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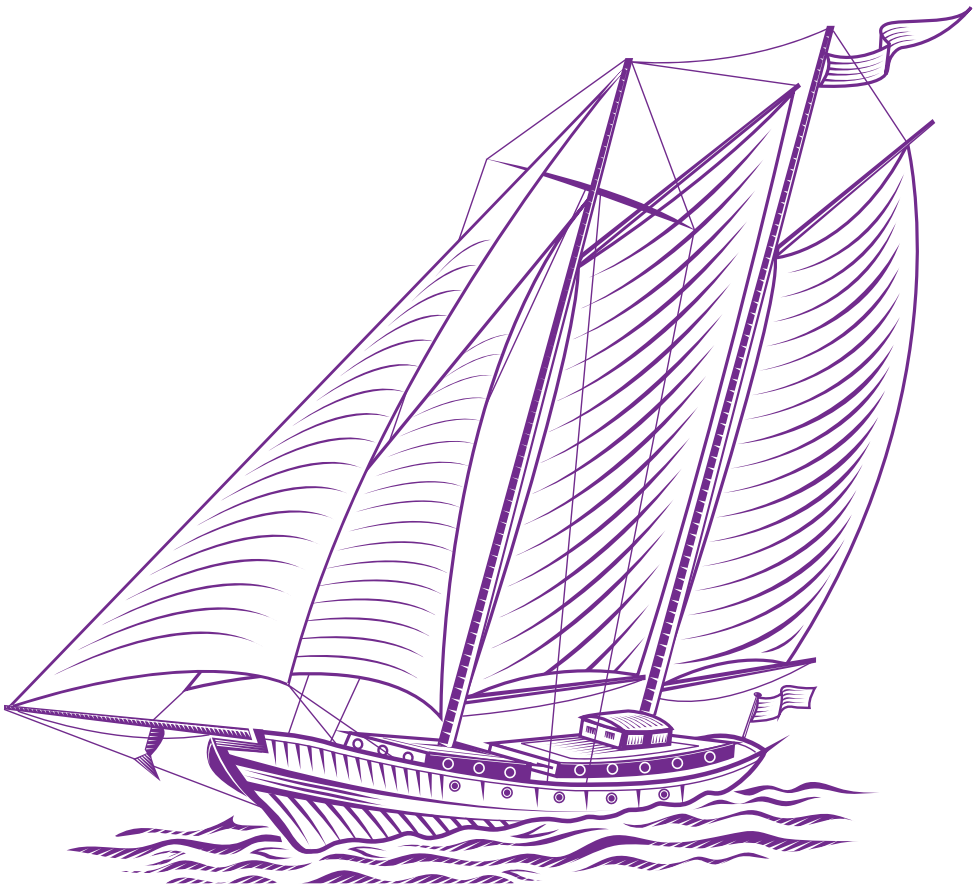

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TOWARDS A COMPETENCY FRAMEWORK FOR SMES - A SOUTH AFRICAN CASE STUDY

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ABSTRACT. Globalization has brought major changes in the world economy, for example a significant increase in trade and investments, rapid technological changes in communications as well as an increasing trend towards deregulation of financial markets. Prospects of increased sales in the world-wide market did not necessarily pose the same benefits to all market participants. In contrast to large multi-national companies, the traditional focus of Small and Medium Enterprises (SMEs) did not include exporting and importing along with alliances, branches and joint ventures abroad. Despite the pivotal roles of small and medium businesses in many economies, the specific challenges resulting from the globalisation phenomenon cannot be denied.

Small and medium businesses are faced with challenges such as limited resources and funding, a lack of formal mechanisms and practices, a shortage of trained and experienced staff as well as different classifications of small and medium businesses worldwide. In particular, smaller businesses do not normally have a well-established and functional accounting department. In view of the apparent differences between the accounting function for larger and smaller businesses, the question is asked whether accountants in the small and medium business sector should demonstrate specific skills and competencies to address the distinctive challenges of this sector. The focus of the study is therefore on the recently announced IES2 Initial Professional Development – Technical Competence and its relevance in the South African environment.

Key words: Competency Framework, Accounting Education.

JEL classification: M41 – Accounting; M48 – Government Policy and Regulation

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1. INTRODUCTION

1.1. Background

The economy and business environment is constantly changing and the world continues to become more global (Retief, 2012:8). Denis, Morrow and Roger (2006:3) defined globalisation as an increasingly integrated world economy and a process underpinned by modifications of policies in various countries towards a more open, market based, system of economic governance. In the wake of the globalisation phenomenon a sustainable, global business environment depends on a strong financial architecture (IFAC, 2013a). From an accounting perspective, it inevitably brought with it moves to establish a single set of financial reporting standards and other forms of standardisation across borders (Chan & White, 2007:605). As a result, international accounting standards have been in a steady state of change to support a viable financial architecture (Retief, 2012:8). The global profession can be strengthened, economic growth and stability can be achieved and the challenge of contribution can be addressed by focusing on the development of high-quality international accounting standards and encouraging unity amongst international participants (Ward, 2005). In addition, harmonisation of accounting practices would be a giant leap to strengthen the accounting profession and protect the public interest globally (Pendergast, Partner, Urbach & Werlin, 2006:16).

In order to address the importance of high-quality accounting standards and for the purpose of setting a benchmark amongst international participants the International Federation of Accountants (IFAC) was established to serve the public interest by contributing to the development and facilitating the adoption and implementation of high-quality accounting standards (IFAC, 2013b). According to Horstmann (2005:98) IFAC's primary mission is to carry on strengthening the global profession and economies by establishing and promoting union international accounting standards. The challenges and opportunities facing this standard-setting body include meeting the increasingly different needs of global users, addressing concerns about complexity, clarity and relevance (Horstmann, 2005:98) and providing direction to financial architectures worldwide (IFAC, 2013a). Despite the fact that the development and implementation of high-quality accounting standards was not without any limitations, the

need for a single set of international accounting standards was recognized (IFAC, 2007). In this regard it was argued that a single set of accounting standards gains the trust of the global audience in financial reporting and therefore increases investments (IFAC, 2007).

In addition to its role in ensuring uniform accounting practices the IFAC facilitates the structures and processes that support the operations of the International Accounting Education Standards Board (IAESB). The main objective of the IAESB is to serve the public interest by setting high-quality educational standards for professional accountants and by contributing to the promotion of national and international education standards (IAESB, 2012:2). The IAESB develops education standards and provides guidance and information on pre-qualification education, training of professional accountants, and professional education development and endurance (IAESB, 2012:2). In order to ensure the development and maintenance of competence required from professional accountants to perform various roles, the project of the IAESB is to improve the clarity of its standards (IAESB, 2012:5). In 2009 the IAESB completed its revision of the Framework for International Education Standards for Professional Accountants which sets out the fundamental concepts and principles for the International Education Standards (IES) (IAESB, 2012:5).

The Framework for International Education Standards for Professional Accountants (2009) identifies general education, professional accounting education, practical experience and assessment as components of the learning and development of a professional accountant. In reaction to the ever-changing global environment the IAESB commenced to revise IES 1 to IES 8, with the goal of ensuring consistency with concepts of the revised framework and improving clarity (IAESB, 2012:5).

The extant version of IES 2, Content of Professional Accounting Education Programs, published in May 2004 and effective from January 2005, prescribes an IFAC member body's professional accounting education program content of knowledge required from a candidate to qualify as a professional accountant (IAESB, 2012:5). The title has been amended in the proposed IES 2 (Revised) to Initial Professional Development - Technical Competence, to reflect the IAESB's review that IES 2 is one of the six IESs covering Initial Professional Development (IPD) (IAESB, 2012:6). According to the proposed IES 2 (Revised), IPD is defined as the learning and development process of competence required to perform the various roles of a professional accountant (IAESB, 2012:6). In

addition, technical competence is used to describe the ability to apply professional knowledge to perform a role to a defined standard (IAESB, 2012:6). The IAESB decided to adopt a learning outcomes approach in the proposed IES 2 (Revised) by specifying eleven competence areas: (i) financial accounting and reporting, (ii) management accounting, (iii) finance and financial management, (iv) taxation, (v) audit and assurance, (vi) governance, risk management and internal control, (vii) business laws and regulations, (viii) information technology, (ix) business and organizational environment, (x) economics and (xi) business management (IAESB, 2012:7). Furthermore, instead of prescribing knowledge, the IAESB identified four proficiency levels, namely foundational, intermediate, advance and mastery levels to demonstrate professional competence (IAESB, 2012:20-22). In addition the IAESB included two new requirements in the proposed IES 2 (Revised) for IFAC member bodies to regularly review and update professional accounting education programs that are designed to achieve the learning outcomes and to prescribe appropriate assessment activities to assess the development of technical competence in a rapidly changing and complex environment (IAESB, 2012:6). Thus, the IAESB requires that aspiring professional accountants should be able to demonstrate not only technical competence but also professional values, ethics, and attitudes (IAESB, 2012:6).

From the aforementioned an aspiring professional accountant is firstly described as an individual who has commenced a professional accounting education program as part of IPD. Secondly professional skills are described as the intellectual, personal, interpersonal, communication and organizational skills that a professional integrates with technical competence and professional values, ethics and attitudes to demonstrate professional competence; and lastly professional accounting education programs are programs designed to support aspiring professional accountants to develop the appropriate professional competence by the end of IPD. They may consist of formal education delivered through degrees and courses offered by universities, other higher education providers, IFAC member bodies and employers, as well as workplace training (IAESB, 2012:9).

In order to fulfill the IAESB's desire for the proposed IES 2 (Revised) to be consistently drafted the IAESB is currently considering comments and feedback and the proposed IES 2 (Revised) is expected to be finalized in the third quarter of 2013 and effective for implementation for periods beginning on or after 1 July 2015 (IAESB, 2012:5-7).

Comments on matters in the proposed IES 2 (Revised) was addressed in a structure of eight questions and released from October 2012. The results of the eight questions (1-8) from the submitted comment letters could be briefly summarized as follows:

Question 1 - The majority of the comments agreed that the eleven competence areas listed in Paragraph 7 of the proposed IES 2 (Revised) captures the breadth of technical competence areas required from aspiring professional accountants. It was however suggested that the sequence of the competence areas should be reviewed and restructured according to necessary educational steps.

Questions 2 and 3 - A number of comments were made on the adequacy of learning outcomes capturing the minimum level of proficiency and the assistance of the Appendix in the interpretation of the learning outcomes.

Questions 4 to 8 – The comments indicated that the objective to be achieved by a member body is appropriate. Commentators also agreed that the requirements of paragraphs 7, 8, and 9 of the proposed IES 2 (Revised) are suitable for achieving an appropriate level of technical competence.

1.2. Rationale for the study

The competencies of professional accountants have been challenged by the ever-changing business environment. The skills, understanding and personal attributes to ensure a successful career in the global world are becoming increasingly more important (Knight & Yorke, 2004) Success in the working environment depends on the identification of specific skills and competencies required of employees. In this regard a competency framework is defined as a high level description of competencies (knowledge, skills and attributes) individuals should possess at the entry point to a particular profession (SAICA, 2010:3). In other words, a competency framework provides the foundation upon which professions are developed and therefore enables a clear understanding of the required competencies a prospective employee should demonstrate embarking a career (SAICA, 2010:3).

Agarwal and Gupta (2008) argue that a gap exists between the students' knowledge after graduation and the practical application thereof in the real-world business. They found that students need to reflect on

knowledge before they can apply this knowledge. In an accounting context the theory and practice of a competency framework was primarily built upon the work of the American pragmatist philosopher, John Dewey, who argued that knowledge is gained by combining theory and practice (SAICA, 2010:8). Practicing accountant should have theoretical knowledge and the skill to apply this knowledge in practice (Rudman & Terblanche, 2012:60-61). According to KPMG (2009) and Price Waterhouse Coopers (2009) knowledge (theoretical aspects) can only be achieved through real-world clients and their specific circumstances. Up until now, researchers found that students can reflect on and apply their theoretical knowledge when applying this knowledge in a business environment (Rudman & Terblanche, 2012:57; Rudman & Terblanche, 2011:63). These studies investigated the question if theoretical knowledge in real-life situation helps students to better understand, conceptualise and contextualise theoretical knowledge in practise.

In order to respond to recent studies on the existence of a gap between theory and knowledge the South African Institute of Professional Accountants (SAIPA) is developing a competency framework based on the IFAC model. The accountancy institute represents Professional Accountants (SA) practising mainly in the small and medium business sector in South Africa (SAIPA, 2013a:2). SAIPA qualifies as one of only two South African accounting bodies that are full members of IFAC (SAIPA, 2012) and have reciprocal agreements with national and international bodies (Pan African Federation of Accountants (PAFA); Practicing Professional Accountants (CPA) in Ireland; Institute of Public Accountants (IPA) in Australia; Institute of Commercial and Financial Accountants (CFA) in Namibia) (SAIPA, 2013a:2). SAIPA is recognised as a professional body as determined by the National Qualifications Framework (NQF) Act 67 of 2008 by the South African Qualifications Authority (SAQA) that acknowledged the critical role SAIPA plays in quality assurance and standards development within the National Qualifications Framework. (SAIPA, 2013b). In addition, two of NQF Act 67 of 2008 most important objectives is to generate a single integrated national framework for learning achievements and to enhance the quality of education and training (SAIPA, 2013b). Therefore, SAIPA must ensure quality experiential training (SAIPA, 2013b) to their learners by being a "truly global voice on issues of standard setting and compliance" (SAIPA, 2012:11).

Globalisation is the essence of IFAC and the IAESB's objective to serve the public interest and contribute to the development, implementation and convergence of high-quality international accounting standards. A competency framework in an accounting context should therefore address the challenges arising from the rapidly changing complex environment to bridge the gap between theory and skills and to enable students to reflect on and apply their theoretical knowledge when applying this knowledge in the business environment. In addition, a competency framework lends strong support to tertiary accounting programmes used to prepare students for the "real-world" working environment and consequently requires accounting courses to be taught using "real-world" scenarios (SAICA 2010:12). In other words, the on-going development of a competency framework for SAIPA promises lucrative results and service of the public interest by setting one set of uniform high-quality accounting standards, accepted and enforced on a consistent basis amongst international participants (Pendergast *et al*., 2006:19).

2. PROBLEM STATEMENT AND RESEARCH OBJECTIVE

The central argument of this study is the existence of a gap between theory and skills and the importance of accounting bodies' requirements to ensure quality education programs in order to comply with the high-quality standards set amongst international participants. In contrast, the majority of SAIPA practices are operating in the small and medium business sector that do not necessarily have an international focus (Dixon, Thompson & McAllister, 2002:27). Therefore, the primary objective of the study is to investigate the foundation upon which SAIPA programs are developed and ask the question whether the on-going development and implementation of a competency framework for Professional Accountants (SA) will be sufficient to bridge the gap between theory and skills. This will also enable professional accounting educators to provide students with the ability to apply the theory they have been taught when they enter the real-world business after graduation.

The contribution thereof is that the development and implementation of a competency framework according to high-quality international accounting standards for the professional accountant will enable the professional accountant to respond to the fast-changing environment

and be a life-long learner (SAICA, 2010:7). Despite the fact that the competency framework may require re-evaluation from time to time due to the fast-changing social, political and business environment (SAICA, 2010:9), it can enable a clear understanding of the required competencies a professional accountant should demonstrate embarking a career (SAICA, 2010:3).

3. DATA AND METHODOLOGY

The research encompassed both a literature and empirical study. The literature review provided the theoretical background of the competency objectives and requirements of IFAC and the IAESB. The literature review also identified a gap between theory and practice.

The literature study formed the foundation for the empirical study, which considered the relevance of the IAESB's competency framework in a South African context. Since IES 2 - Initial Professional Development - Technical Competence (Revised) was developed to identify the skills and competencies required to enter the accounting environment the population comprised accounting firms who attended the North West University career expo in 2013. The sample was narrowed down to accounting firms in the small and medium business sector. In this regard the technical competence learning outcomes according to Table A of the proposed IES 2 were sent to 23 accounting firms who were asked to rate the competency areas according to the IAESB's four proficiency levels. Fifteen accounting firms provided feedback (presented in Annexure A). The average rating of the 11 competency areas is presented in Figure 1.

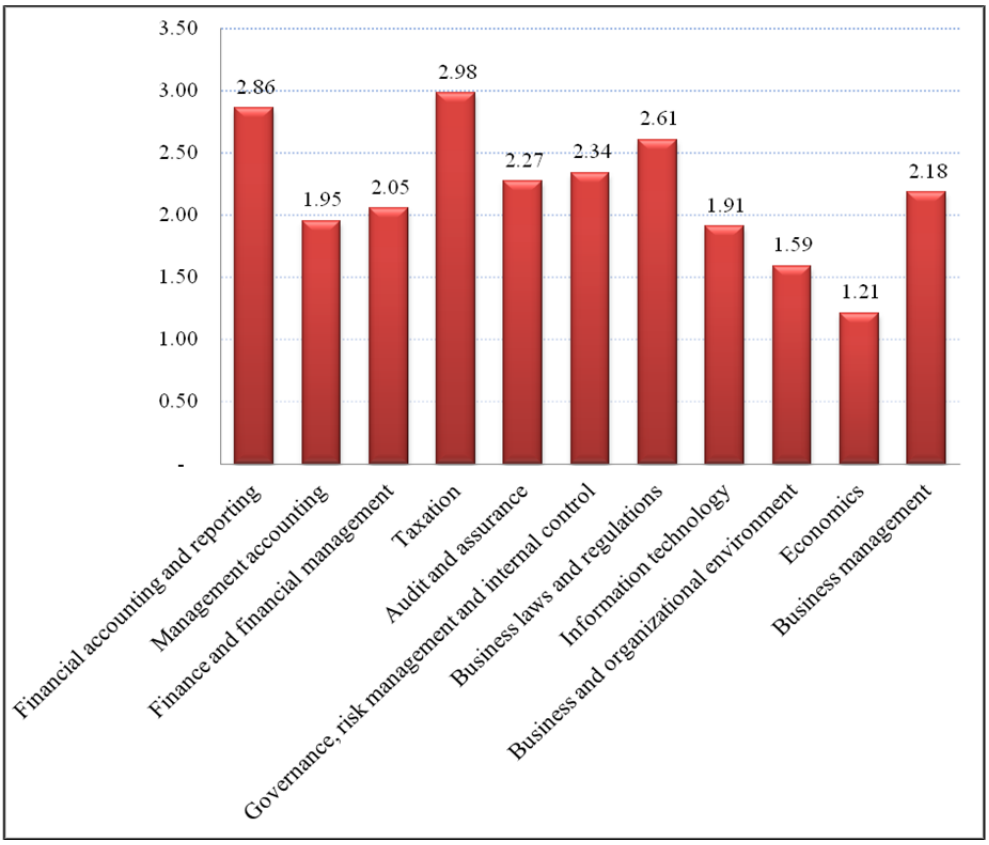

Figure 1 – Average Rating of Learning Competence Areas

The accounting firms rated Taxation (2.98) and Financial Accounting (2.86) as the most important competence areas. Business Laws and Regulations (2.61) were considered the third most important competence area. Governance, Risk Management and Internal Control (2.34) as well as Audit and Assurance (2.27) were also considered important. In contrast, Economics (1.21) and the Business and Organizational Environment (1.59) were not highly rated by the accounting firms. In addition the results revealed that Information Technology (1.91), Management Accounting (1.95) as well as Finance and Financial Management (2.05) are not considered that important by the accounting firms included in the survey. In summary the 11 competency areas could be ranked in the following sequence:

Table 1 – Proficiency levels per competence area

Competence area	Rating	Proficiency level
Taxation	2.98	Advanced
Financial accounting and reporting	2.89	Advanced
Business laws and regulations	2.61	Intermediate to Advance
Governance, risk management and internal control	2.34	Intermediate to Advance
Audit and assurance	2.27	Intermediate to Advance
Business management	2.18	Intermediate
Finance and financial management	2.08	Intermediate
Management accounting	1.95	Intermediate
Information technology	1.91	Intermediate
Business and organizational environment	1.59	Foundation to Intermediate
Economics	1.21	Foundation

4. DISCUSSION AND CONCLUSION

The evidence suggests that accounting students can expect to provide a combination of accounting and tax consulting services to small and medium businesses in the South African environment. The interpretation of specialized reports included under Financial Accounting was however not considered that important by the accounting firms included in the study. With regards to Taxation, international taxation and the involvement of a tax specialist obtained the lowest ratings. The relevant importance of the regulatory environment in which small and medium businesses operate was also confirmed. Business laws and regulation, Governance, risk management and internal control as well as Audit and assurance were considered to be intermediate to advanced areas.

