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CONTENTS

RESEARCH PAPERS

1. Dan Costin Nitescu, Irina Petkova Kazandzhieva-Yordanova
   Post-Crisis Developments in Banking Products
   and Distribution Channels in Romania and Bulgaria .......................................... 103

2. Aygun Garayeva, Gulzar Tahirowa
   Government Spending Effectiveness and the Quality
   of Fiscal Institutions ............................................................................................ 128

3. Suleiman Bolaji
   Public Private Partnership (PPP) for Housing Delivery
   to the Low Income Civil Servants in Abuja, Nigeria ........................................... 144

4. Ralitsa Stefanova Dimitrova
   Key Factors Affecting Water Consumption in the Black Sea Region ............... 158

REVIEW PAPERS

5. Snezhina Kadieva
   Some Aspects of Reputation Management in the Hospitality Business .......... 174

6. Radka Valerieva Nacheva
   Architecture of Web-Based System for Usability Evaluation
   of Mobile Applications ........................................................................................ 187
POST-CRISIS DEVELOPMENTS IN BANKING PRODUCTS AND DISTRIBUTION CHANNELS IN ROMANIA AND BULGARIA

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JEL: E5, G2, F3

Abstract
The paper examines banking distribution channels and post-crisis developments in the Romanian and Bulgarian banking systems and aims to pin down the differences and similarities in both countries. The two phases related to the financial crisis, before 2008 and after 2008, reflect specific developments in terms of policies and distribution channels chosen by the banks to deliver banking products and services. As a result of the global financial crisis the networks of branches were reshaped, contracted and/or redesigned, in order to sustain the new vision. Technology and digitalization determine an important side-effect resulting in a “quality-based” retail banking trend. A mix of channels, both traditional and digital support the new relationship banking with all categories of customers, both retail and corporate.

Keywords:
banks, distribution channels, banking products and services, digitalization, post-crisis developments.

Introduction
The banking system evolution is strongly related to the economic development of a country and to the development of the business environment. The paper will analyze the main aspects regarding the peculiarities of the banking products and services and their distribution considering two relevant phases in time: pre-crisis (before 2008) and post-crisis (after 2008). The financial and economic crisis determined structural changes within the banking business sector. Political decisions to join the European Union, changes in the regulatory framework and the strong presence of foreign banks in EU countries are shaping the structure of the banking systems in Romania and Bulgaria, development of distribution channels and policies for distributing banking products and services within the two markets.
The paper studies the peculiarities of banking products and distribution channels and post-crisis developments in the Romanian and Bulgarian banking systems and tries to outline the differences and similarities in both countries. The paper argues that there are some common features in the post-crisis developments in both countries, arising from the peculiarities of the above countries banking systems – huge dominance of foreign banks on both markets and overdependence on deposits as a source of funding. The similarities in both banking systems also arise from the tendencies and processes taking place in the banking sector after the global financial crisis in the EU as overregulation, digitalization and increased competition with non-bank financial companies. Despite all these similarities certain peculiarities in both banking systems can be pointed out arising from the country economic development, government policy, banking supervision and the behavior of banks’ clients. All these characteristics determine the specific features of banking, bank products and distribution channels in both countries.

The authors study is based on empirical data of key banking indicators for both banking systems and comparisons as public sources of information are used.

In 2007 Romania and Bulgaria joined the European Union. Before joining the EU, a strong privatization process took place, during which foreign, mainly European banks, acquired stakes in local Romanian and Bulgarian banks. This shift changed the structure of the banking system in both countries. Before the privatization of the banks in Romania and Bulgaria the sector was characterized by undercapitalization, an extensive bad debt problems and lack of market discipline.

**Strategic support for the pre-crisis distribution model**

Aydin (2008) reflects that economic growth and high interest rates (higher than domestic market) were the two main motives for foreign banks to enter and operate in the Central and Eastern European markets. The banking sector represents the main source of credit growth in Romania and Bulgaria and foreign-owned banks constitute a majority in the Central and Eastern European banking system. Havrylchyk and Jurzyk (2005) argue that the foreign-owned banks are not affected by the business cycle of the host country and that makes them more competitive compared to the host countries. The macroeconomic conditions in the foreign banks’ home countries do not influence the profitability of the banks operating in CEE countries. The threat of contagion from the home country to the host country is always considered by the supervisory authorities when approving the acquisition of a local bank by a foreign bank or the entrance of a foreign bank in the local market through a branch or a subsidiary. That argument proved to be correct about the Bulgarian banks during the
global financial crisis in 2008-2009 when the banks’ balance sheet did not deteriorate as well as during the Greek crisis in the summer of 2015 (when a bank holiday was announced in Greece).

![Graph showing ownership structure (foreign – state)](image)

**Source:** International Monetary Fund, 2008, *Banking structure and credit growth in Central and Eastern European Countries*

**Fig. 1. Ownership structure (foreign – state)**

The figure reflects the consistent increase in foreign ownership of banking structures versus the state ownership, before the financial crisis, both for Romania and Bulgaria. This trend explains the main characteristics of an almost 20 year business cycle, from 1989 to 2008.

Schoenmaker and Peek (2013) showed that while cross-border banking flow promoted economic growth, it also fueled a credit boom in some of the peripheral countries. Following the usual pattern, these credit booms turned into a bust. Foreign banks that penetrated the market in CEE had access to huge amounts of funding provided by their mother banks and they targeted markets where there was a potential for credit growth and opportunities for higher profits. Claessens, Demirguc-Kunt and Huizinga (2001) show that higher level of bank development lowers banks’ profits and margins due to the higher level of market competition. The loan resources that ceased to be provided by the mother banks to their subsidiaries in Bulgaria in the aftermath of the global financial crisis were the reason for the Bulgarian banks to experience liquidity difficulties and boosted the interest rate levels on deposits.

Despite the extensive penetration of foreign banks in both countries the size of the banking sector remains small in comparison with the developed EU countries – as of the end of 2015 the ratio *total assets of the banking system/GDP* is 56% for
Romania and 101% for Bulgaria. These figures are far from the developed EU countries where the ratio varies between 200% and 400%. On the other hand, considering the level of financial intermediation in the CEE countries the values for Bulgaria are at the average level for the region while Romania has the lowest ratio.

Source: Eurostat, European Banking Federation, own calculations.

**Fig. 2. Total Assets/GDP**

Large European banks but also banks acting more at a regional level, expanded their operations both on the Romanian and Bulgarian banking market. The banking sector in the two countries is dominated by Austrian, Greek and Italian investments which are typical for the Balkan region in general. As the Figure below shows, banks from Austria acquired relevant stakes in the Romanian banking system before the financial crisis and consolidated their position within the post crisis environment. Banks from Greece were conducting expansion processes in Romania, acquiring stakes and developing branches, but the uptrend registered before the financial crisis has changed. The penetration of foreign banks on the Bulgarian market was mainly through acquisition of state-owned banks which were of systemic importance for the banking system as Bulbank, DSK, UBB. After the introduction of the Currency Board Arrangement (CBA) in Bulgaria there were new entrants on the market – subsidiaries and branches – but these banks did not make a huge expansion and they are of no importance for the Bulgarian banking sector.

The geographic segmentation have determined economy of scale and followed specific business interest in the region. The penetration of Greek and Turkish banks on the Bulgarian market is determined by the economic relations in the region – a number of Greek and Turkish companies have commercial activities in the country. The expansion of the Italian, Austrian, Hungarian and French banks is determined by the strategic orientation of the mother banks to enter new markets with high potential for profit.
Romania’s banking sector is characterized by a very high foreign ownership ratio, of about 91% as of September 2016. Compared to Romania the foreign ownership ratio in Bulgaria is lower – 78%. There are two banks with Bulgarian ownership that are defined by the BNB (the Central bank of Bulgaria) as domestic systemically important banks as even one of them is 3rd in rank in terms of assets as of the end of 2016. The privatization of the majority of the Romanian and Bulgarian banking sector boosted the development of IT technologies and raised the educational and the professional level of the bank experts and bank managers. However, despite the above positive effect, Romanian and Bulgarian banks did not go beyond the traditional banking products and services, i.e. offering deposits and granting loans to their clients. Nevertheless, the penetration of foreign banks encouraged innovations as they were mainly directed to offering clients innovative payment services. The
development and distribution of structured retailed deposits and bundled financial products did not become popular in both countries. Investment products gained popularity due to their high yield in 2006-2007 but after the global financial crisis clients’ interest in these products decreased. After a hike in interest rates levels on deposits as of the end of 2008 there is a steady orientation of the clients to investing in simple, typical banking products protected by the deposit insurance scheme.

The global financial crisis reversed the strong upward trend in cross-border banking prior to the crisis. The Vienna Initiative, aimed at maintaining cross-border banking flows from Western to Eastern Europe, may have prevented a further decline of cross-border banking into emerging Europe. As shown in Fig. 4, the Greek investments in the Bulgarian banking sector are significant but as of 2011 the Greek economy started to experience severe political and economic crisis. The measures undertaken by Bulgarian banks with Greek ownership were directed at liquidity management and mitigation of operational risk. As a result of the undertaken measures there were no deposits run from those banks in Bulgaria and they continued to perform smoothly their operations.

The pre-crisis fundamentals among which acquisitions of shares in Romanian and Bulgarian banks, credit lines from mother banks and/or partner banks, investments in branch network expansion and increase in banking personnel, development of new products and services for various segments of customers determines the specific architecture and distribution channels for banks. The pre-crisis credit boom in both countries encouraged hiring of staff in the banking sector and expansion of bank branches. The main products that were offered by the Bulgarian banks in the pre-crisis years are typical bank products such as consumer loans, mortgage loans, working capital financing with revolving credit lines and overdrafts to companies, mid-term and long-term investment financing, letters of credit and guarantees to companies, deposits and current accounts /usually together with a debit or a credit card/. In both countries the retail segment offered a high potential for growth and wider interest rate margins compared to the corporate sector.

**Traditional Bank Products and Distribution Channels in Romania and Bulgaria**

The penetration of foreign banks on the Romanian and the Bulgarian markets was in fact, the catalyzer for the diversification and expansion of distribution channels. The lack of huge bank failures after the banking crises that both countries experienced in the late 90-ies contributed to the self-confidence of banks’ managers. Banks in both countries concentrated on offering consumer loans and loans for house
purchase as the household’s sector had a potential for growth but despite the fact that these loans offer good profit margins they are risky and challenge the banks’ ability to manage a large number of small clients. In the aftermath of the global financial crisis, banks were confronted with the declining values of the collateral on mortgage loans. Asset-backed securitization in both countries was far from being developed in the post-crisis period and after 2008 it almost ceased.

In Romania, foreign banks were aiming to develop branches, at first, mainly in urban areas, within the largest towns, with more than 200 000 inhabitants and in the next phases to enter the medium and smaller towns. As foreign banks entered the Bulgarian market through the privatization, esp. the privatization of banks with systemic importance on domestic level, which had a well-developed branch structure, a rapid expansion of bank branches on the Bulgarian market was not observed. The credit boom that spurred as of the end of 2003 was the factor that determined the dynamics of the development of branch network in the country.

The most important banks were competing to rent, even to buy, some of the most visible locations in the main cities of Romania. The network architecture included regional banking business centers, branches, agencies, even mobile branches for some of the largest banks, but also creative concepts such as a “Banking Cafe”. A standard branch structure included specific areas in order to provide customized financial services and advisory services to various segments of customers, e.g. corporate customers, retail customers, small and medium-sized enterprises (SMEs), special areas for cash management, cashier area, vault deposit area, space to support back-office activities.

Bigger banks in Bulgaria tried to develop private banking services despite the fact that the concept of private banking in Bulgaria is quite different from the general perception and the requirements for the income of the clients is far from the levels that are common for the European and the American banks. However, this is in line with the current perception of the wealth managers who started to offer private banking to well-off clients who are not rich enough but are expected to become wealthier in the near future. Some banks that offer private banking developed special areas where the client and the banker can meet in a friendly environment and discuss the client’s financial needs. Private bankers consult clients on different financial issues, mainly loan products as well as on the possibilities for investments. Private banking is a possibility for the banks to generate more non-interest income as the client pays monthly (or annual) fees for the provided services.

The pre-crisis environment reflected the abundance of capital, basically no barriers for capital flows, big sales budgets for financing products, very low risk
aversion, investments in expansion of branch network but also development of alternative sales channels for banking products (such as brokers, financial partners). In the pre-crisis period, the Bulgarian banks concentrated on offering investment services to their clients and developed retail investment products as the capital market provided an opportunity to clients to generate higher profits in comparison with banks’ deposits. In the post-crisis period that tendency reversed as even some of the banks closed their investment departments or reduced significantly their investment activities.

In Romania, an essential part of banking and financial products was provided in EUR, due to the fact that the adoption of the euro was regarded as highly desirable before the crisis. In comparison, due to the CBA in Bulgaria, the national currency is pegged to the euro at a fixed exchange rate. Regarding the non-financial corporations’ sector in Bulgaria the denomination of loans in EUR is prevailing as the amount of loans granted to non-financial corporations in euro which is double except for the last 2 years when the amount of the loans denominated in the national currency and in euro is almost equal. As for mortgage loans for house purchases there has been a different tendency over the years, respectively with the prevalence of EUR or the national currency. In the field of consumer lending, the preferences of consumers are explicitly to loans denominated in the national currency as said loans are used for buying goods and services. Regarding denominations of deposits there is also a different tendency regarding both sectors – non-financial corporations and households. The majority of overnight deposits to non-financial corporations are denominated in the national currency as they are mainly used for payment transactions between different counterparts in the country. Term deposits to non-financial corporations constitute a small part of all deposits to non-financial corporations and there is a changeable tendency regarding their currency denomination. Regarding term deposits to households in the crisis and in the post-crisis years there was a prevalence of deposits denominated in euro and as of 2012 this tendency was reversed.

**Developments in the Banking Products and Distribution Channels in the Post-Crisis Period**

In Romania, the post-crisis environment was characterized by termination/or closing of branches, promotion of new products and services, mostly related to the deposit side, deep change in the regulatory system, new developments in technology, important changes in banking business arising from the structure of the banking activities. The Bulgarian banks are very active in offering financial products as
insurance and pension schemes, financial leasing, etc., as there is specialization among the Bulgarian banks in products’ offering. That product variety was also kept in the post-crisis years.

In the post-crisis period in Bulgaria similar to Romania deposits attracted by the banks contributed to the majority of the liability side of the banks’ balance sheets. In the aftermath of the global financial crisis there is only one issue of mortgage bonds by a Bulgarian bank which matured in 2014. As during the global financial crisis in Bulgaria, the mother banks were in a dire financial situation, the flow of resources from the mother banks to their subsidiaries was nearly discontinued and the banks relied entirely on the local market to attract resources.

During the period of rapid credit growth, the banks’ revenues were mainly determined by the interest yield generated on the loan products while the non-interest revenues increased with a slower pace. The positive dynamics of the interest and non-interest income for the Bulgarian banks in the aftermath of the global financial crisis was influenced by the continued credit expansion by the banks. The increase of the capital positions of the banks was due to the banks’ accumulated profit.

The Bulgarian banks lacked investments in structured products as CDOs, ABSs and MBSs so they were not affected by the collapse of those products during the financial crisis. Due to the lack of investments in complex financial instruments as well as speculative exposures and investments in currencies other than in euro, the Bulgarian banks did not experience price and currency risk. In the aftermath of the crisis the Bulgarian banks developed marketing strategies and products suitable for households due to the necessity to attract resources on the local market. Because of the volatility of the prices of financial instruments, bank deposits became the main alternative for retail investors for their savings. In certain periods the increase in the deposits is due to transfers to the beneficiaries on EU funds. In the post-crisis period the share of non-performing loans in banks’ portfolios increased in both banking systems.

In the aftermath of the global financial crisis, the lending activities of the Bulgarian banks were gradually decreasing. This trend can be explained with the increased requirements for clients’ creditworthiness, the decline in credit demand and lack of suitable projects. The share of overdue loans is above the average levels in the European Union which were below 6% as of the end of 2015. The Bulgarian banks are forced to undertake a number of measures in order to deal with the issue of overdue loans as those measures are different for the non-financial corporations and for the households. These measures impose certain demands on loan products as more flexibility in servicing loans to households, longer grace periods, seasonal plans for
loan repayments, decrease in the applicable interest rates, remittance of fees, change in the maturity date, selling of loans to collectors’ companies. Clients with overdue loans are treated on individual basis as there are cases where the banks and their clients managed to achieve out-of-court settlement.

Regarding consumer credit and loans for house purchases in Bulgaria there were two important legal acts that were implemented in 2014 and 2016 – an amendment of the Law on Consumer Credit in 2014 and the adoption of the Law on Loans for Purchasing Residential Property by Consumers. Both legal acts affect the price of consumer loans and loans for house purchases as they linked the reference rate with the value of a public index as LIBOR, EURIBOR, SOFIBOR or an indicator announced by the Central bank. The regulatory changes affect the competition, esp. between the banks and non-bank companies but the stronger competition between the banks and non-bank companies is mainly in the field of payments where the non-bank payment companies are very flexible in offering innovative and suitable to the clients’ needs products and services.

The Bulgarian banks /except one small bank/ incl. branches process SEPA credit transfers (SCT) and as of the end of June 2016 the share of SCT to the total amount of the credit transfers in EUR is 56,6%. The share of cards that have migrated to the EMV standards is 89% of all bank payment cards issued in the country as the migration to that standard by credit cards is almost complete. The majority of debit and credit cards issued in Bulgaria are Visa and MasterCard co-branded. The local card company for authorization of card transactions in Bulgaria intends to develop a national card scheme which aims to cover niches of products and services that are not provided by Visa and MasterCard, e.g. electronic vouchers, payment of transportation, payments on vending machines, parking, payment of concert tickets, etc. Due to the entrance into force of Regulation 260/2012, the so called SEPA End-Date Regulation as of the beginning of November 2016 the Bulgarian and Romanian banks should migrate their euro payments to the SCT and SEPA Direct Debit Schemes (SDD). Compared to credit transfers direct debits are not a popular payment instrument in both countries even for payments in national currency.

The observed post-crisis tendency in banking in Romania and Bulgaria is related to high risk avoidance, banks developing a new architecture with new departments and functions, such as compliance, risk management, IT support, and digital services support. This tendency is reflected in the types of products offered by the banks in the post-crisis period. The banks in both countries concentrated on developing secure electronic channels for fast payments. Some of the banks concentrated on developing products based on clients’ individual characteristics, e.g. debit or pre-paid cards for
children, teenagers, students that provide possibilities for the parents to control the amount of their kids’ expenses. Virtual cards and contactless debit cards are gaining popularity. The clients are getting more conscious about the security of payments when using the new payment channels and banks are very active in informing and educating their clients.

As the Bulgarian economy is highly dependent on the European Union funds some of the Bulgarian banks are very active in developing products related with the EU programs as bridge funding, loans for energy efficiency, bank guarantees etc. Wealth management is not well developed by the banks due to lack of clients’ demand for such services. There are some specific products initiated by the government – students’ loans that are granted under the provisions of the Law for Crediting Students and Ph.D. researchers where the state provides a guarantee on those loans in case of default and there is a grace period during the time of the education. Five banks in Bulgaria grant such loans.

**Banking Sector Evolutions during the Post-crisis Environment**

The number of bank branches and employees in the Romanian and Bulgarian banking sector have been steadily declining since 2009. Optimization of the operational costs of the banks implied closing of branches and cutting the number of employees. The new reshaped architecture of the Romanian banking system, with a smaller number of bank branches and employees, influences some specific segments of customer’s access to banking services, related to the geographical distribution of the banks/distance reach for technology based banking services. In the Romanian banking sector, a bank branch provides services to an average of 3 760 people, while the European average is 2 450 people. Moreover, among the European Union countries, Romania reports the lowest number of bank staff relative to population, with one bank employee providing services to an average of 345 people (e.g. the EU average is 175 people per bank employee). In Bulgaria a bank branch provides services to an average of 1 883 people (own calculations) which is below the EU average. Regarding the bank’s staff relative to the number of the population, the figures for Bulgaria are also below the EU average – one bank employee services 233 people – but they are higher than in Romania.
Since 2008, the ratio *Loans/Deposits* dropped slightly (as reflected in the Fig. below), with banks focusing more on selling deposit based products instead of on financing products. Other factors influencing this trend include repayment of the external loans to the mother banks, low interest rates and the pressure for the banks to put more accent on the operations side, due to the week lending activity, connected
also with the removal of non-performing loans from the balance sheets. Post financial crisis, the constant cut in the minimum reserve requirements, both for lei and foreign currency liabilities provided more liquidity to the banking system. The last statement is also valid for the Bulgarian banking sector.

