-olds according to the PISA-measurement; (5) increasing the proportion of those participating in life-long learning from 8.5% to 12.5%.

feedback about how much a member state contributed to the achievement of common goals. At the same time, the indicators also give an opportunity to substitute the measurement of the interaction between education and the economy with the efficiency achieved in the indicator in question (Kovács 2004). Essentially, Máté (2015) also claimed that an increase in the level of human capital (the number of completed school years) is positively correlated with the output per capita growth in high-skilled sectors in OECD countries.

Higher education efficiency indicators (e.g. the number of graduates, the proportion of graduates in certain age groups of the population, the proportion of engineering and science graduates, the number of PhD graduates) appear in the sustainable development strategies' indicator sets of the European Union, and also of its member states (Karcagi-Kováts 2011).

The focus of the Europe 2020 Strategy is to preserve the competitive economic power of the community, something which affects the lives of 500 million people. The primary reason for this is to avoid the 28-member, much more heterogeneous, EU lagging behind its main economic and political competitors. The new strategy, preserving the general goals of the Lisbon Strategy, drafted five main objectives[5] for the member states (Eurostat 2015a), objectives which they have only partially built into their action plans (Kőrösi 2012). The fulfilment of these objectives is not binding, but a proposal based on the advanced economic state and structural arrangement of the member states and their national objectives was determined according to their starting position (EC 2010).

[5] (1) Reaching an employment rate of 75% in the age-group between 20 and 64; (2) increasing R+D investments from 1.9% to 3%; (3) increasing the rate of energy efficiency, decreasing energy consumption, decreasing carbon dioxide emissions; (4) decreasing the rate of those not finishing primary school to below 10% and 40% of those in the 30-34 age group should be participating in higher education or have a degree; (5) reducing the number of people living below the poverty line by 25% (this line is different in different countries).

Among the objectives of the programs, we will examine only the development of R&D expenditures and the proportion of the population with a higher education qualification, as well as their relationship with economic growth.

Methodology

The first step during the research was to review the relevant literature related to the subject.

During the analysis we have used data from the Hungarian Central Statistical Office and Eurostat for the years 2009-2013. The reason for choosing this period is partly because by that time the economic effects of the financial-economic crisis could be felt in most countries, and partly because in 2010 the Europe 2020 strategy was launched, which places a special emphasis on resources devoted to R&D and on the proportion of graduates among the 30-34 age group. In our analysis we focused on the GDP data from countries with the greatest number, an increasing number, or a decreasing number of students, with the aim of proving that the number of students in higher education is rising in those countries where the economic performance is also high. At the same time, we show that there are countries where the economic performance in the period under examination is low, but the growth of student numbers is significant. Following this we compare the development of the number of full time students in higher education in the statistical regions in Hungary, and indicate the differences between the regions.

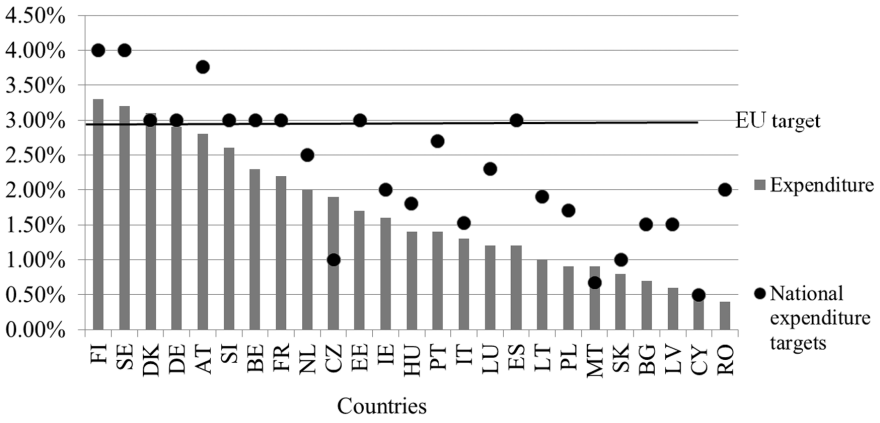
To process the statistical data, we used the Microsoft Excel spreadsheet and graphics program.

Data and results

Progress towards the Europe 2020 Strategy's objective related to research and development

The EU spending on research and development has grown somewhat recently but remains below the objective of 3% determined in the Europe 2020 Strategy (Figure 1). The objective for R&D measures the gross domestic expenditures of the public and private sectors spent on research

and development as a percentage of the GDP. The extent of public funding directly reflects attempts to support R&D. The follow-up of private funding allows an assessment of the efficiency of policies which are aimed at involving and furthering research and development investments performed in the area of business, as well as establishing and enlarging knowledge-intensive undertakings (EC 2014). According to the Eurostat data, the EU-level GDP-proportional permanent expenditure on R&D fluctuated around 1.8% in the period between 2000 and 2007. It was a little over 2% in 2009, then it moderately increased, but even so, it is clearly lower than the performance of the USA (Figures 1 and 4). Based on the developmental trend so far, it is not likely that the Strategy's objectives related to research and development will be fulfilled successfully by 2020. To reach this target, in the next few years the developmental tempo of the union's R&D expenditures should almost double in comparison with the period between 2007 and 2012. There are already forecasts that R&D investment will only increase to 2.2% by 2020. If member states succeed in reaching their objectives, this proportion could reach 2.6% (EC 2010; EC 2014).



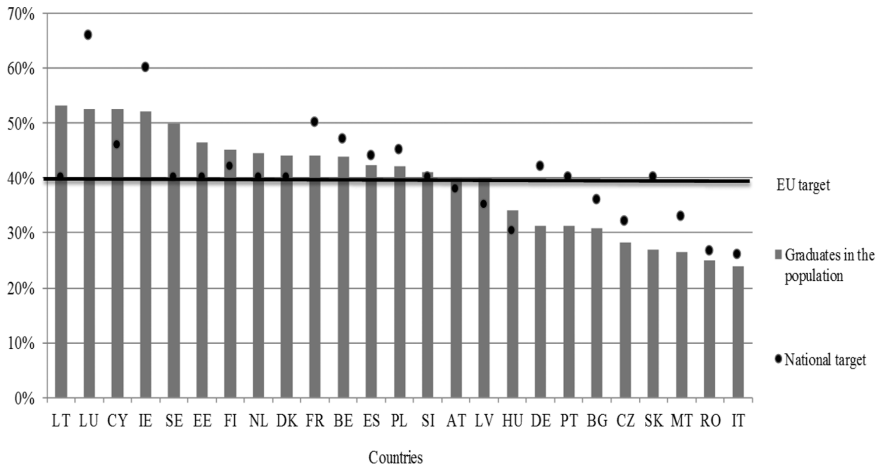
Source: Eurostat 2015b

Figure 1. Expenditures and national targets for R&D as a % of GDP (2013)

The intended goals for R&D indicate endeavours at different levels by member states. Sweden and Finland have set the highest (4%) R&D intensity target for 2020, but Finland (3.3%), Denmark (3.1%) and Sweden (3.2%) had already met the EU expectations in 2013. Cyprus declared an extremely cautious target of 0.5%, which has already been reached. Furthermore, the data for Austria (2.8%), Germany (2.9%) and Slovenia (2.6%) for 2013 are hardly behind both the national and EU objectives. The commitments of Romania and Portugal are the most difficult to achieve: by 2020, Romania wishes to increase its GDP-proportional R&D expenditure from 0.4% to 2% and Portugal would like to increase it from 2.7% to 3.3%. Hungary undertook to reach 1.8% and had already fulfilled 1.4% by 2013. Optimistic and pessimistic scenarios were also set when deciding the target (Borbás 2012), but it seems that the country can certainly fulfil its national objective by the end of this decade.

