

PROCEEDINGS

2nd INTERNATIONAL SCIENTIFIC FORUM, ISF 2014

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RESHAPING THE EFL CURRICULUM IN ALBANIA – MAIN FACTORS COMING FROM THE HIGH SCHOOLS OF ELBASAN

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Abstract

The process of changes in the Albanian Education System has touched even the English Language Curriculum. There are a number of factors which seem to be main ones in reshaping the curriculum, by giving a great emphasis to the way things are perceived from different points of view at the same situation. Teachers, institutions, learners can influence the EFL reshaped curriculum adaptation in the High Schools of Elbasan.

This paper highlights the complex process of the implementation of ELT curriculum innovations, in Albania, by taking examples as well as even from other countries undergoing the same process. It also confirms that teachers are not simply implementers of policies that are handed down to them, but they interpret, modify, alter, and implement these policies according to their beliefs and the context where these policies are being implemented. In addition, this paper, illustrates a number of factors which influence how teachers implement and make sense of ELT curriculum innovations. It will be provided significant implications and useful messages for curriculum developers, teachers' education programs, and educational policy makers.

Keywords: EFL curriculum innovation, curriculum implementation, ELT, factors

Introduction

In the recent years many countries, included Albania, introduced ELT curriculum innovations to their educational systems on the hope to improve the status of English language teaching and learning in these countries. However, during the implementation process, these innovations often fail to achieve the intentions of those who initiated and planned these ELT curriculum innovations.

For example, in Greece, Karavas-Doukas, (1995) used one structured classroom observation and semi structured interviews with 14 teachers to examine their implementation of an EFL curriculum innovation which advocates a communicative learner-centered approach. She reported that classrooms were generally teacher-centered and form-focused. Lessons primarily consisted of activities which provided practice on discrete language items while activities that encouraged spontaneous genuine communication were almost non-existent. Most of the pair work activities were carried out between the teacher and the students rather than, as intended by the curriculum between pairs of students. Another study of relevance here is that by Gorsuch (2000:137), who conducted a questionnaire survey of teachers' perceptions (876 teachers who teach English at high schools in Japan) towards the impact of English educational policy on their classroom practices. Findings revealed that while the educational policy emphasizes the development of students' communicative skills and calls for the equal treatment of the language skills, "Japanese teachers' current orientation toward foreign language learning seems to be that strong teacher control is desirable and that students need to memorize, use written mode, and be very accurate". This

apparent mismatch between curricular principles and teachers' classroom practices is further reflected in a study in Taiwan where there was an attempt to improve the status of English language teaching. The Taiwanese government introduced new textbooks featuring activities for communicative language teaching into its junior and high schools. In this study, Wang (2002:137) interviewed six teacher educators to investigate their perceptions of this curricular innovation. These educators reported that: Most high school teaching is grammar oriented. Grammar-translation method prevails, which makes learning every day English impossible. Instruction resembles "parrot learning" wherein students make sounds without knowing why. The trend apparent in this set of ELT studies recurs in Nunan (2003) who conducted a multiple case study of the effects of English as a global language on the policies and practices in a number of countries in the Asia-Pacific region: Mainland China, Hong Kong, Malaysia, Taiwan and Vietnam. Data were collected through a variety of methods, including document analysis (e.g. recent books, articles, government reports, syllabuses and curriculum documents) and interviews with 68 informants from these countries. Nunan concluded that: English language policies and practices have been implemented, often at significant cost to other aspects of the curriculum, without a clearly articulated rationale and without detailed consideration of the costs and benefits of such practices and policies on the countries in questions. Furthermore there is a widely articulated belief in that, in public schools at least, these policies and practices are failing. (Nunan, 2003:609)