Despite recent distress in the banking system in Bulgaria /the failure of KTB/ and the state support that was provided to the deposit insurance fund to enable the smooth payments to depositors, the confidence in the banking system remained high, the deposits in the system continued to grow by a constant rate and only 2% of the repaid deposits were drawn in cash from the banks during the banking crisis in 2014. That contributed to the increase in deposits in the banking system which trend continued in 2015 and 2016. The ease in attracting deposit payments acted as a deterrent for the banks to develop deposit products with specific features responding to individual clients’ needs. In making decisions where to place their money the clients are concentrated more on the guarantee that is provided by the financial safety net and the level of fees and commissions applicable on the deposit accounts.

Post financial crisis, the structure of the banking systems, the distribution strategy for banking products and services have been changed. We have selected relevant data (see table 1 and table 2) in order to present the evolution for the main banking products and services distributed towards specific segments of customers (loans to non-financial corporations, loans to households, mortgage loans, deposits) for both countries – Romania and Bulgaria.
### Key Banking Indicators for Romania

**Table 1**

<table>
<thead>
<tr>
<th>Balance Sheet Data</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total assets (EUR mn)</td>
<td>90,925</td>
<td>91,451</td>
<td>91,139</td>
<td>90,483</td>
<td>92,194</td>
</tr>
<tr>
<td>growth in % yoy</td>
<td>1.1</td>
<td>0.6</td>
<td>(0.3)</td>
<td>(0.7)</td>
<td>1.9</td>
</tr>
<tr>
<td>in % of GDP</td>
<td>69.5</td>
<td>67.9</td>
<td>64.1</td>
<td>60.6</td>
<td>58.7</td>
</tr>
<tr>
<td>Total loans (EUR mn)</td>
<td>52,125</td>
<td>51,562</td>
<td>49,077</td>
<td>47,547</td>
<td>48,671</td>
</tr>
<tr>
<td>growth in % yoy</td>
<td>5.9</td>
<td>(1.1)</td>
<td>(4.8)</td>
<td>(3.1)</td>
<td>2.4</td>
</tr>
<tr>
<td>in % of GDP</td>
<td>39.8</td>
<td>38.3</td>
<td>34.5</td>
<td>31.8</td>
<td>31.0</td>
</tr>
<tr>
<td>Loans to private enterprises (EUR mn)</td>
<td>27,108</td>
<td>27,289</td>
<td>25,304</td>
<td>23,842</td>
<td>23,744</td>
</tr>
<tr>
<td>growth in % yoy</td>
<td>0.8</td>
<td>0.7</td>
<td>(7.3)</td>
<td>(5.8)</td>
<td>(6.4)</td>
</tr>
<tr>
<td>in % of GDP</td>
<td>20.7</td>
<td>20.3</td>
<td>17.8</td>
<td>16.0</td>
<td>15.1</td>
</tr>
<tr>
<td>Loans to households (EUR mn)</td>
<td>24,199</td>
<td>23,647</td>
<td>23,087</td>
<td>22,811</td>
<td>23,892</td>
</tr>
<tr>
<td>growth in % yoy</td>
<td>1.3</td>
<td>(2.3)</td>
<td>(2.4)</td>
<td>(1.2)</td>
<td>4.7</td>
</tr>
<tr>
<td>in % of GDP</td>
<td>18.5</td>
<td>17.6</td>
<td>16.2</td>
<td>15.3</td>
<td>15.2</td>
</tr>
<tr>
<td>Mortgage loans (EUR mn)</td>
<td>7,753</td>
<td>8,393</td>
<td>9,132</td>
<td>10,099</td>
<td>11,151</td>
</tr>
<tr>
<td>growth in % yoy</td>
<td>14.4</td>
<td>8.3</td>
<td>8.8</td>
<td>9.6</td>
<td>15.0</td>
</tr>
<tr>
<td>in % of GDP</td>
<td>5.9</td>
<td>6.2</td>
<td>6.4</td>
<td>6.7</td>
<td>7.3</td>
</tr>
<tr>
<td>Loans in foreign currency (EUR mn)</td>
<td>33,183</td>
<td>32,351</td>
<td>30,027</td>
<td>26,989</td>
<td>24,268</td>
</tr>
<tr>
<td>growth in % yoy</td>
<td>6.6</td>
<td>(2.3)</td>
<td>(2.2)</td>
<td>(1.1)</td>
<td>(1.1)</td>
</tr>
<tr>
<td>in % of GDP</td>
<td>25.4</td>
<td>24.0</td>
<td>21.1</td>
<td>18.1</td>
<td>15.5</td>
</tr>
<tr>
<td>Loans in foreign currency (% of total loans)</td>
<td>64</td>
<td>63</td>
<td>61</td>
<td>57</td>
<td>50</td>
</tr>
<tr>
<td>Total deposits (EUR mn)</td>
<td>46,866</td>
<td>47,612</td>
<td>51,174</td>
<td>55,225</td>
<td>59,388</td>
</tr>
<tr>
<td>growth in % yoy</td>
<td>4.5</td>
<td>1.6</td>
<td>7.5</td>
<td>7.0</td>
<td>7.5</td>
</tr>
<tr>
<td>in % of GDP</td>
<td>35.8</td>
<td>25.3</td>
<td>26.0</td>
<td>27.0</td>
<td>27.8</td>
</tr>
<tr>
<td>Deposits from households (EUR mn)</td>
<td>26,506</td>
<td>27,922</td>
<td>29,249</td>
<td>30,984</td>
<td>32,644</td>
</tr>
<tr>
<td>growth in % yoy</td>
<td>7.4</td>
<td>5.3</td>
<td>4.8</td>
<td>5.9</td>
<td>5.4</td>
</tr>
<tr>
<td>in % of GDP</td>
<td>20.3</td>
<td>20.7</td>
<td>20.6</td>
<td>20.7</td>
<td>20.8</td>
</tr>
</tbody>
</table>

*Source: Raiffeisen Research, CEE Banking Sector Report, 2016.*

### Key Banking Indicators for Bulgaria

**Table 2**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Assets (in EUR, mln.)</strong></td>
<td>39 272</td>
<td>42 138</td>
<td>43 841</td>
<td>43 528</td>
<td>44 750</td>
</tr>
<tr>
<td><strong>Growth in % yoy</strong></td>
<td>4.19%</td>
<td>7.30%</td>
<td>4.04%</td>
<td>-0.71%</td>
<td>2.81%</td>
</tr>
<tr>
<td><strong>GDP in EUR</strong></td>
<td>41 291</td>
<td>41 947</td>
<td>42 011</td>
<td>42 762</td>
<td>45 286</td>
</tr>
<tr>
<td><strong>in % of GDP</strong></td>
<td>95.11%</td>
<td>100.46%</td>
<td>104.36%</td>
<td>101.79%</td>
<td>98.82%</td>
</tr>
<tr>
<td><strong>Total Loans (in EUR, mln.)</strong></td>
<td>32 903</td>
<td>33 094</td>
<td>34 826</td>
<td>34 035</td>
<td>38 026</td>
</tr>
<tr>
<td><strong>Growth in % yoy</strong></td>
<td>4.62%</td>
<td>0.58%</td>
<td>5.23%</td>
<td>-2.27%</td>
<td>11.73%</td>
</tr>
<tr>
<td><strong>in % of GDP</strong></td>
<td>79.68%</td>
<td>78.90%</td>
<td>82.90%</td>
<td>79.59%</td>
<td>83.97%</td>
</tr>
</tbody>
</table>
D. C. Nitescu, I. P. Kazandzhieva-Yordanova. Post-Crisis Developments in Banking Products and Distribution Channels in Romania and Bulgaria

<table>
<thead>
<tr>
<th>Loans to Private Enterprises (in EUR, mln.)</th>
<th>18 459</th>
<th>19 514</th>
<th>19 585</th>
<th>17 547</th>
<th>17 018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Growth in % yoy</td>
<td>6,21%</td>
<td>5,71%</td>
<td>0,37%</td>
<td>-10,41%</td>
<td>-3,01%</td>
</tr>
<tr>
<td>in % of GDP</td>
<td>44,71%</td>
<td>46,52%</td>
<td>46,62%</td>
<td>41,03%</td>
<td>37,58%</td>
</tr>
<tr>
<td>Loans to Households (in EUR, mln.)</td>
<td>9 466</td>
<td>9 416</td>
<td>9 461</td>
<td>9 352</td>
<td>9 363</td>
</tr>
<tr>
<td>Growth in % yoy</td>
<td>-0,35%</td>
<td>-0,53%</td>
<td>0,48%</td>
<td>-1,16%</td>
<td>0,12%</td>
</tr>
<tr>
<td>in % of GDP</td>
<td>22,92%</td>
<td>22,45%</td>
<td>22,52%</td>
<td>21,87%</td>
<td>20,67%</td>
</tr>
<tr>
<td>Mortgage Loans (in EUR, mln.)</td>
<td>4 790</td>
<td>4 827</td>
<td>4 800</td>
<td>4 757</td>
<td>4 481</td>
</tr>
<tr>
<td>Growth in % yoy</td>
<td>1,07%</td>
<td>0,79%</td>
<td>-0,56%</td>
<td>-0,90%</td>
<td>-5,81%</td>
</tr>
<tr>
<td>in % of GDP</td>
<td>11,60%</td>
<td>11,51%</td>
<td>11,43%</td>
<td>11,12%</td>
<td>9,89%</td>
</tr>
<tr>
<td>Loans in Foreign Currency (in EUR, mln.)</td>
<td>21 735</td>
<td>21 642</td>
<td>22 192</td>
<td>21 029</td>
<td>15 987</td>
</tr>
<tr>
<td>Growth in % yoy</td>
<td>11,39%</td>
<td>-0,43%</td>
<td>2,54%</td>
<td>-5,24%</td>
<td>-23,98%</td>
</tr>
<tr>
<td>in % of GDP</td>
<td>52,64%</td>
<td>51,60%</td>
<td>52,82%</td>
<td>49,18%</td>
<td>35,30%</td>
</tr>
<tr>
<td>Loans in Foreign Currency (% of all loans)</td>
<td>66,06%</td>
<td>65,40%</td>
<td>63,72%</td>
<td>61,79%</td>
<td>42,04%</td>
</tr>
<tr>
<td>Total Deposits (in EUR, mln.)</td>
<td>33 433</td>
<td>36 026</td>
<td>37 775</td>
<td>37 595</td>
<td>38 026</td>
</tr>
<tr>
<td>Growth in % yoy</td>
<td>4,03%</td>
<td>7,76%</td>
<td>4,85%</td>
<td>-0,48%</td>
<td>1,15%</td>
</tr>
<tr>
<td>in % of GDP</td>
<td>80,97%</td>
<td>85,89%</td>
<td>89,92%</td>
<td>87,92%</td>
<td>83,97%</td>
</tr>
<tr>
<td>Deposits from Households (in EUR, mln.)</td>
<td>15 671</td>
<td>17 500</td>
<td>19 115</td>
<td>19 903</td>
<td>21 565</td>
</tr>
<tr>
<td>Growth in % yoy</td>
<td>12,79%</td>
<td>11,67%</td>
<td>9,23%</td>
<td>4,12%</td>
<td>8,35%</td>
</tr>
<tr>
<td>in % of GDP</td>
<td>37,95%</td>
<td>41,72%</td>
<td>45,50%</td>
<td>46,54%</td>
<td>47,62%</td>
</tr>
</tbody>
</table>

Source: Bulgarian National Bank, own calculations.

This trend of national reorientation for the deposits, expressed also by the two main categories of depositors, households in particular, which are generally characterized by a good stability in terms of the degree of permanence, contributed to the favorable developments in the domestic deposit base. Larger volumes were mainly recorded by leu-denominated deposits, which helped consolidate the share of this component in the percentage of total deposits (up to 54.9 percent at the end of 2015). This evolution should be related to the growth in households’ real disposable income, as well as budget payments to the agricultural sector and higher amounts
received from the government budget on account of VAT refunds in the case of companies. The general trend between 2011 and 2015 reflected a decrease in lending products distributed by the banks, both considered related to enterprises and households and related to the currency. Mortgage loans represented the only category with a steady increase during the analyzed period.

Most of the foreign banks have kept a strong international orientation but continue to deleverage from the Romanian market. In fact, it was a switch from credit lines from mother banks to deposits collected from the local customers. This trend is also relevant for Bulgaria. Another peculiarity which should be considered is the existence of CBA in Bulgaria which does not allow the Central bank to provide loans to banks.

Martinez-Peria et al. (2003) suggest that an economic downturn in the home market may cause a multinational bank to reduce its operations company wide. De Haas and Lelyveld (2004) analyze credit stability in Eastern Europe during business cycles, and show that foreign banks reduce credit in the host country when their home country is in an economic downturn. Banking products and services are distributed to the clientele by 36 credit institutions, operating in Romania in 2016. In 1990 in the market were acting 12 credit institutions, in 2008, the structure of the banking sector was composed by 43 credit institutions. The consolidation process is expected to continue as regulations are changing and reshaping the business models and the capital requirements. In 1990, 69 banks were acting on the Bulgarian market and the number of banks continued to increase until the introduction of CBA. In 2008 alone there were 30 credit institutions of which 6 are branches of foreign banks. A slow process of consolidation has been taking place in the sector and as of September 2016 the number of credit institutions is 27 of which 6 are branches.

Post-crisis developments in the Romanian banking sector include mergers, sales of portfolios or shares leading to further consolidation in the banking sector. Some banks have even become larger through facilitated mergers and takeovers in order to rescue vulnerable competitors. In the post-crisis period, the Bulgarian banks depended more on resources attracted by the households. Despite the reliability and the potential of this sector to provide resources for the banking system, it is hard to predict them. The Bulgarian banking sector during the post crisis period was characterized by changes in the banks’ shareholders’ structure, as some of these changes led to an increase of the Bulgarian shareholders’ capital. Many banks increased their capital in the post crisis period preparing themselves for the new regulatory requirements as well as to increase their stability on the market.
Digital distribution channels

Before the financial crisis, the distribution of banking products and services was realized via network of branches. Banks were investing in expansion of their networks. Post-financial crisis banks invest in technology and in new architectures, in order to distribute their services, at distance, to the customers. The post financial crisis period reflects new technological trends that are influencing the development of the banking sector. Indeed, the slow lending dynamics and the increased preference of the retail customers for online financial services resulted in the rescaling of the territorial network. Both Romanian and Bulgarian banks have exhibited a potential for growth in Internet banking services. As in other European countries, payments have been the first services to become digital in Bulgaria and Romania such as verification of customer account, execution of credit transfers and direct debits which are among the most popular services provided through online channels. Payment infrastructures, payment systems and rules have been currently reshaped in order to respond to the new nature of payments that affects the traditional banking model. A research done by PWC regarding the channels for providing banking services in the period 2013-2016 shows that there is a shift from providing services on spot by branches (-25%) and telephone banking (-13%) to online (+37%) and mobile banking (+64%).

Digitalization is inevitable and the transformation of traditional distribution channels represents a gradual process. Personnel with IT/digital skills must be invited to join, stay and contribute to the banking business developments. The new architecture should be integrated with the existing one, in a functional manner, ready to better serve the customers. Within the Romanian and Bulgarian banking sector, in the post crisis environment, the adaptation of the branches to the technological development represented a visible trend. Banks started to explore and implement new concepts for their branches: “self-service” branches, cashless branches, branches that have included technology, operating 24/7/365 with personnel, providing advisory services over the day time. Most of the banks are developing distance digital relationships with the customers, via social media platforms, interactive web sites, video advisory services. Due to the need to place a priority on their customer experience, most of the banks in Romania and Bulgaria redesigned their Internet Banking platforms, their call center solutions, and their Customer Relationship applications.

One of the most developed distribution channels for banking services is mobile banking, offering permanent contact between the customer and the bank. Payment
systems are changing due to the technological support. Various applications promoted by the banks in Romania and Bulgaria enable them to collect data about customers, as support for better assessing of the risks and drafting the customers’ profiles. Digitalization emphasizes that customer-focus should become an essential part of the banking business strategy. The client behavior is changing, the distribution channels are evolving and the approach of the banks is changing too: from products adapted to fit the customers to solutions offered to the situation/business of the customers, adding a strong technological support and trying to ensure access, security, speed, competitive costs, trusted worthy data.

We do consider that strategic decisions for the banks to invest in digital channels and /or to redesign the branch network, to mix digital with the traditional channels need specific complex analysis to take into account, also relevant regulatory and compliance changes, customer behavior changes, new functions, roles and responsibilities to be adopted, new and/or redesigned products and services to be introduced. Despite being less developed, the Romanian and Bulgarian banks are also touched by the rapid digitalization of the banking products and services. However, the process of digitalization of banking happens at a slower pace and the competition from the non-bank players which are not subject to the huge regulatory requirements and actively expand their services to the banks’ clients is a serious issue that should be tackled by the banks in both countries.

The new products that were developed by the Bulgarian banks were based on the Internet and mobile technologies. Services that are provided through the mobile banking (M-banking) are checks on the client’s accounts balances, credit transfers between client’s accounts, information on the client’s transactions performed through his/her debit or credit cards, requests for debit card issue, utility payments, payments on insurances, buying or selling of currency, information about the new products and services offered by the bank, information on the interest rates on different products offered by the bank as well as on fees and commissions on products and services. The support from the well-educated and experienced bank employees is very important in order to enable the banks to offer these new products and to be accepted easily by the clients.

Relevant indicators, regional approach during the post-crisis environment

Both the pre-crisis period, when banks were expanding their territorial presence via branches and the post-crisis environment when banks are exploring their business expansion via technology and distance services, contribute to the evolution registered
by relevant indicators for the banking sector. Hereinafter, we shall present a regional approach in order to reflect some common tendencies but also some peculiarities for every banking market, derived from their culture, geopolitical context, opportunities and vulnerabilities.

![Financial Intermediation (international comparison)](image)

**Source:** National Bank of Romania, European Central Bank (Structural indicators for the EU banking sector).

**Fig. 8. Financial Intermediation (international comparison)**

For the Romanian banking market, two of the indicators used to determine the level of financial intermediation (Assets/GDP ratio and Loans/GDP ratio) registered a downward trend from 2011, while the deposits/GDP ratio remained relatively steady in 2014, with an uptrend. Regarding the financial intermediation, banks’ assets in Romania registered a lower level, for about 60 percent of GDP. The decrease in Loans/Deposits ratio in Bulgaria is due to the constant increase in the amount of banks’ deposits as well as in 2014 and 2015 due to the huge slide in the amount of loans granted by the banks as the lending activities in the country are in a deadlock since the global financial crisis. The share of bank deposits to total liabilities in Bulgaria as of December 2015 is 84.97% which is a proof of the dependence of the Bulgarian banking sector on deposits as a source of funding. The figures are much above the average level for the EU where the ratio is a little above 50%. Nevertheless, this ratio is close to the levels for CEE countries as Slovenia, Estonia, Slovakia where the ratio varies between 67% and 70% but it is far above the levels of the ratio for Scandinavian countries as Finland, Denmark and Sweden where the lowest values of the ratio are recorded (around 32%). Regarding the Scandinavian countries the low
values of the ratio are reflective of a totally different banking model, e.g. the well-developed covered bonds market.

*Source: Bulgarian National Bank, own calculations.*

**Fig. 9. Loan-to-Deposits ratio, Change in the Amount of Loans, Change in the Amount of Deposits in Bulgaria**

*Source: National Bank of Romania, European Central Bank (Structural indicators for the EU banking sector).*

**Fig. 10. Asset Concentration (international comparison)**

The concentration of the Romanian banking sector registered a moderate level, slightly below the EU average. The market share of the top five banks in total bank
assets was 55.3%. In terms of size, in June 2015, large and medium-sized banks held 68.2% and 25.1% respectively of the total bank assets. The figures for the banking market in Bulgaria are close to those in Romania – the five biggest banks in the country have a market share of 57.3% of the banks’ assets as of December 2015.