Progress towards the Europe 2020 Strategy's objectives related to education

In most member states significant progress was made towards achieving the 40% target established by the Europe 2020 Strategy, for obtaining a higher educational qualification (or its equivalent). The aim is to increase the proportion of graduates to 40% in the 30-34 age group. At the EU level, the 22.4% measured in 2000 was followed by 27.9% in 2005 and 35.7% in 2012; this represents a 13.3 percentage point growth over 12 years. The EU had already made significant progress towards achieving its stated objective by the beginning of the period, and the number of those with higher education has also increased. The performance of the 28 EU countries in 2013 was only 2.9 percentage points away from the Europe 2020 Strategy objective of 40%. These figures reinforce the assumption that the proportion of the EU population studying for a higher education qualification is increasing continuously. The number of students participating in higher education was 20.0 million in the EU-28 countries in 2012 (EC 2014; EC 2010, Eurostat 2015c).



Source: Eurostat 2015c

Figure 2. Proportion of graduates in the 30–34 age group (2013)[6]

According to the statistical data (Eurostat 2015c), the proportion of graduates is the highest in Lithuania, where 53.3% of the age-group in question have a higher education qualification. Luxembourg is second with 52.7%, and Cyprus is the third with graduates making up 52.2% of those aged between 30 and 34. The EU expectation of 40% was reached in 2013 by six countries. Bringing up the rear is Turkey[7] (Eurostat 2015b), where 21% are graduates, and which is overtaken by Italy with 23.9%. In Romania, 22.4% of those between 30 and 34 have graduated higher education (Figure 2).

The different levels of the member states' efforts are reflected in the fact that national objectives range between 26% in Italy and 66% in

[6] Figures 1 and 2 show data of 25 EU countries only, as the UK has not subscribed to the targets, Greece was subject to procedure in 2013 and Croatia joined the European Union in 2013.

[7] Turkey is not a member of the EU, however, the number of students has significantly grown during the period examined and the pace of the increase exceeds that of developed countries.

Luxembourg. In 2013, ten member states – Lithuania, Luxembourg, Cyprus, Sweden, Estonia, Finland, Denmark, the Netherlands, Slovenia and Austria – had already reached their objectives. Portugal, Croatia, Slovakia and Malta are the furthest away from reaching their targets. Unlike Italy, with its plan for 26% participation, some countries have set quite high goals: for example, 40% in the case of Slovakia and Portugal, 60% in the case of Ireland and 66% for Luxembourg. According to the forecasts for 2020, most countries will probably reach their objectives – supposedly excluding Malta, Portugal and Slovakia.

The evolution of the number of students based on international data

Firstly, we examine the evolution of student numbers at an international level and then in the Hungarian regional units. The data in Table 1 show the extent of the increase/decrease in the number of students in higher education in different countries. We have presented the data of those countries where the number of students is the highest/lowest, as well as those where the change is significant. In addition to the chosen EU countries, data for Switzerland, Turkey and the USA are also shown.

Table 1. Number of students in the higher education (2009–2012)

Countries/Year	Number of students (thousand persons)				Change 2009–2012 (thousand persons)	Change rate previous year=100%		
	2009	2010	2011	2012		2010	2011	2012
Austria	308.2	350.2	361.8	376.5	68.3	1.14	1.03	1.04
Belgium	425.2	445.3	462.4	477.7	52.5	1.05	1.04	1.03
United Kingdom	2415.2	2497.2	2492.3	2495.8	80.6	1.03	1.01	1.00
France	2172.9	2245.1	2259.4	2296.3	123.4	1.03	1.01	1.02
Netherlands	618.5	650.9	780.0	793.7	175.2	1.05	1.20	1.02
Croatia	139.1	140.9	154.0	157.3	18.2	1.01	1.10	1.02
Poland	2150.0	2148.7	2080.3	2007.2	-142.8	1.00	0.97	0.96
Latvia	125.4	112.6	103.9	97.0	-28.4	0.90	0.92	0.93
Hungary	397.7	389.0	381.9	380.8	-16.9	0.98	0.98	1.00
Germany	2438.6	2555.6	2763.1	2939.5	500.9	1.05	1.08	1.06
Italy	2011.7	1980.4	1967.6	1925.9	-85.8	0.98	0.99	0.98
Romania	1098.2	999.5	871.8	705.3	-392.9	0.91	0.87	0.81
Spain	1800.8	1879.0	1950.5	1965.8	165.0	1.04	1.04	1.01
Norway	219.3	224.7	229.7	238.2	18.9	1.02	1.02	1.04
Switzerland	233.5	248.6	257.7	269.6	36.1	1.06	1.04	1.05
Turkey	2924.3	3529.3	3817.1	4353.5	1429.2	1.21	1.08	1.14
USA	19102.8	20427.7	21016.1	20994.1	1891.3	1.07	1.03	1.00

Source: author's own calculations based on KSH 2014a data.

A growth in the number of students can be seen in several countries; the increase ranges from a few thousands to an extra 1.9 million students (in the USA). Among the small countries only Austria is outstanding, where the number of students grew with 13.6% from 2009 to 2010 and the growth continued at a yearly rate of about 3-4%, summing up a total increase of 68 000 students over four years. The reason for this is that education is free[8] in Austria and participants can "easily" get onto a course, there being no entrance exam, except for 8-10 majors (e.g. medical and journalism majors) (Eduline 2012).

An unambiguous and significant decrease in student numbers has occurred in some Eastern European countries (Poland, Latvia, Lithuania, Hungary, Romania, Slovakia, and Slovenia) and in Italy.

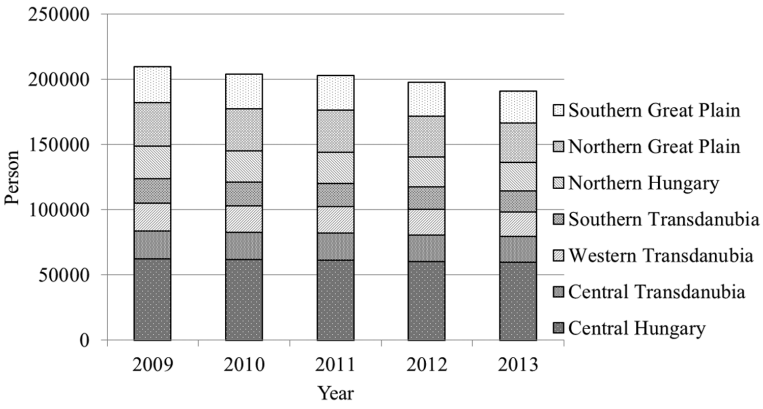
Evolution of the number of students in Hungary

Hungarian higher education has gone through a significant change; as a consequence, the number of university students continuously increased in the 1990s and in the beginning of the 2000s. The subsequent decrease in student numbers was initially caused by the decline in the number of participants in evening, correspondence and distance education courses. From 2010, this decline extended into full-time education, also as a result of education policy measures meaning that higher education has been put at a disadvantage (Ladányi–Szemerszki 2014).