In contrast, the accounting firms indicated that information technology was not considered that important. Moreover, the study revealed that only moderate levels of complexity are required for Management accounting as well as for Finance and financial management. The lower than expected rating for the aforementioned disciplines could be indicating that financial statements prepared in the small and medium

business sector is conformity in nature and that accountants are not involved in the day-to-day management of clients, especially in view of the relatively low rating for Business management; Business and organizational management as well as Economics.

In summary the study identified the most important competence areas for accountants in the South African small and medium business sector. The results could be of value to academic institutions developing academic programs and preparing accounting students for the small and medium business sector. In view of the exploratory nature of the study further studies are encouraged, especially in an international context to compare the competency requirements across borders.

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Annexure A – Learning Outcomes for Technical Competence Area

	Mean	Min	Max	Variance	Standard deviation
(a) Financial accounting and reporting					
(i) Apply accounting principles to transactions and other events	3.36	3.00	4.00	0.23	0.48
(ii) Apply IFRS or other relevant standards to a range of transactions and other events	3.09	2.00	4.00	0.63	0.79
(iii) Classify financial data appropriately in financial statements	3.18	2.00	4.00	0.51	0.72
(iv) Prepare primary financial statements, including consolidated financial statements, in accordance with laws and regulations	2.91	1.00	4.00	0.81	0.90
(v) Evaluate the appropriateness of accounting policies used to prepare financial statements	3.00	2.00	4.00	0.73	0.85
(vi) Interpret specialized reports including sustainability reports and integrated reports	1.64	1.00	3.00	0.78	0.88
(b) Management accounting					
(i) Apply techniques such as product costing, variance analysis, inventory management, and budgeting and forecasting to improve the performance of an organization	1.91	1.00	3.00	0.45	0.67
(ii) Analyze and integrate financial and nonfinancial data to provide relevant information for managerial decision making	2.09	1.00	3.00	0.45	0.67
(iii) Prepare reports to support managerial decision making, including reports that focus on planning and budgeting, cost management, quality control, performance measurement, and benchmarking	2.09	1.00	3.00	0.45	0.67
(iv) Compare and evaluate the performance of products and business segments	1.73	1.00	3.00	0.38	0.62
(c) Finance and financial management					
(i) Compare the various sources of finance available to an organization, including banking finance, financial instruments, and different capital markets	2.09	1.00	3.00	0.63	0.79
(ii) Analyze an organization's cash flow and working capital requirements	2.27	1.00	3.00	0.38	0.62
(iii) Analyze the current and future financial position of an organization, using techniques such as ratio analysis, trend analysis, and cash flow analysis	2.18	1.00	3.00	0.51	0.72
(iv) Evaluate the appropriateness of the components used to calculate an organization's cost of capital	2.09	1.00	3.00	0.63	0.79
(v) Apply appropriate capital budgeting techniques to the evaluation of capital investment decisions	1.64	1.00	3.00	0.41	0.64
(d) Taxation					
(i) Explain domestic taxation compliance and filing requirements	3.27	2.00	4.00	0.56	0.75
(ii) Prepare tax calculations for direct and indirect taxes for individuals and organizations	3.27	2.00	4.00	0.38	0.62
(iii) Analyze the taxation issues associated with non-complex international transactions	2.45	1.00	4.00	0.61	0.78
(iv) Explain the difference between tax planning, tax avoidance, and tax evasion	3.45	2.00	4.00	0.43	0.66
(v) Identify when it is appropriate to refer matters to taxation specialists	2.45	1.00	3.00	0.43	0.66
(e) Audit and assurance					
(i) Analyze the risk profile of an entity to identify the components of audit risk	2.36	1.00	4.00	1.32	1.15
(ii) Describe the objectives of an audit of financial statements	2.45	1.00	4.00	1.16	1.08
(iii) Describe the activities involved in performing an audit of financial statements	2.27	1.00	4.00	1.47	1.21
(iv) Identify applicable auditing standards (e.g., ISAs), laws and regulations relevant to an audit engagement	2.09	1.00	4.00	1.72	1.31
(v) Understand the key elements of assurance service engagements	2.18	1.00	4.00	1.60	1.27
(f) Governance, risk management and internal control					
(i) Explain the principles of good governance, including the rights and responsibilities of owners, and the role of stakeholders in governance, disclosure, and transparency	2.55	1.00	4.00	0.98	0.99
(ii) Analyze the components of an organization's governance structure	2.27	1.00	4.00	1.11	1.05
(iii) Analyze an organization's risks and opportunities within a risk management framework	2.09	1.00	4.00	1.17	1.08
(iv) Analyze the components of internal control	2.45	1.00	4.00	1.16	1.08
(g) Business laws and regulations					
(i) Explain the laws and regulations that are relevant to the environment in which professional accountants operate	2.91	2.00	4.00	0.26	0.51
(ii) Explain different legal forms of businesses and the legislation and regulations that govern each form	2.55	1.00	4.00	0.79	0.89
(iii) Identify when it is appropriate to refer matters to legal specialists for help	2.36	1.00	3.00	0.60	0.77
(h) Information technology					
(i) Describe the basic hardware and software components of information systems	1.91	1.00	4.00	0.99	1.00
(ii) Identify general computer controls and application controls required for effective accounting information systems	2.18	1.00	3.00	0.51	0.72
(iii) Analyze the adequacy of controls for relevant application systems	1.91	1.00	3.00	0.45	0.67
(iv) Explain the components of an information systems continuity plan	1.64	1.00	3.00	0.41	0.64

Annexure A – Learning Outcomes for Technical Competence Area (continued)

	Mean	Min	Max	Variance	Standard deviation
(i) Business and organizational environment					
(i) Describe the environment in which an organization operates, including the main economic, legal, political, social, technical, international, and cultural forces and their influences and values	2.00	1.00	3.00	0.36	0.60
(ii) Analyze key features in the global environment that affect international trade and finance	1.45	1.00	2.00	0.25	0.50
(iii) Explain the impact of legal, political, cultural, and technological contexts on the processes of internationalization of an organization	1.55	1.00	3.00	0.43	0.66
(iv) Identify the characteristic features of globalization, including the role of multinationals, e-commerce and emerging markets	1.36	1.00	2.00	0.23	0.48
(j) Economics					
(i) Describe the fundamental principles of microeconomics and macroeconomics	1.09	1.00	2.00	0.08	0.29
(ii) Interpret the effect of movements in key indicators of microeconomic and macroeconomic activity	1.09	1.00	2.00	0.08	0.29
(iii) Explain the competitive environment facing organizations under different types of market structures, including competitive markets, monopoly, monopolistic competition, and oligopoly	1.45	1.00	3.00	0.43	0.66
(k) Business management					
(i) Explain the various ways that organizations may be designed and structured	2.27	1.00	3.00	0.56	0.75
(ii) Explain the purpose and importance of functional areas, such as human resource management, project management, procurement, technology management, and marketing	2.27	1.00	3.00	0.56	0.75
(iii) Explain the external and internal factors that may influence the formulation of an organization's strategy	2.27	1.00	4.00	1.29	1.14
(iv) Analyze relevant factors in the internal and external business environment that impact on managerial work and organizational performance	2.09	1.00	3.00	0.81	0.90
(v) Compare how various theories of organizational behavior may be used to enhance the performance of the individual, teams, and the organization	2.00	1.00	3.00	0.73	0.85

Legends:
1 = Foundation (define, explain, low levels of complexity)
2 = Intermediate (apply, analyze, moderate levels of complexity)
3 = Advanced (integrating theories and principles, act, advise, evaluate)
4 = Mastery (integrate technical competence, high levels of complexity)

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MUTUAL TRADE IN AGRICULTURAL PRODUCTS AMONG VISEGRAD COUNTRIES – BASIC DEVELOPMENT TRENDS

LUBOŠ SMUTKA[1]

ABSTRACT. The conducted paper is analyzing the mutual trade relations existing among V4 countries. The main aim of the paper is to identify changes in their agricultural sector which happened during the monitored time period and to compare differences existing in area of agricultural sector and trade development in the case of analyzed countries. Another aim of the paper is related to their trade relations. In this case the paper is identifying basic trends in the area of individual analyzed countries' trade development and mutual agrarian trade competitiveness is also analyzed. The paper is analyzing agricultural sector and trade development in 2000 – 2012. The basic statistical methods are applied to analyze individual time series. The individual countries agrarian trade competitiveness analysis is realized through the Balassa and Lafay index. On the basis of the findings coming from the paper, it can be said that individual V4 countries' agricultural production and trade changed significantly during the analyzed time period. Agricultural production and trade represent only a marginal part of the economy and the total merchandise trade. Further, in regard to the agricultural trade of the individual analyzed countries, it may be stated that the commodity structure as well as the territorial structure is very significantly concentrated. The predominant majority of agricultural trade – export as well as import – is carried out in regard to EU countries. In this case it is necessary to emphasize that individual V4 countries are important trade partners for each other. On the base of Visegrad countries' mutual trade analysis - it is possible to say that the main traders active on V4 market are the Czech Republic and Slovakia. The most competitive actors operating in V4 market are Poland and Hungary. If we are analyzing individual countries export

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performance we can see that V4 market is dominated by Poland and the Czech Republic.

Key words: Visegrad group, agriculture, sector, trade, development, mutual, external, EU, value, competitiveness, relations

JEL classification: F14, F15, Q13, Q17

1. Introduction

Visegrad countries (Czech Republic, Hungary, Poland and Slovak Republic) represents a specific group of countries. They are located in the centre of Europe and they have very intensive historical, economic and political relations. The countries of the Visegrad Group – also referred to as the V4 countries - have in recent years undergone a dramatic development, which has very significantly influenced the structure of their economy, including the agricultural sector and trade with agricultural products. Immediately after the collapse of the "Eastern bloc", COMECON and the USSR, all V4 countries faced a significant economic downturn that coincided with the collapse of the former socialist system and its market linkages. The agrarian sector suffered very significant losses in the process of the transition from a centrally planned economy to a market economy. In particular, livestock production and the number of workers employed in the agricultural sector has reduced noticeably – as it was already highlighted by Pokrivcak, Ciaian, (2004); Ciaian, Swinnen (2006); Ciaian, Pokrivcak (2007); Bojnec, Ferto (2009); Basek, Kraus, (2009) etc. This has resulted in a decrease in the level of self-sufficiency of V4 countries.

2. Literature review

Visegrad countries economy and trade are objects of many analyses and research papers published in the past. On the base of researches conducted by the author and other experts focused on V4 area, it is possible to say that individual countries' agricultural sector and agrarian trade recorded the significant changes in the last two decades and especially the position of agricultural sector within individual V4 members' economy

also changed. The share of agricultural exports in total exports in the case of the V4 countries fell below 10%. In the Czech Republic and Slovakia the reduction has been much more significant, since the position of the agrarian sector is not as significant in these two countries as in the case in Poland and Hungary. During the first years of transition (in the last decade of the 20th century) while the share of agrarian exports in OECD countries and in the EU countries was increasing, in the Countries of Central and Eastern Europe, and especially in regions throughout the Commonwealth of Independent States (CIS), the total value of agricultural trade stagnated or even gradually decreased (Pokrivcak Drabik, 2008). Here, a gradual economic transformation took place, leading to the correction of trade relationship deformations caused during the period before 1990 (Drabik, Bartova, 2008). In the early years of the nineties (especially 1990 – 1995), the share of EU countries in agrarian trade with the V4 countries was abnormally low, but over time (thanks to structural changes, and functioning market mechanisms) it has increased to its current level - typical for an EU member country (Bussiere, Fidrmuc and Schnatz, 2005).
The financial crisis affected also trade of V4 countries (The impact of the crisis was significant especially in 2009 and 2010.). It has resulted in the collapse of large financial institutions around the world. It was considered by many economists to be the worst financial crisis since the Great Depression of the 1930s. It contributed to the failure of key businesses, declines in consumer wealth estimated in the trillions of U.S. dollars, substantial financial commitments incurred by governments and a significant decline in economic activity. Many causes have been proposed, with varying weight assigned by experts. Both market-based and regulatory solutions have been implemented or are under consideration, while significant risks remain for the world economy over the 2014. Although this economic period has at times been referred to as "the Great Recession," this same phrase has been used to refer to every recession of the several preceding decades (Hambalková, Rovný, 2010).

The EU share in total agrarian trade of the V4 countries increased mainly due to a process of liberalization, occurring not simply as a consequence of the GATT / WTO negotiation rounds, but mainly because of the partnership established between the V4 and EU countries in the process of integration of the former Eastern European countries into the European structures (Pohlova, Tucek, Kraus, 2007). In this regard, it should be stressed that the process of liberalization, which affected

trade between the V4 countries and the EU in the period prior to their EU accession, was asymmetric in character (Volosin, Smutka, 2011). It should be emphasized however that in this period the V4 countries had also invested considerable resources to support their own agrarian sector and agrarian trade, though their ability to support the agrarian sector was significantly lagging behind that of the EU countries (Tucek, Volosin, 2006). The process of liberalization affected not only the V4 trade with the EU countries; but also during this period it initiated the emergence of the Central European Free Trade Area (CEFTA). The pace of liberalization of agrarian trade within CEFTA was not as dynamic, as it was in the case of the V4 trade with the EU15. In May 2004 the V4 countries became EU members. The EU accession brought about very significant changes in agri-trade for individual countries. The Czech Republic, Slovakia, Hungary and Poland became part of the EU single market, and all the obstacles limiting the movement of goods between them and the EU countries up to that time, ceased to exist (Svatos, 2008). Individual countries had to accept common EU tariffs and also agreements signed and accepted by the EU in the period before the V4 accession (Svatos, 2009). As a result of their positions with non-EU trade partners, from the aspect of the territorial structure of the V4 group, agrarian trade has been weakening. This development did, however, strengthen the positions of the older EU Member States as the most important partners of Czech Republic Slovakia, Poland and Hungary.

The above mentioned period had a significant impact on individual V4 countries agricultural production and trade. Individual countries faced to changes in their economy and their own economy environment together. Individual countries developed strong links in the case of mutual cooperation both in the area of economy and in the area of policy. They founded CEFTA as an instrument supporting their mutual trade and they also founded Visegrad group as an instrument supporting their mutual political, cultural and social cooperation. Individual countries are important trade and economy partners and they are supporting (more or less) each other. The mutual links among Visegrad countries represent an important part individual countries' economy. Regardless their EU membership, individual Visegrad countries are an important partners for each other in all areas of their economy – including their agricultural sector.

The main contribution of the paper are identificantion of basic development trends related to individual V4 countries agrarian export, import and trade balance value and structure development and the identification of the most competitive items of individual Visegrad countries mutual agrarian trade.

3. Methodology and objectives

The conducted paper is analyzing the mutual trade relations existing among V4 countries. The main aim of the paper is to identify changes in their agricultural sector which happened during the monitored time period and to compare differences existing in area of agricultural sector and trade development in the case of analyzed countries. Another aim of the paper is related to their mutual trade relations. In this case the paper is identifying basic trends in the area of individual analyzed countries' trade development and mutual agrarian trade competitiveness is also analyzed. The main idea of this part of analysis is to identify the impact of past years development on mutual agricultural trade development and relations.

The paper is divided into three basic parts. The first part of the paper is analyzing agricultural sector development in individual Visegrad countries (agricultural production value and volume development, employment in agriculture development, agricultural land size development, the share of agriculture in individual countries' GDP). The second part of the paper is analyzing individual Visegrad countries agricultural trade development both in relation to the EU and the rest of the World. The last part of the paper is analyzing mutual agricultural trade development existing among individual Visegrad countries. Individual Visegrad countries' agricultural trade performance is analyzed both in relation to the total Visegrad market and in relation to individual members of Visegrad group. Paper is also analyzing individual Visegrad countries' agricultural foreign trade commodity structure. The commodity structure is analyzed according to the SITC (Standard International Trade Classification), rev. 3 nomenclature. The basic division of agricultural trade according to SITC is the following – for the purpose of this paper the commodity structure is divided into 15 sub-groups.

Table 1: SITC rev. 3

Commodity Code	Commodity Description	Commodity Code	Commodity Description
S3-00	LIVE ANIMALS	S3-08	ANIMAL FEED STUFF
S3-01	MEAT, MEAT PREPARATIONS	S3-09	MISC.EDIBLE PRODUCTS ETC
S3-02	DAIRY PRODUCTS, BIRD EGGS	S3-11	BEVERAGES
S3-03	FISH, CRUSTACEANS, MOLLUSC	S3-12	TOBACCO, TOBACCO MANUFACT
S3-04	CEREALS, CEREAL PREPRTNS.	S3-41	ANIMAL OILS AND FATS
S3-05	VEGETABLES AND FRUIT	S3-42	FIXED VEG. FATS AND OILS
S3-06	SUGAR, SUGR.PREPTNS, HONEY	S3-43	ANIMAL, VEG.FATS, OILS, NES
S3-07	COFFEE, TEA, COCOA, SPICES		

Source: UN Comtrade, 2014

The paper is analyzing individual Visegrad countries agricultural production and trade performance and competitiveness in the period 2000 – 2012. Individual time series are analyzed through the basic and chain indices (the average values of inter-annual growth rate related to individual countries' characteristics are analyzed through the geomean). Individual countries are compared to identify changes existing among them. Except for individual countries export and import performance, the paper is also analyzing the Visegrad countries mutual trade performance and their mutual trade relations. The paper is analyzing especially mutual Visegrad countries agricultural trade competitiveness.