Both in Romania and Bulgaria, the solvency ratios reflected an upward trend, with higher levels for the two banking sectors. Return on Equity (ROE) and Return on Assets (ROA) determine a bank’s efficiency in generating income by using capital and assets, respectively. The assets are registering an almost double level in Romania compared to Bulgaria. Regarding the profitability, the evolutions were different: for almost 3 years, Romania has registered a negative trend (losses) as 2015 represents the first year with a relevant positive result; Bulgaria registered constant positive indicators during the analyzed period. The profitability registered in 2015 in Romania represented the highest level since 2008 and related with low Loans/Deposit ratio creates premises for future growth.

**Source:** IMF (Financial Soundness Indicators, FSI Tables, April 2015), National Bank of Romania calculations.

**Fig. 11. Comparative developments in solvency ratio**

<table>
<thead>
<tr>
<th>Relevant indicators, Romanian and Bulgarian Banking Sectors</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total assets (EUR bn) – Romania</strong></td>
<td>91</td>
<td>91</td>
<td>91</td>
<td>90</td>
<td>92</td>
</tr>
<tr>
<td><strong>Total assets (EUR bn) – Bulgaria</strong></td>
<td>39</td>
<td>42</td>
<td>44</td>
<td>44</td>
<td>45</td>
</tr>
<tr>
<td>Total assets (%GDP) – Romania</td>
<td>70%</td>
<td>68%</td>
<td>64%</td>
<td>61%</td>
<td>59%</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td>Total assets (%GDP) – Bulgaria</td>
<td>98%</td>
<td>103%</td>
<td>107%</td>
<td>104%</td>
<td>101%</td>
</tr>
<tr>
<td>Profitability (ROE, %) – Romania</td>
<td>-2.6</td>
<td>-5.9</td>
<td>0.1</td>
<td>-12.5</td>
<td>12.8</td>
</tr>
<tr>
<td>Profitability (ROE, %) - Bulgaria</td>
<td>5.8</td>
<td>5.3</td>
<td>5.3</td>
<td>6.9</td>
<td>8.1</td>
</tr>
</tbody>
</table>

Source: National Bank of Romania, Raiffeisen Research.

In 2015-2016 there were indications for a constant increase in the profitability of the Bulgarian banks, which was mainly due to increased revenues from financial instruments available for sale, decrease in the interest expenses on deposits, decrease in administrative costs for the banks as well as in the accumulated expenses for provisions. The fall in the interest revenues was offset by the decrease in the interest expenses on deposits, which is reflected in the low interest rates offered to the clients and the abundant liquidity in the Bulgarian banking system. The figure shows the dynamics of ROA and ROE which are the main indicators for the banks’ profitability. Despite decreasing since the global financial crisis, the values of ROA and ROE are higher compared with the average figures of those indicators for the European Union, where in the post-crisis year the values of ROE were even negative – in 2008, 2011, 2012.

Conclusions

The two phases related to the financial crisis, before 2008 and after 2008, reflect specific developments from the policies and distribution channels chosen by the banks to deliver their products and services. Before 2008, banks invested in the expansion of the branch networks. The emphasis was on selling/distribution of financing products, under a prominent quantitative approach, based on funding from mother banks and/or partner banks. After 2008, banks have started to invest more in platforms to distribute their products at distance, in digitalization of financial services, in infrastructures and new architectures to support applications and access from customers, via different devices. The networks of branches were reshaped, contracted and/or redesigned, in order to sustain the new vision. Technology and digitalization may determine an important side-effect resulting in a “quality-based” retail banking trend.

Relevant indicators both for the Romanian and Bulgarian banking sectors reflect consolidation and potential for sustainable growth. Potential further M&A activity targeting banking assets in Romania and Bulgaria may also have a substantial impact on region’s foreign ownership and on further business policies. In order to rely more on quality developments, for products, banking portfolios and network developments, banks should increase their capacity to continuous adaptation of their business
models, the capacity to comply and adapt to a changing regulatory frame. A mix of channels, both traditional and digital, may support the new relationship banking with all categories of customers, both retail and corporate. The simplification for banking products and the accent on educational sale of banking products and services should be a must within the “new normality” created in the post crisis environment.

Both in Romania and Bulgaria, the financial systems should add more non-banking actors, alternative financing solutions that will deepen the financial support for both economies. The banking actors should continue the consolidation process, to improve their specific indicators and to comply with the new regulations as well. Specialization on different industries, on specific niches via building expertise and developing customized products, represents another trend that may create knowledge champions enabled to better serve some specialized industries and economic sectors and build long term relationships.

Another trend for the banks is to explore and develop more business with segments of customers via customized packages of products and services such as private banking, wealth management, trade finance, project finance. Of course, there are local solutions responding to the specific needs of the clients. From the resources point of view, for both banking sectors, the access to European non-refundable funds/other non-refundable financing programs represent an opportunity to develop and provide bridge banking financing, advisory services, to support the customers fully benefit in a competitive business environment. Regional cooperation, cross-border projects between Romanian and Bulgarian companies represent an important point for a future and valuable cooperation. The geopolitical developments, the future Bulgarian presidency for the European Commission in 2018, the future Romanian presidency for the European Commission in 2019, represents milestones for a strategic approach of the financial and economic developments and synergies, especially at a regional level. Business plans should be drafted on medium and long term basis, and commitments should also be considered in the long run. Macroeconomic imbalances generated by the financial crisis have been largely readjusted with the banking systems equipped to support the economic development in the region.

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126
D. C. Nitescu, I. P. Kazandzhieva-Yordanova. Post-Crisis Developments in Banking Products and Distribution Channels in Romania and Bulgaria

GOVERNMENT SPENDING EFFECTIVENESS
AND THE QUALITY OF FISCAL INSTITUTIONS

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JEL: E62, E32, E02, D73

Abstract

The cyclical behaviors of government spending and output are investigated for the time period 1996-2013, in the sample of 45 countries divided into 3 groups – Western European, Eastern European and CIS countries – with each one of these groups representing a different development stage. The main purpose of the study is to identify the main determinants of the effectiveness of government spending and especially, assess the role of institutional quality. Panel data fixed effects model was used for estimation purposes. In developed countries the main determinant of government spending effectiveness is found to be institutional quality, but access to financial markets is more pronounced in developing countries.

Keywords:
fiscal policy, procyclicality, institutional quality, panel data, fixed effects.

Introduction

Fiscal and monetary policies together comprise the two main tools used by governments to stabilize economic activity. Economic policy is more effective when these two are used simultaneously in the same direction. But when the options of monetary policy are limited, fiscal policy becomes the main means for the governments to intervene in economic process.

The response of fiscal policy to fluctuations in output can be automatic or discretionary. Automatic fiscal stabilizers are predetermined policy variables, such as taxes and social transfers, and automatically adjust to economic stance. They induce countercyclical fiscal policy – government expenditure rises when GDP growth falls and falls when GDP growth rises. Saving in good times and spending in bad times reduces volatility in economic activity, and lower volatility is associated with higher growth ra-
tes (Kormendi and Meguire, 1985; Ramey and Ramey, 1995). So countercyclical fiscal policy stipulates high economic growth.

On the other hand, discretionary fiscal policy is when fiscal policy is implemented not according to some predetermined rules, but to the discretion of policymakers. Discretionary fiscal policies are considered to be the main source of destabilizing effect of fiscal policy and the more discretionary the fiscal policy is, the more it tends to be procyclical\(^2\). Procyclicality induces high output volatility and undermines economic growth. In this sense, automatic stabilizers are superior to discretionary policy actions. The main advantages of automatic stabilizers include the absence of lag between policy formulation and implementation, as well as the reduction of human factor in the policymaking process.

This paper contributes to the strand of literature exploring the impacts of institutional quality on the cyclicality of government spending. The cyclicality of public spending has been adopted as a proxy for government spending effectiveness in general, meaning that when fiscal policy is countercyclical, it can be considered as effective. We draw attention to the quality of institutions as a determinant of fiscal policy cyclicality, following Acemoglu et al. (2002), who claim that macroeconomic policy distortions are not the cause of the volatility in economic growth, as frequently stated, but rather they are a symptom of institutional problems.

Here we emphasize the following impact mechanism: low institutional quality undermines effectiveness of government expenditures by making them more procyclical (and thus, volatile) and hinders economic growth. Also the question whether the access to international financial markets and financial depth of a country matters for the cyclical patterns is addressed in this paper.

For empirical purposes, 45 countries divided into 3 different groups are analyzed separately for the time period 1996 – 2013, for each country group to represent a different development stage. The results of the empirical work show that in advanced economies quality of institutions is the main factor affecting cyclicality, while in emerging and developing countries it is financial openness that matters the most.

The rest of the paper is structured as follows: Section 2 reviews relevant literature, Section 3 explains the methodology and data employed, while Section 4 reports the results. Section 5 concludes.

**Literature review**

Considering the points discussed in the previous section, it is not surprising that automatic fiscal stabilizers dominate the fiscal policy in highly developed countries, while in developing countries discretionary fiscal policy is more widespread. This
suggests that in developing countries fiscal policy is more procyclical compared to highly developed countries.

The procyclicality of fiscal policy in developing countries has been confirmed by plenty of empirical evidence, while in advanced economies it tends to be countercyclical, or at least acyclical (Gavin and Perotti, 1997; Kaminsky et al., 2004; Talvi and Vegh, 2005; Alesina et al., 2008). Empirical work, finding proof for procyclical fiscal policy in advanced economies, is not uncommon either (Arreaza et al., 1998; Lane, 2003)

Gavin and Perotti (1997) were among the first to present evidence of procyclical government spending in Latin American countries, and this is explained as a result of the voracity effects related to political distortions and also the loss of market access during macroeconomic downturns. Gavin and Perotti were not the only ones to explore fiscal procyclicality in Latin American countries. Frankel (2011) explores the case of Chile, who was able to transform its fiscal policy from being procyclical to countercyclical during the last two decades. The author gives the main credit for this transition to the improvement in the quality of fiscal institutions, in the form of newly established fiscal rules employed to keep the cyclically-adjusted fiscal balance at target.

Caballero and Krishnamurthy (2004) take the case of other two Latin American countries, namely Argentina and Brazil, and compare their public debt and budget deficit levels in late 1990’s to that of Italy in early 1980’s (high public deficit periods). The comparison shows that both the level of debt and deficit in Italy were significantly larger than in Argentina and Brazil, but unlike in these Latin American countries, in Italy the deficit was countercyclical. The authors go further and show that this is not only true for the countries under study, but also for the whole group of developing and advanced economies: in developing countries budget deficit tends to be procyclical, while in advanced economies it is rather countercyclical. The main reason for this is claimed to be the level of financial depth of a country, as the financial system of the country is underdeveloped, government cannot find any other resource for repaying debts other than increasing taxes. Also Caballero and Krishnamurthy (2004) state that more public investment crowds out private investment, and that’s why expansionary fiscal policies, in fact, have contractionary effects. But the authors feel the need to also mention the effect of political distortions namely in Argentina, saying that the inability of political leaders to react to the crisis on time further worsened the situation.

Alesina et al. (2008) explain the problem of procyclicality as a result of political agency problem in corrupt democracies, where voters follow “starve the beast”
strategy. Aware of the rent-seeking behavior of government officials, voters demand the resources received during economic upturns to be spent immediately in the form of increased government spending or reduced taxes. Because they know that if these resources are not spent, they will be wasted in the form of rents. The proposition that the underdevelopment of domestic financial markets and lack of access to international financial markets is the reason for procyclicality is criticized by Alesina et al. (2008), on the grounds that, this does not explain why governments, aware that the financial depth and openness is limited in their country, do not accumulate reserves in good times to be used during recessions.

Our main paper of interest here is Frankel et al. (2013), who present evidence that many developing countries were able to “graduate from fiscal procyclicality and become countercyclical” and point out to the increase in the quality of fiscal institutions in the form of fiscal rules as the main driving force behind this.

But the adoption of fiscal rules does not always lead to less procyclicality. A recent work by Bova, Carcenac and Guerguil (2014) provide evidence that in developing countries the adoption of fiscal rules has increased rapidly especially during the last two decades, but unlike in advanced economies, this has not caused more countercyclical fiscal policies in these countries. It is suggested that the main issue here is not \textit{de-jure} existence of certain rules, but rather \textit{de-facto} level of compliance with the rules, which is hard to measure.

To sum up, authors investigating the causes of procyclical fiscal policy find two main reasons for it:

1) The quality of fiscal and political institutions – In the presence of low quality institutions governments cannot resist the pressure of spending much during booms. Besides political pressures, the absence of fixed fiscal rules and other fiscal constraints allows policymakers to freely manipulate government spending.

2) Financial constraints – The constraints to the access of governments to credit via domestic and international financial markets make it difficult for them to acquire resources during recessions, so the governments have no other mean of raising revenue other than cutting spending.

**Methodology and data**

To empirically assess the cyclicity of government spending and its determinants, we make use of unbalanced panel data set. We focus on 3 groups of countries separately: 12 post-Soviet Commonwealth of Independent States (CIS), 15 East European and 18 West European countries for the annual time period 1996 – 2013 (for the list of countries, see Appendix, Table A1). As it can be seen, the
country groups can be matched with 3 different stages of development: CIS countries are at an earlier stage of development yet, while East European countries have already achieved a moderate level of development; West European countries represent countries with high and sustainable economic development. In dividing the countries into such groups the purpose is to find out whether determinants of the effectiveness of government spending differ among countries in different development stages.

Panel data fixed effects model is employed for estimation purposes. Methodology is derived from Frankel et al. (2013), with the estimating equation:

\[
g_{it}^c = \alpha_0 + \alpha_1 \log(y_{it})^c + \alpha_2 IQ_{it} + \alpha_3 \text{FinAccess}_{it} + \alpha_4 [\log(y_{it})^c * IQ_{it}] + \alpha_5 \\
[\log(y_{it})^c * \text{FinAccess}_{it}] + \tau_i T_t + u_i + \varepsilon_{it}
\]

where \(g_{it}^c\) and \(y_{it}^c\) illustrate the cyclical components of government expenditure and output respectively, \(IQ_{it}\) is the measure of institutional quality, \(\text{FinAccess}_{it}\) catches the effect of access to financing, \(T_t\) here illustrates year dummies to account for unobservable time-specific effects, \(u_i\) is country specific fixed effects and finally, \(\varepsilon_{it}\) is the idiosyncratic error term.

Our primary interest here is in the interaction terms. The interaction terms show the marginal change in the cyclicality of government spending (the relationship between cyclical components of output and government spending) associated with a unit change in institutional quality or financial access. For example, a negative coefficient estimate for the interaction term \([\log(y_{it})^c * IQ_{it}]\) shows that an increase in the institutional quality is associated with less pro-cyclical government spending. Its magnitude reflects the decrease in the marginal change in government spending associated with 1% increase in output, when the institutional quality increases by one unit, holding all other variables constant. So coefficient estimates on interaction terms need to be negative and significant to prove that an increase in institutional quality and the access of government to financial markets decrease procyclicality.

Based on the classification of institutions by Acemoglu, we look at the impacts of economic and political institutions on cyclicality separately. Access to financing is also differentiated between access to foreign and domestic financing.

Government expenditure is proxied by general government total expenditure in national currency (constant prices). The proxy for output is a rather standard one – annual GDP in constant national currency. Both output and government expenditure data are acquired from the IMF World Economic Outlook Database.

After taking natural logarithms, Hodrick-Prescott filter (\(\lambda=100\), as default for yearly data) is used to obtain cyclical components of government spending and output, following Kaminsky et al. (2004) and Frankel et al. (2013).
To obtain a measure of the quality of economic institutions we take 6 variables from WB Worldwide Governance Indicators, namely Voice and Accountability, Political Stability and Absence of Violence, Government Effectiveness, Regulatory Quality, Rule of Law and Control of Corruption, each of which are estimated in [-2.5; 2.5] interval, and we calculate simple averages to get a single index for the quality of institutions.

The quality of political institutions is proxied by \textit{polity2} variable from Polity IV index, which measures the extent of democracy versus autocracy on a [-10; 10] scale, with lower index indicating less democracy and more autocracy.

We make use of Chinn-Ito financial openness index to measure the access to foreign financial markets, which is also used by Frankel et al. (2013). To proxy financial depth, private credit over GDP is used, a measure which has been employed by Caballero and Krishnamurthy (2004). Data on domestic credit to private sector as percent of GDP is acquired from the World Bank’s WDI.

Incorporating all the discussed variables, we get our main estimating equation:

\begin{equation}
TotalExp\_Cycle = \beta_0 + \beta_1 \log GDP \_Cycle + \beta_2 \text{WGI\_average} + \beta_3 \text{Polity} + \\
\beta_4 \text{FinOpen} + \beta_5 \text{PrivCredit} + \beta_6 [\log GDP \_Cycle \# \text{WGI\_average}] + \beta_7 \\
[\log GDP \_Cycle \# \text{Polity}] + \beta_8 [\log GDP \_Cycle \# \text{FinOpen}] + \beta_9 \\
[\log GDP \_Cycle \# \text{PrivCredit}] + \tau_i T_i + u_t + \varepsilon_{it}
\end{equation}

All indexes are standardized to facilitate interpretation. Winsorization at 0.5% level is applied to all variables to smooth the data and reduce the effect of outliers if there are any. Full set of year dummies are incorporated into the estimation model.

Replication of graphs presented by Frankel et al. (2013) for our sample of 45 countries for the period 1996-2013 (Appendix, Figure A1, A2) confirms our first predictions about the countercyclicality of government expenditures mainly in developed countries and procyclicality in developing ones.

Looking at the scatter plot of the relationship between the quality of economic institutions and government spending effectiveness, one can spot an inverted-U shaped relationship (Figure 1.a), which means that in the first stages of development, when the quality of institutions is low, an increase in the quality leads to an increase in procyclicality, i.e. reduces efficiency. But when the quality of institutions is high enough, further increase in the quality reduces procyclicality, thus increases efficiency. Financial openness and financial depth indicators exhibit slightly noticeable downward slopes, only moderately explaining differences in countries’ procyclicality levels (Figure 1. c, d). On the other hand, the quality of political institutions seems to be an irrelevant factor of government spending effectiveness.
Cyclical components are calculated using Hodrick-Prescott filter ($\lambda=100$). Correlation between cyclical components of government expenditure and output is their correlation coefficient. Negative correlation shows countercyclicality of government spending and positive correlation shows procyclicality.

**Fig. 1. Correlation between cyclical components of government spending and output vs. explanatory variables**

Empirical results

As our time period is relatively short (18 years), there is no need to test for unit roots and autocorrelation. Panel data fixed effects model is employed for estimation.
Modified Wald test for groupwise heteroskedasticity in fixed effects model (Baum, 2001) shows the presence of heteroskedasticity in all 3 groups, so we calculate robust standard errors to account both for heteroskedasticity and autocorrelation.

Table 1 presents the empirical results. For Western European countries quality of economic institutions is the only significant determinant of government spending effectiveness. For these countries 1 standard deviation increase in the quality of institutions is associated with 0.76 per cent decrease in procyclicality, thus increases effectiveness. The cyclical components of output (LogGDP_Cycle) has negative coefficient estimate as expected, showing that the government spending is countercyclical, though not significant.

Quality of economic institutions appears to be a significant determinant of cyclical for Eastern European countries too. The magnitude of the effect is larger compared to high-income country group: 1 standard deviation increase in the quality of economic institutions leads to 1.4 percent decrease in procyclicality (or increase in countercyclicality). Negative coefficient estimate for LogGDP_Cycle implies countercyclicality of government spending, but again not significant.

Another variable of interest for the Eastern European country group is the effect of financial openness to cyclical. The coefficient estimate of the interaction term is strongly significant, but interestingly with positive sign, not quite what we expected. This means that an increase in financial openness reduces government expenditure effectiveness: 1 standard deviation increase in financial openness is associated with 1.17% more procyclical government spending. Increasing financial depth also appears to increase procyclicality, though weakly significant (at 10% confidence level).

For CIS countries none of the included variables show significance in explaining the relationship of interest. Though insignificant, coefficient estimate of LogGDP_Cycle is positive confirming our expectations of procyclical government spending in developing countries. The reason for the incapability of our model to find significant determinants of government spending effectiveness for these countries is not merely related to the variable choice. More likely it is the result of the low quality of available data for these countries.