In 2012, the higher education policy introduced two important changes, whose aim was to modify the internal composition of higher education rather than directly affect the total number of students. One of these changes was aimed at changing the proportions of students studying within different training areas. Two elements were employed to achieve this: defining the quotas and modifying the support system.

[8] Students have to pay only 20 EUR for a semester as a so-called tuition fee. If a student does not complete a first degree course within 8 half-years, the student will have to pay a tuition fee of 360 EUR. The period of "toleration" lasts for seven semesters in the master's degree program.

There were increases in the numbers of funded students in the natural sciences, technical subjects, IT and life sciences, but this involved a fall and almost complete reduction in the number of state-funded places in Law, Business, Economics, and Arts majors. In addition to the government's declared preference for certain training areas, there were no alluring jobs, salaries or enticing labour market forecasts in certain subjects (Temesi et al. 2013). However, according to the statistical data, the number of students has not increased in these majors, even though the state finances them. In those majors where state aid has ceased, potential students can choose another course financed by the state, but practice shows that students prefer to pay rather than change career path – they want to graduate in Law, Economics etc. Students who pay can decide to choose among state, private or foreign higher education institutions. Whatever they choose, the composition effect desired by the government will not occur, or will only occur to a limited extent. For students studying in Hungary, a tuition fee has to be paid, which is limited by the parents' income. If a student goes abroad, then there is an absolute decrease in the number of students in Hungary. The government tried to keep students, mainly doctors, in the country by means of a



Source: author's own edition based on KSH 2014b data

Figure 3. Number of students in full-time training in Hungarian higher education by regions, 2009–2013

student contract, but this tool is rather a "threat" than a reasoned solution. The student can borrow a student loan to finance the course. However, this did not prove to be an acceptable solution in previous years, because graduates' starting salaries are low, and so the repayment instalments represent a huge burden during the first years of a career.

The continuing migration of people with higher education qualifications puts Hungary at a competition disadvantage. The experience of previous years shows that Hungary's present higher education system produces a well-educated labour force which is "sucked up" by the labour markets of other countries, and so strengthens the economy there.

Figure 3 shows the number of full-time students participating in basic and master programs[9] from Hungary in the period 2009–2013, grouped by residency. In Hungary, a process contrary to the European trend has started. In 2006, 380 000 students were studying on basic- and master courses; this number decreased to 328 000 in 2009 (despite education being free) and to 282 000 by 2013. At first, it was just the number of participants in correspondence and distance courses which decreased, but from 2009 the number of students on full-time courses also declined, from 222 000 to 209 000, representing a 6.4% reduction nationwide. (KSH 2014c)

By examining the NUTS2 statistical regions of the country (Figure 3), it can be stated that a sharp contrast appears in the number of students in Central Hungary and in the other six regions of the country. The smallest fall has occurred in Central Hungary (only 4%), but it has been much greater in the provincial universities: 17.7% in Southern Transdanubia, 14.3% in Northern Hungary, 10.8% in the Northern Great Plain and 12.1% in the Southern Great Plain. The decisive role of

[9] The Hungarian higher education system changed to the so-called multi-cycle course in 2006; the three cycles are the following: basic-, master- and doctoral courses. The primary aim of the system was to ensure much more flexible frameworks for continuing education and to comply with the principle of life-long learning.

Budapest is indisputable. Its cause is to be found in the popularity of its famous universities and colleges, in the high level of education and in the more or less appropriate relationship between supply and demand. This region also features as the main centre of Hungary from the point of view of trade, economy, education etc. Accordingly, there are many more opportunities for employment here than in any other region.

R&D expenditures and GDP

A state should spend on higher education because a considerable public benefit results through education (Friedman 1996). However, from a state's point of view, there is an important question to answer: whether this investment will be refunded over time? Investment in human capital can be defined as a very costly and time-consuming process which is refunded in the longer term.

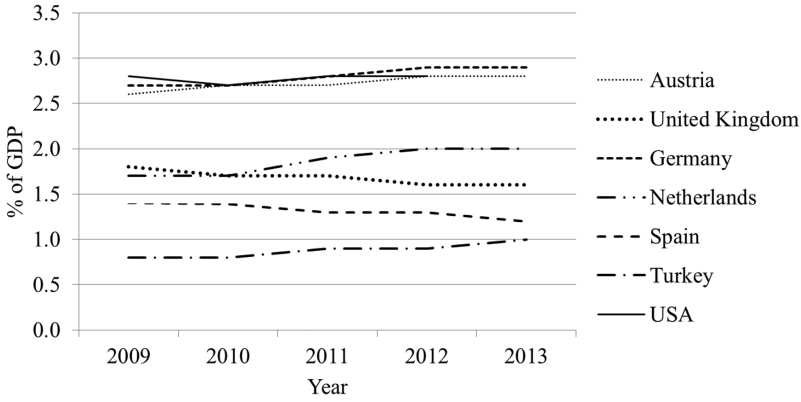
In the beginning of this study, we claimed that a close relationship applies between qualifications and GDP and the more of its GDP a country "devotes" to education, the more educated the intellectual labour force will be.

In the following, we present the total GDP (Table 2) and the share of the gross domestic product created used to finance research and development (Figure 4) of countries where the criterion of an increasing number of students has been met, according to the available data.

Table 2. GDP of countries with an increasing number of students, 2009–2013 (billion EUR)

Country	2009	2010	2011	2012	2013
Austria	286.2	294.2	308.7	317.2	322.6
United Kingdom	1663.6	1816.6	1836.9	2041.5	2017.4
Germany	2456.7	2576.2	2699.1	2749.9	2809.5
Netherlands	617.7	631.5	642.9	640.6	642.9
Spain	1079	1080.9	1075.1	1055.2	1049.2
Turkey	440.4	550.4	555.1	612.4	617.8
USA	10337.5	11287.9	11147.9	12580.3	12625.6

Source: KSH 2014d



Source: author's own design based on KSH 2014e data.

Figure 4. R&D expenditures as a % of GDP of countries with an increasing number of students, 2009–2013

Based on the data from Figure 4, it can be seen that Germany spends the highest proportion of its GDP (2.9%) on R&D, closely followed by Austria (2.8%) and the USA (2.8%). However, the amounts differ significantly: the Germans spend 81.5 billion EUR, the Austrians spend 9.0 billion EUR, while the Americans spend 353.5 billion EUR on research and development.

In Turkey, only 0.9% of the GDP is spent on research and development, but the GDP created has increased by 177.4 billion EUR over four years and the number of students has also increased significantly, by more than 1.4 million. In 2012-2013, the Netherlands and United Kingdom decreased their R&D expenditures to a modest extent.