The competitiveness analysis of individual Visegrad countries foreign trade is realized through the two indices - Balassa index and Lafay index of "revealed" comparative advantage. These indices are selected for this study for the following reasons. Firstly, they allow us to conduct the competitiveness analysis using available data. Secondly, these indices complement each other. Balassa index (Balassa, 1965) estimates export flows competitiveness of individual V4 countries in relation to the EU, the rest of the world and the Visegrad market. The

Lafay (Lafay, 1992) index can be used for bilateral trade relations competitiveness existing directly among individual V4 countries.
The Balassa index tries to identify whether a country has a "revealed" comparative advantage rather than to determine the underlying sources of comparative advantage (Qineti, Rajcaniova, Matejkova, 2009). The index is calculated as follow.

$$RCA = (X_{ij} / X_{it}) / (X_{nj} / X_{nt}) = (X_{ij} / X_{nj}) / (X_{it} / X_{nt}) \quad (1)$$

where *x* represents exports, *i* is a country, *j* is a commodity and *n* is a set of countries, *t* is a set of commodities. RCA is based on export performance and observed trade patterns. It measures a country's exports of a commodity relative to its total exports. If RCA>1, then a comparative advantage is revealed.

The next index is Lafay index. Lafay index is very useful instrument for the analyses of trade competitiveness between two countries. Using this index we consider the difference between each item's normalized trade balance and the overall normalized trade balance (Zaghini, 2003). For a given country, *i,* and for any given product *j*, the Lafay index is defined as:

$$LFI_{j}^{i} = 100 \left(\frac{x_j^i - m_j^i}{x_j^i + m_j^i} - \frac{\sum_{j=1}^{N} (x_j^i - m_j^i)}{\sum_{j=1}^{N} x_j^i + m_j^i} \right) \frac{x_j^i + m_j^i}{\sum_{l=1}^{N} x_j^i + m_j^i} \quad (2)$$

where x^i_j and m^i_j are exports and imports of product *j* of country *i*, towards and from the particular region or the rest of the world, respectively, and *N* is the number of items. Positive values of the Lafay index indicate the existence of comparative advantages in a given item; the larger the value the higher the degree of specialization. On the contrary, negative values points to de-specialization. (Zaghini, 2005)

4. Visegrad countries agricultural production

The following part of the paper provides a brief overview of the last two decades development on agriculture and especially agricultural trade of Visegrad countries. If we are analysing the structure of individual Visegrad countries' economy, we can see that agriculture only plays a minor role. The share of agriculture in individual countries' economy is

steadily decreasing. The current share is less than 4% (in the Czech Republic the share of agriculture in GDP is the lowest (1.7%), and contrary in Slovakia the share of agriculture in total GDP is the highest – almost 4%.

Agricultural land represents a large proportion of total land in analyzed countries. The share of agricultural land is the highest in Hungary (63%), and the lowest in Slovakia 40%. The share of agricultural land in total land is quite stable in the Czech Republic and in Hungary, however in Poland and Slovakia it has been declining over the last two decades.

Employment in agriculture is low in the analyzed countries. The share of people working in agricultural sector has been steadily decreasing in each of the analyzed countries. The lowest share of people working in agriculture is in the Czech Republic (3.1%) and Slovakia (3.2%) and on the other hand the highest share is in Poland (12%).

Agriculture in the individual Visegrad countries is becoming more and more tive. The value added generated by the agricultural sector has been constantly growing – the only exception is the Czech Republic. The average value of inter annual growth rate of agricultural value added is positive in the case of Hungary, Poland and Slovakia (for details about agricultural added value development please see the Tables 2 and 3).

Table 2: Agriculture, value added (constant 2000 US$)

Country Name	1993	1997	2001	2005	2009	2010	Inter annual growth rate – GEOMEAN
Czech Republic	2 601 256 550	1 718 645 956	1 943 983 107	2 496 690 029	2 220 258 838	2 100 452 125	0.9875
Hungary	2 069 593 467	2 196 051 563	2 541 385 349	3 387 836 924	3 243 573 970	2 744 022 562	1.016731
Poland	7 994 303 202	7 643 310 115	8 051 872 151	8 833 573 449	8 999 771 492	8 863 696 021	1.006091
Slovak Republic	1 100 419 889	1 250 230 330	1 307 352 128	1 549 659 112	2 328 173 945	1 955 039 617	1.034385

Source: WDI, 2014

The productivity of agriculture per worker is increasing in each of the Visegrad countries studied. The average growth rate of real agricultural added value in individual Visegrad countries is: Slovakia (5.6% a year), Hungary (5.4% a year), Poland (3.1% a year) and the Czech Republic (1.55% a year). (See table 3)

Table 3: Agriculture value added per worker (constant 2000 US$)

Country Name	1993	1995	1997	1999	2001	2003	2005	2007	2008	2009	2010	Inter annual growth rate – GEOMEAN
Czech Republic	4 945	4 078	3 634	4 298	4 662	5 324	6 712	5 262	5 674	6 608	6 423	1.015501
Hungary	3 449	3 935	4 482	4 848	5 856	5 595	8 822	6 882	11 029	9 711	8 522	1.054644
Poland	1 759	1 767	1 896	2 072	2 182	2 397	2 626	2 616	2 643	2 964	2 994	1.031807
Slovak Republic	3 916	4 343	4 942	4 607	5 493	7 209	7 141	9 779	11 279	11 526	9 924	1.056222

Source: WDI, 2014

The volume of agricultural and foodstuff production in individual Visegrad countries decreased during the period 1993–2010, the only exception is Poland. Table 4 provides detailed information about the volume of agricultural and foodstuff production in individual Visegrad countries. In the case of the Czech Republic the volume of production decreased by more than 36%. In Hungary the current volume of food production is at the same level as in 1993, but if we take into consideration the peak level of food production in 2001, we can see that the current production volume is lower by 21-22%. Slovakian volume of food production declined during the analyzed time period by more than 30%, and only one Visegrad country (Poland) was able to keep the level of food production stable during the last twenty years. If we examine the individual countries food and agricultural production more in detail, we can see that both segments – animal and crops production - of agricultural production were heavily affected during the last nearly twenty years development.

Table 4: Agricultural production index (2004-2006 = 100)

Country Name	1993	1997	2001	2003	2005	2007	2008	2009	2010
Czech Republic	126.15	100.22	101.14	88.32	98.30	95.67	101.84	98.20	91.86
Hungary	86.60	94.83	103.84	83.26	95.15	79.30	103.79	94.81	82.83
Poland	99.80	92.64	95.59	96.03	98.17	100.33	102.13	106.25	100.16
Slovak Republic	115.80	113.36	93.89	91.95	102.87	89.29	104.04	93.03	83.99

Source: WDI, 2014

While the level of production in individual analyzed countries was reduced significantly (the only exception being Poland), the level of domestic consumption changed only a little during the whole monitored time period in each country studied.

A significant decrease of production volume in comparison with domestic consumption volume development affected the level of agricultural market self-sufficiency level in the individual analyzed countries. The changes in agricultural production volume, apparent in the monitored time period, had a direct impact on agricultural trade value and volume development. The following subchapter analyzes the value and volume of individual Visegrad members' agricultural trade development. Trade development is analyzed in relation to the EU market, third countries (countries outside of EU) and also in relation to the Visegrad countries mutual trade.

5. Development and structure of merchandise trade of the Visegrad group countries with a focus on agricultural trade

The countries of the Visegrad group are representatives of the new member countries of the EU. A general characteristic of such countries is their very significant orientation toward foreign trade, which is primarily significant in the case of the Czech Republic and Slovakia, as well as in the case of Hungary. Poland also likewise significantly engages in foreign trade activities, but nevertheless, the share of foreign trade in the Polish GDP is significantly lower in comparison with the share of foreign trade in the GDP of the Czech Republic, Slovakia and Hungary. If we analyze the commodity structure of merchandise trade of the V4 countries, we find that it is dominated by trade in processed industrial products. Further, it is also important to state that the actual territorial structure of goods trade of the V4 countries is distinctly oriented toward EU countries. Another interesting finding that pertains to the development of goods trade of the Visegrad group countries is also the fact that the average year-on-year rate of growth of merchandise trade of the V4 countries significantly exceeds both the average year-on-year rate of growth of the world merchandise trade, as well as the average year-on-year rate of growth of goods trade of EU countries.

Table 5: Development of value and structure of foreign trade (export) of Visegrad group countries in the years 2000 – 2012

Export		bil. USD	2000	2002	2004	2005	2006	2007	2008	2010	2012
CR	World	Agriculture	1.11	1.4	2.18	2.99	3.25	4.37	5.53	4.94	7,04
SR	World	Agriculture	0.37	0.49	0.98	1.41	1.69	2.15	2.37	2.49	3,84
Hungary	World	Agriculture	1.96	2.35	3.41	3.63	4.2	5.72	7.12	6.5	8,28
Poland	World	Agriculture	2.43	3.3	6.11	8.36	10.12	12.95	16.13	16.79	21,37

Source: Comtrade, own processing, 2014

Table 6: Development of value and structure of foreign trade (import) of Visegrad group countries in the years 2000 – 2012

Import		bil. USD	2000	2002	2004	2005	2006	2007	2008	2010	2012
CR	World	Agriculture	1.56	2.2	3.27	3.99	4.65	5.99	7.1	6.65	8.23
SR	World	Agriculture	0.71	0.89	1.47	2.5	2.24	3.13	3.97	3.97	4.80
Hungary	World	Agriculture	0.92	1.17	2.29	2.67	2.97	3.79	4.7	4.12	4.52
Poland	World	Agriculture	2.86	3.21	4.95	6.13	7.27	10.7	13.6	13.8	15.45

Source: Comtrade, own processing, 2014

In relation to the position of agricultural trade of the Visegrad group countries within the overall goods trade, it may be stated that likewise as in the case of the global and European market, agricultural trade represents only a supplement to goods trade (less than 10% of total trade). In this regard, it is important to state that the value of both agricultural exports as well as imports of the V4 countries is dynamically increasing. Just in the years 2000-2012, the value of agricultural export of the V4 countries increased from USD 6 billion to more than USD 40 billion, and in the case of agricultural import, there was an increase in the traded value from USD 6 billion to 33 billion. In terms of their own development of agricultural trade, the V4 countries achieve, other than certain exceptions, a positive balance of agricultural trade. Nevertheless, it is appropriate to state that currently, such positive balance is fully to the debit of the agricultural trade of Poland and Hungary, while the agricultural trade of the Czech Republic and Slovakia regularly finishes in negative values. A further significant characteristic of agricultural trade of the V4 countries is its distinct orientation toward the market of EU countries.

A specific characteristic of merchandise trade of the V4 countries is the competitiveness of trade transactions, both in relation to the market of the EU countries, as well as in relation to the market of third countries. In this regard, it is appropriate to emphasize that currently, in terms of the development of the value of realized trade flows, the important thing is primarily the ability to retain comparative advantages in relation to the EU market, which represents the main outlet for exports originating from V4 countries.

As regards agricultural trade, there we can state that Czech, Slovak and Hungarian agricultural trade is currently uncompetitive, both in relation to the EU market, as well as in relation to the market of third countries. Nevertheless, in the case of Poland, the situation is the opposite. Polish agricultural trade is capable of achieving comparative advantages, and, importantly – it is also capable of amplifying them.

Table 7: Competitiveness of commodity structure of goods trade of V4 countries in relation to the EU market and to the global market

Export		RCA1	2000	2002	2003	2004	2006	2008	2010	2012
CR	EU27	Agriculture	0.41	0.35	0.35	0.38	0.43	0.45	0.42	0.47
SR	EU27	Agriculture	0.36	0.37	0.33	0.42	0.52	0.41	0.44	0.51
Hungary	EU27	Agriculture	0.68	0.62	0.63	0.63	0.61	0.79	0.77	0.86
Poland	EU27	Agriculture	0.75	0.69	0.72	0.88	1.12	1.8	1.6	1.12
CR	Others	Agriculture	1.4	0.50	0.70	0.57	0.46	0.31	0.28	0.31
SR	Others	Agriculture	0.69	0.61	0.46	0.42	0.44	0.21	0.16	0.21
Hungary	Others	Agriculture	2.20	2.8	1.83	1.62	1.28	0.80	0.76	0.79
Poland	Others	Agriculture	2.49	2.10	2.26	1.87	1.68	1.29	1.72	1.75

Source: Comtrade, own processing, 2014

6. Mutual agricultural trade of the countries of the Visegrad group

The following text focuses on a detailed analysis of the commodity structure and territorial structure of agricultural trade of the V4 countries. The leader of the agricultural market of the V4 countries is undoubtedly

the Czech Republic, which (in period 2000 – 2012) participated in the total agricultural trade realized within the V4 countries with a share of over 30%. The second place is then held by Slovakia – which, by way of intensive exchange realized between it and the Czech Republic, participates in the trade turnover of the territory of the V4 with a share of approximately 28%. Poland participates in the turnover of agricultural trade within the territory of the V4 countries with a share of approximately 24% and Hungary participates with a share of approximately 16%.

The data set out in Table 8 shows that the value of mutual trade among the V4 countries is growing dynamically.

Table 8: Commodity structure of agricultural trade of V4 countries

	2000	2001	2002	2 003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Exports	V4	V4	V4	V4	V4	V4	V4	V4	V4	V4	V4	V4	V4
mil. USD	V4	V4	V4	V4	V4	V4	V4	V4	V4	V4	V4	V4	V4
S3-00	18.7	20.7	26.4	27.50	64	89	143.3	165.6	162.2	149.7	216.5	317.5	361.2
S3-01	51.3	52.3	76.7	87.20	166	376.1	441.4	589.4	821.4	855.6	1050.1	1277.7	1332.9
S3-02	94.2	108.9	120.9	155.80	268.9	416.9	542.5	695.1	887.5	718.2	830.9	991.2	852.3
S3-03	22.3	25.9	28.6	33.50	48.9	60.2	71.3	88	107.5	110.1	114.8	147.1	123.1
S3-04	224.6	212.4	211.3	280.20	354.2	418.2	583.8	877.8	1189.9	873.5	931.2	1431.0	1318.6
S3-05	155.4	188.6	203.4	256.30	373.1	493.3	558.6	735.2	856.5	706.9	765.9	798.2	755.2
S3-06	47.6	57.2	73	79.90	172.7	211.8	315.5	411.3	412.5	435.4	624.4	864.8	1202.6
S3-07	150.2	172.8	195.6	266.80	336.7	409.5	491.4	581.4	683.1	666.3	659.3	857.2	874.6
S3-08	50.8	58.4	64.6	78.30	104.2	141.1	175.1	258.5	372.9	276.8	321.8	437.7	459.4
S3-09	138.6	135.6	165.7	178.60	242.7	341.6	377.7	485.5	638.6	522.9	512.2	630.2	582.9
S3-11	68.4	79.2	101.9	120.50	187.4	267	312.9	438	532.7	487.8	477.7	599.8	565.3
S3-12	61.2	68.2	150	106.40	110.1	188.6	201.7	312.4	282	293.1	271.9	326.1	349.3
S3-41	4	5.4	7.1	11.30	15.6	12.7	14.9	16.3	19.9	23.8	28.9	41.7	39.3
S3-42	31.4	36.1	25.2	34.80	52.9	60	64.7	80.1	225.9	219.6	258.9	553.0	907.3
S3-43	8.5	6.1	6.1	8.70	16.4	19.8	20.1	25.6	40.3	86.7	38.3	57.5	55.7

Source: Comtrade, own processing, 2012

Only in the years 2000 – 2012, the value of mutual agricultural trade rose from approximately USD 1.1 billion to almost USD 10 billion – which shows an exceptional growth rate of mutual trade, which ranged around a level of approximately 20% within the monitored period. If we look at the commodity structure of mutual agricultural trade of the V4 countries in detail, we find that this structure is dominated primarily by

trade in the following aggregations: grains, vegetables and fruit, milk and dairy products, meat and meat products, stimulants and beverages. Further, in terms of the dynamics of growth in value, the most distinctly growing aggregations include the following: meat and meat products, sugar and candy products, live animals, milk and dairy products and vegetable and animal fats and oils.

The following Tables 9 and 10 provide an overview of the development of export, import and the balance of agricultural trade carried out on the market of the V4 countries in the case of the individual monitored countries. The tables show the especially bad situation of Slovakia, which has a long-term negative balance in the case of agricultural trade in relation to the territory of the V4 countries. In the case of the Czech Republic and Poland, on the other hand, a positive balance predominates. In the case of Poland, this is caused by substantial comparative advantages primarily in relation to the Czech Republic and Slovakia. In the case of the Czech Republic, the positive balance within the territory of the V4 countries is caused by a distinctly positive balance in relation to Slovakia.