Quality of political institutions fails to significantly explain the differences in cyclical levels of government spending in all country groups. We suspect that the reason for this is the lack of variability in the quality of political institutions over the years within each country: countries mainly sustained specific to them levels of polity4 scores with occasional changes and as fixed effects estimation mainly focuses on within group variation, the effect of the political institutions on cyclical cannot be captured.
### Table 1

**Panel regression results**

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>Cyclical components of general government total expenditure</th>
<th>Western Europe</th>
<th>Eastern Europe</th>
<th>CIS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LogGDP_Cycle</td>
<td>-0.697</td>
<td>-2.411</td>
<td>2.759</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(5.225)</td>
<td>(2.120)</td>
<td>(1.907)</td>
<td></td>
</tr>
<tr>
<td>WGI_average</td>
<td>-0.0242</td>
<td>0.0197</td>
<td>0.107**</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0417)</td>
<td>(0.0547)</td>
<td>(0.0374)</td>
<td></td>
</tr>
<tr>
<td>Polity</td>
<td>-0.0238</td>
<td>-0.0301</td>
<td>0.0420</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0181)</td>
<td>(0.0276)</td>
<td>(0.0560)</td>
<td></td>
</tr>
<tr>
<td>FinOpen</td>
<td>0.00559</td>
<td>0.0181</td>
<td>-0.100</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0371)</td>
<td>(0.0205)</td>
<td>(0.0717)</td>
<td></td>
</tr>
<tr>
<td>PrivCredit</td>
<td>0.000342</td>
<td>0.00135***</td>
<td>-0.00173</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.000207)</td>
<td>(0.000379)</td>
<td>(0.00223)</td>
<td></td>
</tr>
<tr>
<td>LogGDP_Cycle # WGI_average</td>
<td>-0.759***</td>
<td>-1.420**</td>
<td>1.292</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.104)</td>
<td>(0.512)</td>
<td>(2.003)</td>
<td></td>
</tr>
<tr>
<td>LogGDP_Cycle # Polity</td>
<td>0.985</td>
<td>0.890</td>
<td>0.881</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2.232)</td>
<td>(1.354)</td>
<td>(0.864)</td>
<td></td>
</tr>
<tr>
<td>LogGDP_Cycle # FinOpen</td>
<td>0.593</td>
<td>1.171***</td>
<td>-1.112</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2.404)</td>
<td>(0.356)</td>
<td>(0.740)</td>
<td></td>
</tr>
<tr>
<td>LogGDP_Cycle # PrivCredit</td>
<td>-0.000348</td>
<td>0.0164*</td>
<td>-0.0571</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.00252)</td>
<td>(0.00860)</td>
<td>(0.0417)</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>0.0631</td>
<td>-0.0848***</td>
<td>-0.319</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0558)</td>
<td>(0.0215)</td>
<td>(0.384)</td>
<td></td>
</tr>
<tr>
<td>Observations</td>
<td>219</td>
<td>170</td>
<td>140</td>
<td></td>
</tr>
<tr>
<td>R-squared</td>
<td>0.520</td>
<td>0.652</td>
<td>0.236</td>
<td></td>
</tr>
<tr>
<td>Number of country</td>
<td>16</td>
<td>12</td>
<td>11</td>
<td></td>
</tr>
</tbody>
</table>

**Note:** Cyclical components are calculated using Hodrick-Prescott filter ($\lambda=100$). Robust standard errors are given in parentheses. Asterisks indicate relative significance levels: *** $p<0.01$, ** $p<0.05$, * $p<0.1$

**Robustness check**

For robustness purposes we employ another indicator, namely public consumption expenditure, to proxy for our dependent variable. Government consumption expenditure has been used as a measure of government spending by Alesina et al. (2008) and Woo (2009). Data on general government final consumption expenditure (% of GDP) is acquired from World Bank World Development...
Indicators. General government final consumption expenditure is a category of government spending that only includes the acquisition of goods and services by the government to satisfy current individual and collective needs of society and does not include government investment expenditures and social transfers. The exclusion of social transfers from government spending provides us with a measure of spending free from the effect of automatic stabilizers.

The output is proxied by natural logarithm of annual GDP (constant 2005 US$). HP filter ($\lambda=100$) is again used to obtain cyclical components of output and government spending.

On the other hand, we replace our index of economic institutions quality with another index from International Country Risk Guide (ICRG) dataset by the PRS Group, Inc., as is done by Knack and Keefer (1995) and Frankel et al. (2013). The weighted average of 4 variables from ICRG, namely Law and order, Bureaucracy quality, Corruption and Investment profile is calculated to acquire single index showing institutional quality. The index then is standardized to have zero mean and unit standard deviation.

Panel data fixed effects model with robust standard errors is estimated with full set of year dummies included. Table 2 illustrates the results. Again for Western European countries, the quality of economic institutions appears to be a significant determinant of the cyclicity of government spending with expected negative sign, meaning that an increase in the quality of economic institutions reduces government spending procyclicality or increases countercyclicality, enhancing effectiveness of government spending. But for Eastern European countries the quality of economic institutions loses significance, though keeping sign. Financial openness index is weakly significant and changes sign from being positive to negative, meaning that an increase in financial openness increases countercyclicality of spending. While for CIS countries financial openness significantly affects government spending effectiveness, and an increase in financial openness is associated with a decrease in procyclicality (or increase in countercyclicality).
### Robustness results

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>Cyclical components of general government final consumption expenditure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Western Europe</td>
</tr>
<tr>
<td>LgGDP_Cycle</td>
<td>28.05</td>
</tr>
<tr>
<td></td>
<td>(28.78)</td>
</tr>
<tr>
<td>ICRG_average</td>
<td>-0.286*</td>
</tr>
<tr>
<td></td>
<td>(0.150)</td>
</tr>
<tr>
<td>Polity</td>
<td>0.761</td>
</tr>
<tr>
<td></td>
<td>(0.504)</td>
</tr>
<tr>
<td>FinOpen</td>
<td>-0.197</td>
</tr>
<tr>
<td></td>
<td>(0.235)</td>
</tr>
<tr>
<td>PrivCredit</td>
<td>0.00307</td>
</tr>
<tr>
<td></td>
<td>(0.00178)</td>
</tr>
<tr>
<td>LgGDP_Cycle #</td>
<td>-7.200**</td>
</tr>
<tr>
<td>ICRG_average</td>
<td>(2.935)</td>
</tr>
<tr>
<td>LgGDP_Cycle # Polity</td>
<td>0.903</td>
</tr>
<tr>
<td></td>
<td>(18.66)</td>
</tr>
<tr>
<td>LgGDP_Cycle # FinOpen</td>
<td>-18.51</td>
</tr>
<tr>
<td></td>
<td>(21.62)</td>
</tr>
<tr>
<td>LgGDP_Cycle # PrivCredit</td>
<td>0.0399</td>
</tr>
<tr>
<td></td>
<td>(0.0482)</td>
</tr>
<tr>
<td>Constant</td>
<td>-0.411</td>
</tr>
<tr>
<td></td>
<td>(0.910)</td>
</tr>
<tr>
<td>Observations</td>
<td>197</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.635</td>
</tr>
<tr>
<td>Number of countries</td>
<td>16</td>
</tr>
</tbody>
</table>

*Note:* Cyclical components are calculated using Hodrick-Prescott filter ($\lambda=100$). Robust standard errors are given in parentheses. Asterisks indicate relative significance levels: *** $p<0.01$, ** $p<0.05$, * $p<0.1$

### Conclusion

To summarize the main conclusions from the research, the main determinants of fiscal spending effectiveness differ among country groups: going from high to low
developed countries the significance of the determinants shifts from institutional factors to financial factors. The quality of economic institutions is a strongly significant determinant of government spending effectiveness for high-income Western European countries and is robust to different specifications. For these countries an increase in economic institutions’ quality index increases countercyclicality of government spending. Financial openness is a significant factor affecting fiscal cyclicality in Eastern European countries, but its effects are not clear-cut. Failure of obtaining robust results for Eastern European and CIS countries is likely to be the consequence of low data quality for these countries.

Reference

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1151.

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indicators
Appendix

Table A1

The list of the countries included in empirical analysis

<table>
<thead>
<tr>
<th>Western European countries</th>
<th>Eastern European countries</th>
<th>CIS countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austria</td>
<td>Albania</td>
<td>Armenia</td>
</tr>
<tr>
<td>Belgium</td>
<td>Bosnia and Herzegovina</td>
<td>Azerbaijan</td>
</tr>
<tr>
<td>Denmark</td>
<td>Croatia</td>
<td>Belarus</td>
</tr>
<tr>
<td>Finland</td>
<td>Czech Republic</td>
<td>Georgia*</td>
</tr>
<tr>
<td>France</td>
<td>Estonia</td>
<td>Kazakhstan</td>
</tr>
<tr>
<td>Germany</td>
<td>Hungary</td>
<td>Kyrgyz Republic</td>
</tr>
<tr>
<td>Greece</td>
<td>Kosovo</td>
<td>Moldova</td>
</tr>
<tr>
<td>Iceland</td>
<td>Latvia</td>
<td>Russian Federation</td>
</tr>
<tr>
<td>Ireland</td>
<td>Lithuania</td>
<td>Tajikistan</td>
</tr>
<tr>
<td>Italy</td>
<td>Macedonia, FYR</td>
<td>Turkmenistan</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>Poland</td>
<td>Ukraine</td>
</tr>
<tr>
<td>Netherlands</td>
<td>Romania</td>
<td>Uzbekistan</td>
</tr>
<tr>
<td>Norway</td>
<td>Serbia</td>
<td></td>
</tr>
<tr>
<td>Portugal</td>
<td>Slovak Republic</td>
<td></td>
</tr>
<tr>
<td>Spain</td>
<td>Slovenia</td>
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</tr>
<tr>
<td>Sweden</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Switzerland</td>
<td></td>
<td></td>
</tr>
<tr>
<td>United Kingdom</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Despite the fact that Georgia is not now a member of CIS, we include it in the model, mainly because we are more interested in the development level of countries, and the division of countries into country groups here is conventional. Secondly, our analysis covers the time period 1996 – 2013, and Georgia left the organization in 2009, so during most of this period it was a member of CIS.
Note: Procyclicality coefficient is the correlation coefficient between cyclical components of output and government expenditure. A negative correlation shows countercyclicality of government spending and a positive correlation shows procyclicality. The color of the bars shows the development level of the countries, i.e. dark bars represent advanced countries, while white bars represent the emerging market and developing economies (according to the classification of countries by IMF).

Fig. A1. Correlation between cyclical components of government expenditure and output by countries, 1996-2013.
A. Garayeva, G. Tahirova.
Government Spending Effectiveness and the Quality of Fiscal Institutions

Fig. A2. Correlation between cyclical components of government expenditure and output in 1996-2004 vs. 2005-2013

End Notes

1 We are very grateful to prof. Daniel Riera-Crichton from Bates College for his help in obtaining access to the data needed for the research.

2 Procyclicality – government spending rises and falls in the same direction with GDP growth; the opposite of countercyclicality.

3 Domestic credit to private sector refers to financial resources provided to the private sector by banks and other financial corporations, such as through loans, purchases of non-equity securities, and trade credits and other accounts receivables that establish a claim for repayment.

4 All indexes are standardized, and the coefficient estimates show the changes in output variable caused by a 1 standard deviation change in input variables.
PUBLIC PRIVATE PARTNERSHIP (PPP) FOR HOUSING DELIVERY TO THE LOW INCOME CIVIL SERVANTS IN ABUJA, NIGERIA

Suleiman BOLAJI¹

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Abstract

The aim of the paper is to relate the cost of two-bedroom houses to the income of low income civil servants and examine the possibility of acquiring PPP houses through the National Housing Fund (NHF) contributions in Nigeria. Structured questionnaires were sent to selected housing developers and the low income civil servants from the Federal Housing Authority (FHA) and mass housing department of the Federal Capital Development Authority (FCDA) Abuja and the data collected were analyzed using frequency analysis. Part of the finding is that institutional arrangement put in place is not strong enough. Therefore, the paper concluded among others that, with PPP arrangement that off-set the cost of land and basic infrastructures, N3m is adequate for a two-bedroom house in Abuja and elsewhere in the country. The study therefore, suggested full implementation of a strong market oriented PPP housing delivery.

Keywords:
Public Private Partnership, Civil servant, Housing, Low Income Earners.

Introduction

House ownership is a long dream of all civil servants regardless of status and since its acquisition involved huge finance, most low income civil servants build their houses incrementally with the passage of time as the number of families and their financial capabilities increase. Clark and Digha (2013) noted that between 35-45% of the monthly income of the low income earners were spent on accommodation (rent) against the 20% recommended by the United Nation. The inadequate income made it imperative for them to rely on public housing provision for decent accommodation and where it is not available they have to manage the expensive squalid private rented houses. In Nigeria PPP housing commenced in 2000 with the mass housing programmes of the Federal Government in Abuja. It was not until 2005 that the pro-
curement method got the legal backing or framework i.e. (Infrastructure Concession Regulatory Commission Act of 2005).

The study therefore, relates the cost of two-bedroom houses to the income of low income civil servants and examines the possibility of acquiring PPP houses through the National Housing Fund if accessed. The first comprehensive National housing policy came to being in 1991 and was reviewed in 2002, 2006, and 2012 as a result of difficulties in meeting the set goals and objectives (Ukwayi, et al. 2012). The policy framework outlined the major areas of development and improvement such as housing finance, land registration, building materials, legal, regulatory and institutional framework needed for a sustainable housing delivery in the country. Inadequate institutional framework and housing finance have long being identified as the most critical factors militating against affordable housing delivery to the low income earners in Nigeria. This issue however, is highly contentious, highly politicized by the governments, as every government has its own housing programme with none achieving the goal since independence in 1960. Various options have been adopted and the current approach in providing affordable housing for the majority of Nigerians who are the low income earners is the public private partnership.

An overview of housing delivery policies and programmes in Nigeria.

- The first period (Pre-independence 1960)

  Nigeria gained its independence from Britain in 1960. During this period, government efforts are seen in providing houses for the expatriate colonial masters and selected senior civil servants in police, army and railways in the Government Reservation Areas (GRA) which are in existence in Nigerian towns till today. There was no effort during this period to improve the housing condition of the low income civil servants. The first urban renewal attempt was the slum clearance after the bubonic plague of 1928-1929 in Lagos, the then capital of Nigeria and later the construction of additional houses in Surulere and other parts of Lagos in preparation for the independence. The establishment of Nigerian Building Society (NBS) in 1956 to provide mortgage loans to both public and private citizens, the introduction of African Civil Servants Staff Housing Fund and the regional governments establishment of housing corporations meant to provide housing for the people, were noticeable housing development activities during the period (Ikejiofor, 1998).

- The second period (Post-independence periods, 1960-1999)

  Several researches indicate efforts by governments over the years to solve the housing problems with the ultimate goal of ensuring that all Nigerians own or have access to safe, decent and healthy housing at affordable cost, (Olotua, 2000, Agbola,
According to Taiwo (2009) housing delivery over the years has been plagued with the problems of availability, accessibility and affordability as the government for a very long time accepted the enormous responsibility of providing housing for the citizens. However, the provision of adequate shelter for the citizens require huge financial resources which the government alone cannot bear, because of the contradictions within the political economy - that is, the problem of matching resources with needs at all levels (Taiwo, 2009, Madawaki 2011). This may somehow be easier in the then former socialist countries where the state either owns or has the controlling shares in the construction companies and also where the state subsidizes housing inputs to provide affordable housing for its citizens (Andreyev, 1985). This is in contrast to the practice in capitalist and particularly mixed economy countries like Nigeria where licensed entrepreneurs freely initiate, finance and build houses for the public based upon suitable arrangements between the state and the licensees (Bhatia, 2008). The government in the past articulated and implemented various land and financial reforms capable of revolutionizing the housing sector in Nigeria, but these have not yielded the desired results. These include the Federal Government of Nigeria (FGN) acquisition of 100% ownership of Nigerian Building Society and its transformation into Federal Mortgage Bank, vide Decree 7 of 1977. The current re-engineering of Federal Mortgage Bank of Nigeria (FMBN) which resulted into a framework of two-tier financial structure, the FMBN on one hand and Savings Banks, Building Societies, Credit Union and Housing Corporation on the other. In addition, the land use decree 1978 had the intention of easing the land acquisition and distribution. In Nigeria the government has always been the provider of all basic amenities and infrastructures, such as Schools, Roads, Hospitals, Refineries, Housings etc, which are considered social responsibility and not economic per se. The public is under the illusion that the government must provide these amenities and infrastructures and where it fails, it serves as a barometer for judging the success or failure of the government.

In 1962, the first National Development Plan NDP (1962 – 1968) was introduced which was aimed at producing 24,000 housing units during the planned period. Unfortunately, only 500 housing units representing 2.10 % were built, before the outbreak of the civil war in 1967. Four years later in 1971, the National Council on Housing, consisting of all state commissioners for housing was established. The FGN planned to build 59,000 housing units between 1972 and 1973 from which 60% of the houses would be for the low income earners, 25% for the middle income earners and 15% for the high income earners. Out of 59,000 units 15,000 were to be built in Lagos and 4,000 each in the remaining 11 state capitals then. The FHA was
established in 1973 to directly construct and supervise the housing projects. The projects conceived housing delivery for all income strata of society and this marked the first significant and direct attempt by the FGN to provide houses for the low income civil servants. As part of the efforts to achieve this, the ROMCONSULT of Romania was engaged to study the housing situation in Nigeria and recommend a programme for its improvement. Part of ROMCONSULT’s recommendations was the establishment a new housing estate with a coordinated and planned expansion of water, electricity, sewage, transportation, waste collection and disposal (Asiodu, 2001). The third National Development Plan (1975-1980) planned to build 202,000 housing units but like the previous one only 28,500 units representing 14.1% were built (Amao, et al, 2013). A plan was designed for the construction of 202,000 housing units annually. 46,000 units were planned for Lagos, 12,000 for Kaduna and 8,000 each for the remaining 18 state capitals. During the period the state governments were also asked to directly participate in the construction while the FHA was to provide the necessary infrastructures. The target groups were the low income earners whose annual income did not exceed N5, 000 p.a, for the one-bedroom houses and N8, 000 for three-bedroom houses, (medium income earners).

In an attempt to correct the failure in implementation and inadequacies of the past housing policies and programmes, FGN appointed a ten-man committee in 1990 to among other things, take positive steps to ensure that the less privileged members of the society have access to affordable houses. This resulted to formulation of a comprehensive National Housing Policy in 1991 which was revised in 2004 to take care of the problems encountered in its implementation. This policy was aimed at ensuring that all Nigerians own or have access to decent and safe housing at affordable cost by the year 2000. The strategies for achieving this were expected to be the restructuring of institutions, creating new structures and promulgation of new enabling laws.

- The third period (the period between 2000-2015)

The presidential technical Committee on Housing & Urban Development was also set up in 2001 to address the new housing reforms given the current unsatisfactory performance and challenges and its recommendation includes the followings: Restructuring of Federal Mortgage Bank of Nigeria, Creation of Real Estate Developers Association of Nigeria (REDAN) and Building Materials Producers Association of Nigeria (BUMPAN). The FMBN was restructured to operate solely as a secondary mortgage institution, at the same time to serve as an agent of the National Housing Trust Fund and as an operator in the capital market. Hence, an estate development loan window has been created to provide loan to real estate developers in Nigeria.
To solve the problems of housing the low income earners according to Ukoje and Kanu 2014, the government adopted a more market oriented approach by initiating and inviting the private sectors in to mass housing development which started in Abuja in 2000. It has been shown that PPP is more efficient through a properly functioning housing market than through the public agencies (UNCHS, 1997 and Akintoye, 2006). The government then maintained the role of facilitator, enabler, regulator and not the provider of public houses as it was in the past.

The Federal Capital Development Authority (FCDA) embarked on housing development, specifically targeted at low and medium income earners, through the allocation of parcels of land to private developers, to build houses and sell to members of the public under the condition that they will make the low income earners the beneficiaries. The developers were given lands ranging between 5 and 100 hectares to develop housing estates (Table 1). With this the foundation of private sector led mass housing delivery was laid.