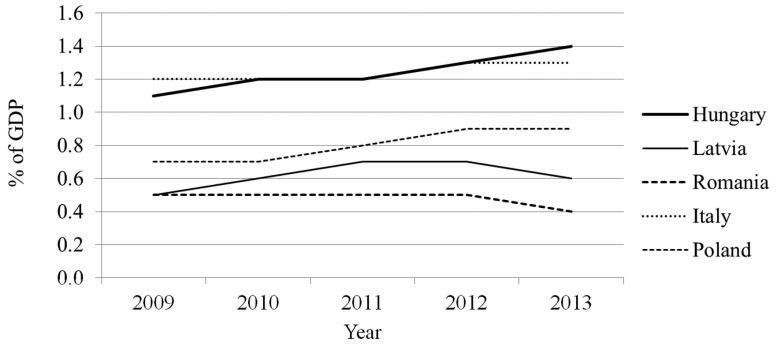
In Table 3, the GDP of those countries are shown where the decrease in the number of higher educational students was the greatest and Figure 5 presents the share of GDP spent on research and development by the same countries. Hungary spends almost as much of its GDP on research and development as Italy (1.3% on average), but there is a significant difference in the amounts expressed in EUR:

almost 1.3 billion EUR in Hungary, but 21.0 billion EUR in Italy. Latvia and Romania spend only a very small proportion of their GDP on supporting R&D activities.

Table 3. GDP of countries with a decreasing numbers of students, 2009–2013 (billion EUR)

Country	2009	2010	2011	2012	2013
Hungary	93.4	97.8	100.4	98.7	100.5
Poland	314.7	359.8	377.0	386.1	396.1
Latvia	18.8	18.0	20.2	22.2	23.3
Romania	120.4	126.7	133.3	133.8	144.3
Italy	1573.7	1605.7	1638.9	1615.1	1609.5

Source: KSH 2014d.



Source: author's own design based on KSH 2014e data.

Figure 5. R&D expenditures as a % of GDP of countries with a decreasing numbers of students, 2009–2013

Research and development activity has been increasingly seen as a key tool which creates revenue from economic activity over several years (Dienes 2014). This change of attitude developed gradually as a result of a long process and its role in economic policy is now very important; knowledge and skill accumulated in this area has been recognized as a means of production tool. Nowadays, one of the important indices of a

country's economic development is the evolution of its R&D expenditures. Further important information for economic operators and investors is the share business enterprises, research institutions and higher educational units receive from R&D expenditures.

Table 4. Proportion of R&D expenditures received by business enterprises, research institutions and higher educational units in 2013 (%)

Countries	Business enterprises	Research institutes	Higher education units
Austria	68.6	5.1	25.6
United Kingdom	64.5	7.3	26.3
Germany	67.8	14.7	17.5
Netherlands	57.5	10.7	31.8
Spain	53.2	18.7	27.9
Turkey	45.1	11.0	43.9
USA	69.8	12.3	13.8
Hungary	69.4	14.9	14.4
Latvia	28.3	29.0	42.7
Poland	43.6	26.8	29.3
Romania	30.7	49.2	19.7
Italy	54.0	14.9	28.2

Source: KSH 2015.

In countries with an increasing number of students about 53-70% of the R&D expenditures flow into the business sector and 14-32% into higher education (Table 4), except from Turkey, where the proportion of R&D expenditures received by higher education units is 43.9%.

The picture is more varied in the countries with a decreasing number of students. In Hungary, business enterprises' share of research and development expenditures is more than two-thirds, while that of higher education units is barely 14.4%. Higher education units received in 2013 a more important share (42.7%) of R&D activities in Latvia, research institutes (49.2%) in Romania and the business sector in Italy (54.0%) and in Poland (43.6%).

Conclusions

With the requirements of sustainable development and the improvement in competitiveness in mind, the Europe 2020 Strategy worded specific numerical proposals for member states, which went beyond general objectives. The EU expenditures related to research and development have recently grown slightly, but they lag behind the 3% objective defined by the Strategy. Significant progress has been made in increasing the number of people with a higher education qualification, and some countries, such as Lithuania, Cyprus, Ireland, Sweden, and Finland, have already reached the union objective (40 %) by the middle of the period. With regard to the commitment for 2020, most countries will probably fulfil their national targets.

Our analysis supports the statement according to which countries with better economic performance spend more (2-3%) on R&D and have an increasing number of students in higher education, however Turkey spends only 0.9% of GDP on R&D, but its number of students increased from 2.9 to 4.3 million in the reference period (2009-2013). The biggest reduction in the number of students occurred in Latvia, Romania and Italy.

Statistical data show that Hungary has not been among the leading countries in terms of R&D expenditures, the number of students in higher education, or graduates; indeed, as Harsányi and Vincze (2012) noticed earlier, Hungary can be found rather at the rear of the EU countries' list. Therefore, the education policy should pay much more attention to adult education, since this is an important element in the economic and social development of a country (Polónyi 2014).

The national target set for Hungary by the EU 2020 Strategy regarding the share of the 30-34 age group with a higher education qualification, is of 34% (below the EU target of 40%); this target was already achieved in 2014. Due to demographic reasons, a large-scale reduction can be predicted in the number of young people in the higher education age bracket over the next few years (Berde 2013), which conceals a so-called historic opportunity: the share of graduates can be increased without enlarging the existing capacity of higher education,

only the present number of students needs to be retained. Of course, the benefit from the demographic headcount reduction cannot be counted as a long-term economic goal in this sense.

With the continuous development of social and economic life, it is to be hoped that higher educational activity will be increasingly appreciated in Hungary, as well as in other EU countries.

To stop the further reduction in the number of students in the countries with negative trends, the opportunities for learning in higher education should be popularized, and there should be greater recognition of the moral and material value of higher education.

Altogether more than half of R&D expenditures flow into the corporate sector. Enterprises can give a mandate to the other two sectors, can get ideas based on the results produced by higher education and research institutions, and can cooperate with them in order to solve innovation tasks. One economic policy dilemma brought to the surface by today's financial crisis is precisely the question of which area needs a deeper integration. It had already been previously recognized in the EU member states that the utilization of R&D resources should be harmonized at national, sectoral, as well as regional levels.

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Small businesses and their social media audiences – What inspires consumers to like pages of small catering establishments[1]

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It is primordial for brand owners to map their own community, to stimulate their social-focused communication activity. This is especially true for (typically small) catering enterprises, where social media is often the only available communication tool. It is then important to investigate the SME environment and provide adapted solutions to their needs. Moreover, a strong influence of the owner/ managers' personality can turn to competitive advantage in the high-cluttered and personalized environment of social media. In our empirical research, we content analyse consumer narratives (n=151) in search of the inner motives of members of brand communities for engaging with their most preferred catering establishments. Based on our analysis, four categories of motives (information needs, affective motives, individual and social factors, thematic connections) were found and analysed. Our categories confirm prior studies on consumer motivations in social media, while our sub-categories contain novel elements that contribute to the lacking literature of social media use within SME marketing.

Keywords: small and medium-sized enterprises, social media, brand communities, user involvement, inner motivation.

JEL codes: M37, M31.