Table 9: Position of individual member countries within agricultural trade carried out among the V4 member countries themselves

Mil. USD		2000	2 002	2004	2005	2006	2007	2008	2009	2010	2011	2012	2000-12	Geomean - inter annual growth rate
V4	**trade**	**1127.2**	**1456.6**	**2513.9**	**3506**	**4315**	**5760.3**	**7233**	**6426.3**	**7102.7**	**9330.8**	**9779.8**	**61505.4**	1.197
CR	export	454.9	603.2	900.8	1249.8	1379.3	1938.1	2446.5	1986.5	2128.2	2850.5	3075.4	**20148.6**	1.173
CR	import	355.2	465.9	830.5	1065.2	1384.3	1747.5	2127.8	1992.7	2013.2	2505.4	2664.2	**18144.7**	1.183
CR	balance	99.7	137.3	70.3	184.6	-5	190.6	318.7	-6.2	115.1	345.1	411.2	**2004**	
Hungary	export	212.7	231.2	369.1	402.4	517.5	774.8	1097.1	876	1148.1	1651.4	1462.4	**9218**	1.174
Hungary	import	316.3	306.2	443.5	537.1	703.2	947.6	1217.4	945.7	1018.6	2024.9	2143.4	**11260.1**	1.173
Hungary	balance	-103.6	-75.1	-74.4	-134.7	-185.7	-172.8	-120.4	-69.8	129.5	-373.5	-681	**-2042.4**	
Poland	export	230.2	300.6	662.3	1026.5	1382.9	1685	2220	2052.2	2197	2600.5	2615.9	**17630.5**	1.225
Poland	import	120.9	182.5	496.6	763.2	909.7	1221.5	1418.6	1325.5	1499.2	1424.5	1595.3	**11349.6**	1.240
Poland	balance	109.3	118.1	165.7	263.3	473.2	463.5	801.4	726.7	697.8	1176	1020.6	**6280.9**	
SR	export	229.4	321.7	581.7	827.2	1035.4	1362.5	1469.3	1511.7	1629.3	2228.4	2626.1	**14508.4**	1.225
SR	import	334.8	502.0	743.2	1140.4	1317.9	1843.8	2469.1	2162.4	2571.8	3375.9	3376.8	**20750.7**	1.212
SR	balance	-105.4	-180.3	-161.5	-313.2	-282.5	-481.3	-999.8	-650.7	-942.4	-1147.5	-750.7	**-6242.2**	

Source: Comtrade, own processing, 2012

Table 10: Mutual agricultural trade flows – territorial structure – in 2012 (Mil. USD)

2012	Export	S3-00	S3-01	S3-02	S3-03	S3-04	S3-05	S3-06	S3-07	S3-08	S3-09	S3-11	S3-12	S3-41	S3-42	S3-43
Slovakia	Czech R.	18.7	126.7	92.6	5.5	117.7	88.8	213.1	57.8	20.4	41.2	83.1	0.1	1.7	124.8	9.4
Slovakia	Hungary	107.2	110.4	82.6	2.9	130.0	45.1	273.1	177.1	35.3	24.8	44.1	0.0	11.8	167.9	18.9
Slovakia	Poland	36.1	7.9	12.7	0.5	144.3	10.6	64.4	38.0	32.8	14.4	15.6	0.1	2.7	12.7	0.6
Czech R.	Hungary	37.1	26.6	35.3	8.9	39.0	24.6	57.0	23.4	5.3	31.3	16.7	5.9	0.2	6.5	3.6
Czech R.	Poland	28.1	20.8	45.4	12.0	224.3	37.1	43.9	45.0	61.1	42.9	54.9	18.2	0.1	169.3	5.7
Czech R.	Slovakia	55.9	353.6	165.7	40.1	194.1	241.4	137.8	135.8	78.9	125.2	166.1	70.1	3.9	165.2	11.1
Hungary	Czech R.	7.3	46.4	9.0	0.2	34.2	26.8	44.8	26.1	31.8	24.0	25.2	15.3	0.4	30.6	0.4
Hungary	Poland	4.0	27.2	13.0	1.3	82.8	65.4	46.3	20.9	62.2	20.7	18.6	6.5	0.2	24.3	0.0
Hungary	Slovakia	15.4	44.3	0.5	3.7	76.7	0.4	45.4	76.5	36.3	0.8	117.5	32.8	146.0	121.6	28.7
Poland	Czech R.	5.1	256.1	190.6	28.2	137.6	95.3	80.4	124.9	52.4	122.4	45.2	96.9	4.5	98.5	2.0
Poland	Hungary	14.0	104.0	75.7	12.1	51.1	43.9	18.3	60.9	15.3	68.0	26.3	92.5	6.9	0.9	0.5
Poland	Slovakia	2.3	176.8	93.4	10.7	45.9	43.4	77.4	42.9	35.3	52.7	25.3	43.2	3.1	29.8	2.9

Source: Comtrade. own processing. 2012

The last part of this sub-chapter provides an overview of the distribution of comparative advantages on a bilateral level among individual countries of the Visegrad group, specifically in terms of the individual traded aggregations. As was stated above, agricultural trade as a whole holds comparative advantages in relation to global markets only in the case of Poland and Hungary. In relation to the market of the V4 countries, only the agricultural trade of Poland has comparative advantages as a whole, and in some years, also Hungarian agricultural trade. Agricultural trade of the Czech Republic and Slovakia as a whole does not have comparative advantages even in regard to the global and European market, or even in relation to the market of the V4 countries. Nevertheless, it is appropriate to state that agricultural trade as a whole is growing in the case of all of the V4 countries, and not only in the case of imports, but also in the case of exports. Those are, in the case of the Czech Republic, growing 17% annually on average, and by nearly 22% in the case of Slovakia. The above thus clearly proves the existence of comparative advantage - if not on the level of overall agricultural trade, then at least on the level of individual aggregations, which represent the motor for the actual growth of realized agricultural trade.

Table 11 provides an overview of the distribution of comparative advantages in the case of individual aggregations traded between the monitored countries mutually. In the case of each of the monitored countries, there are 45 flows monitored within 15 aggregations realized between the given economy and its three partners.

Table 11: LFI Index – Comparative advantages of agricultural trade among individual V4 countries at the level of individual aggregations representing agricultural trade

2012	LFI	S3-00	S3-01	S3-02	S3-03	S3-04	S3-05	S3-06	S3-07
Slovakia	Czech R.	-0.45	-2.48	0.32	-0.68	0.80	-1.59	6.37	-0.54
Slovakia	Hungary	3.12	1.42	3.12	-0.12	0.13	1.70	7.57	1.95
Slovakia	Poland	4.09	-11.02	-4.82	-0.67	13.90	-1.68	2.35	1.58
Czech R.	Hungary	4.64	-3.06	4.09	1.37	0.78	-0.33	1.92	-0.41
Czech R.	Poland	1.45	-7.76	-4.04	-0.29	8.20	-1.18	-0.27	-1.76
Czech R.	Slovakia	0.45	2.48	-0.32	0.68	-0.80	1.59	-6.37	0.54
Hungary	Czech R.	-4.64	3.06	-4.09	-1.37	-0.78	0.33	-1.92	0.41
Hungary	Poland	-0.65	-5.14	-4.57	-0.83	5.95	4.41	4.16	-2.40
Hungary	Slovakia	-3.12	-1.42	-3.12	0.12	-0.13	-1.70	-7.57	-1.95
Poland	Czech R.	-1.45	7.76	4.04	0.29	-8.20	1.18	0.27	1.76
Poland	Hungary	0.65	5.14	4.57	0.83	-5.95	-4.41	-4.16	2.40
Poland	Slovakia	-4.09	11.02	4.82	0.67	-13.90	1.68	-2.35	-1.58
2012	**LFI**	**S3-08**	**S3-09**	**S3-11**	**S3-12**	**S3-41**	**S3-42**	**S3-43**	**Tot. agr. trade**
Slovakia	Czech R.	-0.91	-1.05	-0.11	-1.61	-0.01	1.78	0.17	-2.35
Slovakia	Hungary	-0.94	0.90	-5.71	-2.06	-8.74	-1.24	-1.09	3.96
Slovakia	Poland	1.47	-1.88	0.12	-2.91	0.11	-0.52	-0.12	-4.37
Czech R.	Hungary	-4.10	1.14	-1.31	-1.46	-0.03	-3.73	0.49	0.15
Czech R.	Poland	1.71	-1.80	1.60	-2.34	-0.15	6.37	0.26	-1.76
Czech R.	Slovakia	0.91	1.05	0.11	1.61	0.01	-1.78	-0.17	2.35
Hungary	Czech R.	4.10	-1.14	1.31	1.46	0.03	3.73	-0.49	-0.15
Hungary	Poland	6.34	-3.01	0.13	-6.73	-0.54	2.90	-0.04	-1.69
Hungary	Slovakia	0.94	-0.90	5.71	2.06	8.74	1.24	1.09	-3.96
Poland	Czech R.	-1.71	1.80	-1.60	2.34	0.15	-6.37	-0.26	1.76
Poland	Hungary	-6.34	3.01	-0.13	6.73	0.54	-2.90	0.04	1.69
Poland	Slovakia	-1.47	1.88	-0.12	2.91	-0.11	0.52	0.12	4.37

Source: Comtrade, own processing, 2012

The results show (for the year 2012) that the Czech Republic has, in relation to Hungary, comparative advantages in the case of 7 monitored aggregations, in the case of 6 aggregations in relation to Poland, and in relation to Slovakia there are 10 competitive aggregations. Slovakia has, in relation to Hungary, comparative advantages in the case of 8 aggregations, in the case of 7 aggregations in regard to Poland, and Slovakia achieves comparative advantages in the case of 5 aggregations in relation to the Czech Republic. Hungary achieves comparative advantages in relation to the Czech Republic for 8 aggregations, for 7 aggregations in relation to Slovakia, and there was a comparative advantage for 7 aggregations in relation to Poland. Polish agricultural trade in relation to the V4 countries achieves comparative advantages in the case of the Czech Republic for 9 aggregations, for 8 aggregations in the case of Slovakia, and for approximately 9 aggregations in the case of Hungary.

7. Conclusions

On the basis of the above findings, it is shown that agricultural trade in the case of all of the countries of the Visegrad group represents only a marginal part of the total merchandise trade. Further, in regard to the agricultural trade of the individual analyzed countries, it may be stated that the commodity structure as well as the territorial structure is very significantly concentrated. The predominant majority of agricultural trade –export as well as import – is carried out in regard to EU countries. Such countries participate in the agricultural trade of the individual countries of the V4 group at a rate of over 80%. Third countries represent only a marginal market in regard to the sale of agricultural products from the V4 countries, and their position is slightly more significant in relation to agricultural imports primarily of tropical and subtropical products going onto the markets of the V4 countries. In regard to the territorial structure of the agricultural trade of the V4 countries, it may generally be stated that it is relatively stable in time.

In relation to the development of the commodity structure of agricultural trade, it may be stated that the volume and value of trade realized withinthe majority of goods aggregations is growing on a long-term basis in the case of all of the V4 group countries. Nevertheless, it is appropriate to state that the most dynamic growth was seen in the case of Poland. Czech and Slovak agricultural trade also showed considerable

growth in terms of realized trade; however – only in the case of Poland was the growth in the dynamicity of exports so substantial that the resulting balance of Polish agricultural trade moved from negative values to positive values. A specific country in terms of the development of the commodity structure and the value of agricultural trade is Hungary. At the beginning of the monitored period, it was the only country of the V4 group with a positive balance in agricultural trade. Nevertheless, structural problems of the Hungarian economy also led to significant problems in the area of the development of the agricultural sector and agricultural trade. The result is the gradual reduction in the field of the development of a positive balance of the Hungarian agro-trade and a decline in the importance of the agricultural sector – or agricultural trade – as a significant source of the positive trade balance of Hungarian merchandise trade.

If we focus on the actual objective of the article, which was to identify the comparative advantages of agricultural trade of the V4 countries in the area of commodity structure and territorial structure, both in relation to the global market, as well as in relation to the EU countries, and also in relation to the "own internal market" of the V4 group countries – all of which is for the purpose of ascertaining the most significant changes that occurred in the field of agricultural trade of the individual countries within the years of 2000 – 2012, the following may be stated. Agricultural trade of the Czech Republic, Slovakia and Hungary as a whole does not have comparative advantages either on the global market or on the internal market of the EU countries. However, Poland as the only representative of the V4 countries does have comparative advantages in the field of agricultural trade, both in relation to the internal market of the EU countries, as well as in relation to the global market (to the market of third countries). If we focus further on the distribution of comparative advantages within the mutual trade of the V4 countries (The most competitive aggregations of individual analysed countries within V4 market are the following: Czech Republic (S3-00, S3-03, S3-04, S3-08, S3-09), Slovakia (S3-00, S3-02, S3-04, S3-06, S3-07), Hungary (S3-05, S3-08, S3-11, S3-12, S3-42) and Poland (S3-01, S3-02, S3-03, S3-05, S3-07, S3-09, S3-12).) – we can state that Poland clearly dominates. Hungarian export is also capable of gaining comparative advantages in some years in relation to the market of the V4 countries. However, Czech and Slovak agricultural trade as a whole is profiled as uncompetitive within the whole of the space of the V4 countries. Nevertheless, it is appropriate to emphasize

that although Czech and Slovak agricultural trade, in comparison with Hungarian and primarily Polish agricultural trade, appears to be uncompetitive, the value of both agricultural trade of the Czech Republic as well as the agricultural trade of Slovakia is constantly increasing, both in relation to realized exports, as well as in relation to realized imports. Primarily in relation to the growth of agricultural exports, it may be stated that the Czech Republic and Slovakia, although they do not have comparative advantages at the level of overall agricultural trade, are capable of gaining at least partial comparative advantages at the level of individual aggregations representing agricultural trade.

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TRANSPARENCY – A REQUIREMENT FOR MARKET DISCIPLINE IN THE LIGHT OF PRIOR RESEARCH LITERATURE

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ABSTRACT. Our paper approaches "transparency" as a requirement for market discipline from a different perspective – the researchers one - presenting an overview image of the economic theories derived from these concepts, by analyzing and discussing positive arguments and negative reasons for improving transparency, highlighting as well its beneficial consequences identified along time, which is important to all researchers interested on it.. The main reason of focusing our research in this area was the continuously increasing importance given to transparency and disclosure, as a consequence of the most recently corporate failures and accounting scandals, not only among regulatory authorities and at companies' level, but in academic environment, too, where we have assisted at an increasingly interest in identifying and assessing their causes and effects. Thus, our paper provides a different approach, by focusing upon the trend of research studies on disclosure and transparency in a particular economic field, the banking one, thus offering a qualitative analysis of prior empirical evidences.

Keywords: market discipline; transparency; disclosure; banking

JEL Classification: M41, G30

1. Introduction

Because banking environment was negatively affected for several times along time, many studies have been conducted with the purpose

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of identifying the main causes, searching for possible solution in order to prevent it, but unfortunately, without guaranteed results. Prior literature reveals that among the main causal factors of the financial distress is *"the absence of effective market discipline against hazardous bank behavior due partly to the lack of transparency and the disclosure of relevant information"* (Llewellyn, 2002).

Transparency, as used *in the humanities and in a social context* more generally, implies openness, communication, and accountability. It is a metaphorical extension of the meaning a "transparent" object that can be seen through. *In business environment*, transparency is related to the extent to which investors have ready access to any required financial information about a company such as price levels, market depth and audited financial reports. Classically defined as when "much is known by many", transparency is one of the silent prerequisites of any free and efficient market. When transparency relates to information flow from the company to investors, it is also known as "full disclosure".

> *In financial system*, according to the Basel Committee on Banking Supervision, *transparency* is defined as *"the public disclosure of reliable and timely information that enables users of that information to make an accurate assessment of a bank's financial condition and performance, business profile, risk profile and risk management"* (BIS, 1998, para. 6).

Market discipline plays an important role in banking system, by safeguarding its financial stability. Thus, its main duty is to alleviate the banks' moral hazard problems that might arise because of the risky nature of banking activity mainly characterized by collecting deposits and investing these in loans, the easiest way of reducing the incentive to take excessive risk being to make risk-taking more costly (Nier and Baumann, 2006). But, this is not as simply as it seems because of the complexity of market discipline process that leads to a comprehensive theory about whom and how might effectively ensure it.

Basing on this background, our paper proceeds as it follows: Firstly, we briefly review prior literature concerning market discipline and transparency theories. Then, we provide information about our research design, pointing out both the objective of this study and the research methodology used. After following the qualitative analysis

proposed, mainly focused on analyzing and discussing positive arguments and negative reasons for improving transparency, highlighting as well its beneficial consequences identified along time, we ended our study through concluding remarks, limitations and perspectives for future research.

2. Literature review upon market discipline and transparency theories

The first theoretical framework of market discipline in banking environment was developed at the beginning of 1990's (Berger, 1991). Its basics consist not only of the market participants that might be able to exert it (depositors, subordinated debt holders and equity holders) but especially of the requirements upon the information structure (the right information condition, the right time condition and the right participant condition).

Along time, various researchers tried to bring value-added to this theory by introducing new types of conditions besides those related to information (Lane, 1993), extended the theory by interplaying it with the regulatory discipline (Crockett, 2002), by adding new conditions on information structure, as the cost-benefit one (De Ceuster and Masschelein, 2003) or by rethinking it and summarizing through a different shape (Hamalainen et al., 2005).

Thus, two different stages that drive the process of market discipline of banks have been identified (Bliss and Flannery, 2002; Flannery, 2001), a brief history of the main steps in developing the market discipline theory being presented in Table 1.

Table 1. Summary of developments in market discipline theory

The first market discipline theory		
Berger (1991)	- market participants	- depositors - subordinated debt holders - equity holders
	- conditions on information structure	- the right information condition - the right time condition - the right participant condition

Developments of market discipline theory:

Lane (1993)	→ open capital markets → no bailout of investors → banks responding to market signals	These were added to the general condition called "Information" (consisted of the three conditions on information structure defined by Berger (1991))
Bliss and Flannery (2002) Flannery (2001)	→ two phases of market discipline: - market monitoring - market influence	These gave a new shape to the theory by dividing market discipline process into two stages
Crockett (2002)	→ the ability of processing information → complementariness of regulatory discipline and market discipline	This was added to the right participant condition defined by Berger (1991) This extended the theory with regulatory discipline issue
De Ceuster and Masschelein (2003)	→ the cost-benefit condition (benefits must outweigh the costs of monitoring for the right incentives to be present)	This was added to the conditions on information structure defined by Berger (1991)
Hamalainen et al. (2005)	→ open capital markets → information → right participant → banks responding to market signals	Redefined all issues debated before into four basic conditions

Source: own projection based on literature review

In conclusion, so that a fully and effective market discipline to occur, four conditions must to be met and two phases must be complete, which are detailed in Table 2:

Table 2. Fully description of the market discipline process

Stages	Definition	Conditions	Definition
market monitoring / the recognition phase	the process by which investors accurately evaluate changes in a firm's condition and incorporate those assessments promptly into security prices	*open capital markets*	the existence of unrestricted and efficient capital markets
		right information at the right time	the public disclosure of bank capital structure and risk exposures
		right participant	market participants must not believe that the borrower would be bailed out in the case of an actual or impending default
market influence / the control phase	the process by which outside claimants influence a firm's actions	*banks responding to market signals*	banks must respond to market signals produced in the recognition phase, in a manner consistent with their solvency

Source: own projection based on literature review (Bliss and Flannery, 2002 Flannery, 2001; Hamalainen et al. 2005)

Thus, among the basic conditions that need to be satisfied so that market discipline to be effective, as prior literature (Nier and Baumann, 2006) highlighted, is that "the market must have *adequate information* to gauge the riskiness of the bank", which actually leads to the conclusion that market discipline can work effectively only on the basis of full and accurate information disclosure and transparency. Good quality, timely and relevant information needs to be available to all market participants and regulators so that as set quality, creditworthiness and the condition of financial institutions can be adequately assessed. Thus, only through *enhanced transparency*, market participants might impose market discipline earlier and more effectively, great importance in this respect having both the regulatory environment (Nier and Baumann, 2006) and supervisors' information, especially for banks that were not forthcoming in their prior disclosures (Jordan et al., 2000; Bliss and Flannery, 2002).

According to prior studies, the most prominent way of increasing the transparency of financial institutions is the disclosure of information in published reports. This inevitable lead to the following question: *"Will disclosure really be able to improve transparency?"*.

This controversial question stood at the basis of various researches along time, thus leading to two conflicting theories (see Figure 1) about the consequences of grater transparency (Tadesse, 2006):

- *"transparency-fragility" theory,* which states that greater disclosure may engender banking-system instability because it may lead to projection of information about problems of specific banks as indicator of widespread problems in the banking system, thereby leading to bank-runs or stock market collapse;
- *"transparency-stability" theory*, which states that greater disclosure and the consequent transparency facilitate the efficient allocation of resources by improving market discipline via reducing informational asymmetry and enables early detection of weak banks before they drag the entire banking system into crisis, by rewarding strong banks for their risk management and performance and penalizing weak banks with higher costs of raising capital and deposits.