**Table 1**

<table>
<thead>
<tr>
<th>District</th>
<th>Total allocation to developers</th>
<th>Lowest size allocated (Ha)</th>
<th>Highest size allocated (Ha)</th>
<th>Total Hectares</th>
<th>Av. size allocated (Ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dakwo</td>
<td>20</td>
<td>5</td>
<td>20</td>
<td>204</td>
<td>10.20</td>
</tr>
<tr>
<td>Galadimawa</td>
<td>21</td>
<td>20</td>
<td>30</td>
<td>460</td>
<td>21.90</td>
</tr>
<tr>
<td>Kafe</td>
<td>26</td>
<td>15</td>
<td>100</td>
<td>567</td>
<td>21.81</td>
</tr>
<tr>
<td>Lokogoma</td>
<td>61</td>
<td>5</td>
<td>100</td>
<td>731</td>
<td>11.98</td>
</tr>
<tr>
<td>Mbora</td>
<td>10</td>
<td>10</td>
<td>25</td>
<td>170</td>
<td>17.00</td>
</tr>
<tr>
<td>Wunba</td>
<td>46</td>
<td>5</td>
<td>40</td>
<td>478</td>
<td>10.39</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>184</strong></td>
<td></td>
<td></td>
<td><strong>2610</strong></td>
<td></td>
</tr>
</tbody>
</table>

*Source: Jibril&Garba (2012).*

**Housing Institutions**

i. Public Housing Delivery Agencies in Abuja

There are two public housing delivery agencies in Abuja: The Federal Housing Authority of Nigeria (FHAN) and the Mass Housing Department under the Federal Capital Development Authority (FCDA). The Federal housing authority is a federal agency established through Decree 40 of 1973, now CAP 130 law of the Federation
of Nigeria 1990, to implement Federal government housing policies and programmes. The Department of mass housing was established in 2005 to facilitate and regulate the mass housing scheme, to develop Federal Capital Territory (FCT), housing policies and regulations in line with the existing National and FCT Laws. The Department is also mandated to prepare manuals which will specify standards for planning, design and basic infrastructure in accordance with FCT regulations and National Building Codes, secure an assurance of the developer’s managerial, technical and financial abilities and to establish benchmark and checklist for all developers which should be certified before the commencement of any mass housing development discussions.

ii. Federal Mortgage Bank of Nigeria (FMBN) and Housing Finance

The FMBN was established as a direct intervention by the government to develop houses for Nigerians. The bank is expected to expand and coordinate mortgage lending throughout the country, using resources from deposits mobilized and equity contribution by the Central Bank of Nigeria (CBN) and Federal Government at interest rates below the market rates (Sanusi, 2013). FMBN has the responsibility to promote mortgage lending and manage Nigerian housing policy as the apex mortgage institution. The bank raises its capital from the National Housing Fund (NHF). Applications for the loan are made to FMBN through the Primary Mortgage Institutions (PMIs).

Housing finance - Housing in Nigeria is financed formally by borrowing from corporate financial institutions (commercial banks, merchant banks, Federal Mortgage Bank of Nigeria, Primary Mortgage Institutions and the employer of labour) and informally through savings, borrowing or assistance from friends, relations and families. Currently the alternative procurement method PPP is embraced by the government of all nations, (Austin, 2008, Andrew and Allison, 2006). PPP by nature offers innovative finance alternative for the infrastructural services delivery and can be employed for sustainable housing development in Nigeria.

Housing finance needs to be thoroughly examined given the significant role it plays in housing delivery, more so, as the majority of Nigerians cannot access loans from formal financial institutions because of high interest rates which is between 19% - 22% before the current economic recession, a situation that makes the contribution of formal financing to housing development less than 20%.

iii. Primary Mortgage Institutions (PMIs)

Up till mid-1980s the Federal Mortgage Bank of Nigeria remained the only mortgage institution in the country but it has little impact on housing delivery. The establishment of PMIs through the decree No 53 of 1989 provided an opportunity for
the private sector to participate and operate mortgage finance for private housing developers. Record shows that up till 2005 only 26 out of 36 states in Nigeria have PMIs and they are mainly in the south west (Madawaki, 2011).

### Table 2

<table>
<thead>
<tr>
<th>S/N</th>
<th>State</th>
<th>Av. Mortgagor’s G.ann. Income (Nm)</th>
<th>Unit cost of house (Nm)</th>
<th>Mean av. Cost</th>
<th>S/N</th>
<th>State</th>
<th>Av. Mortgagor’s G.ann. Income (Nm)</th>
<th>Unit cost of house (Nm)</th>
<th>Mean av. Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Abia</td>
<td>6.00</td>
<td>3.10</td>
<td>-</td>
<td>14</td>
<td>Kano</td>
<td>6.00</td>
<td>2.70</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>Akwa Ibom</td>
<td>8.00</td>
<td>3.20</td>
<td>-</td>
<td>15</td>
<td>Katsina</td>
<td>6.00</td>
<td>3.20</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>Anambra</td>
<td>6.00</td>
<td>3.00</td>
<td>-</td>
<td>16</td>
<td>Kebbi</td>
<td>6.00</td>
<td>3.10</td>
<td>-</td>
</tr>
<tr>
<td>4</td>
<td>Bauchi</td>
<td>6.00</td>
<td>2.60</td>
<td>-</td>
<td>17</td>
<td>Kwara</td>
<td>6.00</td>
<td>2.80</td>
<td>-</td>
</tr>
<tr>
<td>5</td>
<td>Benue</td>
<td>6.00</td>
<td>2.40</td>
<td>-</td>
<td>18</td>
<td>Lagos</td>
<td>8.00</td>
<td>4.10</td>
<td>-</td>
</tr>
<tr>
<td>6</td>
<td>Cross River</td>
<td>8.00</td>
<td>3.40</td>
<td>-</td>
<td>19</td>
<td>Nassarawa</td>
<td>6.00</td>
<td>3.50</td>
<td>-</td>
</tr>
<tr>
<td>7</td>
<td>Delta</td>
<td>8.00</td>
<td>2.80</td>
<td>-</td>
<td>20</td>
<td>Niger</td>
<td>6.00</td>
<td>2.50</td>
<td>-</td>
</tr>
<tr>
<td>8</td>
<td>Eboyi</td>
<td>8.00</td>
<td>3.00</td>
<td>-</td>
<td>21</td>
<td>Ogun</td>
<td>6.00</td>
<td>2.90</td>
<td>-</td>
</tr>
<tr>
<td>9</td>
<td>Edo</td>
<td>8.00</td>
<td>2.90</td>
<td>-</td>
<td>22</td>
<td>Ondo</td>
<td>6.00</td>
<td>2.90</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>Enugu</td>
<td>6.00</td>
<td>3.20</td>
<td>-</td>
<td>23</td>
<td>Osun</td>
<td>6.00</td>
<td>2.80</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>FCT-Abuja</td>
<td>8.00</td>
<td>4.40</td>
<td>-</td>
<td>24</td>
<td>Rivers</td>
<td>8.00</td>
<td>2.80</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>Gombe</td>
<td>6.00</td>
<td>2.60</td>
<td>-</td>
<td>25</td>
<td>Taraba</td>
<td>6.00</td>
<td>2.60</td>
<td>-</td>
</tr>
<tr>
<td>13</td>
<td>Kaduna</td>
<td>6.00</td>
<td>2.90</td>
<td>-</td>
<td>26</td>
<td>Yobe</td>
<td>6.00</td>
<td>2.50</td>
<td>-</td>
</tr>
</tbody>
</table>

**Source:** Culled from Madawaki, (2011).

**Public Private Partnership Housing delivery for the civil servants**

All National Housing Policies and Programmes are directed towards providing affordable housing for the low income earners who constitute the majority of population. It was in view of this that the national housing fund was established in 1992 to provide loanable funds to workers both in public and private organizations. The 1991 Nigeria Housing Policy established NHF through a mandatory contribution of 2.5% of the monthly salary of any worker earning more than three thousand naira (N3000), about eleven dollars (USD 11) then. The interest on this savings is 2%, repayable at the age of 60 or on death of a contributor. In addition to this, FMBN
received contributions from the Federal Government, commercial banks, insurance companies and pension funds. The contributors to the NHF, after six months of contributions, are entitled to a long-term loan of five million Naira (N5,000,000), for a period of up-to 30 years, depending on age and the year of service of the contributor. The loan is to enable them to purchase a house, renovate, rehabilitate, or expand the existing ones, or to buy land and build houses on their own. However, if the N 5,000,000 is not enough for the contributor, an additional loan can be sought at the prevailing market rate through the PMIs. Applications for the loans are made to FMBN through the PMIs.

- Build-Own-Sell (BOS) method of public private partnership.

BOS is the most popular form of PPP housing arrangement for the civil servants.

In Build–Own-Sell model, the developer is the principal. If it is the public developer, the housing corporation would be the initiator of the programme and would work together with the ministries of housing and urban development which will provide the blue print for the scheme. The land for the building would be supplied by the government and the construction work would be financed through FMBN’s secondary loans. If the initiator of the housing programme is a private developer that is an individual or a Primary Mortgage Institution (PMI), the government then becomes partner that facilitates, regulates and supplies the required land for the developments. The housing construction work may be funded through FMBN’s secondary loans acquired by the individual developer or by the PMI on its own. If a PMI solely finances the housing scheme then the project is called Private Finance Initiative (PFI). Whichever the case, it is mandatory by the law that housing units produced through FMBN’s funding must be sold to NHF-contributors only. The units developed would then be purchased through their savings alone or through the savings added to FMBN’s loans. This method guarantees sustainable housing development for the civil servants if well structured, managed and implemented.

The 3rd ASO housing exhibition and conference were held on 11th-13th April 2013 in Abuja. The developers presented prices of one-, two-, three-, four- and five-bedroom houses to the conference. The price for two-bedroom houses ranged between 4 – 38 million Naira, though the houses are on different locations, sizes, qualities and standard. These developers include the Federal Housing Authority (FHA), ASO Investment and Development Company, GREENGARDENS consultants limited, NET CONSTRUCT Nigeria Limited, NEWHAVEN cooperative city home owners, CITY VIEW estates limited. Among the developer’s presentations, NEWHAVEN offers the lowest prices and conditions attractive to the low income civil servants, with the prices of 1, 2 and 3 bedrooms at 3,000,000 Nm, 4,000, 000
Nm and 5,000,000 Nm respectively, the equity contributions of 20%, the interest rate of 6% for the civil servants and 12% for none civil servants. Also the NEWHAVEN offered mortgage tenure of 10-25 years, subject to age of the prospective house buyer.

The civil service structures

The Nigerian Civil Service has its origins in organizations established during the colonial period. Britain has one of the oldest civil services in the world. The Nigerian civil service structure is tailored towards the British, its colonial master (Ujo 2001). It consists of employees in Nigerian government agencies other than the military. Most employees are career civil servants in the Ministry, Department or Agency (MDA) who are progressing based on promotion, qualifications and seniority. Four classes or cadres in the civil service in Nigeria were set up during the colonial administration and remained so till today. These are the minor manipulative class, clerical class, the executive class and the administrative class. The minor manipulative class is the civil servant within salary grade level 01 – 03. They are the labourers, messengers, cleaners, drivers etc. with entry qualification of First School Leaving Certificate. This class is no longer in existence in most federal establishments as their services had been contracted out to independent contractors. The clerical class is the civil servant within the salary grade level 04 – 06, with entry qualifications of secondary school certificate. They are clerical officers and the typists who keep records and assist administrative and executive officers with their preliminary work. The two classes represent the low-income civil servants (low income earners) and formed the majority.

The Executive class are officers on grade level 07-12. They carry out day to day activities of Government business. They are the Assistant Executive Officer (AEO), Executive Officers (EO), Senior Executive Officers (SEO), Higher Executive Officers (HEO) and Principal Executive Officers (PEO). They constitute the middle income earners. The administrative class are officers on grade level 13-17, like the Permanent Secretary who is the administrative head and the Directors. They are in charge of the overall administration of the ministries, they formulate policies and advice the ministers/commissioners (Taiwo, 2009).

Methodology of study

The study was carried out on the two public and few private housing delivery agencies in Abuja between September 2013 and February 2014 to relate the cost of PPP houses on offer with the amount the low income civil servants can afford and to see whether the maximum of five million Naira (N5000000) provided by the NHF loans is adequate for a two-bedroom house. It also examined the mortgage facilities
available to the civil servants. The study administered questionnaires to developers to elicit information on the cost of a two-bedroom house with a note that the capital cost of construction excludes the cost of land and primary infrastructures and that the building is of simple design, average standard of materials and finishes. A total of 75 questionnaires were administered on purposely selected staff of the organizations, out of which 36 questionnaires representing 48% were returned and analyzed using frequency analysis, (Table 3).

**Table 3**

Cost of a two-bedroom house from the developers in million naira (Nm)

<table>
<thead>
<tr>
<th>Cost of a 2-bedroom house from the developers (Nm)</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,500,000 – 2,000,000</td>
<td>5</td>
<td>13.9%</td>
</tr>
<tr>
<td>2,000,001 – 2,500,000</td>
<td>8</td>
<td>22.2%</td>
</tr>
<tr>
<td>2,500,000 – 3,000,000</td>
<td>12</td>
<td>33.3%</td>
</tr>
<tr>
<td>3,000,001 – 3,500,000</td>
<td>11</td>
<td>30.6%</td>
</tr>
<tr>
<td>Total</td>
<td>36</td>
<td>100</td>
</tr>
</tbody>
</table>

*Source: Author's field work (2013).*

Also, the list of low income civil servants was obtained from the payroll of the Federal Housing Authority and Mass Housing Department in FCDA from which a selection was made with the help of some technical assistants working with the agencies which distributed another set of 60 questionnaires to this category of civil servants out of which 31 representing 51.66% were returned. These questionnaires were equally analyzed using frequency analysis as shown in Table 4.

**Table 4**

Cost of a two-bedroom house from the low income earners million naira (Nm)

<table>
<thead>
<tr>
<th>Cost of a 2-bedroom house from the low income earners (Nm)</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,500,000 – 2,000,000</td>
<td>16</td>
<td>51.6%</td>
</tr>
<tr>
<td>2,000,001 – 2,500,000</td>
<td>12</td>
<td>38.7%</td>
</tr>
<tr>
<td>2,500,000 – 3,000,000</td>
<td>2</td>
<td>6.5%</td>
</tr>
<tr>
<td>3,000,001 – 3,500,000</td>
<td>1</td>
<td>3.2%</td>
</tr>
<tr>
<td>Total</td>
<td>31</td>
<td>100</td>
</tr>
</tbody>
</table>

*Source: Author’s field work (2013).*

153
On the possibility of acquiring PPP housing by the low income civil servants from the loans received from National Housing Fund (NHF), cost study of twenty two-bed room bungalows of different design, from registered Quantity Surveying firms were examined by the researcher.

**Analysis of data and discussion**

Table 3 shows that the majority, 33.3% of the developers agreed that a two-bedroom house can be built in Abuja with about N2.5m – N3m, 30.6% agreed that it will take between N3m-N3.5% to build the two-bedroom house when the land is given and primary infrastructures were provided at no cost. 22.2% agreed that it will cost N2m- N2.5m. The remaining 13.9% agreed that it will cost between N1.5m-N2m. This is in contrast to Table 4 where the majority (51.6) % of the low income civil servants wanted the 2-bedroom house at between N1.5m – M2m. 38.7% agreed the cost to be between N2m-N2.5m, while 6.5% and 3.2% of the low income civil servants agreed on between N2.5m- N3m and N3m –N3.5m respectively. This is not surprising as the prospective house owners will always want cheaper houses, figure 1.

Cost of 2 bedroom house-developer’s perspective and Low incomes earner’s perspective

![Source: Author’s field work.](image)

**Fig. 1.** Cost of 2-bedroom houses from developer’s perspective and low income earners perspectives.
Also in table 2, literature survey of cost of two-bedroom bungalow in the twenty six states of the federation that has primary mortgage banks gives a mean average of 3.01 million naira.

Therefore, the study revealed the mean average cost of about 3 million Naira for the construction of a two-bedroom house.

**Conclusion**

Public Private Partnership (PPP) remained the only viable option for sustainable housing delivery to the low income earners in Abuja and elsewhere in the country because of its innovative finance ideas. In it the 2.50% monthly contributions to NHF qualify workers for a loan that can be used to build, buy, or renovate the existing building as the efforts of the governments over the years have not yielded desired result. Research has shown that with PPP arrangement where the land and basic infrastructures are provided free, a developer can build to an average standard a two-bedroom house for the low income civil servants with 3 million Naira which is less than the maximum of five million Naira (N5million) that can be accessed by the contributors of the National Housing Fund from the Federal Mortgage Bank of Nigeria.

**Recommendations**

- the Government needs to intensify effort in collecting the contributions to the National Housing Fund and ease the access of low income earners to the maximum loan of five million Naira (N5 million) allowed.
- Effort should be made to establish Primary mortgage banks in all states of the federation.
- the Government should consider PPP as an alternative procurement option that offers innovative finance alternatives and ensure its full implementation in housing delivery especially for the low income earners with proper legislation.

**References**


KEY FACTORS AFFECTING WATER CONSUMPTION IN THE BLACK SEA REGION

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JEL Q25

Abstract

Water resources are a key component of the environment and a very valuable resource for the person and his business. Two main forms of water use on the farm are distinguished - water consumption and water use. By their nature, water consumption is disposable, successive and circulating. The main purpose of this article is to examine the factors that influence water consumption. The study uses methods of analysis and synthesis, surveys and statistical methods.

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Introduction

The increase in population, rising global exchange of ideas, technologies, resources, finished products and global climate change create a new context for managing natural resources. Some of the natural resources of greatest strategic significance for mankind are water resources. Even in ancient times people placed water in the center of creation of world. Their role as a source for creating and maintaining a social life on our planet is expressed by their diversity. Forms for use of water resources are two - water use and water consumption. Water use is related to the amount of retention of water (water transport, fisheries, recreation, health, etc.), while water consumption is related to the amount of seizure of water for industrial and domestic needs. Water consumption reflects the standards and lifestyle of the inhabitants of a country.
The main objective of this research is empirical study of key factors influencing water consumption in the Black Sea basin water management (to avoid repetitions Black Sea basin water management, the Black Sea basin management, the Black Sea region and the Black Sea area are used interchangeably in the text).

The main research hypothesis, which seeks theoretical and empirical evidence is: Organisations of water sector management of water resources do not take into account the regional characteristics of water and thus gets imbalance between water resources and water consumption in different areas of the country. They do not account for important characteristics such as population, gender - age structure and cultural level.

The subject of the article is the study of relationships between water resources and water consumption. In order to confirm / reject the hypothesis we seek theoretical arguments in various studies on the problem area. In an empirical study plan dependencies are studied to verify the research hypothesis. The research subject is water consumers in the Black Sea area.

Use of water resources

Water resources are among the most important resources, especially an indispensable factor of the environment. The overall cultural and business activity of people is closely related to the use of water resources. For each country, they are one of the primary conditions for the development of national wealth and namely - energy, metallurgy, chemical, cement, pulp - paper, food - industry, agriculture, recreation and spa industry, to supply water to the settlements. Water influence the development of water transport, artificial irrigation, power generation and many other. These are vital resources that determine human life and socio - economic development of society.

There are two known forms of water use - water use and water consumption (Kafedzhiev, 2005, p.50).

Water use is inherently quantitative conservation of water. Such water users comprise hydropower, water transport, fisheries, health, sport and more. Water consumption is associated with seizure of quantitative and qualitative change in water production and consumption. Such water consumers are industry, agriculture and households. By their nature, water consumption is (Kafedzhiev, 2005, p. 59):

- disposable - when it is fully or partially used in the technological process, resulting in reduced amount. Depending on the degree of contamination waste portion is returned to the reservoirs or subjected to purification;
successive - when water technology is used by several industries or separate business units that bring different demands on it. For example, in industry it can participate consistently as a raw material, environment for cooling and after partial treatment to be used in agriculture for irrigation;

circulating - when the same amount of water is re-used in a production or as a cooler or technologically, then purified again and the rinsing water is returned to the production process.

In Bulgaria water is mainly used for drinking - water supply, industry, agriculture and hydropower. The amount of water used per capita depends largely on its life standard, the level of water-use technologies and the development of industry, energy and agriculture. Therefore the amount of water used by these major water consumers per capita per year is different for each country. Table 1 presents data on the average amount of water used per year in different countries.