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Introduction

Social media is a new opportunity for organizations to take advantage of the interactive properties of digital networks in their communication with consumers and other stakeholders (Cheung–Lee 2012). While all forms of communication (one-to-one, one-to-many, and many-to-many) are accessible in social media, organizations need to be aware of the fact that everyone can be a content producer and provider on these channels, and the organization is in direct competition with all other users in a communication environment characterized by high degrees of clutter (Ha–McCann 2008). Moreover, as a 2011 IBM study shows (Baird–Parasnis 2011) companies have some major misconceptions regarding why consumers interact with them via social media. For instance, while totally against the logic of the social character of these platforms, traditional marketing activities, such as discounts and sales come in first, while being part of a community through these channels is less important. However, to build long-term brand involvement, organizations communicating in social media need to primarily focus on becoming an organic part of the consumer-to-consumer conversations (Kozinets et al. 2010). In this context, effective marketing communications need to follow a strategic approach (Csordás et al. 2014), at the expense of a purely short-term transactional approach, so typical for small businesses.

The new communication forms offered by social media go hand in hand with the extending organizations' marketing communications opportunities, scope and tasks. The democratization of information brings about the fact that organizations are not alone anymore to communicate to their target audiences, but users increasingly talk to each other in contexts of consumption (Parsons 2011). This phenomenon introduces a new scope for the marketing of a hybrid communication mix: the organization can keep on communicating to its users through more or less targeted paid channels, but they also have the opportunity to easily create their own interfaces on channels consumers use anyway, and also to access, investigate and potentially to integrate earned media such as related consumer discussion into

their marketing communications strategy. Facebook, the most used social networking service worldwide (Kemp 2015), the focus of our present study is one such channel where organizations can create brand pages which later can operate as a brand community where the organization is being offered a direct communication channel with its stakeholders, supporting their sharing of opinion thus integrating various media channels and communications types to one central space. Thus obtaining valuable consumer information and reacting to them emerges as a new challenge to organizations, hence the need to prospect various aspects of the participation patterns of their stakeholders.

A Facebook community can thus provide a wide range of opportunities for the organization: to listen to their consumers, communicate to and with them, to engage them, to assist them in facilitating consumers making social ties while communicating with each other about the brand (Cova–Cova 2002), and to participate and cooperate in the improvement and development of the organizations' products and services. Thereby – even though it is hardly controllable – the organization can follow and influence the diffusion of user-generated information (Mangold–Faulds 2009).

Organizations can not only inspire consumer commitment through social media channels, but they can also boost loyalty in case they succeed in building a viable community, by giving consumers a reason for continuously interacting with the brand. According to Parent et al. (2011) the organization is capable of triggering consumer activity and participation by offering them relevant contents. This activity can be referred to as the practice of content marketing, or in a wider framework, that of experiential marketing.

These capabilities empower in particular small and medium-sized enterprises, which often work with limited resources but can flexibly adapt to new environments, to build viable connections with their consumers and to intensify them using an adapted social media strategy. Academic research so far, however, is very limited in the area of social media used in small and medium-sized enterprises. Our article

tries to contribute to filling in this gap by first examining the specificities of the SME marketing, then characterizing virtual communities and in the final part, by presenting the results of our study on narratives about small catering establishments' virtual communities.

Characteristics of SME marketing

Small and medium-sized enterprises[5] (hereafter: SMEs) can be considered in many aspects as the motor of economic growth, and thus a backbone of a country's economic activity. The dimensions that most highlight their importance are the stimulation of job creation, competition, local and regional economic development, innovation and entrepreneurial skills (Dallago 2011). In the European Union, SMEs are a key sector as much in terms of employment volume, as in their contribution to GDP growth, investment, and export (Klein 2014).

The definitions of marketing – however – mostly apply to a corporate environment. Carson (1993) suggests that generic marketing terminology needs to be adapted to fit the particularities of SMEs. Although the definition of marketing for the SME context is now present in the marketing literature, it is not widely adopted. A common point is that the SME marketing is often associated in these definitions with entrepreneurial behaviour (Reynolds 2002). According to a number of sources, adapted marketing actions are as much inherent to SMEs as to any other type of business, however the former are heavily influenced by the owner/managers' personality. Yet, as owner-managers often have a wider scope of business goals and ways of conducting business than large corporations, a viewpoint in the literature argues

[5] Are considered as small and medium-sized enterprises those enterprises with a maximum of 250 employees, and that have either an annual turnover not exceeding EUR 50 Million, or an annual balance-sheet total not exceeding EUR 43 Million, that equally conform to the criterion of independence (i.e. those which are not owned as to 25% or more of the capital or the voting rights by one enterprise falling outside the definition of an SME) (European Commission Recommendation 2003/361/EC).

that there cannot be a valid unified description of marketing for the SME environment (Simpson et al. 2006).

According to Reijonen (2010), the main goals in marketing in a SME environment do not differ notably from the general conception (i.e. informing consumers about the organization and its products and services; increasing sales; marketing communication), but the establishment and development of significant and sincere relationships with consumers and business partners is of primary importance in the sector (Hill 2001). The SME marketing is a process of planning and implementation during which a SME proceeds to the elaboration, pricing, communication and distribution of ideas, goods and services with the aim of satisfying individual and organizational goals. Moreover, a marketing process focused on SMEs needs to take into account the different contexts and particularities of the SME environment, such as limited resources, the lack of specialist marketing knowledge, a limited impact on market processes due to their size, and lastly, a strong influence of the owner/managers' personality on the organization's marketing activities. Because of this latter, the SME marketing is in many aspects more irrational and unplanned than its corporate counterpart, and it relies more heavily on the force of the owner/managers' personality and social networks (McCartan-Quinn–Carson 2003), making the SME marketing more informal and casual, more unstructured and spontaneous, and characterized by a slower, reactive adaptation to industry norms (Gilmore et al. 2001).

By dint of the resource constraints, the SME marketing as a whole fails to compete with established companies in the sector. The main objective of our paper by analysing the motives behind their fan community is to investigate a channel where SMEs are able to compete with larger companies in their own way.

Motives to join virtual communities

A common misconception in digital marketing is the fact that organizations need only to create virtual spaces for communities to appear – however these spaces, as much as the communities that thus

emerge need to be managed continually. Thus, to maintain these virtual communities, it is necessary for the organization to generate and support user activity in a strategic manner, requiring both financial and human resources (Csordás et al. 2014). A central element in assisting to the creation and consolidation of a virtual community is to explore the reasons that influence individuals to participate in virtual communities as motivation has been shown to appear as a causal factor for actual behaviour (Goldsmith–Horowitz 2006). In doing so, it is worth considering that consumers react differently to marketing communications in digital and social contexts (Piskorski 2011).

The need to explore user motivations is supported by de Valck et al. (2009. 185) who identify three key streams of research for virtual communities: 1) investigating what motivates people to participate in and contribute to online communities; 2) how companies can use online consumer conversations to extract marketing knowledge; 3) the nature of brand communities and their effect on consumer behaviour. Addressing these issues contributes to the organizations' being able to actively manage their brand communities and create marketing value from them.