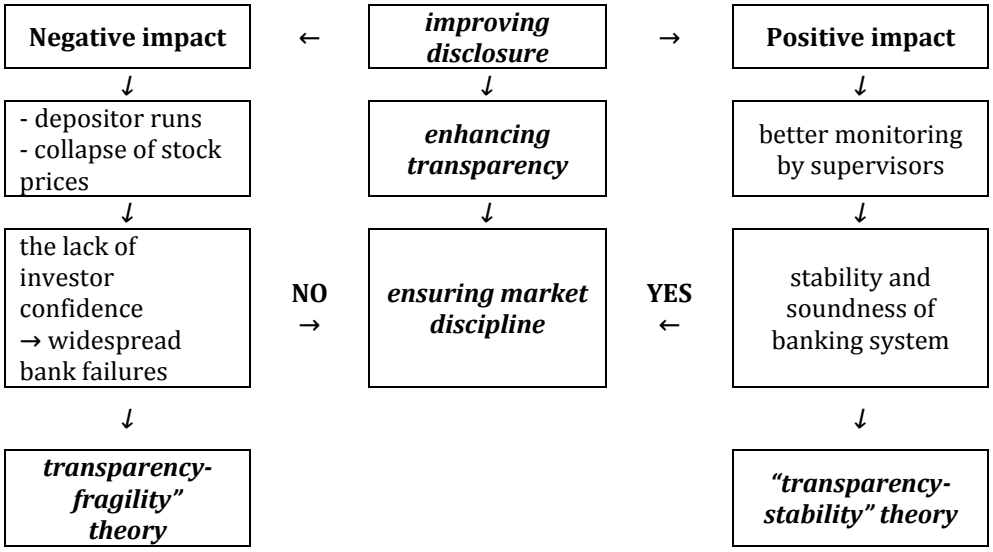

Figure 1. The two faces of transparency

Source: own projection

Considering the two opposites faces of transparency the following question aroused and does not received a clear answer yet: *"Should bank information be disclosed to the public? … If so, to what extent? … Why? … How? … and to whom?"*

3. Research design and results

The objective of our paper is to provide an overview of international research focused on transparency and disclosure, by discussing among the positive arguments and negative reasons for improving transparency, highlighting as well its beneficial consequences identified along time. For achieving our goal, we selected a sample of papers, appreciated as the most relevant for academic research in our field of interest.

The research methodology used for achieving our goal is therefore based on a literature review of a significant number of research papers published in various journals indexed in the most well-known international databases. Thus, our study comprises a qualitative analysis which reveals the evolution of the state of research in the area of disclosure and transparency issues over the time, pointing out the most relevant conclusions.

For performing the proposed analysis of empirical research in order to offer the most accurate picture of the past and to highlight possible ideas for future studies, firstly we searched in the most well-known international databases (including Business Source Complete, Cambridge Journals Online, Osco Host EJS, Emerald, Informaworld, IngentaConnect, ISI Web of Knowledge, ISI Web of Science, Jstor, Proquest, ScienceDirect, Springer, Wiley Online Library) for those papers that report findings on "pro's" and "con's" for increasing transparency and its consequences. Our search was based on different combinations of the words "disclosure", "transparency", "market discipline" and "bank/banking" on papers' title, ABSTRACT. and keywords. The searches yielded a total of 89 papers, from which we retained for our analysis just those papers that provide evidence on our research topic.

3.1. Qualitative analysis upon arguments "pro" and "contra" improving transparency

Improved transparency brings advantages to all parties involved in banking environment, by providing a disciplining mechanism whereby

banks whose performance or risk profile is considered inadequate can be sanctioned, while banks whose performance or risk profile indicate sound management can receive incentives (Flannery and Sorescu, 1996). Moreover, it ensures stability to the entire *banking system* by allowing bank supervisors to perform better monitoring for impending problems, and hence enabling them to take earlier wealthy actions. It might increase risk-management abilities across the banking sector, as banks will not want to be viewed as inferior to other banks in this respect, which it will, in turn, create more stability within the industry, hence reducing systemic risk (Linsley and Shrives, 2005). *For market participants,* it improves their ability to make informed decisions, through more accurate assessment of a bank's financial strength and performance (Oyama and Shiratori, 2001).

Anyway, there are also *arguments "contra" improving transparency*, appreciating that it may negatively affect the fragility of banking system, especially in case of temporary problems that a bank might face up. Thus, the following situations might occur:

- *a contagious bank-run*; through great transparency depositors welfare might be reduces and as a consequence they may overreact, being tempted to withdraw their money, thus increasing the chance of an inefficient contagious run on other banks (Chen and Hassan, 2006). Consequently, full transparency of bank risks, could lead to bank failure via increasing interest on deposits that banks have to pay in the riskier state (Cordella and Yeyati, 1998);
- *the impossibility of raising the necessarily capital*; in case of problems, shareholders as well may overreact and this may cause the bank's share price to plummet (De Ceuster and Masschelein, 2003)

Consequently, these situations, might occurs in case of financial problems disclosure, that might lead either to the bank's failure through a bank run or to an overreaction in the financial markets, jeopardizing the ability of the bank to raise capital. If such cases spread to the entire banking system it results in a systemic failure, thus higher disclosure becoming the cause of the collapse of a banking system, rather than providing market discipline.

The main reasons why banks might be reticent in ensuring higher transparency could be classified at least into the following categories:

- *financial reasons;* increasing transparency by providing a higher level of disclosure also implies additional costs to institute a timely, comprehensive and accurate system of information reporting, resources that might be more profitably employed elsewhere being thus designed to fulfil this function;
- *speculative reasons;* by a fully transparent system of reporting, the ability of bank's management to engage in self dealing transactions made to bring unfair advantages to some parties, is limited;
- *competitive reasons;* usually banks adopt their own strategies, which become more transparent in case of higher level of disclosure, thus affecting their competitive status by revealing their vulnerabilities.

In conclusion, considering that improving disclosure might bring both benefits and drawbacks, there has been stated that transparency is a preventive measure, which must be introduced when confidence is rising and market reaction is likely to be benign (Fons, 1998).

3.2. Qualitative analysis upon consequences of increasing the level of disclosure

The main consequences of inadequate disclosure, resulting in poor transparency and the absence of effective market discipline, might consist of weak monitoring and supervision, thus leading to financial crisis. Closely related to financial crisis there has been proved that inappropriate informing increases funding costs, especially in times of financial distress (Fons, 1998), enables banks to evade prudential and other restrictions and contributes to the depth and breadth of a banking crisis (Rahman, 1999). Also, it has been stated that transparency can only help to prevent a financial crisis and it should not be seen as a cure for systems already under stress (Fons, 1998).

Anyway, many other *consequences* of increasing the level of disclosure were identified and analysed along time, such as:

- it might result in *lower* measures of *stock volatility* (Bauman and Nier, 2004), due to disclosure's ability to reduce the magnitude of the impact of news about a firm's performance (Lang and Lundholm, 1993; Bushee and Noe, 2000);

- it is likely to *reduce information asymmetries* in the market that result in pronounced price changes in response to changes in demand for the stock (Botosan, 1997; Diamond and Verrecchia, 1991);
- it *promotes a safer banking system*, by: improving bank performances (Podpiera, 2006), increasing banks' soundness as a result of regularly and accurately data report (Demirguc-Kunt, et al., 2008), boosting banks' capital positions, particularly in countries with more competitive banking systems (Nier and Baumann, 2006), preventing banks from taking excessive risks, as market discipline reduces the funding base of imprudent banks (Hirtle, 2007);
- it *attracts more foreign portfolio investment* (Gelos and Wei, 2004), which might result in the reward of having *lower borrowing costs* (Glennerster and Shin, 2004), *corporate credit spreads*, particularly for short-term bonds (Yu, 2005) and *transaction costs*, thus *increasing the liquidity of the stock* (Amihud and Mendelson, 1986);
- it *decreases the cost of equity capital* (Poshakwale and Courtis, 2005), because higher disclosure *enables a better monitoring of managers* and *increases the demand for the securities* (Verrecchia, 1988; Dye, 1985; Diamond, 1985; Benston, 1986; Fishman and Hagerty, 1989) and leads to *more accurate analyst earning forecasts*, with lesser dispersion among individual analyst forecasts and lower volatility in forecast revisions (Lang and Lundohlm, 1993), all of these, actually leading to a lower cost of capital.

During the financial meltdown which began late 2007, both capital market and the bank regulatory authorities have called for enhanced transparency, basing on the assumption that inappropriate and improperly timed information disclosure may make the banking system sensitive to systemic shocks.

But, between the degree of disclosure and the net benefits of transparency there is a particular relationship that might be taken into account. Thus, as the level and quality of financial disclosure increases its benefits are rising, but only until a certain level, call the "optimal threshold". After reaching this point the benefits of disclosing information start their decline, being lower than the cost attached to producing it. Consequently, a *cost-benefit analysis* is essential when deciding upon the information to be disclosed.

4. Concluding remarks

The concept of market discipline can be defined as accountability through transparency. By accountability it is expected that bank's management acts in the best interests of outside stakeholders, while by transparency it is expected that a bank discloses sufficient information so as to allow these stakeholders to make informed judgments as to whether the bank is acting in their best interests.

For the market discipline mechanism to operate effectively, it is thus imperative that stakeholders receive frequent, relevant and meaningful information regarding the risk profile and management of banks, and for the disclosure of such information to be both mandatory and reasonably consistent across banks and jurisdictions.

However, it is somehow natural to wonder: "Will disclosure really be able to improve transparency and enhance market discipline?". Various arguments have been brought along time in this respect, most of them leading to certain skepticism in this respect. Thus, firstly, higher transparency might be useless because banks are inherently opaque institutions, and increases in disclosure may not be able to materially change this (Bauman and Nier, 2004). On the other hand, disclosure is costly, and thus, for being justified it is expected that its costs, either those directly related to producing and disseminating information, but also the indirect ones that might arise when a bank's competitors are able to exploit the information that the bank provides to the financial market, should be offset by proper benefits (Bauman and Nier, 2004). Evidences show that investors are willing to accept some discretion on the part of managers to withhold a certain "threshold" quantity of information (Verrecchia, 1983). Finally, a higher level of disclosures may not necessary lead to transparency, unless it is disclosure of 'useful' information (Linsley and Shrives, 2005), the following qualitative characteristics that contribute to transparency being stated - timeliness, comprehensiveness, reliability, relevance, comparability and materiality (BIS, 1998, para.53). Consequently, such arguments gave researchers a lot of possibilities to approach transparency topic, but there are many unexplored, yet.

Anyway, the qualitative analysis provided within this study reveal a significant "enrichment" of disclosure related literature, due to a continuously increasing interest on this topic mainly because of the

latest financial scandals that led to the collapse of many international recognized companies, corporate governance failures due to lack of transparency being often considered as their major cause.

Like any other research, we are aware of the limitations of our study that come from the sample's dimension made of selective articles, considered relevant for the performed analysis. But, these limitations offer us outlooks for future research, by extending the sample of journals and papers included in analysis, considering more specific criteria for selection than the "transparency" concept as a whole. Also, the research methodology might be improved by using comprehensive statistical methods for testing the relationship between the established variables, which is the main purpose of future studies.

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THE ROLE OF PSYCHIC DISTANCE ON INTERNATIONALIZATION PROCESS OF SMEs IN TURKEY

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ABSTRACT. The purpose of this paper is to investigate the effect of psychic distance factors on internationalization decisions of small and medium-sized enterprises (SMEs). Particularly, this paper offers interesting insights into the literature because of the limited number of academic studies related to psychic distance factors in Turkey and the presence of contradictory findings about the effect of these factors in literature. This study takes into consideration all psychic distance indicators which have been found in earlier studies and indicates how effective those factors are for SMEs in Turkey as an emerging country. The results of the empirical study confirm that psychic distance factors have an impact on the internationalization decisions of companies and the extent of impact of these factors vary considering internationalization degree and number of countries they operate.

Keywords: Psychic Distance, Internationalization, Small and Medium-Sized Enterprises

JEL classification: M16, L25

1. Introduction

In today's fast-paced and aggressive competitive business environment, domestic companies, especially small and medium sized enterprises

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(SMEs) face the fact that it is vital and inevitable to internationalize in order to compete with multinational companies which dominate their home market. However, there are many difficulties of internationalization and SMEs may cope with a more complicated and compelling internationalization process because of having insufficient experience and resources. For Turkey, due to the fact that SMEs constitute 99% of all enterprises and contribute 59% of total export, their internationalization process comes out to be a crucial and critical issue to analyze (TUIK, 2012).

Considering earlier studies carried out, some theories specify internationalization process of companies as a stepwise path, which suggest that companies initially select close markets to internationalize, and then they move forward to more distant ones. Uppsala model is one of the most prominent models, which elaborates this gradual pattern of internationalization (Johanson and Wiedershiem-Paul, 1975). In this model some attributes, named as psychic distance factors, are asserted as disturbing factors affecting understanding of business environment of foreign markets; thus lead companies to select countries which have lower psychic distance at first rather than more distant ones. Yet this suggestion is disaffirmed by some studies arguing that psychic distance factors do not have considerable influence on internationalization decisions (Crick and Jones, 2000; Kontinen and Ojala, 2010; Moen and Servais, 2002). The different and two-sided approaches and findings of current literature and the fact that there is no consensus about the effect of psychic distance factors on internationalization are the motivation to analyze the situation for SMEs in one of the emerging markets, Turkey. The aim of the study is to investigate whether psychic distance factors have any impact on the internationalization decisions at the level of companies; besides if any, it is intended to find whether the extent of impact of these factors vary considering the international experience and internationalization degree of companies.

2. Literature Review

In recent years, companies show a gradually higher propensity to expand into global markets to take advantage of the growth opportunities within a competitive market place. In this case, the most fundamental decision of internationalization process is selection of the right market

(Malhotra et al., 2009). Particularly, the perception of decision makers about the country will be selected may have an important role beyond the realities related to entry decision such as transportation costs or competition in that country. For example, Beckerman (1956), Johanson and Vahlne (1977) revealed that managers/exporters are affected by their perceptions while deciding which foreign market is appropriate to enter. Under this argument, a new concept called psychic distance has emerged.

The term of psychic distance was first used in the literature by Beckerman (1956) in a study about trade flows among European countries and he refers this term to describe that some foreign markets are perceived to be closer than others. Then, the concept was developed and popularized by a group of scholars at Uppsala University to explain internationalization process of a company and identified as a determinant of internationalization behavior (Johanson and Vahlne, 1977; Johanson and Wiedersheim-Paul, 1975). Johanson and Wiedersheim-Paul (1975) define psychic distance as "factors preventing the flow of information between the company and the foreign market (e.g. differences in language, culture, political systems, level of education etc)". According to Uppsala internationalization model, companies tend to enter foreign markets which are not psychically distant from home country. They start their foreign operations in countries which are less psychically distant and as they gain sufficient knowledge and experience, they subsequently penetrate into the countries which are more psychically distant (Johanson and Wiedersheim-Paul, 1975).

During the ongoing debate on psychic distance, scholars began to revise their psychic distance definitions. For example, in the study of Nordstrom and Vahlne (1994, p.42), they define psychic distance as "factors preventing or disturbing companies' learning about and understanding a foreign environment". Their focus on companies' comprehension and learning refer that consideration of individuals within the company is particularly important when measuring psychic distance due to the fact that individuals' decisions hold great significance to learn companies' internationalization behavior. In this context, the term of psychic distance is required to change from an information flow perspective which is based on the differences in national level to a perception-based perspective which shows the importance of how individuals affect their companies' internationalization process. Thus, the concept of perception has been added to many subsequent studies (Lee, 1998; Stottinger and

Schlegelmilch, 1998; Swift, 1999; Evan and Mavondo, 2002; Evans and Bridson, 2005). Therefore, psychic distance can be redefined as the individual's perceived differences between the home and host country (Sousa and Bradley, 2006). Taking into account that individuals' perceived differences between home and host country becomes especially remarkable for SMEs due to the fact that they are dependent on owners/top managers' decisions in their internationalization process; the concept of psychic distance takes an important place for market entry decisions in earlier stages of internationalization of SMEs (Cicic, Patterson and Shoham, 1999).

When conducted studies are considered, contradictory findings regarding the impact of psychic factors on internationalization decisions of companies appear. For instance, there are some other empirical findings related to insignificance of the psychic distance factors in the internationalization process of companies. Moen and Servais (2002) found that psychic distance has no impact on the export market decisions of internationalizing companies. Besides, according to Crick and Jones's study (2000), growth opportunities, niche markets are more exploratory compared to psychic distance factors in terms of market choice. However, Dow (2005) found that psychic distance perception has an effect on born-global companies rather than global companies in terms of their selection of psychically close markets at first. Hashai and Almor (2004) also claimed that born-global companies follow a gradual internationalization process with regard to entering psychically closer countries rather than distant ones. Moreover, Chetty and Champell (2004) investigated traditional and rapidly internationalizing companies of New Zealand and their findings support that companies behave according to psychic distance logic by following a stepwise path and investing psychically similar countries initially.

Liesch and Knight (1999) mention that the more psychically distant the market, the greater the uncertainty confronting the new entrant. This idea is derived from studies of Johanson and Wiedersheim (1975) and Johanson and Vahlne (1977) which reveal that market knowledge and market experience are important for companies regarding resource commitment and further investment. It was argued that when the companies have sufficient experience related to a particular market and get accustomed to business activities in this market; their level of commitment to that market increase due to decreased perceived risk and uncertainty level through learning. The smaller amount of perceived

risk and uncertainty reduces psychic distance between home and host country. In other words, when companies start to be more familiar with a specific country through the gained international experience, they are encouraged to enter new markets that are psychically more distant. In this context, the following hypotheses were proposed to explain that the impact of psychic distance factors differs through international experience which is a function of both the time and diversity of operations.

H_{1a}: The impact of psychic distance differs through the number of countries operated
H_{1b}: The impact of psychic distance factors differs through the internationalization age

According to Papadopoulos and Martin (2010), internationalization degree shows the firm's concentration to foreign markets in terms of export intensity. Additionally, Olejnik and Swoboda (2012) supported this view by identifying that the firms' internationalization degree is related to their knowledge and understanding gained from foreign markets. By considering this relationship and taking into account abovementioned link between international experience and psychic distance factors; one can expect that there is an association between internationalization degree and psychic distance factors.

H_2: The impact of psychic distance factors differs through internationalization degree of companies

3. Research Methodology

In this study, it is preferred to conduct a survey to test mentioned hypotheses above. The survey comprises of two parts. In the first part, it was aimed to measure to what extent psychic distance factors effect SMEs' internationalization decisions. The literature of psychic distance factors was searched and we reached a wide variety of scales and indices about the operationalization of the construct in order to form a questionnaire measuring psychic distance factors (Bello et al., 2003; Boyacıgiller, 1990; Brewer, 2007; Child et al., 2009; Dow and Karunaratna, 2006; Evans and Mavondo, 2002; Hakanson and Ambos, 2010; Johanson and Wiedersheim-Paul, 1975; Katsikeas et al., 2009; Klein and Roth,

1990; Lee, 1998; Madsen, 1989; Shoam and Albaum, 1995, Sousa and Bradley, 2005). Subsequently, the scales which are used in measurement of psychic distance were examined and all items were integrated by eliminating repetitive and resembling items. Consequently, a questionnaire with 32 items using a 7-point scale (from completely ineffective to completely effective) was formed. Cronbach's alpha of this scale is 0.93 which means a high internal consistency. In the second part, the questions about internationalization degree, international experience and demographic profile were presented to respondents. Internationalization degree was measured with the question of foreign sales ratio. Two questions were asked to assess the level of international experience: the year when companies have begun their international activities (internationalization age) and the total number of countries they operate. The questionnaire was firstly designed in English and then translated into Turkish through back-translation procedure.

In sampling process, list of SMEs engaged in international activities in Izmir have constituted sampling frame. A company list was taken from Aegean Exporters Association and convenience sampling method was used to select subjects. In survey implementation, several surveys applied via e-mails and company visits were made for several others to increase response rate. Totally 123 valid questionnaires were collected.