Table 1

<table>
<thead>
<tr>
<th>Country</th>
<th>Drinking - water supply</th>
<th>Industrial water supply</th>
<th>Agriculture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulgaria</td>
<td>74,3</td>
<td>353,6</td>
<td>427,9</td>
</tr>
<tr>
<td>Russia</td>
<td>75,0</td>
<td>704,8</td>
<td>843,4</td>
</tr>
<tr>
<td>Hungary</td>
<td>55,7</td>
<td>297,3</td>
<td>195,1</td>
</tr>
<tr>
<td>Poland</td>
<td>78,2</td>
<td>291,7</td>
<td>97,7</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>63,9</td>
<td>267,9</td>
<td>32,6</td>
</tr>
<tr>
<td>Greece</td>
<td>48,2</td>
<td>12,8</td>
<td>444,6</td>
</tr>
<tr>
<td>Turkey</td>
<td>81,9</td>
<td>63,6</td>
<td>511,3</td>
</tr>
<tr>
<td>USA</td>
<td>184,8</td>
<td>1218,4</td>
<td>1019,4</td>
</tr>
<tr>
<td>France</td>
<td>70,0</td>
<td>264,0</td>
<td>204,0</td>
</tr>
<tr>
<td>Germany</td>
<td>49,9</td>
<td>206,1</td>
<td>8,4</td>
</tr>
<tr>
<td>Portugal</td>
<td>100,1</td>
<td>399,3</td>
<td>504,7</td>
</tr>
</tbody>
</table>


Analyzing data from the table we find that in highly developed countries of Europe such as Germany, France have little unjustified loss of water for drinking, so they have less spent supplied drinking water per capita than Bulgaria, despite its high
life standard. This is due to the fact that in Bulgaria the network is amortized and with bad functional parameters when working with larger water losses. The fact that water for industrial use is in a larger size in our country than in Germany, France means that the country does not use water save new technologies for water saving and advance systems which reduce the volume of wastewater. We, Portugal, Greece and Turkey have more than twice per capita water use in agriculture than France, suggesting low efficiency of irrigation systems in the countries listed.

From an objective analysis of the above mentioned here we can conclude that in Bulgaria the water is used irrationally. This situation requires increased attention from organizations of the water sector to seek ways for effective management and rational use. Organizations in the water sector represent a combination of human elements and instrumental resources appropriately coordinated and clear pattern of interconnections and dependencies, which aim to provide water services to the population and the economy. In this regard the following actions can be undertaken:

- introduction of strict control of water consumption and water use, the quantity and quality of effluents from various industries, households and many other activities;
- use of the levers of economic and administrative - legal mechanism by introducing optimal prices and limits stimulating economic water consumption.

Effective management and utilization of water resources affects not only the preservation of one of the main natural resources, but also on the quality of our lives. So saving water resources must become a priority for every country.

**Methodology of empirical research**

The object of this study are water consumers in the Black Sea basin management. Under water consumers we mean the natural or legal persons who consume certain amounts of water in their activities. The focus of the empirical research to the Black Sea basin water management is targeted. Given that the Black Sea basin management includes all rivers, streams forming its mainly on Bulgarian territory which flow into the Black Sea directly or through coastal lakes and bays, including internal waters and territorial sea. Its west border is the Danube Basin and East Basin, to the north it borders Romania, to the south - with Turkey.

The study is to identify the factors affecting water consumption. The aim of this study is to empirically identify the main factors influencing water consumption in the Black Sea region.

**Limitations of the study:**
restrictions related to the subject of study. The first constraint represents the isolation of natural factors that influence water consumption. The background import restrictions indicators used to measure water resources. The restriction formed the approach used to search for factors that influence water consumption. For the purposes of the article focus on social - demographic factors influencing water consumption;

restrictions related to the object of study. The scope of empirical research only covers the Black Sea basin water management. The research sample excluded the organizations from the private sector.

The survey was conducted in the period 1.07.- 30.09.2016. In order to conduct the pivotal study we used a sampling approach. By the method of respondents we had formed a sample of 60 respondents. Of these, 57 are households and the other 3 are businesses in the water sector in the research area. As of businesses responded only 3 due to their heavy workload during this period. In the selection of business operators in the research sample we used positive attitudes of cooperation from the heads of water operators in the territory of the Black Sea region and expressed interest in participating in the study.

It could be argued that their structure resembles a general sample set criterion user group (see Figure 1).

Source: study author.

Fig. 1. Distribution of respondents by consumer group

162
For the purposes of this study, the sampling unit is individual water users and items from which the data are households and managers of water operators (businesses) from the Black Sea region. Due to the nature of the water consumption, the water is used by both the natural and by the legal entities. To be largely confident in the results obtained, reported is another parameter, namely the size of the population, i.e., in this case the population of the Black Sea region, which according to NSI data for 2012 is 1130429. In view of this distribution, we accept a sample sufficiently representative (according to generally accepted standards required sample size, the share of the population surveyed usually constitute 5 to 10 percent of the sample).

In connection with the implementation of the study is an empirical inquiry is carried out. To collect the necessary data is designed questionnaire. It contains 23 questions and 8 allegations. The questionnaire is composed of five parts - introduction, three blocks of questions and statements. The introduction of the card represents an address to the respondents, which briefly presented the goal of the study and guaranteed confidentiality of information received. The questions in the survey were closed.

Statistical data processing is performed by software product SPSS. Given the specificity hypothesis using the following methods averages (Radilov and others. 2010, p. 87-88), the method $\chi^2$ and coefficients of contingency Pearson (Mishev, 2008, p. 151-152).

We believe that in the way the study was conducted there is a possible dilution in performance, and therefore attached instruments are consistent with the sample and measurements characterizing the questions in the survey.

**Factors influencing water consumption in the Black Sea region**

The subject of research interest is to determine water consumption in the Black Sea region. The distribution of the respondents in their monthly water consumption is presented in Figure 2.
Fig. 2. Water consumption per month

The reported monthly water consumption in the Black Sea region differentiates different groups according to the amount of used water. The results obtained in the empirical study showed that the water consumption in the research area which amounts in the range of 10-20 m$^3$ is mostly used and it is indicated by 45% of respondents. This amount of water consumption is typical for an average household, so the majority of respondents indicated it. 36% is not a small number, too, 67 percent of the respondents listed in the smallest possible range specified in the questionnaire, which is 5-10 m$^3$ respectively. This is conditioned by the fact that the region is populated by an aging population, suggesting that it has a passive water consumption and it uses significantly a smaller amount than others. An insignificant share represents the water consumption over 1000 m$^3$, only 5% because it is more typical for large businesses. The statistical analysis of the survey results takes into account the average water consumption per capita in the Black sea region, which is about 1.97 m$^3$.

Of particular interest for the purpose of our study is the ratio of water resource per capita and its water consumption in certain areas of the country. Statistics on water resources in Bulgaria reported that the index average amount of water per person – the total amount for the country is about 2,400 m$^3$ of water. Other important
statistics reported comprise the total water consumption in the country, which amounts to about 10 billion m$^3$ and represents about 50% of the water resources of the country. In this sense, having this data of average total quantity of water resources per person in the country and the overall water consumption, the average amount of water resources per capita can be calculated. In 2015 Bulgaria's population is 7,153,784 inhabitants. Therefore, in this data the total water resources of the population is the product of population and defined water resource per person - total and therefore it is equal to 17,169,081,600 m$^3$. As a result of this value we can calculate the average water resources per capita, which is private between total water consumption in the country and population with its water resources, yielding approximately 0.6 m$^3$ water resources per capita. Due to lack of statistical data on these indicators, the methodology for calculation is presented and made by the author, who does not claim its accuracy and precision.

As a result of these data and calculations made by the author of the average of the indicator water resources per capita is about 0.6 m$^3$. This figure compared with the resulting average water consumption per capita for the Black Sea region, which is 1.97 m$^3$ is much smaller and therefore establishes an imbalance between water resources per capita water consumption in the Black Sea area. This is due to the fact that water resources in our country are formed mainly by foreign inflows and are unevenly distributed on the territory of Bulgaria. Water scarcity arises in the Black Sea region and due to high population density and the development of specific natural - geographic and economic characteristics of this region. Disparities in the distribution of water resources can be on territorial, seasonal and annual terms. It is therefore important to specify that the period of conducting the empirical research is the season of summer, when it is possible to obtain the study area – there are major imbalances in the seasonal aspect because then during the summer season, a well-developed tourism is observed and significantly a large water consumption compared to other seasons is reported.

It is important to note that according to territorial Basin Directorate data for the Black Sea region it has seen a shortage of drinking water due to lack of surface sources of water supply. Another reason is the excessive construction along the Black Sea coast which is disproportional to the resources available for water supply. To overcome this deficiency, the following sources: dams "Kamchia", "Ticha", "Tsonevo" and "Yasna Polyana" and groundwater extracted from a large number of drilling wells, drains and reservoirs are used. These facts speak eloquently again for the discrepancy obtained - a small number of water resources per capita compared to its needs of water consumption is provided.
The expressed disproportion indicates that the water sector organizations in the field and their structures at central level do not take into account the regional characteristics of water resources. A common practice is to counteract the stressful effects of water deficit and water scarcity to use larger volumes of dams, which should be used only in case of extremely dry year. Water development and irrigation systems, are also overloaded, most of which are in poor condition, to be within tolerance for the economy and population of the region.

During the process of study of water resources some other factors that influence them are observed. In this context, sex is one of the main factors that presupposes the amount of water consumption. Gender is one of the main individual signs that determines the participation of human reproduction of social and economic processes.

The results of the study reported that more than half of respondents are women 66.6% and the other part are men 33.3%. This is due to the fact that the country's majority population is female. According to statistics for 2015 the population of our country is characterized by a greater number of women than the number of men, especially in the age groups over 40 per 1000 men account for 1070 women. This is the result of the higher average life expectancy for women, the increased mortality in men and the aging of population. According to the United Nations(UN) data the average life expectancy for men in Bulgaria is 69.2 and for women in the country, respectively - 76.2.

The next key factor which is the subject of research interest is the cultural level. The concept of cultural level has a very ambiguous definition and because of this versatility and multiple layers, it is subjected to a hard single definition. Its various definitions reflect different understanding or criteria for evaluating culture. The word culture comes from the Latin term "cultura", coming from the "colo", "colere" and means the general education, education, development, cultivation. As a result of this explanation, consequently, for the purposes of our study by cultural level we mean educational level. It reflects the educational level of the society and depends mostly on socio-economic development of the country.

The survey found that the largest share of respondents have secondary special education 30%. They are, respectively, followed by those with higher education. 28.3% of the respondents possess a Master's degree, and 13.3% - a Bachelor's degree. The same is the percentage of respondents with secondary general education 13.3%. Respondents who indicated primary education are 8.3%, followed by representatives of college education 5.00% and those persons without education -1.67%.

According to the research hypothesis, the question whether there is a link between monthly water consumption of respondents and their gender is an interesting
one. Statistical processing and analysis of the empirical study found a moderate upward correlation between monthly water consumption of the respondents and their gender. Given the research hypothesis and measurement scales, a suitable measure for the presence of correlation between the variables studied by us and the power of dependence is a factor contingency Pearson and in our case we get coefficient of contingency Pearson - 0.315.

The relationship between the studied water consumption per month and gender structure is presented in the figure below 3.

![Water consumption per month on gender structure](image)

**Direction of dependence - upward;**  
**Statistical dependence - moderate;**  
**Ratio of contingency Pearson - 0.315.**

*Source:* study author.

**Fig. 3. Relationship between the studied water consumption per month and gender structure**

Particularly, in this connection the women in the Black Sea region have a higher water consumption 31.7% compared with that of men, which is not even the half of the consumption of women and is 13.3% only. The reasons for this can be accounted to the fact that the female population comes first in the study area and dominates across the country and secondly that women use the water more often in different directions in their life and in greater amounts than men. Basically women use water in their everyday life for drinking, personal hygiene, cosmetics, in kitchen appliances (washing machines, dishwashers), cleaning house, garden and animals, while the
priorities of men using water revolve mainly around health and hygiene and for use in agriculture and livestock.

Another important aspect that explore and interpret this survey is the relationship between water consumption per month and the cultural level of respondents. Empirically we highlighted a significant correlation between the amount of water consumption and cultural level of the respondents. Given the measuring scales, a suitable measure for the presence of correlation between the variables studied by us and here comes the coefficient of contingency Pearson, which in our case is respectively - 0.528. As it has already been mentioned at the beginning of the analysis by cultural level we understand the educational level of individuals, as in Figure 4 represents water consumption by cultural levels.

![Water consumption per month on cultural levels](chart.png)

Statistical dependence - significant;
Ratio of contingency Pearson-0.528.

Source: study author.

Fig. 4. Relationship between water consumption per month and cultural level

Statistical analysis shows that the water consumption of respondents with secondary education is in the range of 5-10 m$^3$, while another portion of respondents
with university master have a greater water consumption in the range of 10-20 m³. This shows that this population with higher cultural level uses more water. This is due to the greater awareness and possession of more knowledge about the benefits of water used and the maintained higher living standards. The main indicators characterizing the living standards are access, quantity, quality of goods, services, demographics, education level and social benefits. Accordingly, households with higher standard of living have the latest technology for households such as washing machines, dishwashers, they live in larger spaces and they may have more properties, for example villas with gardens, swimming pools, etc. All these living conditions imply a greater consumption of water for different purposes. The other group of the population with the low education maintained - low standard of living life and live scarce and therefore do not have a large number of new modernized household appliances, they live in smaller spaces and therefore do not spend such a large amount of water.

With particular importance in the study was the question if there is a connection between the monthly water consumption and age structure. The age structure is important because it reveals the labor and reproductive capacity of the population and therefore its relationship to water quantity used needs to be investigated. This is shown in the following figure 5.

![Water consumption per month on age structure](image)

Source: study author.

Fig. 5. Relationship between water consumption per month and age structure

The results show that it is clear that the younger population in the Black Sea region uses a large amount of water compared to the older population. This should stem from the fact that more young people lead more dynamic lifestyle. Compared to adults resulted in a more passive lifestyle, as used less water and therefore their less
water consumption. In this regard it should also be noted that according to medical studies water needs of a young person are bigger than an adult’s one.

The empirical study highlighted a large correlation between water consumption and consumer group. Again complying with measuring scales, the suitable measure for the presence of correlation between the studied variables by us is the coefficient of contingency Pearson, which in this dependence is - 0.707. Operators have much more water consumption than households, which is represented in Figure 6.

Fig. 6. Relationship between monthly water consumption and consumer group

As evidenced by the results of the study the largest relative share of households is in the range of 10-20 m³, the distribution of shares of other groups is in the lower range of the amount used water consumption, as has already been analyzed and interpreted in the previous pages. Another significant contrast of the big monthly water consumption - over 1000 m³ for businesses, occupies a small share of 5%. This is due to the fact that operators are large organisations that use large amounts of water in the normal course of their business and can not be compared to the needs of a household.
Conclusion

The empirical study which was conducted confirmed the research hypothesis. From the results presented and proven by statistical path dependencies so far, we can make the following summary: there is a disproportion between water resources and water consumption in the Black Sea area. Organizations in the water sector in the management of water resources do not take into account the important characteristics of the region as population, gender - age structure, cultural level. The results obtained and the summaries made on the Black Sea region in the analysis can be used for other analyzes taking into account the approach of assigning private to general and could apply to some extent to other areas in the country.

From all mentioned above it becomes clear that there is a need for comprehensive consideration of water resources in the system of the water sector. In this connection, it is recommended that the ministries of the water sector in the country to develop a detailed water development plans for the security of water consumption in different areas of the country. These plans should be based on thorough analyzes of projected water resources tailored to the demographic characteristics of different regions in the country. In this connection it is necessary to check the established system of aquaculture facilities for year-round to provide the necessary amount of required water quality and to plan for those which are ready to be available upon the occurrence of unforeseen events and phenomena. It is recommended that the state develops a national water policy in a way that encourages minimal water consumption. This is possible by attracting investments for progressive systems which reduce the volume of wastewater and water saving technologies used by the population and water operators in the country.

A good practice that can be used by the organizations of the water sector in developing general schemes for water use in different areas of the country is to assess the security of water consumers taking into account factors such as gender - age structure, cultural level and user group. In this connection, it is recommended in areas with predominantly aging population, which has a passive water consumption to build on fewer catchments that can meet less water quantities. On the other hand, in places dominated by young active population, to build more catchments that require capital intensive infrastructure which can absorb large amounts of water supplies. Taking into account the cultural level factor can help careat aquatic clubs in which the public can actively participate in issues management and rational use of water resources where the cultural level is high.
Consideration of socio-demographic and environmental factors affecting water consumption in different regions for basin management of the country would allow sector organizations to provide the necessary amounts of water which can meet the needs of the population. In well received balance system for accurate distribution of water resources in the country shall be provided the necessary conditions and natural resources for future generations.

An investigation is an attempt to study the factors affecting water consumption in order to accurately allocate water resources per capita consistent with its water consumption.

References

SOME ASPECTS OF REPUTATION MANAGEMENT IN THE HOSPITALITY BUSINESS

Snezhina KADIEVA

Abstract

The article examines the nature and importance of the term “reputation” and its relation to the concepts of “image” and “brand”. It outlines the characteristics of reputation management in the hospitality business, emphasizing specific manifestations of online reputation management. An overview is made of the most commonly used international online portals that share opinions and reviews of customers about their stay in hotels, which largely form the hotel reputation. The article identifies opportunities and the latest approaches to the use of reputation management in the hospitality business.

Keywords:
reputation, image, brand, reputation management, reputation management in hospitality business.

Introduction

Over the last decade reputation management has gained importance in the hospitality business considering the existing keen competition on the market and the constant effort to attract more customers. The concept of reputation management was developed in the field of public relations, but gradually shifted its focus to surveying and assessing reputation mainly in social networks and platforms, which is formed as a result of shared views of users as well as taking adequate measures and decisions regarding maintaining high corporate reputation.

Probably no other industry branch than the hospitality business has such a strong need to apply reputation management, especially in the face of the growing influence of social media. To any hotel maintaining good reputation is a key factor for successful sales and attracting loyal customers. According to a survey of one of the most popular sites for guest opinions and reviews on hotels, restaurants and tourist sites, TripAdvisor, 93% of the respondents state that reviews shared in such sites influence their choice to a
great extent when booking and staying in a hotel. 53% of the respondents firmly state they wouldn’t book a room without having read guest reviews and opinions. (http://www.customer-alliance.com/de/artikel/hotel-reputationsmanagement)

**Nature of the concepts of: reputation, image, brand and the relation between them**

Very often the term "reputation" is used parallel to the concepts of "image", "brand" or as their equivalent, but, in essence, these three concepts have their own specifics and characteristics. This requires specific approaches to their management. Due to the volume and type of this publication, going into depth and clarifying the nature of these concepts will not be the objective, however, some definitions and opinions of authors who reveal specific characteristics of the researched concepts have been selected. Reputation is "the opinion in a particular social group or society as a whole as a result of social evaluation of the personal merits or flaws of someone, who is a particular person or group of people and organizations, based on a set of criteria. Reputation is important in many fields such as business, politics, online communities, social status, etc” (https://bg.wikipedia.org/wiki/Репутация/)

According to Graham Dowling (2005, p.13), the value of reputation is expressed in the following directions:

- It adds to the psychological value of the products - (such as trust) and services (for example, when the quality of a service is difficult to determine, it will be appreciated slightly higher if the company has a good reputation);
- It helps reduce the risk that customers take when purchasing products or services;
- It helps customers when making a choice between similar products and services;
- It increases employee satisfaction with their work;
- It provides the opportunity to attract employees with higher qualification;
- It enhances the strength of promotion and helps raise sales.

“Reputation is a communication result of the interaction between the subject and its audiences, i.e. it is a product that reflects the assessments of external audiences, while the image contains both internal and external perception and the communicated identity.” (Pavlova, 2016, p.26)

Image precedes the creation of reputation, giving us an initial idea of the given subject on the basis of which the specifics, rationality of reputation unfolds and the result is the nature of assessment heavily dependent on the particular society. (Pavlova, 2016, p.28). Another thing to be pointed out is the origin of the word "image" in English, with the meaning of ‘picture’, ‘idea’ and "reputation" - "general opinion", “assessment," which in its essence is already quite different.
As the author Kremena Georgieva explains (www.newtrend.bg, 2013) corporate image or brand image is a **collection of opinions and attitudes towards an organization**. Corporate reputation, in turn, is a concept that is based on values caused by the corporate image created in the opinions of one person. In practice, the road to good reputation goes through projection of the desired image (such as a range of opinions and perceptions) and its connection with one or more values that are important to the target groups.