The study of the main motivations for the use of social networks can contribute to the investigation of the motivations for joining company-generated Facebook brand communities. Social networking sites' use motivations that can be categorized as 1) cognitive (e.g. information gathering); 2) entertainment and recreation; 3) social connection (e.g. maintaining relations, social interaction); 4) habitual use and pastime; 5) identity creation and self-expression (Alhabash–McAlister 2015. 4).

By mapping the motives for joining social networks such as Facebook, businesses can explore which factors they should act upon in order to trigger consumers joining the brand community established by the organization. Among these motives are 1) social connection (maintaining relationships with friends and acquaintances), 2) shared identities (developing new relationships with people with similar interests, e.g. through discovering new groups or communities), 3) content (exploring, consuming, sharing various contents), 4) social

network surfing (a sort of observation; gathering information about friends, friends of friends, etc.), 5) social investigation (gathering information about new acquaintances), and 6) status updating (monitoring SNS's news streams) (Joinson 2008).

Davis et al. (2014) identify five core drivers of use of brand communities in a social media context: functional, emotional, self-oriented, social and relational. A functional need is composed of information needs, access to responses, the evaluation of a service proposal, and the wish to access special offers. The emotional motivations for brand interaction can include the need for easing personal problems, the experience of feeling recognized, privileged, and the satisfaction of curiosity. Self-oriented brand consumption refers to the need for self-actualization and self-branding. The last two categories express the double role of brand communities in maintaining relationships. Social motivations represent the need to get to know and interact with other peers, members of a community. Relational motivations represent the need for interacting with the brand, for co-creating a service offering and for a personalized brand interaction, establish a personal relationship with the brand (Davis et al. 2014).

Methodology and sample characteristics

SMEs may have difficulties in properly using Facebook as a strategic marketing tool for they are facing a continuous and ever growing communication clutter. Moreover, lacking the proper marketing research tools, they have a limited knowledge of users' motivations and needs as members of their brand community. In this perspective, the main objective of this paper is to investigate users' narratives of their experience as members of various virtual brand communities of small businesses (limited in our study to catering establishments) in order to answer the following research questions:

RQ1: What motives can be identified that drive the activity of fans of brand communities related to small businesses in the online sphere?

RQ2: How can these motives be characterized and utilized by small businesses?

While there is abundant research in the area concerning the motives of fanning brands' social media pages in general, we argue that the above-mentioned specificities of the SME marketing call for a targeted investigation of the topic. Based on our literature review, our prior assumptions were that while the general motives for fanning a SME brand's page will appear, enough specific elements will surface that will be useable in a specifically SME context.

To answer the research questions a content analysis was carried out. Content analysis is the study of recorded human communications, which is particularly well-suited to the study of communications as it encompasses psychoanalytical, institutional and cultural circumstances and contexts as well (Babbie 2003). An iterative coding process was applied, where codes were developed steadily during the coding process. By dint of their exploratory nature, our research questions were answered using a qualitative content analysis, which can be considered as the "art of understanding", as it examines individual approaches and it is interested in making sense of texts, by interpreting meanings of expressed ideas and the related consumer intentions.

In the design of our methodology, we followed the process suggested by Krippendorff (1989):

1) The focus of our research was narrowed to the selected industry of catering in order to offer a more homogenous, and therefore a more transparent and comparable environment for the study. "Eating and cooking motivates people very easily, and this is visible on their Facebook pages, too. A restaurant or confectionery communicating properly with their fans can attract them without serious campaigns" (Lévai 2012. 42). The study was equally narrowed to Facebook, the most widely used social networking site (hereafter: SNS) in Hungary, making it a channel of choice, and most often the sole reasonably available (in terms of affordability and manageability) marketing communications channel for small businesses.

2) Our empirical research is based on consumer narratives. The sample consists of short, one-page essays (n=151) written by university students (for extra credits) about their experience with the Facebook page of their favourite (and fanned[6]) small catering establishment. The

sample thus contains narratives about the pages of restaurants, cake shops, bakeries, cafés, and pubs.

3) The narratives were content analysed by two independent coders. Conflicts between the coders were resolved through discussion, providing an iterative coding process, and reaching a coding agreement of >80%. The process of analysis thus meets the criteria of reliability and relevance.

4) In a final stage, a discussion ensued and we proceeded to the final analysis of the coded narratives. Our results are summarized in the following part of the article.

Results of the study

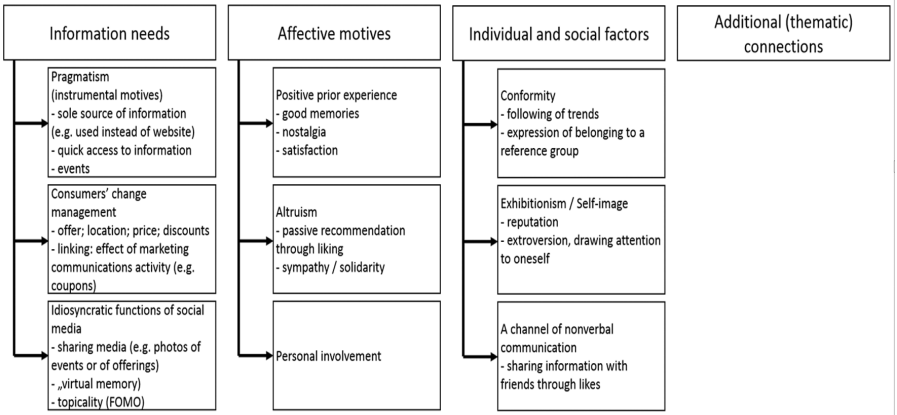
Self-declared triggers of fanning the official social page of a catering establishment were categorized in four categories during coding: 1) information needs, 2) affective motives, 3) individual and social factors, and 4) additional (thematic) connections. The first three categories largely support the main use motivations described by Alhabash and McAlister (2015), with the exception of the entertainment factor which is mostly irrelevant for the present context and does not appear as such in the present findings. Alternatively, the fourth category in our results gives an interesting insight into what other uses and associations might motivate consumers to become fans of such establishments (of which entertainment is only a sub-category).

In the following we present each category in detail. Figure 1 gives a graphic overview of our findings, while textual illustrations to each category and sub-category are provided in Tables 1–3. Sub-categories might overlap in some cases[7] in a complex motivational environment,

[6] In the text, we refer to the act of becoming a fan of an official Facebook page as "fanning". The word "liking" is often used in internet vernacular as a synonym of "fanning". However, for reasons of clarity, we advise for using this latter term in the context of becoming a fan of a social media page, as the notion of "liking" can also refer to the act of hitting the "like" button in the case of contents published by a given page.

[7] A typically overlapping element was the user narrative of a "regular hangout": liking such places' Facebook pages obviously fulfills the continued need for information, while the expression of a strong affective tie might equally be a strong motivator.

our goal in categorizing user motives was not to establish mutually exclusive categories, but rather to explore the main themes and factors that businesses ought to consider when developing a social media activity.



Source: own design

Figure 1. Categorization of inner motives of SNS users in the sample to become fans of small businesses

Information needs: A key pragmatic factor in visiting service providers' social media pages

The desire for acquiring and possessing resources is a key motivator for users' joining of (online) social networks, as this can help them reduce risks and give them an advantage over other users. One can distinguish between two main types of such resources: information and tangible assets (Markos-Kujbus 2013). The access to information not only enables individuals to quickly access testimonials and feedback, but thereby also reduces perceived risk.