Another study which focuses on the implementation of curriculum innovation comes from the Albanian High Schools of Elbasan. It was used an eclectic approach (interviews, semi-structured and unstructured observations, lesson observation, assessment of learners' work and an examination of documents), to examine 145 English language teachers' implementation of learner-centered approaches within the Albanian context. Findings revealed that while most teachers claimed to be implementing learner-centered approaches in their classrooms, lesson observations did not match teachers' implementation claims. Thus, although one of the curriculum aims is "for the students to communicate effectively and fluently with each other and to make talking in English a regular activity" classrooms were generally teacher centered and the Albanian language was the dominant language during classroom interaction. Teachers also spent considerable time correcting students' grammatical and pronunciation mistakes. During the reading lessons, teachers spent substantial time reading word by word and sentence by sentence, explaining vocabulary, translating into Albanian, and reading aloud. Little attention was given to activities included in the curriculum such as working out the meaning of the words from the context, scanning the reading text for specific information, matching activities, and the after reading activities. The above ELT studies clearly emphasizes the need to examine the factors and reasons which led to this gap between the ELT curriculum intentions and what actually happens inside the classrooms. In this paper, it is shed light on these factors and in doing so, we might facilitate the implementation process of ELT curriculum innovations. However, before proceeding to examine the factors which might affect how teachers implement ELT curriculum innovations, it is made clear the rationale for studying teachers' implementation of ELT curriculum innovations.

I.

Factors influencing teachers' implementation

A number of researchers have attempted to identify factors, which have an impact on the adoption and implementation of curriculum innovations (Chang, 2011; Fullan, 2001; Karavas-Doukas, 1995; Owston, 2007; White et al., 1991). Below there are considered the following factors as being crucial in the implementation process of ELT curriculum innovations: the nature of the innovation; the role of teachers' beliefs, teachers' training and

development; the examination system; and finally the context where the innovation is implemented.

The nature of the innovation

The nature of the innovation itself can have a crucial impact on the acceptability and implementation process. (Fullan, 2001; Rudduck, 1986; White et al., 1991). The nature of the innovation can be viewed in terms of its originality, complexity, clarity, and triability (Fullan, 2001). Originality means that the innovation includes new practices which are different from the existing practices. This however may lead to consistency problems. In a curriculum innovation, for example, inconsistency may include the mismatch between the curriculum materials on the one hand and an existing examination, or between the curriculum principles and the teachers' beliefs and practices. Complexity is related to the difficulty and extent of change required of the implementers of the innovation. Brindley and Hood (1990:183) argue that "the more complex an innovation is perceived to be, the less likely it is to be adopted". They go further to propose that "when complex changes are required in teacher behavior, it is more difficult to bring about the successful adaptation of an innovation in teaching methods". This position is not shared by Fullan (2001:78) who suggests that "while complexity creates problems for implementation it may result in greater change because more is being attempted".

In a study of teachers' responses to the introduction of task based learning in the high schools of Elbasan, it is reported that teachers could not make sense of the innovation because of its complex structure and very theoretical orientation. In addition, when teachers began to feel that the ideas endorsed by the reformers were inconsistent with reality, many teachers switched back to their traditional approaches of teaching. The clarity of the innovation will also have a significant impact on the implementation stage. Teachers are often asked to implement a curriculum innovation without being given a clear explanation of how to put the innovation into practice. Fullan (2001:77) warns that "lack of clarity, diffuse goals, unspecified means of implementation represent a major problem at the implementation stage, teachers and others find that change is simply not very clear as to what it means in practice". He goes further to suggest that "unclear and unspecified changes can cause great anxiety and frustration to those sincerely trying to implement them". (Fullan, 2001:77) In ELT for example, Karavas-Doukas (1995), in an examination of a communicative language teaching curriculum being implemented in Greek high schools, found that teachers showed incomplete understanding of the innovation they were asked to implement and that this misunderstanding resulted in negative perceptions of the innovation. Whether or not an innovation can be tried and tested on a small/large scale is also an important factor. Conducting an innovation on a small scale reduces the risks involved in large scale adoption without testing or experimenting. For example, it might be advisable to try out a new curriculum in one or two schools before making decisions to implement this curriculum more widely. This experiment would give all the parties involved in the curriculum innovation some idea about any obstacles that might affect the implementation process.