And where there is good correlation between people's values and the corporate image, the reputation of the organization can become a super brand - super goal of every owner of the brand, and every Public Relations specialist. That is because, in that case, the company is respected, it enjoys high appreciation and the products or services offered are purchased (desirable). The dispute over which of these two, whether image or reputation, has a stronger impact becomes groundless at one point.

With the rising influence of new media brands with an exceptionally good image could literally be "destroyed" online in seconds, only maintaining high reputation can help management to overcome the crisis and achieve fruitful communication between the company and its audiences, thereby preventing much of its problems.

"We could say that image is what we build and we want to present and reputation is what really exists - the way we are perceived. Or if ‘image’ is the perfect image that we want to create in the minds of our public, ‘reputation’ is the reflection of what we have actually reached in the pursuit of this goal. In building and establishing an image stereotypes, archetypes and already existing images activate in individuals’ minds. In the formation of reputation, which can be seen as reciprocal to the image, opinions and assessments are activated of the actual functioning of the company and its image in social, economic, political and cultural life in comparison to similar or competing individuals, companies or organizations." (Popova, 2016, p.6)

"If certain perceptions and attitudes towards a company, i.e. its image, coincide with the perception of a particular person of appropriate corporate behaviour, they will have a positive opinion about this company. In fact, good corporate reputation represents exactly matching the image of the company and independent personal perceptions and values. "(Dowling, 2005, p.23)

In order to build good reputation commitment of the organization to the problems of society is important, i.e. accepting the idea of corporate social responsibility (CSR). Those who want to achieve a better reputation, apart from striving to gain higher profits, assume social obligations and responsibilities. They aim to contribute to the positive development of society and communities.
"There is evidence that competing with companies of equal standing commitment of a company to social problems can attract more customers. In the presence of growing competition CSR can become a competitive advantage." (Fileva, 2013, p.203, 204)

"In the 1990s it was believed that positive reputation could be built based on: profitability, low risk, market value, media image, return on investment, company size and demonstrating social concern. In the first decade of the twenty-first century other factors are added: customer satisfaction, building close relations with the stakeholders, campaigns supported by the company (including establishing their own foundations or sponsorships, and donating money for charity) and corporate programs "corporate citizenship" (Mitkova, Serafimova 2012, p.35)

In direct interaction with the concepts of ‘reputation’ and ‘image’ is the concept of ‘brand’. "The difference between image and brand can be interpreted like this: image is the ‘face’, ‘mask’ of the individual, organization or company and like a mask it can be modified and managed relatively easily, while the brand is something more: the established name, established recognizable characteristics - fonts, logos, colors, etc., the associations we have of a company or organization, as well as a public figure, acting as a brand." (Pavlova, p.33)

It should be pointed out that the terms trademark and brand are not equal, as stated by the author T. Dabeva: "Officially, any company can register a trademark, but this act does not automatically form the brand. There must be a relatively long period of establishing and strengthening the brand associated with maintaining quality consistency of the products or services associated with the brand attributes. Globally, there are many trademarks, but few brands, which suggests that a brand comprises a broad scope of marketing communications and a wealth of features. The transformation of the trademark into a brand is a process of continuous, targeted and sustainable communication of the brand holder with their target audiences. Therefore, besides the trademark, what is essential to the formation of a brand is the company name and logo, company colours, font, or a combination of fonts, other company attributes, features of the design, original pictograms and signatures, internal corporate standards, virtual and real promotional tools, forms of public relations and others." (Dabeva, 2012, p. 36)

As concisely but accurately summarized by the author Galyatin, "Image – this is the present, brand – that is the past and reputation - your future!" (Galyatin, 2011). The distinguishing characteristics of the concepts of ‘brand’, ‘image’ and ‘reputation’ are presented in Fig. 1:
The role of reputation management in the hospitality business has increased a great deal over the last decade. The predominant share of services in the hotel product, which are intangible by their nature, creates the need for potential users to explore to a greater detail the opinions and reviews of other real users about the quality of services at the hotel where they want to book, to understand what its reputation is regarding the quality of services.

Therefore, an important place in reputation management is taken by customer surveys and feedback on their opinions. Customer feedback is an important indicator of the degree of their satisfaction and a good tool in the policy of increasing the share of repeat guests in hotels, as well as enhancing the reputation of hotel companies. The survey of customer satisfaction in hospitality can be done in many different ways - through direct contact of managers and staff and talking with guests, through surveys,
through reviews of other stakeholders such as tour operators, through the "mystery guest" assessment system, including certification systems of quality and others.

One of the most recent and more widely used methods, however, is listing hotels in web-based systems of assessing quality in the hospitality industry. On the other hand we can say that the behavior of the modern consumer in tourism and hospitality changes in the direction of surveying online potential sites for travel, recreation and accommodation facilities followed by making their bookings on-line. At the same time millions of tourists share their opinion/reviews on their stay in hotels in the Internet. According to a survey carried out in Germany in 2010, 31 million Germans use the Internet when planning their vacation and about 7 million build their opinions about hotels based on the information in specialized sites for hotel reviews, of which the most popular are "Holidaycheck" and "TripAdvisor". (http://www.test.de/Hotelbewertung-Die-besten-Portale-im-Netz-1841156-0/)

At first interest was focused on travel and reservation web sites. Later, with the advance of web-2, with the plenty of possibilities for interactive sharing rather than simple content delivery, publishing information on social networks became popular; today with the existing opportunity to access the Internet through various mobile devices the trend is to make use of all social, local and mobile access, the so called SoLoMo. (http://www.euromonitor.com “SOLOMO (SOCIAL LOCAL MOBILE): A Game Changer for the Travel Industry?/)

Before outlining some major aspects of online reputation management in the hospitality business, we should point out that it is not all about the reputation of a particular hotel online, and we shouldn’t make reputation management the sole participant in hotel management. Above all, a hotel should have built an efficient quality control system, adequate customer relation management system (CRM), while at the same time applying good customer care policies. All these should be able to add to the quality of the hotel product. Introducing online reputation management is pointless without achieving high quality and positively good share of customer satisfaction and repeat business.

The complex approach when applying reputation management in the hospitality business should include:

- Survey expectations and perceptions of potential and real customers through better communication and feedback from customers and partners - tour operators, etc., Regular surveys of reviews and assessments on the Internet, analysis and estimates based on the surveys carried out, so that they lead to particular, prompt and adequate solutions.

- Introduce systems of standards and procedures, establish corporate culture, test standards and procedures, apply ongoing monitoring, make sure corporate culture is customer-orientated, apply social responsibility policies.
Apply training and staff remuneration schemes (remuneration corresponding to the level of customer satisfaction and loyalty), teamwork training, role-play training, receive feedback from staff, delegate management responsibilities, apply new technologies, improve technological skills of staff. Make sure staff gets hotel guests involved in the ethics of social responsibility.

- Frontline staff should be trained to react with sensitivity to the changing customer needs, their expectations and the levels of their satisfaction.
- Surveys of image, brand popularity, reputation. Introducing a system of receiving customer feedback. Study blogs and sites to check on reviews, opinions. Offer prizes to loyal customers, expressing their opinions in social media.
- Good reputation management is also based on the management of potential problems. Management of potential problems in turn is associated with identifying problems, analyzing problems, options for action strategies in the event of change, action plans and assessment of reputation. (Dalton, G. 2005)

Over the last decade the role of On Line Reputation Management (ORM) in the hotel business has increased substantially. According to a survey made by TripAdvisor, one of the largest travel reviews sites for sharing reviews and opinions, one of the six most important trends in the travel and hospitality business in 2016 is management of on-line reputation.

- 93% of hotels find on-line travel reviews vital for the future of their business. On Line Reputation Management is one of the important fields of investment in hospitality.
- In 2016 these investments have increased by 59% compared to 2015. (https://www.tripadvisor.co.uk/TripAdvisorInsights/n2670/6-key-travel-trends-2016#sthash.dKeuawed.dpuf)

Online Reputation hotel management involves continuous monitoring of feedback, ratings and reputation of the hotel in social networks and specialized sites. There is constant need for receiving customer feedback, effective techniques are expressing appreciation for shared positive feedback, adequate response to negative feedback, i.e. sending replies to dissatisfied customers, taking measures to remedy problems that tourists complain about.

We will present in brief portals/sites, most widely used in the hospitality industry internationally, which share opinions and reviews of customers about their stay in hotels, and to a great extent help shape hotel reputation.

**TripAdvisor** is one of the most visited portals for sharing opinions and reviews of travel and stay in hotels. With its over 200 million reviews and opinions given by travellers, this site offers efficient customer feedback. You can learn about the quality
of service that a hotel offers, as soon as you click on its page in TripAdvisor. The first panel has an illustrated scale with the number of visitors and the rating they have given, such as "excellent", "very good", "medium", "bad" or "terrible" as well as a more detailed breakdown of the assessment (from 1 to 5) for the "location", "quality of sleep", "rooms", "service" and "cleanliness". In addition to the general reviews and opinions the hotel pages in TripAdvisor feature pictures of the hotel, a map with its location, contact information, a link to the official website of the hotel, ranking compared to all other hotels in this city (e.g. "position 26 out of 1,270 hotels in Rome"), a list of the amenities it offers, hotel description provided by the hotel itself. "Questions and Answers ", as well as tips for better room selection. In a small search window travellers can check availability of rooms and prices for the selected period.

**Holiday Check** is another very popular site created as a space for sharing posts of travellers and their stay in hotels and travel destinations, and later expanded its functions offering options for online booking. About 25 million visits at Holiday Check are registered every month. Customers can post online only their opinions and reviews of hotels they have stayed at. Classification of hotels according to the views of consumers is influenced by three main factors: number of reviews, level of assessments (ranking) and recommendations given by customers. It should be pointed out that comments can be published only by customers who have stayed at the respective hotel at least one night. One of the specifics of Holiday Check is its databank. It keeps customer reviews for more than 25 months. This extensive databank provides opportunities to measure the reputation of the respective hotel for a longer period of time.

**Zoover** is a site considered most important and used mainly in the Benelux countries. It operates with 25 more sites from other countries, and it has separate sites for Germany, Austria and Switzerland. Guests have the right to publish reviews of a hotel only once a year. Zoover warns its customers - hotel guests and owners, that those who post ratings and reviews of hotels that are false and manipulative will be removed as users. For hotel ranking Zoover uses an algorithm that is based on the average score of the opinions of guests, amount of the information provided on the site such as pictures, reviews, more detailed hotel information, etc., as well as the users’ behavior while surfing the Zoover.

**Booking.com**, the market leader for hotel booking platforms belongs to the American Priceline Group and has over 100 million registered ratings and guest reviews. The portal can be used in 40 languages and it offers the opportunity to book in 1,007,490 accommodation establishments. On average 800,000 beds are booked through Booking.com daily. After their stay in a hotel, guests are notified automatically to assess their stay at the hotel. The system calculates an overall score of 1 to 10
based on the following criteria: cleanliness, comfort, location, amenities, staff, "quality/price" ratio and free WiFi access. Based on the assessments accommodation establishments in the area are rated and listed starting from poor to excellent.

**HRS** (Hotel Reservation Service). Tiscover and hotel.de. sites belong to HRS, which is the market leader for business trips. The company was founded back in 1972 before that Internet boom. HRS now offers over 250,000 hotels in 32 languages, hotel.de alone offers a choice of 210000 hotels. A hotel is assessed in several categories and average values are calculated. In HRS and Tiscover the hotelier can address customers responding to their comments, whereas this is impossible on the hotel.de.

**Trivago** is a company based in Germany and since the end of 2012 it has been a subsidiary of Expedia. Trivago specializes in meta-search of hotels, providing its users comparison of hotels in different channels under the criteria: prices, reviews rating. Trivago provides comparative information about over 725,000 hotels in 256 different booking pages. The portal integrates user ratings of other portals (eg. Holiday Check, Booking.com, Venere, Zoover) and it recalculates them with an index to 100. In addition to this, users can make their own assessments on the Trivago site on a scale of 1 to 10.

In these evaluations, hoteliers can reply to customers. Moreover, hoteliers can enter free additional information when their product has changed and use promotion material.

Table 1 presents some of the leading online sites for reviews and ratings of hotels reputation in 2015. They should be monitored by hoteliers wishing to make use of effective reputation management.

<table>
<thead>
<tr>
<th>Site</th>
<th>User market</th>
<th>Business model</th>
<th>Rating system</th>
<th>Availability of hotelier’s comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>TripAdvisor</td>
<td>International</td>
<td>Meta-search (direct booking)</td>
<td>1 - 5 points</td>
<td>yes</td>
</tr>
<tr>
<td>HolidayCheck</td>
<td>International, in German-speaking countries mainly</td>
<td>On-line travel agency (OTA)</td>
<td>1-6 suns</td>
<td>yes</td>
</tr>
<tr>
<td>Zoover/subsidiary of HolidayCheck/</td>
<td>Benelux</td>
<td>Click-Out:*</td>
<td>1-10 points</td>
<td>yes</td>
</tr>
<tr>
<td>Booking</td>
<td>International, with a major share in Europe</td>
<td>OTA</td>
<td>1-10 points</td>
<td>yes</td>
</tr>
<tr>
<td>Service</td>
<td>Handled by</td>
<td>OTA</td>
<td>System description</td>
<td>Rating</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>--------------------------</td>
<td>-----</td>
<td>------------------------------------------------------------------------------------</td>
<td>---------</td>
</tr>
<tr>
<td>Trivago</td>
<td>International Meta-search</td>
<td></td>
<td>Summarises and compares prices and reviews from different sites. With its own rating system - 1-10 points</td>
<td>yes</td>
</tr>
<tr>
<td>Venere</td>
<td>Italy, International OTA</td>
<td>1-10</td>
<td></td>
<td>yes</td>
</tr>
<tr>
<td>Hotels.com</td>
<td>International OTA</td>
<td>1-5</td>
<td></td>
<td>yes</td>
</tr>
<tr>
<td>HRS</td>
<td>International, German-speaking countries mainly OTA</td>
<td>1-10</td>
<td></td>
<td>yes</td>
</tr>
<tr>
<td>Tiscover</td>
<td>German-speaking countries /focusing on UK destinations/ OTA</td>
<td>1-5</td>
<td></td>
<td>yes</td>
</tr>
<tr>
<td>Hotel.de</td>
<td>German-speaking countries OTA</td>
<td>1-10</td>
<td></td>
<td>no</td>
</tr>
<tr>
<td>Holiday-test.de/assessment site „ab-in-den-urlaub, Unister/</td>
<td>German-speaking countries OTA</td>
<td>1-5</td>
<td></td>
<td>no</td>
</tr>
<tr>
<td>yelp</td>
<td>International Advertising agency</td>
<td>1-5 stars</td>
<td></td>
<td>yes</td>
</tr>
</tbody>
</table>

* redirects users to external booking partners (e.g. on-line travel agencies)

**Source:** ÖsterreichischeHoteliervereinigung, file:///D:/Reputation%20Management%202016/REPUTATIONSMANAGEMENT.pdf

**Online reputation management in the hospitality business**

As already stated, online reputation management has been gaining importance in the hospitality business. Experts recommend different approaches to managing online reputation to be used by hotels (www.travelmind.eu): 1) monitor relevant portals for the reviews and ratings of hotel guests; 2) subscribe to the GoogleAlerts service, through which we receive the Google search results according to specific criteria; 3) place a tablet at reception - this is perhaps the easiest, yet most effective way to encourage guests to review their stay in the hotel, the tablet has special software installed to post reviews and assessment in real time mode; 4) place the QR code
(Quick response code) in the hotel room - you can receive the opinion of guests at any time of their stay by placing QR-codes in a hotel room, elevator, restaurant or other key locations. QR codes allow users to go directly, with a click of the smart phone, to a page online and share feedback and reviews of their stay in the hotel; 5) reminder at reception - one way to encourage satisfied guests to leave a review about the hotel online is through a personal reminder for checking out guests. Receptionists could do that by encouraging guests, on their checking out, to share their opinions of the hotel in popular relevant sites; 6) e-mail reminder - another way to increase your online reputation is by sending an email to every guest within 24 hours after their departure. The content of the email can enclose direct links to TripAdvisor, Holiday Check or similar sites where they can make comments online, or post reviews, opinions or recommendations to the hotel; 7) create a database of negative reviews and recurring problems expressed in the guest feedback with the aim to analyze the reasons causing those faults and find ways to make amendments. At the same time guest should receive a reply thanking them for their critical opinion shared and apologizing for the inconvenience suffered.

Besides the above-mentioned possibilities for hotels to manage their own on-line reputation, there are consulting firms which offer such paid service using specialized software products. Market-leading companies in this field are: TrustYou, ReviewPro, Revinate, CustomerAlliance, Travel Mind etc.

“Specialized marketing agencies can help the hotel define its strategy and manage its online reputation. However, it should be pointed out that Replies to critical remarks must be sent on behalf of the hotel, and by the hotel itself” (http://thexperts.bg/article/ gostite-vi-rabotyat-za-vas-onlain, your guests work for you on-line) A steady trend in the development of the Bulgarian hotel business is currently exhibited, with more and more accommodation establishments starting to register in online booking systems. Hoteliers monitor guest reviews and the hotel rating, but they are not in constant contact with their customers, they do not reply regularly to their critical remarks and they do not use the complex approach described in the article when applying hotel reputation management. This calls for more focused management strategies in this matter in order to raise the reputation of Bulgarian hotels on the international hospitality market.

There is a direct correlation between reputation management and revenue management. The good reputation of a hotel contributes to its increasing revenue and vice versa. The Cornell University estimated the ratio between successful hotel reputation management and the number of sales: If the assessment of a hotel in on-line sites goes up by one point (on the scale of 1 – 5), the hotel can raise its prices by 11%
without experiencing lower demand for its services or losing its market share. (http://www.customer-alliance.com/de/artikel/hotel-reputationsmanagement/)

The higher rating and higher reputation, respectively, of a hotel justifies the increase in prices, as it is accepted by the customer as normal, leading to a following increase in bookings.

Conclusion

Considering the conditions in which the modern hospitality business is developing hotel managers and hotel owners need to implement effective reputation management to enhance the hotel’s reputation, which would certifying the quality of the hotel product. Building a positive image of the hotel and establishing its brand is inextricably linked to maintaining its high reputation. Reputation management, including online Reputation management is a tool that allows the hotelier to maintain efficient feedback from its customers, in order to better understand their needs and desires and thus be able to improve service and attract a growing number of loyal customers.

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ARCHITECTURE OF WEB-BASED SYSTEM FOR USABILITY EVALUATION OF MOBILE APPLICATIONS

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Abstract
Nowadays, the use of mobile devices and applications installed on them is growing more and more and this leads to an increased interest in the ease of use of their user interface. In this article are researched the factors that influence the usability evaluation of such type of applications. There are studied some methods and tools which are used in usability testing and evaluation processes. On this basis there is proposed a system for usability evaluation of mobile applications. Its architecture implements features of Internet, multimodal and biometric applications.

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Introduction

Numerous researchers work on the usability problems of computer interfaces. In the 1980s and early 1990s a number of methods for usability testing and evaluating of software were created. The dynamic advance of information technologies has over the years had to develop new methods and tools to assist specialists in the study of the usability problems of user interfaces. With the emergence of mobile technology, there has gradually been formed a new research field. According to statistics, today there are reported about 7.7 billion mobile connections worldwide, of which 4.7 billion unique users (GSMA Intelligence, 2016). In Bulgaria alone these are 11.1 million (GSMA Intelligence, 2016) at a population of 7.15 million (Department of Economic and Social Affairs, Population Division of United Nations, 2015). The advent of mobile technology in everyday life is growing globally. At the end of 2015 it was reported that 63% (GSM Association, 2016) to 68% of the world population (Poushter, 2016) had a mobile phone, for Europe the proportion was higher - 85% (GSM Association, 2016) and continued to increase. At the end of 2020 it is projected that 72% of...
the world's population will have mobile communication (GSM Association, 2016). Therefore, this study focuses precisely on the usability of applications that run on mobile devices - phones and tablets.

The purpose of the present article is to propose an architecture of a system for usability evaluation of mobile applications, which applies advanced technology, ensures accuracy of the final result and covers the entire process of exploring usability.