Meeting information needs turned out to be a primary motive for liking small catering establishments' social media pages, with far the most mentions thereof in the sample. The overwhelming nature of these mentions might be counterintuitive, as brands' social media pages are hardly the best source for official, company-related information (e.g. in

contrast to official websites) or for user-generated information (e.g. in contrast to Facebook groups, social rating sites, etc.). However, the reason for the strength of this category in the present research context can be twofold. First, the particularity of small businesses as non-professional communicators, often being inherently more social than their corporate, institutional counterparts, and the lack of resources to maintain a diversified online presence and the subsequent attribute of a social media page being their sole official digital communication channel (often instead of an official website). Second, it can be closely related to a global change of consumer behaviour among certain target groups (e.g. the first and second generations of digital natives). This change of behaviour can be characterized by the use of social media sites as direct complements and even as substitutes to search engines and traditional websites (e.g. of official company information) in the processes of information search and decision making (Bronner–de Hoog 2014). It is however a surprising finding in the sample that – based on their self-declaration – a few respondents estimated that the above information need was reason enough to become fan of a service provider, even prior to visiting the given establishment.

As a first subcategory we identified consumer pragmatism and resource minimization. Users follow the principle of least effort during their browsing experience which leads to them first looking for information on channels they spend most of their browsing time on anyway. As content aggregators, SNS such as Facebook can offer users baseline information, thus reducing users' willingness to search for additional sources elsewhere (e.g. in the case of low involvement product and service categories, such as catering establishments, the focus of the present study).

The possibility to follow quick changes (e.g. current offers, updated product offerings) in a comfortable, aggregated way is the base of the next subcategory dubbed consumers' change management. The subcategory includes factors such as presentation of the product offering, (descriptive and visual) information about the location and site of an establishment, the possibility to follow current promotions, and

price-based communications. Altogether, this subcategory can be said to lie closest to businesses' traditional marketing efforts, with social media merely being a new manifestation and channel thereof. Based on this, one can presume that even if SNS are a novel way of gathering information, businesses cannot lose sight of consumers' traditional information needs: even if normative literature often associates SNS with a more long-term, brand- and relationship-focused strategy (Csordás et al. 2014), there seems to be a genuine demand for duplicating baseline consumer information to this channel.

As a next subcategory, SNS offer idiosyncratic functions with potential added marketing (communications) value for businesses. Such functions of Facebook are the possibility for businesses to distinctly manage events, photos (e.g. photos taken at events as a follow-up activity, or photos about the place or its offering as a means to tackle consumer uncertainty related to the intangibility of services (Csordás–Gáti 2014). The use of the internet as a "virtual memory" cannot be neglected either, where liking post or fanning pages can serve as a reminder for future use. On the contrary, the channel's topicality can help tackling users' fear of missing out (Przybylski et al. 2013), and offer a higher level of consumer experience at the same time by providing first-hand information.

Affective elements

As shown by the above-mentioned IBM study, consumers in social media seem to want to interact with brands directly in social media for mainly utilitarian reasons. Contrarily to the cognitive/information factor, affective elements pertain to users' emotional connection to the brand. While less important in number among the mentions, the various affective elements can bring about the social element in social media, i.e. can contribute to engage a genuinely interested part of the audience and thereby form long-term relationships with them.

The different types of social ties can play various roles in the marketing activities of the brand. Strong bonds operate through trust (in the sample, with consumer formulations like: "I instantly became a fan", "If at any time I go, I always find a familiar face", "I became totally

Table 1. Information need as a motive to fan small catering establishments' SNS pages

Category	Quote
pragmatism – quick information	"Facebook was the first to come to my mind for finding information – so I went there and looked the place up" (22, female)
pragmatism – quick information	"The Facebook page is already worth liking for practical reasons, as they upload their weekly menu here" (age: 21, female)
consumer change management (following for updates) – e.g.: product offering	"The main reason I became fan of the page was to know about what's happening at the place, and to be informed of the most important changes." (20, male)
consumer change management (following for updates) – e.g.: opening hours, promotions	„I liked to Facebook page of this [brand's]wine bar to know about the opening hours and the various promotions they offer" (28, male)
consumer change management (following for updates) – e.g.: promotions	"I liked their page about a year ago after having purchased a % reduction coupon on the internet – I wanted to know more about the place before I went there." (21, female)
access to idiosyncratic information – e.g.: benefits only available on SNS (here: discounts)	"I thought that maybe this way I can catch some promotion or novelty sometime, and I thought that maybe my 'membership' there will get me some discount in the future – as I saw some examples of this at other places." (20, female)
access to idiosyncratic information – e.g.: first-hand information about events	"I was happy to see their page on Facebook, that I immediately 'liked', because I can follow their events, that is, what kind of event will be there and when" (37, female)

Source: own research.

enchanted by the brand") contribute to generating interaction and e-wom (Seraj 2012), and forms a core of engaged fans of businesses' digital spaces. Brands reflecting one's inner or social self incite consumers to offer positive electronic word-of-mouth (e-wom) on social networks. Further, self-expressive brands fanned on social networks positively influence brand acceptance, and the forgiveness of engaged fans for potential wrongdoing (Wallace et al. 2012). Weaker bonds have a key role in further diffusing of e-wom. Small businesses therefore ought to identify and strengthen the various types of bonds thereby making e-wom appear more "naturally". The affective elements for doing so are discussed in the following.

Among the identified affective dimension, the principal element is the virtual manifestation of nostalgia, i.e. positive prior experience.

Here, the SNS appears as a genuine social link: by becoming fan of a place, respondents claim expressing their satisfaction with the establishment and a will to remain connected with the brand (as much as the memories linking them to it) as well as with like-minded consumers. Thus a sense of community appears. The pleasant memories related to the positive prior experience are a herald of subsequent acts of consumption and consumer loyalty. Thus, in the case of these users, SNS step forward as a customer relationship management tool for businesses.

Another manifestation of brand loyalty in our analysis is the subcategory dubbed altruism. Here, respondents mentioned that their liking of a brand's Facebook page was a sort of passive recommendation of the establishment for their friends. This way, users indirectly support their acquaintances without any expected compensation by providing them with a selection of quality knowledge or by thus trying to solve other acquaintances' problems (Brodie et al. 2013). In the case of small catering establishments, it is important for small businesses to try to map their regular customers' social status, as such altruistic behaviour is likely to generate a considerable amount of word-of-mouth in case of fans who are opinion leaders or social hubs in their virtual networks.

Similarly, connecting to virtual brand communities can be interpreted in some cases as the expression of solidarity with the activity of the establishment in question (Table 2, #4). Expressed sympathy can further be interpreted as an expression of a support for a proper functioning of the establishment's online community (Chiu et al. 2006), with a wider personal goal to support community development, and protecting the establishment from external threats (e.g. competitors).