The role of teachers' belief

Educational innovations frequently require teachers to change their behaviors and practices. However, "we are unlikely to bring about change in practice unless we face up to and, if necessary challenge teachers' deep rooted beliefs about the nature of knowledge transmission" (Adey & Hewitt, 2004:156). Spillane et al. (2002:415) state that: Reform cannot be accomplished by having teachers learn only the surface form of reform practices. It requires grappling with the underlying ideas and may require deep conceptual change, in which teachers rethink an entire system of interacting attitudes, beliefs and practices. Thus, as

Breen et.al (2001:472) have proposed “any innovation in classroom practice from the adoption of a new technique or textbook to the implementation of a new curriculum has to be accommodated within the teacher’s own framework of teaching principles”. According to Breen et al., these principles stem from underlying beliefs or personal theories the teachers hold about nature of the broader educational process.

Tillema (1994:602) has argued that “beliefs serve as filters which screen new information, ultimately determine which elements are accepted and integrated in the professional’s knowledge base”.

The filtering effect of beliefs has been also been stressed by Pennington (1996), who claims that teachers’ existing beliefs function as filter, hindering or modifying new information coming in.

The above discussion leads us to consider the crucial role of teachers’ beliefs in determining teachers’ rejection or adoption of educational innovations. With reference to ELT curriculum innovations, Orafi and Borg (2009) suggested while the ELT curriculum being implemented in Libyan schools emphasizes that “it is possible to understand the gist of the text without having understood every word” (Macfarlane, 2000:3). The beliefs about teaching reading teachers expressed during the interviews were at odds with the curriculum’s approach to this aspect of language teaching. A common belief among the teachers in this study was that the goal of reading is to develop accurate pronunciation. There was little evidence in the teachers’ comments that they were aware of the communicative orientation towards teaching reading embedded in the curriculum. Similar difficulties in promoting communicative reading instructions were noted by Musai (2008). In the Albanian context, he employed a survey design to elicit 290 EFL teachers’ assumptions towards reading in relation to curriculum innovation in Albania. The study found that while the curriculum encourages the development of reading skills, teachers’ theoretical views about reading were inclined towards the development of pronunciation. The author suggested that one possible explanation for these results is that the majority of the teachers have not been exposed to the recent trends and methods of teaching EFL reading. The lack of exposure to communicative approaches to teaching EFL reading might be one factor which led to the inconsistency between what the curriculum proposes with respect to teaching reading and what teachers do when they teach reading.

Teacher training and development

Since many educational innovations require teachers to change their classroom practices and adopt new ways of teaching, teachers’ training and development are also regarded as an essential factor in the implementation process. As Malderez & Wedell (2007:xiii) emphasize “the effective teaching of teachers is the key factor influencing the extent to which the effective implementation of new education policies and curriculum reforms takes place as intended”. Carless argues that “teachers need to acquire the skills and knowledge to implement something, particularly if it is slightly different to their existing methods”. Thus, it is important to recognize that while teachers examine and assess the innovation, they need to be monitored and supported in a way that their personal practical understandings and knowledge of the innovation are enhanced. Carless (ibid) highlights the consequences of neglecting the retraining of teachers: If teachers are not equipped to deal with the implications of a new approach, they are likely to revert to the security of their previous behavior and the desired change may not take place. Without sufficient retraining, even teachers initially enthusiastic about an innovation can become frustrated by the problems in innovation and eventually turn against it. (Carless, 1999:23) However, it should be noted that briefing teachers with short sessions about the innovation will be insufficient in equipping teachers with the necessary skills, knowledge, and attitudes for successful

implementation of the innovation As Adey & Hewitt (2004:156) put it “real change in practice will not arise from short programs of instruction, especially when those programs take place in a center removed from the teacher’s own classroom”. Returning one year later after conducting a two week training sessions for English language teachers in Indonesia, Lamb (1996:147) commented that “a great deal of our original input had simply been lost, and what was taken up was reinterpreted by teachers to fit their own beliefs and their own concerns about what was important to them and their students”.