Studies and revisions about the definition of psychic distance give rise to the alteration of the unit of analysis in the process of measuring psychic distance (Smith et al., 2011). Even though the appropriate unit of analysis for measuring psychic distance consists of individuals, the concept comprises both national and individual determinants (Dow and Karunaratra, 2006; Smith et al., 2011). This study applied to export managers/genaral managers/owners of the companies.

4. Results

The questionnaire was filled by decision makers of internationalization process and as a result about 85% of the participants were general managers, export managers or owners of the companies which increases the accuracy/precision of the answers. The sample structure considering aspects such as title of respondents, firm age, product type, internationalization age, total number of countries operated is presented in Table 1.

Table 1. Respondent Profile

		%
Title of respondents	Owner/Shareholder	40.7
	President/Vice president	5.7
	Export manager	39.0
	Others	14.6
Firm age	0-3 years	7.3
	4-10 years	23.6
	11-25 years	47.2
	26 +	22.0
Product type	Industrial products	66.7
	Consumer products	33.3
Internationalization age	0-3 years	18.7
	4-10 years	36.6
	11-25 years	37.4
	26-50 years	6.5
Total number of countries operated	1-5 countries	35.0
	6-10 countries	32.5
	10 +	31.7
Foreign sales ratio	1-10 %	13.8
	11-25 %	17.9
	26-50 %	25.2
	51-100 %	42.3

Data analysis was conducted in three stages. At first stage, the mean rating method was used. In this context, Table 2 shows the effect of 32 psychic distance factors on internationalization decisions in descending order. According to this ranking, among all items, having trade agreement (μ=5.22), having similar approaches in the framework of trade ethics (μ=4.99) and conveniently to reach secondary information (μ=4.99) have the highest impact on internationalization decision. It should be noted that the mean score of overall scale was 3.56 and 15 items were under 3.56. Additionally, the respondents rated their interest in sporting activities of host country as the least effective item in their internationalization decisions (μ=1.49). Even though proxy cultural ties such as common language, religion are described as an important determinant of bilateral trade volumes (Felbermayr and Toubal, 2010), cultural similarities have seen among least effective factors in this study; for instance, having similar religion (μ=1.87) was evaluated as one of the least effective psychic distance factors. Due to almost 70% of

respondent companies are producing industrial products which means they are not dealing with end user directly in the operated country, cultural similarities may be perceived as relatively less prevailing.

Table 2. Psychic Distance Items

	Mean	Std. Deviation
Having trade agreements between home and host country	5.22	1.952
Having similar trade ethics between home and host country	4.99	1.931
Having trade representation offices and secondary information availability about host country	4.88	1.840
Presence of aid programs for the host country	4.84	1.985
Having high degree of foreign investments in host country	4.67	2.059
Existence of similar legal system between home and host country	4.50	1.939
Having similar trade regulations between home and host country	4.41	1.886
Having similar consumer preferences between home and host country	4.35	2.045
Knowing the language of the country operated	4.24	2.270
Having similar accepted business practices between home and host country	4.21	1.839
Having similar marketing infrastructure between home and host country	4.07	1.902
Having similar economic climate between home and host country	4.07	1.957
Having similar purchasing power of customers between home and host country	4.06	2.058
Presence of low level of corruption in host country	4.04	2.208
Existence of developed communication infrastructure in host country	3.98	1.952
Having low geographic proximity between home and host country	3.93	2.246
Having similar level of economic development between home and host country	3.70	1.996
Having similar level of education between home and host country	3.47	1.972
Existence of political rivalry between home and host country	3.31	1.988
Travelling frequently to the host country	3.29	2.052
Existence of similar political system between home and host country	3.16	1.926
Having high level of technical development in host country	3.15	1.731
Having similar conventions of personal relationships between home and host country	3.06	1.830
Having cultural similarities between home and host country	2.79	1.955
Having similar life style between home and host country	2.78	1.831

Existence of previous trading channels between home and host country	2.54	1.956
Having similar climatic conditions between home and host country	2.41	1.801
Existence of Turkish immigrants in host country	2.40	1.782
Having historical ties between home and host country	2.36	1.574
Having small time zone differences between home and host country	2.20	1.651
Having similar religion between home and host country	1.87	1.465
Being interested in sporting activities of host country	1.49	1.011
1= Completely Ineffective ; 7= Completely Effective		

At second stage, an exploratory factor analysis was conducted in order to reduce the number of variables for a subsequent analysis of variance (ANOVA) identifying response variation based on number of countries operated, internationalization age and internationalization degree. As mentioned above, the questionnaire was made up of 32 items, all of which were gathered through scales and indices previously developed. In order to assess the items which have been perceived as more prominent, the items whose mean score are below 3.56 and which are perceived as irrelevant were deleted and not considered for the further analyses. As a result totally 17 items were put into the exploratory factor analysis. However, beforehand Kaiser Meyer Olkin (KMO) value of these 17 items was checked to ensure the suitability and wellness of data for factor analysis. KMO value was found 0.869 and Barlett's Test of Sphericity value was seen as significant (.000), promoting the factorability of correlation matrix. Examination of the rotated factor loadings using varimax rotation yielded four factors with an eigenvalue greater than one, all of which explain 66.12% of the variance. Two items with loading factors less than 0.50 were removed from the analysis (Hair, 1998). The pattern suggested that items included in first factor were corresponding marketing attributes and labeled as "marketing and related items" (6 items, α=0.848). Items in the second factor were related to trade characteristics of markets and named as "trade relations" (4 items, α=0.798). Third factor was regarded as "business ethics" (3 items, α=0.609) and forth factor was related to "financial incentives" (2 items, α=0.751) Subsequently Cronbach's alpha was calculated and item-total statistics were examined for each factor. At least acceptable reliability ratios varying from 0.6 to 0.8 obtained implying that none of the items were needed to be removed due to diminishing total reliability level of factors.

Table 3. Factor Analysis of Psychic Distance Construct

Factor items	Factor loading	Cumulative variance explained
Marketing and Related Items (Alpha=.848)		21.98
Consumer preferences	0.829	
Economic climate	0.784	
Purchasing power	0.682	
Economic development	0.646	
Marketing infrastructure	0.585	
Trade regulations	0.539	
Trade Relations (Alpha= .798)		39.67
Trade agreements	0.757	
Foreign direct investment	0.740	
Language	0.642	
Communication infrastructure	0.635	
Business Ethics (Alpha= .609)		53.25
Business ethics	0.720	
Corruption	0.708	
Business practices	0.548	
Financial Incentives (Alpha= .751)		66.12
Aid programs	0.836	
Representation office	0.783	

At third stage, series of ANOVA were conducted to test the hypotheses (Table 4-5). Significant difference of impact for "marketing, trade relations and business ethics based psychic distance factors" were found according to internationalization degree, number of countries operated and internationalization age.

The first hypothesis (H_{1a}) proposed that the impact level of psychic distance factors for marketing, trade relations and business ethics differs through the total number of countries operated ($F = 5.461$, $p = 0.005$; $F = 4.052$, $p = 0.020$; $F = 6.864$, $p = 0.002$). Therefore, the H_{1a} was accepted through the significant result of ANOVA (Table 4). It has been found that as the number of countries operated increases, the impact of psychic distance factors for marketing, trade relations and business ethics decreases. For marketing factor, while companies operating in between 1-5 countries think that psychic distance factors have an effective role on their internationalization decisions ($\mu = 4.60$), companies operating in more

than 10 countries do not find them as much as effective they found (μ = 3.54). Likewise, trade relations and business ethics factors show also decreasing trend effect on internationalization decisions of companies as number of countries they operate increases.

Table 4. ANOVA for Total Number of Countries Operated

Number of Countries Operated	Mean* (Std. Dev.)	F	Sig
	Marketing and Related Items based Psychic Distance Factor		
1-5 countries	4.60 (1.39)	5.461	.005
6-10 countries	4.12 (1.40)		
10 + countries	3.54 (1.53)		
	Trade Relations based Psychic Distance Factor		
1-5 countries	4.68 (1.44)	4.052	.020
6-10 countries	4.89 (1.54)		
10 + countries	3.92 (1.74)		
	Business Ethics based Psychic Distance Factor		
1-5 countries	4.96 (1.35)	6.864	.002
6-10 countries	4.44 (1.32)		
10 + countries	3.79 (1.61)		

*1= completely ineffective; 7= completely effective

For H_{1b}, according to the results obtained from ANOVA test, significance level of all four factors; marketing, trade relations, business ethics and financial incentives are found greater than 0.05, which means the perceived impact level of psychic distance does not differ significantly through internationalization age ($F = 1.078$, $p = 0.361$; $F = 1.688$, $p = 0.173$; $F = 0.754$, $p = 0.522$; $F = 2.553$, $p = 0.059$). Therefore, H_{1b} was not confirmed.

Regarding the H_2, the ANOVA revealed that the impact level of psychic distance factors on internationalization decisions differs through internationalization degree of companies. Results obtained reveal that two factors; impact of trade relations and business ethics based psychic distance factors on internationalization decisions have significant difference ($F = 3.410$, $p = .020$; $F = 4.357$, $p = .006$). Thus, the H_2 is accepted for psychic distance factors related to trade relations and

business ethics (Table 5). Indeed, perceived impact level of psychic distance for business ethics factor decreases as companies' foreign sales ratio increases. While companies had foreign sales ratio in between 1-10% found it more important (μ = 5.19) than companies had foreign sales ratio in between 26-50% (μ = 376).

Table 5. ANOVA for Internationalization Degree

		Mean* **(Std. Dev.)**	**F**	**Sig**
		Trade Relations based Psychic Distance Factor		
Internationalization Degree**	1-10 %	4.98 (1.91)	3.410	.020
	11-25 %	4.55 (1.57)		
	26-50 %	4.01 (1.50)		
	51-100 %	5.01 (1.51)		
		Business Ethics based Psychic Distance Factor		
Internationalization Degree	1-10 %	5.19 (1.49)	4.357	.006
	11-25 %	4.18 (1.71)		
	26-50 %	3.76 (1.36)		
	51-100 %	4.63 (1.34)		

*1= completely ineffective; 7= completely effective
**Foreign Sales/Total Sales

5. Conclusions

Overall, the results of this study suggest that the effect of psychic distance factors on internationalization decisions varies through companies' international experience and internationalization degree, as hypothesized. According to the results obtained, it was found that as companies gain experience, they give less importance to psychic distance factors during their internationalization decisions. The influence of psychic distance factors based on marketing and related items, trade relations and business ethics on internationalization decisions decreases through gained international experience. Hence, it can be mentioned that impact of psychic distance becomes to be neglected as the number of countries they operate increases. When the companies increase the number of markets they operate, they gain more experience about foreign markets, which

results in upslope of the learning curve. Since they get higher market knowledge about host country, their perceived risk of investing abroad decreases and the psychic distance factors get lower attention.

Participant companies have different perceptions about trade relations and business ethics based psychic distance factors according to internationalization degree. Companies with low internationalization degree mentioned that trade relations based psychic distance factors are more effective on their internationalization decisions compared to companies with higher internationalization degree. This result points out how SMEs at the bottom rung of the internationalization ladder are more influenced about the presence of trade agreement between home and host countries, high degree of foreign investments, and familiarity with language of host country. However, for the companies with highest internationalization degree, the perceived impacts of trade relations based factors have higher mean value. This surprising outcome can be interpreted as highly internationalized companies are more concerned about trade relations based on psychic distance factors due to the fact that their resources stability and permanence are more dependent to international trade revenues and returns. Especially, the presence of trade agreements with host country and high degree of foreign investments to host country makes the process easier for more internationalized companies to intensify their operations and guarantee their earnings by enhancing general trade interaction between two countries.

It should be noted that psychic distance factors do not have broad impact on companies' internationalization decisions. Particularly, the psychic distance factors related to similarities about trade regulations, business ethics, legal systems, business practices were found as relatively more effective factors on internationalization process compared to socio-cultural factors such as historical ties, similar lifestyle and religion. For example, 15 psychic distance items which includes socio-cultural factors have been identified as they had poor impact on internationalization decision. The reasons behind this finding can be SMEs' inadequate awareness about psychic distance factors based on socio-cultural aspects. It can be attributed to two dynamics, first of which is the type of customer targeted and second of which can be defined as operation mode. For instance, most of the companies are producing industrial product, which means SMEs do not deal with end user directly in the operated country. Beside, almost all of the examined companies are internationalized

through export mode and do not deal with further resource investment such as foreign direct investment (FDI). Mentioned issues can be preventive or hindering points that restrain SMEs to deal with the market entirely or completely; hence, reducing the impact of psychic distance or awareness of these factors. Together with the statements above, another explanation which can be drawn from the company visits is that Turkish SMEs mostly take financial opportunities into consideration rather than psychological factors. Those opportunities which have been overemphasized during the interviews consist of cost advantages such as advance payment or money back guarantee. "Financial incentives" was also found as one of the highest rated psychic distance factors and this finding is also in accordance with previous explanation.

Finally, a number of limitations need to be considered. First, the generalization of findings is limited because of the convenience sampling method used. Second, measurement of dependent variable is based on the perceptions of managers. Third, the elimination of items whose mean scores are under 3.56 could damage the validity. Fourth, in the company visits it was reported that companies generally have a tendency to find new markets or customers through references or testimonials by previous customers; hence companies do not become concerned about the environment or characteristics of new markets in the internationalization process. This way of market selection can be noted as a limitation, since it diminishes companies' consciousness about psychic distance factors or the amount of importance devoted to those factors.

As with any study, there are some research limitations that lead to further studies. Our sample does not focus on specific industry and the results may differ from industry to industry. Therefore, it would be recommended to make the comparative analysis among different industries and between SMEs and large companies. Also, the results of this study cannot be generalized for all of the countries, since it has been conducted to the firms operated in Izmir, Turkey.

When discussing managerial implications of this study, managers' perception of psychic distance is crucial for firms in terms of selection of the right market. Therefore, being aware of the effect of psychic distance factors on their internationalization decisions provides more comprehensive understanding of market entry decisions and accordingly, managers may handle distant-creating factors more effectively and efficiently when entering psychically distant markets.

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SOFTWARE SOLUTIONS ADOPTED BY SMES: CASE STUDY REGARDING ROMANIAN SMES

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ABSTRACT. During the last decades, the ICT industry imposed new tendencies concerning the communization of software platforms and solutions; thus a continuously growing phenomenon has been developed, namely that of open source software. In the present context, when companies have to manage large databases and exploit them to develop a business intelligence allowing them to create important competitive advantages within the global economy, open source software solutions become viable alternatives to be adopted by any company. Taking into account the global trends in open source software development, and also the increase in the level of utilization of this type of software in companies, the present study assesses the types of software solutions used by Romanian SMEs, identifying comparative aspects of use and perception of SMEs regarding the two important categories of software: open source and commercial. An SME profile is also identified from point of view of SMEs as final consumers of software products used to support their business processes. The results of the study can be considered as an important source of information for the business environment, starting with the companies' decision makers responsible for the elaboration of the development strategy for their company, continuing with the commercial software providers and open source software communities and developers.

Key words: free software, freeware, open source, commercial software, SME

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1. Introduction

Informational globalization allowed companies to develop new collaborative and innovative competencies in their own business environment. ICT industry provides companies with specific solutions in order to create and maintain an active competitive advantage in a globalized business environment. The last years have brought about important changes at global level, which can be included in the wave of informational globalization, starting with the development of hardware, software and communication infrastructures from the individual, home-user level up to its universalization; the development of public Internet network transformed, without precedent in the history, both interpersonal and business communication; thus the possibility and ability to communicate and transaction information at global level made possible for companies to develop new collaborative and innovative capacities and competences for their business environment.

From another perspective, the globalization of digital infrastructure and mobile technologies changed the global competitive polarity, this, at its turn, also becoming global. Any company must fight on the global competitive front and, as a consequence, and with this aim, must develop higher level adaptability abilities and competences.

In this context, companies have the opportunity to use tools and solutions put as disposal by the ICT industry for their own development and for creating and maintaining an active competitive advantage in a globalized business environment.

From the perspective of solutions offered to companies by the ICT industry, it is very useful to identify a phenomenon that has been hugely amplified during the last decades, namely the development of open source software industry.

The practice of the business environment as well as the economic crisis, transformed the OSS (Open source Software) industry into a long term viable alternative providing companies with reliable and advantageous solutions with important benefits to their competitiveness in the global business environment.

The software industry offers companies important alternatives in adoption of software support solutions for business processes, from commercial software packages, solutions for renting software to, not in the least, open source solutions.

OSS developed as a contemporary phenomenon, with sustained growth tendency within ICT industry, as well as in the field of software adoption by companies (Marsana et. al, 2012). Despite the development of this industry, the rate of adoption of OSS by companies on a global level remains at low level due to some important loopholes in elaboration of adoption and development policies and procedures at company level. (Marsana et al., 2012).

ICT literature indicates that open source may lead to enhancing quality and innovation in the business environment. Regarding the adoption of open source solutions by companies, a series of motivations were formulated that suggest, on one hand, the fact that this adoption is carried out by companies desiring to obtain a competitive advantage in their field of activity, on the other hand, the impact of these software products on the perception of companies regarding open source vs. commercial solutions is underlined, having as final result a re-evaluation of software products in companies and development of long term open source strategies (Asundia et al., 2012).

Starting from these aspects and from the global tendencies regarding the OSS development and the increasing adoption rate of these solutions within the companies, the present study evaluates the adoption of open source software vs. commercial software in Romanian SMEs, drawing a profile of SMEs as final users of software products for supporting business processes.

The study's results offer an important source of information for the business environment, starting with open source software providers, continuing with those providing commercial software and decision makers in companies in charge of the elaboration of their development strategies. On another level, additional to identifying the level of usage of open source software in SMEs, the study also identifies the advantages and disadvantages perceived by them regarding the adoption of open source software and the perception of SMEs in relation to their future adoption.

2. Literature review

Software industry can be considered as having one of the most rapid rates of growth, being also an obvious representative of globalization.

According to MarketLine, the global software market had revenues of 292.9 billion dollars in 2011, having a compounded annual growth (CAGR) of 3.6% between 2007-2011 (*http://www.reportlinker.com/ci02072/Software.html*, accessed January 2013). According to the same source, a 6.3% annual growth rate is estimated for the 5 years period between 2011- 2016, expected to lead to a revenue of 396.7 billion dollars on the market by the end of year 2016.

In 2012, International Data Corporation (IDC) indicated that the software market at global level grew by 3.6% year by year; it has also forecasted a growth rate of 5.7% for 2013 and a compounded annual growth rate of 6.3% for the period 2012 - 2017 *http://www.idc.com/getdoc.jsp?containerId=prUS24127113*, accessed March 2013).

Open source industry brought about changes in the software market at global level; within the global software market having a value of almost 300 billion dollars, the open source software market is expected to register a yearly growth rate of 22%, exceeding 8 billion dollars in 2013 (*http://www.reportlinker.com/ci02075/Open-Source-and-Free-Software.html* accessed March 2013).

Llanesa & De Elejalde (2013) determined the conditions under which open source companies and proprietary companies co-exist in a balance characterized by a market with asymmetrical structure; "proprietary firms invest more in R&D and obtain a larger market share than open source firms. Open source firms, on the other hand, benefit from lower development costs."