Lastly, personal involvement is an interesting category. A few mentions in the sample leave to believe that the fact that the respondent is the owner, former or current employee, or other stakeholder (e.g. family member or friend of the owner) of a small catering establishment was the main reason for becoming fan of the establishment's Facebook page. This equally is the manifestation of solidarity: even though the

person who fans the brand page may not be themselves a customer of the establishment, they support its activity by generating e-wom for the brand. In the situation where SMEs are in lack of resources this subcategory is of primary importance for acquiring an initial core of community and exposure.

Table 2. Affective need as a motive to fan small catering establishments' SNS pages

Category	Quote
nostalgia (positive past experience)	"The main reason for me to like the page was that we have been long-time clients there, like since my childhood, and when they started their Facebook page, there was this opportunity for me to follow them there too." (21, female)
nostalgia (positive past experience)	"I 'liked' [the fast food restaurant's page] even before they opened the place, because I had been a regular client at their other joint and I was curious about this new endeavour of theirs." (21, female)
altruism and sympathy – passive support through fandom	"I believe that the effort made by the [brand] cheese manufacture to generate a renewed interest and appreciation for dairy products made of natural, quality ingredients was well worth my expressing of sympathy in a way or another." (21, female)
personal involvement	"I became a fan of the establishment's page right at its opening, because the founder was a friend of mine – I wanted to help them in their new business with my 'like', to become more renowned." (28, female)

Source: own research

Individual and social factors

Individual and social factors are another category with a dominance of affective elements. A reason for making them an individual main category is the added presence of human social needs. By definition, this category is the cornerstone of social media: here, respondents are motivated to fan a brand's page by being able to meet and develop their relationships with like-minded people, earn support, and express emotions (Hall–Graham 2004).

Within the category of individual and social needs, liking a brand page may be a response to something being popular: this is the subcategory of group conformity. Here, fanning a brand or an

establishment in SNS is externally motivated by them being topical and fashionable, already fanned by people with determining influence on the user who this way does not want to lag behind. Liking a fashionable establishment can thus be the effect of users' statement of being a member of their reference group (Forgas 1996) and up-to-date on matters important to the group. Small businesses need to identify and treat conformity likes with reservation, as the main driving force is not their own activity and performance, but rather a third-party element (a reference group or opinion leader), which may trigger collective user action. While this can lead to additional buzz about the company, it can also be left behind if the original driving force behind the likes backs out.

To the contrary, a self-centred motivation appears in the subcategory dubbed exhibitionism. Here, respondents suggested that becoming fans of these small businesses' pages was primarily motivated in the aim of shaping the image their acquaintances have of them. This implies that these respondents interpret SNS and their actions thereon as a concrete (virtual) manifestation of their own personality. By liking specific pages, users in the sample admit expecting a positive change in social visibility, popularity and reputation. This self-motivated act is led by a will of self-expression (Seraj 2012; Zhao et al. 2012). Previous research shows that extroverted people are more likely to participate in social activities on Facebook (Ross et al. 2009). Businesses therefore ought to identify opinion leaders with a certain level of exhibitionism, in order to raise their level of activity.

Based on the above, one can conclude that liking brand pages on Facebook can be interpreted as a personal form of nonverbal communication. By liking/fanning a page, a user actively communicates not only towards the company, but also their acquaintances, offering them information, about their preferences and about the establishment itself.

Table 3. Individual and social factors as a motive to fan small catering establishments' SNS pages

Category	Quote
exhibitionism, self-reputation	"[...] with my friends we love a bit too much having 'party photos' made of us – as these are then mostly made available at the places' FB pages" (21, female)
exhibitionism, self-reputation	"[...] this was also my main motivation for "liking" their page, because I wanted that to appear on my profile page" (21, female)
following of trends, drawing attention to oneself	"Not the least, one can also shape their image by carefully choosing what they like or what they post [on Facebook]. This restaurant has a style that fits my style and image, so I thought that I can approve that." (24, female)
conformity, reference groups	"I believe that I belong to a group this way, and I can show my friends the changes that I have made concerning my eating habits" (21, male)
conformity, reference groups	"[…] one reason was to show my acquaintances that I've been there […]" (20, female)
nonverbal communication–sharing information with friends	"[…] the first time I came out of there after having a hamburger I had the impression that it was so good that I needed to share the experience with others." (22, male)
nonverbal communication–sharing information with friends	"I simply wanted to express that I like that joint, and also to call my friends' attention to this place – and by this, basically, I recommend it to them, to try it out." (21, female)

Source: own research

Motives of the third kind: thematic connections

Other factors, while having received far less mention, can be an interesting supplement to the aforementioned motives and thus to a small firms' targeted social communications. We classified as a thematic connection a respondent's motive to fan a small establishment's Facebook page for professional curiosity. While not present in our sample, this subcategory can easily be extended to include the social monitoring of competition by businesses, an accessible tool which is available to businesses devoid of access to professional marketing research services.

Another respondent mentioned being impressed by the style and decoration of an establishment, which she mentioned as being the primary reason for her fanning the Facebook page. This finding suggests a potential communication niche available for small businesses for

appealing to potential consumers through elements loosely related to the business' core activity. This communication activity can be related to that of content marketing, which is argued to require talent (an aforementioned potential competitive advantage of small businesses), technology (made available by social media) and content acceptance (founded by the user activity of fanning the organization) (Pulizzi 2012). Content marketing itself can be an alternative strategy whereby a business bases its communication not on its core activity but on consumer needs aiming for the connection to various, loosely related consumer tribes (Cova–Cova 2002).

Conclusions, limitations and future research directions

In our study of consumer motives for becoming fans of small catering establishments' social media pages, the traditional cognitive, affective and conative dimensions all appear as important drivers of online consumer participation. The significance of the results is that it gives a structured overview – along the main functions offered by social media (here: Facebook) – of the consumers' self-declared motives (based on a narrative analysis) for being part of virtual communities related to small businesses. Based on our review, where both instrumental and affective motives appeared, it is important to distinguish between short-term and long-term social management tools and actions. This way, our study shows that consumers might become fans of an establishment for purely practical reasons, which serve their instant needs. These "fans" constitute a brand's first line of reached target audience in social media. It is then the organization's responsibility to handle their communities (both offline and online) along their interests, and to serve their (information, affective, etc.) needs on a long-term, to generate user engagement.

Our results also confirm that social media is taking over the place of owned official channels (e.g. official websites) in satisfying various consumer needs: it is in the interest of small businesses to follow – by necessity – this trend, and expand the circle of those businesses relying on social media, a channel on the verge of paid and earned media

(thereby implying a certain loss of control). In exchange, social media channels can build upon a few competitive advantages of small companies, namely their relationship-based and intuitive nature.

As a qualitative study, our results are limited in scope, as they give an in-depth analysis of self-declared consumer narratives gained through convenience sampling. While not generalizable, the chosen sample was deemed relevant as the age group of now-university students falls into the generation of the "digital natives", for whom digital and social media become primary sources of information. Based on our results and the limitations, further research should be directed towards the changes in consumer behaviour memberships in online fan communities trigger. To complete our results, recording actual consumer behaviours might be a relevant further research direction. To amplify the relevance of the above results, online community behaviours (e.g. user-generated contents such as ratings, reviews, discussions, or visual contents) ought to be compared with observed actual business performance. To amplify validity, other sectors with important SME activity (e.g. agri-food) ought to be included in future studies.

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