Furthermore, teacher training and development programs which depend on knowledge transmission models may not be effective in bringing about the desired change (Adey & Hewitt, 2004; Kennedy, 2005). In these models teachers often act as receivers of specific knowledge which is imparted to them by an ‘expert’ without taking into consideration the context in which teachers work. Acknowledging the importance of the context, Bax (2003:283) states that “any training course should make it a priority to teach not only methodology but also a heightened awareness of contextual factors, and ability to deal with them”.

Thus, change does not only mean adopting new skills and practices, but it also means grappling with one’s beliefs and values, and to achieve this level of change, teachers need to be given opportunities to reflect upon their own practices. As Harris (2003:378) explains: For teachers to learn effectively they need to be able to reflect on their own learning and internalize new knowledge. Change in the classroom therefore involves much more than acquiring new skills or knowledge. It essentially means changes in attitudes, beliefs and personal theories in order to reconstruct a personal approach to teaching. This cannot be achieved unless there are opportunities to reflect upon their practice and the practice of others. Teachers often encounter different obstacles while trying to implement educational innovations. Shamim (1996:120) claims that many teacher training programs do not take the dynamics of change, and the potential obstacles encountering change into consideration. According to Shamim, this makes teachers unable to face the problems that follow their attempts to implement change in their classrooms and institutions. She insists on the need to advise teachers of the various obstacles that might face them in the implementation process. She writes: It is important for teacher trainers to encourage participants in teachers training programs to discuss both overt and ‘hidden’ barriers to the successful implementation of change in their own teaching/learning contexts. This will not only make trainees aware of potential sources of conflict but it will also enable them to develop strategies and tactics to deal with anticipated problems in initiating and managing change in their own classrooms. (Shamim, 1996:120)

The socio-cultural context

The educational process in any context is not only an exchange of information between teachers and students, but it is also a set of conventions which decides what happens between these parties (teachers and students). These conventions are determined by the social and cultural norms within this particular context (Coleman, 1996; Holliday, 1994; Tudor, 2001; Tudor, 2003). Stressing the central role of the social context, Tudor (2001:35) indicates that “the classroom is a socially defined reality and is therefore influenced by the belief systems and behavioral norms of the society of which it is part”. This coincides with Locastro’s (2001:495) argument that “classrooms are social constructions where teachers, learners, dimensions of the local educational philosophy, and more general socio-cultural values, beliefs, and expectations all meet”. Nunan and Lamb (2001:33) add that “classroom decision making and the effective management of the learning process cannot be made without reference to the larger context within which instruction takes place”. Holliday (1994:24) also notes that “the culture of the classroom provides tradition and recipe for both

teachers and students in the sense that there are tacit understandings about what sort of behavior is acceptable”.

The socio-cultural context where an innovation is to be implemented therefore will play a major role in the adoption or resistance of the innovation. For example, commenting on the process of curriculum innovation, Morris (1998:120) argues that “the implemented curriculum can be far removed from the intended curriculum, particularly if insufficient consideration is given to the context in which the reform is to take place”.