According to the study carried out in 2013 by Venture Partners and Black Duck Software, among the main drivers for choosing open source by companies we can find innovation, collaboration partnerships and possibilities for infrastructure development (*http://open source.com/business/13/4/open-source-2013-survey*, accessed May 2013).

From the perspective of success achieved by open source solutions on the global software market, Midha & Prashant (2012) identified among the success factors of OSS the users and the developers, based on more than 300,000 OSS projects available only on SourceForge in October 2011.

The software industry and ICT literature assign two meanings to free, community software, namely free and open source software. The

term "free" of "free software" refers to the final user's freedom and not to its costless acquisition. The first complete definition was published in GNU's Bulletin, in February 1986
(*http://fsfe.org/about/basics/freesoftware.en.html*, accessed on April 2013) and comprises the four freedoms conferred by the free software category its users, namely: freedom to use, copy, distribute, change and improve the adopted software
(*http://www.gnu.org/philosophy/free-sw.html* accessed April 2013).

A clear distinction has to be made between the two established terms of software industry: free software, respectively freeware. While free software grants the four cumulated attributes to the products, also supposing, evidently, access to the source code, in case of freeware is meant that category of software that can be downloaded from the Internet by any person and can be used for free, without access to the source code and without possibility of modifying, personalizing, improving it.

In this context, the other category, open source, does not only indicate access to the source code; but there are also other criteria included in its definition. Open source software supposes free redistribution of software products, without any licensing restrictions, in order to allow modifications and distribution under the same conditions as the original software; open source supposes equality between user groups and fields of activities or industries. (*http://open source.org/osd* accessed April 2013).

At the invisible border between free and open source software we can find the new tendencies of some fix and mobile equipment supplier companies to offer attached to the equipment, some free software applications which can be considered free and open source code; but suppliers do not allow the installation of modified versions; upgrading of these applications can be done only by the producer companies. These practices are called in the industry as "tivoization".
(*http://www.gnu.org/philosophy/open-source-misses-the-point.html*, accessed May 2013).

From point of view of open source licenses, the most well-known and the most used were defined by the Proliferation Report of Open Source Initiative (OSI) in 2006 and are: Apache License 2.0, BSD 3-Clause "New" or "Revised" license; BSD 2-Clause "Simplified" or "FreeBSD" license; GNU General Public License (GPL); GNU Library or "Lesser"

General Public License (LGPL); MIT license; Mozilla Public License 2.0; Common Development and Distribution License; Eclipse Public License (*http://open source.org/licenses*, accessed April 2013).

Daffara Carlo (2011) underlined the fact that choice of a type of license for F/LOSS (Free/libre OSS) is influenced by the adopted business model "property-efficiency", depending on two parameters: intellectual property and efficiency of adopted software solutions.

Mens & Goeminne (2011) bring a new vision into the understanding of OSS demonstrating the important impact of social aspects on the temporal evolution of OSS ecosystems. The authors underline the existence of an important link between the evolution of the software and that of the software community.

Margea (2009) highlighted aspects related to the growing tendency of adopting OSS as a viable alternative for commercial and proprietary applications in companies and public administrations from Europe.

Sen et al. (2012) underlined aspects related to the success of open source projects from the double perspective of developers and of users. Their analysis identified the fact that projects that develop OS software for Windows/UNIX/ Linux operational systems and those using language C or derived languages attract a higher number of users as well as developers; other aspect is related to OSS projects accepting financial donations and that have a large number of users; another dimension identified is related to the proportionality between the number of users and the age of the OS solution.

Mertik (2011) in a study concerning the adoption of open source in Slovenia points out that open source gained ground as an opportunity for the business environment, bringing an important added value to SMEs.

Hunter & Walli Stephen (2013) concluded as a result of their study that software developed in collaborative environment and under open source licenses continue to offer an increase in productivity for developers as well as for users and companies.

Gartner Consulting Company, demonstrated that from the perspective of ICT infrastructure development, up to 2016, SMEs at global level will spend 1 Trillion dollars; the biggest growth opportunities are forecasted in Software & Services, and Asia will be the region with the most important opportunities for development.
(*http://www.gartner.com/it/content/2273800/2273821/january_8_itspending_forecast_final.pdf?userId=59645980*, accessed May 2013).

According to the same source, it is envisaged that software industry will have a yearly increase of 6.8%until the year 2016; in emerging economies the increase will be determined by ERP (enterprise resource planning) solutions and DBMS (database management system), while in mature economies by security and CRM (customer management system) solutions.

Macredie & Kabiru (2011), identified a set of factors that can profile an empiric framework for adoption of OSS solutions by SMEs. In identifying the perception of SMEs on the adoption of OSS solutions, the authors used as starting point the attitudinal belief structure regarding benefits, complexity and comparability of OSS solutions. The identified factors were: low costs of the software licence acquisition, lack of drivers corresponding to these solutions, functionality, support offered by the OSS community, web media, innovativeness, capital investments and communication infrastructure in case of adopting such solutions.

Pande & Gomes (2012), identified among the benefits of adopting OSS solutions by SMEs the following: easy personalisation of the solutions, increase in visibility in the OSS develops' community, increase in the quality of solutions from collaborative point of view, unlimited use of OSS solutions and the large support in the process of utilisation offered by the OSS community.

Werber & Žnidaršič (2011), through their study concerning the level of awareness of OSS solutions and their use by micro-companies in Slovenia, identified the following aspects: almost half of the studied companies used a category of software without licence, 34% of the managers had no knowledge about OSS, and the percentage of using OSS solutions in comparison to commercial software was very low.

Open source in Romania

In Romania, representatives of Zitec Company developed over 250 projects using mainly open source technologies, having allocating on average nine months of work per project (*http://www.forbes.ro/Cat-timp-acorda-specialistii-romani-unui-proiect-it-open-source_0_6962.html*, accessed April 2013).

In Romania, 2013, was marked by the entry on the Romanian market of the global leader in open source technology, Red Hat; the main advantages of Red Hat solutions attracted over 70 Romanian companies in

adopting open source solutions (*http://www.agora.ro/stire/tehnologia-open-source-un-trend-companiile-din-romania*, accessed May 2013).

The Romanian company BIT Software is the developer and provider of some open source solutions; SocrateOpen ERP&CRM is used by companies in the field of professional services like Avangate or Byblos (*http://www.aries.ro/socrateopen-erpcrm-solutia-potrivita-pentru-companiile-de-servicii-profesionale/*, accessed April 2013).

3. Material and methods

The global image of the open source industry's development, as well as the increasing global tendencies of adoption of these solutions in companies, determined the implementation of an ample research regarding the level of adoption of open source vs. commercial solutions in SMEs from our country.

The complexity of research allows identification of some important aspects starting with the perception of SMEs regarding existing open source solutions, the level of use them in their specific activities, SME's perception concerning the benefits and risks of their adoption, respectively their vision concerning the necessity of adopting these solutions on short term and the global evolution of open source vs. commercial solutions.

In carrying out the research it was necessary to have an optimal mix of online and offline research tools, respectively of those specific to mobile devices.

It is well-known the difficulty of carrying out research using tools that are specific to the digital environment and mobile technologies, due to the dispersed character of the subjects' geo-location and the impossibility of integrally contacting the population included in the research. As a consequence of this shortcoming, common to web and mobile based studies, the selection of the population and of the research tools was done to ensure the best possible representation in order to obtain conclusive results.

The research covered all SMEs registered online in Romania and was carried out between January 2012 and June 2013.

The research concept was to identify some very important aspects for the software industry, viewed both from the perspective of demand and that of the supply of these products, namely:

- The comparative level of use of open source vs. commercial solutions and the share of these in SMEs;
- Types of users of open source solutions in relation to the length of adoption of open source solutions;
- Existence of ICT staff specialized on open source technologies, in SMEs;
- Solutions and categories of open source compared to commercial solutions used in SMEs in present;
- SMEs' perception of advantages and risks of adopting open source solutions;
- SMEs' vision regarding the short term adoption of open source vs. commercial solutions;
- SMEs' perception of future development trend concerning open source vs. commercial.

It was necessary to combine primary information collected through the questionnaire answered by SMEs with secondary information resulting from statistical resources, existing researches and studies, online information sources.

The questionnaire developed for the research was conceived in shared format, using collaborative tools of Google Drive, taking into account the possibility of quick and automated collection of data.

The questionnaire was disseminated using several tools, being transmitted in embedded format using email and SMS, but QR code was also generated with the URL of the questionnaire and information on the research.

The questionnaire was conceived in a modular structure, based on the concept and aims of the research, and included a total of 15 questions:

- The first module comprised questions for identifying SMEs in relation to the county where SMEs were registered, the environment they operate in (urban/rural), the field of activity according to NACE, and number of employees;
- The second module contained questions concerning use of open source solutions and the proportion of these solutions in comparison to commercial solutions, length of using open source solutions and existence of ICT staff specialized in using open source technologies;

- The third module included questions regarding the categories of software and open source solutions used in practice by SMEs compared to commercial software;
- The fourth module contained questions aimed to identify the SMEs perception on the advantages and risks linked to the open source solutions that could be adopted;
- The last module presented questions related to SMEs' vision regarding adoption of open source vs. commercial solutions and future development tendencies of open source solutions.

As a consequence of previous experiences, and taking into account aspects linked to the highly technical character and the specific terminology used in the questionnaire, in order to ensure the most competent answers to the questions, an explanatory index of the terms used in the questionnaire was developed and attached to it.

The most laborious and difficult part of the research was identifying the data on SMEs registered in the digital environment; with this aim online resources were identified and used such as free web directories and statistical websites listing for free data of SMEs from Romania.

The set-up of the database of SMEs with online presence, with valid contact information (email address, telephone number and website) was carried out correlating the data from these free resources with the data listed on the service portal of the National Company Registry, using its Recom online free service (*https://portal.onrc.ro/ONRCPortalWeb*).

In this context, to identify SMEs as subjects of the research, free online resources listing Romanian companies per county and field of activity were used and analyzed. We selected for consideration websites and specialized directories as:
http://www.firme.ro, http://www.listafirme.ro/, http://www.firme.info/, http://www.datefirme.ro/, www.firme-on-line.ro/, www.firmepenet.net/, http://www.directorfirme.ro/, http://www.economia-online.ro/, www.bizoo.ro/catalog-firme/.

After collecting the data, 12,246 SMEs registered in Romania and listed by specialized sources were identified; the data was subjected to filtering and structuring based on the existence and correctness of the data. Only those SMEs were selected that had active website, valid email address or telephone number.

SMEs identified as subjects of the research were invited to participate using diverse online tools available: emails, social media using a topic created especially for this purpose, SMS and mobile or landline telephone calls, all indicating the URLs where the questionnaire could be completed.

The selection resulted in retaining and building a research population consisting of 11,796 SMEs registered in Romania, subjected in their totality to surveying using the above mentioned method.

By comparing the number of SMEs registered statistically in Romania, 529,015 SMEs,
(*http://ec.europa.eu/enterprise/policies/sme/facts-figures-analysis/performance-review/files/countries-sheets/2012/romania_ro.pdf*, accessed on January 2013) and the number of those identified as a result of the research as being registered on online resources (without considering the existence and accuracy of contact information) (12,246 SMEs), we can conclude a very low level of SME presence in the digital environment (2.31%). This situation may be caused by the lack of information on new technologies and software solutions to support specific activities, revealed among SMEs in our country.

The most important percentages among the subjects were represented by SMEs having the following fields of activity: Construction, Architecture, Design, Cadastre (20.36%), followed by SMEs from the field of Computers, Software, Communications, Office automation (9.34%), and having a share between 5-10% SMEs from Business Services, Marketing, Publicity, Services - other activities, Machinery and equipment.

A very low percentage, below 1%, was registered by SMEs belonging to the field of Footwear, Leather, Glass, Ceramic, Industry - other activities.

It is important to point out that many SMEs from multiple fields had a low share, between 1-5%, making up 40.47% of the selected subjects; this may indicate important aspects related to lack of visibility and active online presence of a worryingly high percentage of Romanian SMEs that are practically not adapted to the online business environment which would ensure their global integration in an efficient, rapid and mainly free of charge manner.

Other aspect, otherwise well-known in relation to the web-based surveys, should be pointed out, namely that related to the unsatisfactory answer rate achieved at completion of the questionnaire placed on web

and mobile-based interfaces; this shortcoming requires a supplementary effort in carrying out the research calling for classical, offline interviewing activities using telephone or face-to-face. The final rate of responses was only of 58.06% from the total population included in the research representing 6,849 SMEs.

4. Results and discussions

The first module of questions provided *identification data of SMEs in relation to the county of registration, the environment in which the company deploys its activities, the field of activity and the number of employees.*

The analysis of data identified two categories of counties with totally opposed rates of representation; the best represented counties were: Cluj, Timis, Contanta, Brasov, Ilfov, Bihor, Prahova, while among the counties with the lowest representation we find: Covasna, Botosani, Ialomita, Calarasi, Vaslui; the capital city of the country, Bucharest, was situated among the well represented regions.

From point of view of the environment in which the subject deploys their activities, the SMEs indicated urban environment in proportion of 79.85%, the rest belonging to rural environment.

The best and the worst represented fields of activity, in decreasing order are presented in Table 1.

The analysis of data regarding number of employees indicated by the respondents presents a structuring of SMEs that puts on the first place small companies (number of employees between 10 and 50) with 62.21% of total, followed by micro-companies (with less than 10 employees) with 23.17%, while only 14.62% represented medium companies (with more than 50, but less than 250 employees).

Tabel 1: SMEs by field of activity

Field of activity	Percentage
The best represented	
Media. Printing	73.31%
Computers, Software, Communications, Office automation	72.60%
Marketing, Publicity	70.14%
Construction, Architecture, Design, Cadastre	69.86%

Business services	67.60%
Motor vehicles, Transport equipment, Fuel	66.45%
Services-other activities	63.86%
Tourism, Hospitality, Restaurants	62.28%
Electrical machinery and appliances, Electronic equipment. Precision Instruments	61.54%
The worst represented (fewer than 35%)	
Industry - other activities	35.94%
Textile. Clothing	35.34%
Metallurgical Products	35.25%
Health care	32.73%
Glass, Ceramic	30.77%
Forestry, Logging and gathering of reed, Processing of timber. Pulp paper and paperboard	22.05%

The analysis of data resulting from the second module of questions revealed the following aspects:

- *Usage of open source vs. commercial solutions* points out non-users in the highest proportion (52.67%), followed by those who plan using open source solutions (36.30%), while only 11.03% declared themselves users of open source solutions (Figure 1).

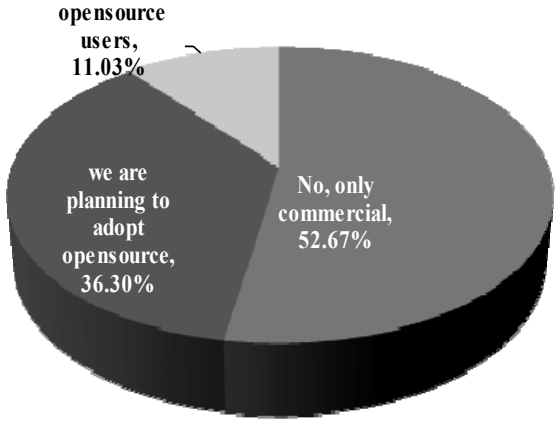

Figure 1. Usage of open source vs. commercial solutions

- Taking into account the proportion of *open source solutions used* by the respondents, most of them (49.12%) indicated non-usage of them, while 11.12% pointed out a lower proportion of used open source

solutions than that of commercial solutions; these respondents subscribe to the category of non-users of open source and to that of SMEs planning to adopt open source solutions in the future.

- The *category of open source users* indicated a usage of 100% of these solutions (10.6%) together with 29.09% who used more open source than commercial software.
- The *length of using open source solutions by SMEs* shows four types of users: users below 3 years, represented in the highest percentage (40.75%), followed by users between 3 and 5 years (29.34%), and then, having very close percentages, the groups of short term users, those who use these solutions for less than one year (14.02%) and the long term users, with over 5 years (15.89%) (Figure 2).

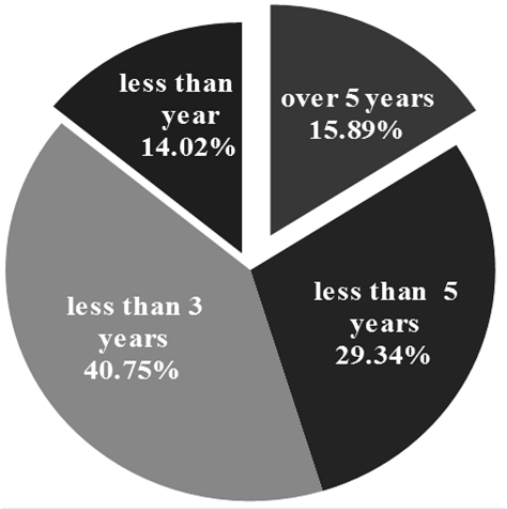

Figure 2. The length of using open source solutions

- The question related to *the existence of ICT staff specialized in using open source technologies in SMEs* indicates a percentage of 65.12% of SMEs having qualified IT staff; this very high percentage is surprising and it is not at all covered by SMEs using only open source and refers to SMEs with over 3 years of experience in using these solutions.

The data from the questionnaire's third module provides, after analysis, relevant information regarding:

- *The main categories of open source software actually used by SMEs in comparison to commercial software;* from this perspective the analysis covered client and server operation systems, web servers, proxy servers, application servers, desktop applications, office applications, system tools, file management applications, multimedia applications; graphical and image management applications, Internet tools, statistical tools, others;

o the image of *the open source software categories used by SMEs*, in decreasing order of percentages, is shown in Figure 3.