Usability of mobile applications

Usability is a subject of research by a number of specialists. Some define it as "a quality attribute that assesses how easy user interfaces are to use" (Nielsen, 2012). According to others, the term is "a catch-phrase for products that work better for their users, but it is difficult to pin down just what people mean by it" (Quesenbery, 2001). Some standards define it as "extent to which a system, product or service can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use" (ISO/DIS 9241-11.2, 2015).

Table 1 shows a comparison between the main factors which determine usability based on the developments of specialists who work in this field - Jacob Nielsen, Whitney Quesenbery and Jennifer Preece, and the standard ISO / DIS 9241-11.2. According to Nielsen, these are quality components. Quesenbery calls them "five characteristics or the 5 Es of usability", and for Preece these are goals.

The factor which determines the usability in all of the definitions is efficiency. Effectiveness and user satisfaction are also important. According to Quesenbery, user satisfaction stems from the combination of the five "E"-s, as she calls them. For Nielsen, Quesenbery and Preece usability is defined by quality component learnability or ease to learn, i.e. the interface of a technology must be designed to allow intuitive handling, hence the memorability indicated by Nielsen and Preece.
Based on the foregoing, it could be concluded that usability is a quality criterion seen in a specified context of use. In defining the level of a product’s usability there should be taken into account the ease of interaction, which, according to the author of this study, encompasses easy to learn, memorability and error tolerance.

If there are to be identified additional factors that determine usability and which are correctly reflected in its evaluation by methods and software tools, those are: efficiency, effectiveness, ease of interaction, security and utility placed in specific context of use and always viewed in combination, to achieve user satisfaction for those who work with the current application.

In terms of applicability of the reviewed definitions to the usability of mobile applications it is necessary to consider additional factors arising from the physical characteristics of the devices. Based on the studies of certain authors (Zhang, Adipat, 2005; B'Far, 2005; Deepak et al, 2012; Kumari, 2014; Flora, Wang, Chande, 2014), this article proposes the following categories of factors that do not depend on the type of the specific mobile application (native, hybrid or mobile web):

- Related to the mobile device - computing capabilities, screen size, resolution, input-output methods, power consumption and sensors. None of the reviewed authors indicates the sensors as a factor that affects usability, or as a part of the characteristics of mobile devices in general. According to the author of this study it is correct to consider that as well, because the loss or damage of any of them can cause problems with application performance and thereby affect its usability. In addition, sensors give an account of environment changes (context of use). In that way applications "meet" adequate external device factors that can affect communication between the software and the user in a negative aspect;

- Related to the network connection - when data exchange is disturbed, the application cannot fulfil its purpose. This leads to usability problems - the users remain dissatisfied because they cannot perform their specific tasks and achieve their goals.

All of these factors determine usability as a context-dependent criterion of no single measure. However, it can be tested by various methods and tools, some of which have been established in the art of other fields.

The author of the present study has found that there are currently no precisely identified stages of this process either by the international standards or by specialists in the usability field. Some authors (Howarth, Andre, Hartson, 2007) have researched only the usability evaluation process, others have focused on the usability testing process (Barnum, 2011; Rubin, Chisnell, 2008), but in the literature these do not occur together, covering the entire usability exploring process. Also, there have not been found sources that clearly indicate grouping of the methods and tools, which corresponds to their application by stages.
The objective of the present research requires us to identify the main activities in exploring the usability of mobile applications. To describe that process the author of the article uses the process approach, which should provide "a lower cost and faster development of new products; lower fixed and predictable costs; the ability to dynamically improve the organization" (Filipova, 2013). Adapted to the usability of mobile applications, it is appropriate to include the following stages: Planning (P), Testing (T), Usability analysis (UA) and Reporting (R) (Fig. 1).

**Fig. 1. Business process of exploring the usability of mobile applications**

For the proper implementation of the process it is necessary that its stages be provided with specific methods and tools for usability testing and evaluation. These are an object of research in many scientific papers (Nielsen, 1993; Nielsen, Mack, 1994; Faulkner, 2003; Lewis, 2006; Rubin, Chisnell, 2008; Wilson, 2013). Based on the studies of the author, Table 2 summarizes a comparison of the methods which are mainly applied in the practice. The author of the present study divides the types of methods into main and supporting. The main methods can be applied independently, while supporting methods must be used with another (main) method.
Table 2

Comparison of methods applied in the testing and evaluation of usability

<table>
<thead>
<tr>
<th>Method</th>
<th>Type¹</th>
<th>Stage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thinking Aloud Protocol</td>
<td>Main</td>
<td>T</td>
<td>Tools: Task Scenarios, Video / Audio Recording; Quantitative data: No; Place²: OfC / Lab</td>
</tr>
<tr>
<td>Question-asking Protocol</td>
<td>Main, Supporting</td>
<td>T</td>
<td>Tools: Task Scenarios, Video / Audio Recording, Questionnaire; Quantitative data: No; Place: OfC / Lab</td>
</tr>
<tr>
<td>Remote Testing</td>
<td>Main, Supporting</td>
<td>T</td>
<td>Tools: Remote Access Software; Quantitative data: Yes; Place: Rem</td>
</tr>
<tr>
<td>Performance Measurement</td>
<td>Main</td>
<td>T</td>
<td>Tools: Task Scenarios, Video / Audio Recording; Quantitative data: Yes; Place: OfC / Lab</td>
</tr>
<tr>
<td>Wizard of Oz</td>
<td>Main</td>
<td>T</td>
<td>Tools: Prototype, Task Scenarios, Video Recording; Quantitative data: No; Place: Lab</td>
</tr>
<tr>
<td>Focus Groups</td>
<td>Supporting</td>
<td>T</td>
<td>Tools: Questionnaire, Video / Audio Recording; Quantitative data: No; Place: OfC</td>
</tr>
<tr>
<td>Interview</td>
<td>Supporting</td>
<td>T</td>
<td>Tools: Questionnaire, Video / Audio Recording; Quantitative data: No; Place: OfC / PVU / Rem</td>
</tr>
<tr>
<td>Contextual inquiry</td>
<td>Supporting</td>
<td>T</td>
<td>Tools: Questionnaire; Quantitative data: No; Place: PVU</td>
</tr>
<tr>
<td>Surveys</td>
<td>Supporting</td>
<td>T</td>
<td>Tools: Questionnaire; Quantitative data: No; Place: OfC / PVU / Rem</td>
</tr>
<tr>
<td>Heuristic evaluation</td>
<td>Main</td>
<td>UA</td>
<td>Tools: Software for automated testing; Quantitative data: No; Place: OfC / Rem</td>
</tr>
<tr>
<td>Cognitive Walkthrough</td>
<td>Main</td>
<td>T, UA</td>
<td>Tools: Prototype; Quantitative data: No; Place: OfC / Rem</td>
</tr>
<tr>
<td>Pluralistic Walkthrough</td>
<td>Main</td>
<td>T, UA</td>
<td>Tools: Prototype; Quantitative data: No; Place: OfC / Rem</td>
</tr>
<tr>
<td>Feature Inspection</td>
<td>Main</td>
<td>T, UA</td>
<td>Tools: Prototype; Quantitative data: No; Place: OfC / Rem</td>
</tr>
<tr>
<td>Standards Inspection</td>
<td>Main</td>
<td>UA</td>
<td>Tools: Prototype / Final product; Quantitative data: No; Place: OfC / Rem</td>
</tr>
</tbody>
</table>

The methods are applicable to only one or two stages of the usability exploring process, but do not cover the rest. In practice, those which use questionnaires are completely automated, because they comply with a certain structure. However, this type of studies is not suitable for self-administration in the entire process because users are mechanically responsive in some situations, without thinking on the issue. Usability experts are not able to observe their face expressions, voice intonation and reactions when giving answers.

On the other hand, methods that are associated with direct communication with groups of people, such as focus groups, contextual inquiry and “Wizard of Oz”, do
not follow a precise structure and these are different every time, although there may formally be set a scenario. The application of the methods is strictly dependent on communication between people which makes them unsuitable to implement on a software system.

The method that provides maximum freedom at work is remote testing. It is implemented in software tools for usability testing. It provides independence from hardware, time and physical location of users who interact with the software system. Its disadvantage is related to its insufficiency of reproducing the relevant results. Therefore, it should be applied in conjunction with other methods. The method is often combined with performance measurement that is used for tracking users’ time for performing specific tasks. That is why the latter is suitable for automation and respectively for implementing on a software system.

An important point in usability research is studying the mental models of users in the performance of test tasks. For this purpose there is used the method Thinking Aloud Protocol, which can also be applied in combination with other methods. It is not subject to automation, but it is conducted with additional technical equipment for video and audio recording, which makes it suitable for implementing on a software system.

Concerning the methods that are applied at the stage Usability analysis, among the most widely used and proven in practice is the heuristic evaluation (Ji, Park, Lee, Yun, 2006; Bertini, et al. 2009). But it cannot be automated, at least not entirely. Some of the evaluation criteria (heuristics) cannot be reduced to an algorithm because they depend on the judgement of experts and accordingly are too subjective.

The presented methods are used by some of the existing software tools for remote testing of mobile applications, which are summarized in Table 3.

**Table 3**

<table>
<thead>
<tr>
<th>Tool</th>
<th>Stage</th>
<th>Tests’ type</th>
<th>Input data type</th>
</tr>
</thead>
<tbody>
<tr>
<td>UserZoom (userzoom.com)</td>
<td>(us-</td>
<td>T, UA, R</td>
<td>Taps, Gestures, Questionnaires, Bio-</td>
</tr>
<tr>
<td></td>
<td>)</td>
<td></td>
<td>metric data</td>
</tr>
<tr>
<td>iMotions (imotions.com)</td>
<td>(im-</td>
<td>P, T, UA, R</td>
<td>Biometric data, Questionnaires</td>
</tr>
<tr>
<td></td>
<td>)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Userlytics (userlytics.com)</td>
<td>(us-</td>
<td>T, UA, R</td>
<td>Taps, Gestures, Questionnaires</td>
</tr>
<tr>
<td></td>
<td>)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loop11 (loop11.com)</td>
<td></td>
<td>T, UA, R</td>
<td>Taps, Gestures, Questionnaires</td>
</tr>
</tbody>
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The listed software tools support most of the stages of the process of exploring usability, but do not cover them completely. For example, some allow a creation of test tasks, but do not support a creation of a complete plan of the testing process. They support analysis of the test results, which are displayed in graphical format, in most cases in the form of heat maps. There are also generated reports that are based on the results of the analysis, but they only include quantitative data without recommendations for usability improvement.

Some tools are used in performing unmoderated (without usability experts) usability testing. On the one hand, the use of such tools saves time in the testing process, reduces costs, including experts in the project, gives fast results, collects quantitative data (most often tracked actions are display taps). On the other hand, the absence of a moderator can be essential in analysing the user’s behaviour (especially in facial expressions and tone of voice in applying the method Thinking Aloud Protocol). Still no software can detect some subtle detail differences in the behaviour of people which are perceived by an experienced specialist.

Tools that are based on the collection and processing of biometric data, generate the utmost accurate results because they cannot be manipulated. There are also used advanced biometric technologies, such as eye tracking, electroencephalogram (EEG) analysis of facial expressions, reading brain waves and more. This gives an account of the many aspects of interaction between humans and the tested technology.

It could be concluded that the considered methods and tools do not fully cover the entire process of exploring usability. This raises the need for developing a piece of software that can be practically useful by providing for the business process of exploring usability (Fig. 1). The new solution must fulfil the following requirements:

- realize the system as a web-based application through which to achieve flexibility of the workflow;
- add policies related to security of access to the system, given the specificity of the collected data;
- integrate easily accessible methods for recording, processing and analysis of biometric data;
- apply methods for tracking users’ interactions with mobile applications;
- provide an opportunity for development of two testing approaches - moderated and unmoderated.

All that represents a necessity to develop a system for usability evaluation of mobile applications characterized by a complex architecture and integrating advanced technologies.

**Architecture of a system for usability evaluation of mobile applications**

Taking into consideration the system requirements and stages of the process of exploring usability, the present study proposes an architecture of a system for usability evaluation of mobile applications. Access to it have four user groups: Administrator, Project Manager, Usability Analyst (usability specialist or moderator of the session), Tester. There is a different interface for each group. As some authors recommend (Kuyumdzhiev, 2011), the pages that are used in these interfaces need to be grouped into modules to restrict the access of some of the groups to certain functionalities of the application.

The system has the following main modules: **Project Organization, Users, User Sessions, Messages, Data Processing and Analysis, and Reports**. In practice, each of the phases of the business process is supported by a specific module. The connection between the modules is illustrated in Fig. 2 by connecting arrows that have the meaning of "direct interaction".

![Fig. 2. Modular system organization at a high level](image-url)
The module "Project Organization" is responsible for creating new projects, for managing the active ones and for results tracking of already completed projects. Through it the first stage of the business process (Planning) is provided.

Module "Users" interacts with the others and is associated with user account control. User information is required in creating new projects, in testing mobile applications, in messaging, in the preparation of reports, etc.

To improve communication between users in the system, there is provided the creation of a module "Messages". It is responsible for sending a new email, for checking received ones, for working with drafts.

Module "User Sessions" provides for the stage "Testing" in the process of exploring usability. Data that are received by it are transmitted to the module "Data Processing and Analysis" to perform important automated analytical operations. User sessions are conducted in two sub-stages - Interview and Test Sessions. The interview contains questions divided into two groups - Expectations / Impressions of the product and Checklist after tests. The first group of questions are asked before performing the tests. The goal is to check whether the user has worked with the app or likes it and to share their anticipation prior to using it. Users answer the second group of questions after the test sessions. The goal is to conduct subsequent control of their opinion on the basis of experience with tested applications.

Test sessions are implementing case studies (there is used the Performance Measurement method) through which the solving of specific problems is observed. User actions are tracked after having an application installed on their mobile devices (phone or tablet) which contains code for tracking their actions with the test product. In performing each task the system records the activities and accordingly the necessary quantitative data that are tracked through by interaction (tapping) with the specific options of the application by the users. Suitable addition to those is reporting users’ brain activity, the analysis of which should establish which tasks are actually difficult or easy to do. Based on the performance of the tasks the system generates tap heat maps and brain activity maps. On the basis of the maps it could be concluded what are the most chosen options of the specific application and which remain hidden (out of the sight of users). Also, it can be concluded at which moment brain activity increases, i.e. which tasks are difficult for testers.

The module "Data Processing and Analysis" maintains the stage "Analysis of usability" of the process of exploring usability. It contains a number of smaller components specializing in different tasks - work with real-time communications, biometric data processing (working with mental commands generated by BCI devices) and interactions with mobile applications. All recordings of user sessions are trans-
mitted to the module. The following automated operations are provided by it: encoding and decoding of communication in real time (video and audio streaming); creating heat maps as a result of interactions with the tested mobile application. It is necessary to maintain an API to connect to the mobile operating system of users; extraction and transcription of mental commands entered through a specialized hardware device for brain activity tracking; analysis of the recorded brain activity (commands) in order to make mental templates; mapping and analysing the mental templates to create brain activity maps.

As a result of each of these activities, the system generates graphical reports that are submitted to the module "Reports". Its purpose is to cover the stage "Reporting" in the process of exploring usability. The module shows processed information in readable form for the end-user. Reports are of two types - generated by the system and created by an usability expert, which contain the results of an expert’s evaluation and recommendations for improving the usability of the test product.

From the above it can be seen that the system for usability evaluation of mobile applications is characterized by considerable complexity and integrates multiple modules with versatile use. Its technological implementation requires compliance with the following requirements:

- integrating the functionality of the web application, biometric and multimodal system;
- integrating hardware devices used for the recording of biometrics;
- including modules for biometric data processing;
- reflecting the storage of information obtained as a result of the work of the system;
- reflecting the methods of user authentication.

In the foreground, the main requirements for system architecture give three important concepts: web application, multimodal system and biometric system. Merged into a single entity, they form the concept of an architecture of the proposed system. The typical peculiarities of each of these types of applications are aimed at putting forward their architectures. Internet applications implement a Client - Server model, where the logic is divided into layers, each of which has a defined purpose. Usually the used architecture is multilayered.

In contrast to layered architecture, the architecture of multimodal systems offered by the W3C (W3C, 2012) is based on the architectural pattern Model-View-Controller (MVC). The view in the MVC architecture of this type of application combines visual, audio, biometric and/or tactile modalities. In practice, multimodal
systems are often biometric. This means that the interaction with the system is used as a source of biometric data. From here it could be concluded that multimodal biometric systems must have a module which directly interacts with the database and makes decisions based on the consistency or inconsistency of the data stored in it.

None of these architectures are suitable to be exactly applied to the system proposed in this study, since some conditions remain unfulfilled. This means that there is no developed solution which could be used. Therefore, the author of the present article proposes a hybrid architecture. The layered architecture of web applications will serve as its basis with essential modifications and added meanings of the author, which could lead to its implementation as a web-based multimodal biometric system.

Fig. 3. An Architecture of a Web-Based System for Usability Evaluation of Mobile Applications
The hybrid system architecture template contains the following layers (Fig. 3): **Physical client-side layer** and **Physical server-side layer** comprising a User experience layer, Service layer, Business layer, Data layer and Cross-cutting layer. Communication between the individual layers is performed by translating buses.

The kind of diagram in Fig. 3 is significantly closer to a Deployment diagram in UML 2.0, but the difference lies in the fact that the proposed hybrid template logically groups the system’s modules, and not the physical location of already developed files of the application and the relationship between devices, as in the Deployment diagram.

The interaction with the system is via **Physical client-side layer**. It is a combination of all hardware and software (client-side runtime environment - web browser) the user is working with to implement full access to the system. It includes also user input, input-output and output hardware devices.

**The Physical server-side layer** is a combination of all hardware and software involved in communication with the client. It includes: server-side runtime environment (all the software necessary for the proper functioning of the system, including the operating system, web server, etc.), data repository and lying on it databases, server security software (for protection against unauthorized access to the system). The server-side runtime environment contains the system components, logically grouped into layers. These are: User experience layer, Service layer, Business layer, Data layer, and Cross-cutting layer. Communication between layers is carried out by translating buses: Business processes translating bus, Services translating bus, Data translating bus, and High level translating bus.

**The User experience layer** is exactly the Presentation layer at the standard architecture of Internet applications. It is used for visualizing the components of the user interface. The main elements of the layer are dashboards modules, analysis and reporting tools for working with heat maps and brain activity maps, video and audio tools.

**The Service layer** contains all APIs through which external systems are able to use the services of the proposed system. It can be defined as the API to access the system. This is the interface that performs connection with the application that users install on their mobile devices to send data to the system.

**The Business layer** contains all system components that implement the system's business logic (Fig. 2). It includes modules for process control based on biometric data.

**The Data layer** groups all system components that combine into a logic necessary to access the data repositories.
The Cross-cutting layer groups all the components that affect the performance of the components of the other layers, which largely depends on the proper functioning of the system. These are modules for managing the authentication and authorization of users (security access), user accounts and sessions, system resources, input and output modalities and input-output signals. Module "Security and access control" is necessary to maintain the close connection with "I/O modalities management" which is aimed at managing the input and output modalities. The type of modalities depend on the system requirements. The system should allow the simultaneous access of multiple users and at the same time there will be conducted several user sessions. That is why it is necessary to support a module for user accounts and sessions management.

The hybrid architecture has a few translating buses whose functions are related to the implementation of successful communication between the layers, the base of which lies in the transmission of data between them. These perform very specific integrative and transformative functions of high and low levels, as well as manage transmitted messages and services only between the layers that are connected. The data is converted into a universal format, which contributes to their subsequent interpretation, i.e. their platform independence and their applicability in other systems.

Conclusion

In conclusion it should be noted that the proposed architecture of a web-based system for usability evaluation of mobile applications allows for substantial capturing and automating the entire process of exploring usability. The used biometric technologies are characterized by the highest level of accuracy in conducting this type of research. That is why these are suitable to implementing on the system. From a business perspective, and in particular the companies involved in developing mobile applications, the development of such a system would contribute to gaining a number of benefits. Creating usable products reduces the costs of maintenance, customer training, preparation of documentation and operations, shortens development time and improves marketability. Subsequently, applying the user-centered approach to the design of a product improves the efficiency of individual projects and the company as a whole.

References


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