Goodson (2001:53) also highlights the consequences of ignoring the context where the innovation is to be implemented: Without sensitivity to context, the new change forces may be shipwrecked in the collusion with hard sedimentary rocks of existing school contexts. Externally mandated change forces are all very well as a triumphalist symbolic action pronouncing the new world order, but unless they develop sensitivity to school context and to teachers’ personal missions, the triumph may be short-lived and unsustainable, or we will see the emergence of a new purpose and function for teaching and schooling far removed from the mandated intentions. If an innovation is implemented without consideration of the socio-cultural structure of the society, conflict and resistance might arise. If an innovation entails new behaviors and roles which contradict the behaviors and roles inherent in the society and culture, receivers of this innovation might not easily accept these new roles and behaviors. Shamim (1996), in her attempt to introduce a process approach to English writing classes in Pakistan, found that conflicts between the learners’ assumptions about knowledge, their learning behavior in the classroom inherited from the culture of the wider community, and the assumptions of the innovation impeded its successful implementation. Shamim explains the reasons behind learners’ resistance to this particular innovation. As she notes: The lack of ‘fit’ between the ‘users’ (learners) and the assumptions of the innovative methodology was largely as a result of ‘value conflict’. On the one hand, learners’ beliefs and assumptions about the norms of appropriate classroom behaviors shown to be entrenched in the culture of the community clashed with the assumptions of the innovative methodology. On the other hand, the affinity between their expectations of the etiquette of teacher/learner behavior in the classroom and the culture of the community made it easier for them to reject the innovation (Shamim, 1996:119). She also makes suggestions regarding introducing educational change in general. They are as follows: 1. The need for behavior change is not limited to teachers. Students, parents and communities also have to change for the successful implementation of the innovation. 2. It is easier to implement change that is congruent with ways of thinking and believing and the norms of interaction prevalent in the culture of the community. 3. An innovation, if it clashes radically with the culture of the community, should be adapted to the local culture before being introduced. Holliday (2001:169) calls for innovations “to be sensitive to the cultural expectations of the recipients of the innovation, whether they are students or teachers encountering new teaching methodologies, or stakeholders in curriculum projects”.

In addition to the socio and cultural factors, other elements of the educational context such as the availability of the resources, and the structure of the examination system can have a significant impact on the extent educational innovations can be implemented effectively.

The examination system

A number of researchers have pointed to the crucial role exams play in shaping what teachers do inside the classroom (Andrews, 2004; Cheng, 1997; Cheng & Watanabe, 2004; Choi, 2008). For example, Lamie (2004:127) indicates that: If the tests are perceived by the teachers to have significant effects on their students’ lives, then they can see it as part of their duty to make sure that their pupils have the best possible chance they can to succeed.

Several ELT studies show that one of the factors which led to the mismatch between the curriculum intentions and teachers' actual classroom practices is that teachers often focus on teaching the skills that are tested in the exams and ignore those that are not included in these exams. For example, nowadays in Albania it can be pointed to a mismatch between the focus of the exams and the aims of the curriculum. Although the curriculum aims to extend students' abilities in the four language skills of reading, listening, speaking, and writing, exams still focus on grammar memorization and vocabulary knowledge, and ignore other language skills such as speaking and listening. This mismatch in turn, leads teachers to focus on reading and grammar and to pay little attention to the development of students' communicative skills. The findings of this study also reflect those of Gorsuch (2000), who investigated teachers' practices in relation to an English curriculum innovation in Japanese high schools. Gorsuch reported that while the curriculum innovation calls for all four skills to be treated equally, the exams written by the Ministry of Education in Japan focused on knowledge of grammatical points, vocabulary, and English usage. He added that because speaking and listening activities are not tested in the exam, students resisted teachers' attempts to implement these activities in the class.

Another study which points to a mismatch between the aims of the innovation and the focus of the exam is Agrawal (2004), who investigated the implementation of an English curriculum innovation in secondary schools in India. Findings revealed that although the curriculum emphasized the development of oral skills, teachers tended to ignore these skills because they did not form a part of the exams written by the Ministry of Education.

Fotos' (2005:666) description of many EFL settings appears to coincide with the findings of the above ELT studies: Many EFL situations have a centrally controlled education system with a set curriculum, prescribed textbooks, and highly competitive nationwide examinations determining admission to middle, secondary and tertiary institutions. Such examinations usually have an English component requiring reading comprehension, knowledge of grammar rules, vocabulary. As a result, English language teaching is often aimed at mastery of points tested on such examinations. Therefore, it is not surprising that traditional EFL instruction usually emphasizes the development of knowledge about English, rather than the development of communicative ability.