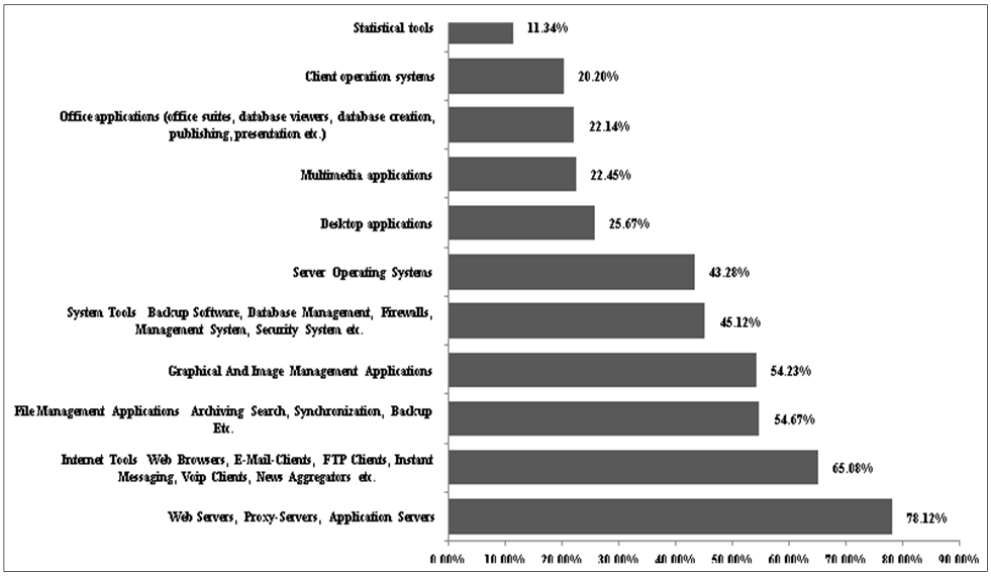

Figure 3. Open source software categories used

o the most used categories of *commercial software* are indicated in Figure 4:

o another aspect revealed by the data analysis refers *the open source software categories in use ahead of commercial software*;

- in this area the following categories were indicated: Internet tools, File management applications, Web servers, Proxy servers, Application servers, System tools, Graphical and image management applications and Server operating systems;

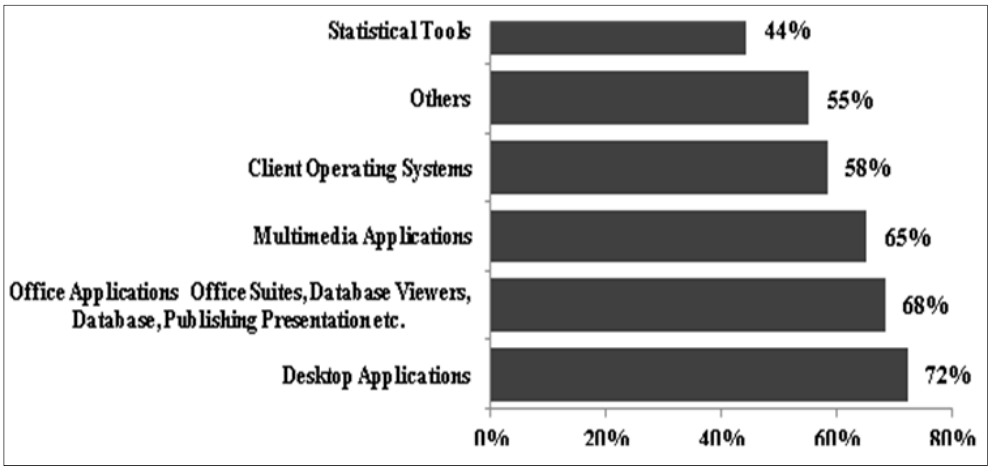

Figure 4. The most used categories of commercial software

o the *comparison between the average percentages for using open source vs. commercial solutions* shows that commercial software categories were named as being used in a higher proportion (41.42%) ahead of open source (39.70%); however, it must be pointed out the fact that the difference between the two percentages is very small.

- The identification of *two specific classes of software solutions actually used by SMEs, from the same comparative perspective - open source vs. commercial*; in this context we considered business applications and software development applications;

o for the class of ***business applications*** the most important and most used applications were identified, as follows: Accounting software, Collaboration software, CRM (customer relationship management) software, e-commerce software, Groupware software, Invoice software, POS (point of sale) systems, Project management, Document management, Asset management, Business intelligence, ECM (enterprise content management) and portals, ERP (enterprise resource planning), HRM (Human resource management), Issue tracking, Others;

o the analysis of collected data for these *open source applications* puts in front of the list solutions of the following types: Collaboration software, Document management, ECM and portals, E-commerce solutions, Project management (Figure 5).

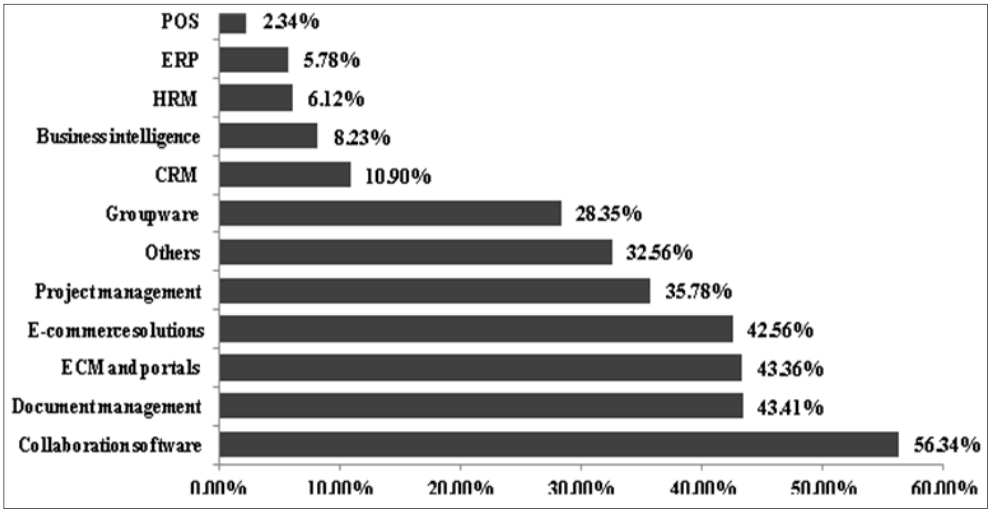

Figure 5. The most used open source business applications

o from *commercial software categories* the most used were the following solutions: POS systems, Accounting software, Invoices software, HRM, CRM software (Figure 6).

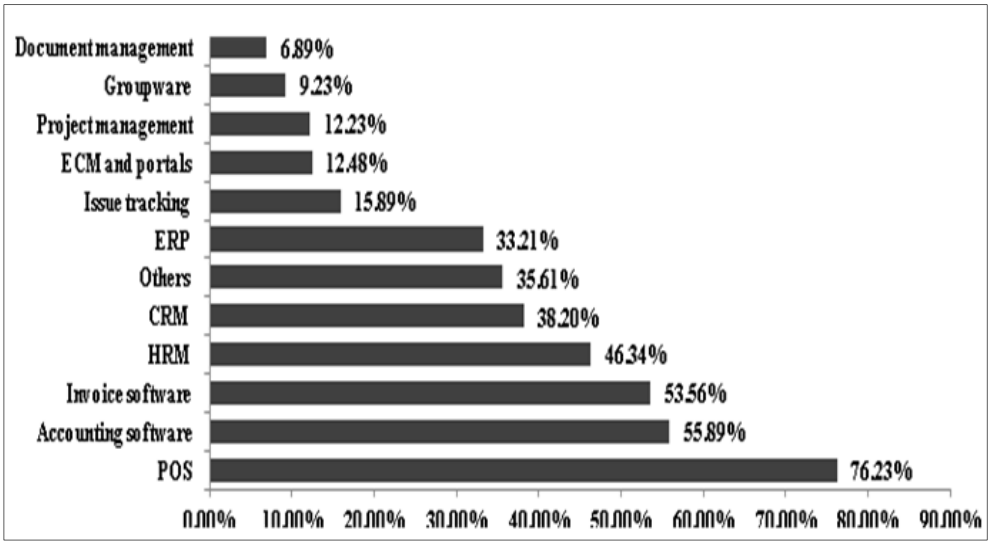

Figure 6. The most used commercial business applications

- *comparative analysis of open source software categories used ahead of commercial software* shows the following categories: Collaboration software, E-commerce software, Issue tracking, ECM and portals, project management, Groupware software and Document management;
- *the average of percentage*s indicated for using open source business solutions is 22.78%, while for commercial software is 30.7%;
- an important difference is noticeable between the two figures, indicating a clear preference for commercial solutions for this class of applications;
- in case of the ***second class***, that of ***software development*****,** analysis of data concerned the most important software development tools, namely: Web Development (blog software, CMS, Social networking, text editors and IDEs, Web forums, Web frameworks, Web galleries, Webmail, etc.), App development (App frameworks, IDEs, Issue tracking, Programming tools, revision software, text editors, UML tools, etc.), Mobile development (frameworks, mobile tools, etc.), others;
  - this category indicates the prevalence of using open source solutions ahead of commercial solutions; thus, in the *open source category* the ranking based on percentages is as follows: Web Development 2.56%, App Development 79.23%, Mobile development 78.98%, others 76.43%, while in the *commercial category* the decreasing order of used development applications is: others 2.65%, Web Development 11.65%, Mobile development 8.94%, App Development 8.54%; the *comparison of average percentages of using open source development applications* (79.30%) is very high in relation to that of the commercial category (10.45%) (Table 2).

Table 2: Software development - comparative use

Product	OSS	Commercial
Web Development	2.56%	11.65%
App Development	79.23%	8.54%
Mobile App development	78.98%	8.94%
Others	76.43%	2.65%

- this result explains the fact that open source solutions are very common and used by ICT staff from companies, those who also have knowledge of these technologies and possess development abilities and

competencies; from here also results an important relationship between the existence of ICT staff in possession of development competencies and adoption of open source technologies in SMEs.

The analysis of the data collected from the answers to the questions forming the fourth module of the questionnaire put face to face *the advantages and the risks perceived by SMEs in the adoption of open source solutions*; respondents considered as the most important advantage zero costs related to acquisition, implementation, development and upgrading of the solutions (89.76%), while experimental use for innovation was indicated as the less important perceived advantage (23.89%) (Figure 7).

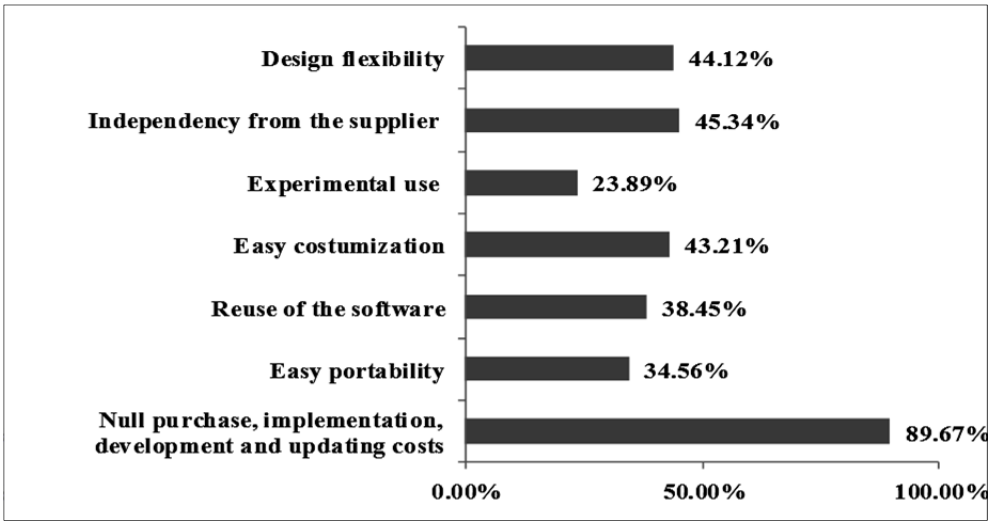

Figure 7. Advantages of adopting open source software

Within the category of *disadvantages perceived by SMEs* regarding the use of open source solutions the most important one was the requirement of specialized ICT staff and developers (43.24%), while the less important disadvantage was considered to be the lack of observance of intellectual property rights (12.45%) (Figure 8).

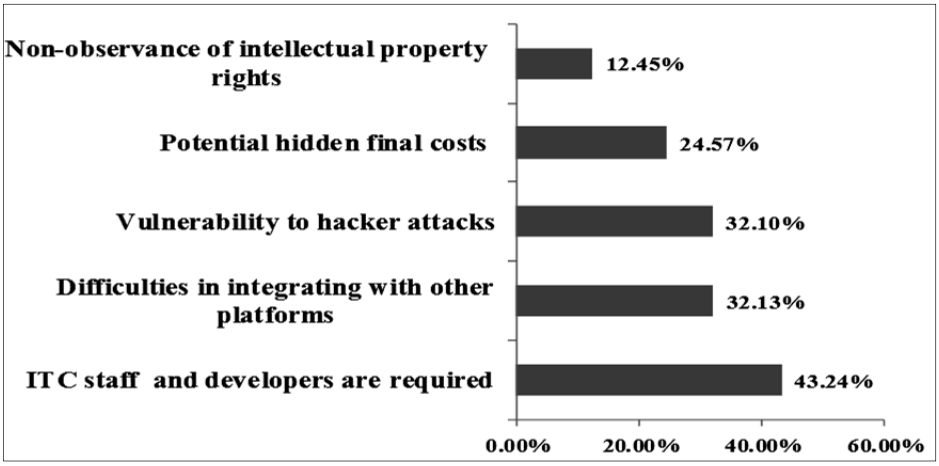

Figure 8. Disadvantages of adoption of open source software

The analysis of data resulting from the last module of questions highlights, on one hand, *the vision of SMEs related to adopting open source solutions vs. commercial solutions on short term* (less than one year), on the other hand, prognosis of SMEs regarding future tendencies in the development of open source solutions; the percentage of those planning to adopt open source solutions on short term is prevailing (47.17%), followed by those remaining faithful to using only commercial software (40.26%); a very low percentage is identified as devoted users of open source solutions (12.57%) (Figure 9).

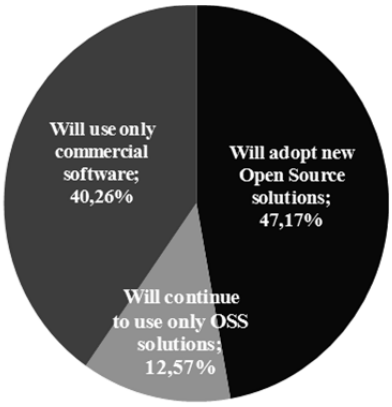

Figure 9. The short-term adoption of open source vs commercial solutions

The perception of SMEs regarding future development tendencies of open source vs. commercial software indicates the highest percentage for those optimistic about the development of open source (38.53%); very close percentage present companies considering that commercial software industry will maintain its dominance (37.34%); only 24.13% of respondents are convinced that open source solutions will dominate the software market (Figure 10).

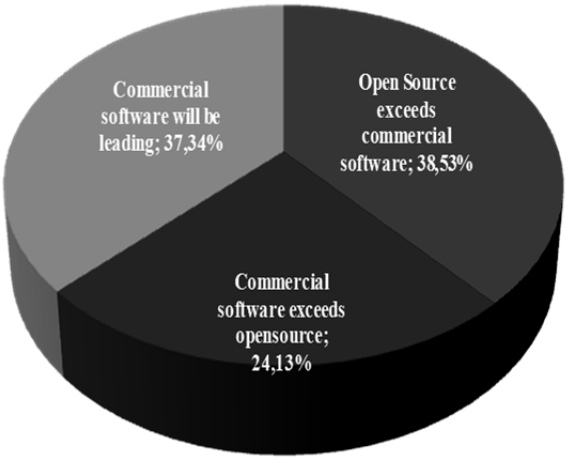

Figure 10. Future development trend of open source vs. commercial software

The data analysis results allow outlining *a profile of SMEs from the perspective of consumer of open source vs. commercial solutions*; the final consumer of compared software solutions is a micro-company registered in one of the following counties: Cluj, Timis, Contanta, Braşov, Ilfov, Bihor, Prahova, which:

- deploys its activities in urban environment in fields like Media, Printing, Computers, Software, Communications, Office automation, Marketing, Publicity, Construction, Architecture, Design, Cadastre, Motor vehicles, Transport equipment, Fuel Services-other activities, Tourism, Hospitality, Restaurants, Electrical machinery and appliances, Electronic equipment, Precision Instruments;
- is non-user of open source solutions, but plans to adopt this type of solutions, or already uses them;

- belongs to the category of users with less than 3 years of experience in using open source solutions;
- has ICT staff specialized on open source technologies;
- is an user of the following software categories: server and client operational systems, web servers, proxy servers, application servers, system tools, graphical and image management applications, file management applications, Internet tools; from open source business applications uses Collaboration software, Document management, ECM and portals, e-commerce software, project management, Groupware;
- indicated the main open source development tools used: Web Development, followed by App Development, Mobile development;
- stressed as a first advantage in adopting open source solutions considers the null costs of acquisition, implementation, development and upgrading of these solutions;
- identified the main disadvantage is the necessity of having specialized ICT staff and developers;
- will adopt open source solutions on short term and considers that the open source software will dominate the software market.

5. Conclusions

It is known the fact that in the dynamics of economic development both at national and at global level the SMEs sector may be considered as a very important driving factor and for its support and development medium and long term strategies are developed.

The research carried out had as starting point also this important aspect, supplemented by an extremely dynamic sector, the ICT industry in general, and software industry in particular; these industries contribute significantly to the support and development of global economy; as a consequence, using software solutions to support SMEs' activities should be considered as desirable for all companies aiming to maintain themselves on a globally competitive market.

From this perspective, the results of the present study can be considered useful for decision makers in SMEs, who should pay attention to the following aspects:

- The development of an ICT infrastructure adapted to present technologies and that will lead to the creation of a competitive advantage visible at local, regional and global level;
- To consider the aspects related to open source software solutions as a costless, flexible, viable and secure alternative to commercial solutions, and permitting, on one hand, reduction of costs, on the other hand, maintenance at high and continuously updated level of the software infrastructure;
- To consider the elaboration of correlated ICT development and HRM strategies, including the adoption of open source ICT solutions and using specialized ICT staff.

Regarding the categories of open source and commercial software providers, the results of the research provide useful information concerning the profile of potential consumers in SMEs, able to outline a new market segment that is very dynamic at local level as well as at global level; the software categories that remain uncovered with software solutions could be identified and become the target of the activities promoting open source or commercial software solutions.

The providers of open source software solutions can identify the important shortcomings in the SMEs' information level regarding open source solutions existing on the ICT market, and thus are able to develop information and presentation strategies of these solutions using online collaborative tools.

Commercial and open source software developers, based on the results of the present study, may identify ICT development trend, the rates of using commercial vs. open source solutions, perceptions and visions concerning the adoption of open source solutions that could represent important elements to be taken into account in software development tendencies.

Starting from the disadvantages and risks perceived by SMEs in relation to adopting OS solutions, there is a need for better information from the part of providers and developers to dissolve the fears of SMEs with sound arguments.

One of the risk factors perceived by open source software users is connected to security of these solutions; from this point of view, Craig-Wood Kate (2013), in a case study regarding the design of a hosting/cloud IaaS (infrastructure as a service) using only open source software tools, strengthens the fact that open source software solutions are more secure than the solutions offered on the software market.

Finally, but not in the least, open source communities can be considered final beneficiaries of this study, they being able to substantiate new information and awareness raising strategies directed to SMEs about aspects related to existing open source tools and solutions which can be adopted under very profitable and competitive conditions at global level.

The results of the study can also be considered as a set of elements useable by any person or company, having the role of raising awareness on the needs for information and efficient adaptation of any kind of human and economic activity to community and collaborative solutions of the open source industry.

Although the research can be considered very wide and laborious, it has its *limitations* related firstly to the difficulties in identifying complete and correct data on SMEs registered in Romania; this fact required a laborious web-mining activity and correlation of different information available for free in the digital environment. Another limitation can be correlated with the level of representativeness of the studied population at the level of the entire country, or at regional, or continental level. Taking into account these limitations, the exploratory character of the research, and the qualitative results obtained, large opportunities of research extension are opened from geographical point of view, at the level of larger regions. The results of the research can also be used in comparative analysis concerning similar aspects from other countries, also allowing further detailing the research on classes and types of software solutions which make the object of present and future technological trends.

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