In many EFL settings, it is often regarded that it is the teachers' responsibility to make sure that their students can pass the exams. If students cannot achieve this goal, teachers will be blamed for not doing their job. This obligation may force teachers to focus on teaching the skills that are tested in the exams and ignore the ones which are not. Students as well are pressured by the exams and require their teachers teach for the exams.

Conclusion

In this paper, there are mentioned a number of the key factors which influence how teachers implement and make sense of ELT curriculum innovations. In addition, this paper showed that the implementation of ELT curriculum innovations is a complex process, not only in Elbasan, Albania, but even in other countries. In this aspect every ELT curriculum innovation needs to be planned very carefully, and take into consideration the various factors discussed here which may influence its successful implementation.

Thus, this paper provides significant insights and messages for curriculum developers, teachers' education programs, and educational policy makers. Firstly, teachers should not be left alone to find ways of implementing the innovation. In this respect, Leithwood et al. (2002:12) stresses the importance of providing teachers with clear description of how to put an innovation into practice. They suggest: The curriculum to be implemented should be described in exceptionally clear and concrete language. This is not meant to diminish the necessity and value of dealing with relevant conceptual and philosophical matters in

curriculum frameworks and related materials. It means however, that the actual practices emerging from such consideration need to be outlined very clearly, and with plenty of illustration if they are to be uniformly understood. Thus, teachers need to understand why they are being asked to behave and act in certain ways. This can be done by explicitly explaining the rationales and principles which underlie the practices which teachers are asked to implement. As McLaughlin & Mitra, (2001:307) contend: Absent knowledge about why they are doing what they are doing, implementation will be superficial only, and teachers will lack the understanding they will need to deepen their current practice or to sustain new practices in the face of changing contexts. Secondly, as mentioned in this paper, teachers' beliefs play a significant role in teachers' implementation of ELT curriculum innovations. However, teachers may not be aware of their beliefs. Therefore an important role of teacher training programs is to raise teachers' awareness of their existing beliefs and the principles behind change. The need to raise teachers' awareness about their beliefs has been echoed by Hedge & Whitney (1996:122) who suggest that: All teachers operate according to set of beliefs about what constitutes good classroom practice, but some may never have made those beliefs explicit to themselves. Thus an essential part of in-service education is to encourage teachers to reflect on their own professional practice, to make explicit to themselves the assumptions that underlie what they do and then to review those assumptions in the light of new perspectives and practices. Thirdly, it is important for the culture of the proposed innovation to be consistent with the social-cultural norms of the context where the innovation is to be introduced. As Markee (1997:84) points out, "the likelihood of an innovation to be adopted is always contingent on its appropriateness in a specific context of implementation".

Fourthly, given the crucial role of exams in determining what happens inside the classroom, one could argue for a change in the examination system to match the aims of the proposed change. Wedell (1992:338) claims that "the success or failure of any proposed changes in teaching content and methods depends on whether the examination system is altered to reflect the proposed changes". It is clear, then, that the mismatch between assessment and the curriculum is another factor that works against the successful implementation of ELT curriculum innovations in many EFL settings. Finally, it should be realized that the implementation of ELT curriculum innovations is a complex process, and that the introduction of ELT curriculum innovations needs to be planned very carefully, and take into consideration the various factors discussed here which may influence its successful implementation.

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LEARNING BY DOING: SPANISH APPLIED LINGUISTICS AS A LIVING LAB

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Abstract

This paper addresses the impact of a sustainable teaching model in the Faculty of Creative and Critical Studies at the University of British Columbia in the Okanagan (UBCO). During the past few years, the growing number of students wanting to learn Spanish has become evident, class size has increased from 30 to 70, but manpower has remained the same. The trade-off has been that it has become almost impossible to give immediate individual feedback to the students in the classroom, so monitoring language learning has been affected. In language learning, feedback is understood as any communication between the instructor and the student that provides information about the student's performance in a given task. When this communication breaks, the learning process is affected. So, this eminent class increase promoted the idea of creating a learning space for students taking a course in Spanish Applied Linguistics. Most specifically, the course was designed to engage undergraduate fourth year students in project based learning to foster the integration of teaching and research. Theoretical applied linguistic concepts were introduced in class, and the experiential learning approach was used to allow the students opportunities outside the classroom to enact the concepts learned through classroom observations, tutoring, service learning, creation of supplementary materials and on-going reflection. The paper includes a detailed description on how the course was conducted, what learning opportunities the students were exposed to, and what the overall results of the course were.

Keywords: Experiential learning, monitoring, sustainability

Introduction

The effects of experiential learning in education have been the center of attention in many studies (Amstrong, 2011; Knoll, 2011; and Kolb, 1984). Kolb said that 'learning is the process whereby knowledge is created through the transformation of experience. In his cyclical theory of learning, he presented four main stages in which this transformation takes place:

- a) First, the student has a concrete experience.
- b) Second, the student makes observations and reflects upon what he has experienced,
- c) Third, these observations and reflections help to form a new conceptual understanding and interpretation of what the student has experienced.
- d) Last, the new conceptual understanding is used as a guide for new experiences.

Following Kolb's theory, the Spanish Program at UBCO has found a way of formal education that enables the students to integrate the knowledge acquired in the lectures with their direct involvement in the learning experience. Most precisely, students enrolled in Spanish Applied Linguistics (SAL) or Span-441, created a learning community with the vision to assist students in the learning of Spanish as a foreign language.

One of the main characteristics of a community of learning is to share a common goal (Levine, 2005; Goodsell, 2004; Smith, et. al., 2004). In Span-441, the students shared their

willingness to learn how to teach Spanish. What they learn was shaped by the assignments, reflections and assessments they were invited to do. Another shared goal was to help students enrolled in first year large Spanish succeed in the learning of Spanish as a foreign language. The objective of this paper is to explain how the experiential learning approach was used to allow the students opportunities outside the classroom to enact the concepts learned through classroom observations, tutoring, service learning, creation of supplementary materials and on-going reflection. Another objective of the paper is to analyze the impact this approach had on the students' motivation.

Context

The Spanish Program at UBC Okanagan offers between 24 and 27 courses per school year plus 2 first and 2 second year language courses in the summer. First and second year courses are devoted to learning the language and there are two third year courses (Span-301 and Span-302) which include a more advanced study of the language. The other third or fourth year courses cover specializations like literature, linguistics, or translation. Usually, first year classes are large and the numbers start decreasing as the level increases. (Table 1).

Eight hundred and eighty five students are currently enrolled in the Spanish program at UBCO. From these students, 600 are taking courses at the 100 level. At this level, students are graded with two midterm exams, four journals, an oral presentation, two reading comprehension exercises, four online vocabulary quizzes, online exercises (ilrn) and a final exam. Up to end of the second half of the winter semester 2009, Spanish language classes at UBCO ranged from 20 to 30 students and it was manageable to monitor the students' learning in class. Students were given immediate feedback when they were engaged in group discussion, when they answered questions in the classroom, when they completed the exercises assigned in class, and when they wrote their journals. The growing number of students wanting to learn Spanish became evident, class size increased from 30 to 50 and even 60, but there were no new hires. The trade off was that formative evaluation started to be affected.

Table1: Student enrollment in Spanish courses from September, 2014 to April, 2015

Courses	Students per class	Number of classes	total
Language			
Span-101	50	6	300
Span-102	50	4	200
Span-201	40	3	120
Span-202	40	3	120
Span-301	35	1	36
Span-302	35	1	32
Total Language		18	808
Literature & Linguistics			
Span-411	25	1	11
Span-280	25	1	6
Span-380	25	1	8
Span-312	25	1	29
Span-305	25	1	13
Spanish-408	25	1	10
Total Lit and Ling.		6	77
Total		24	885

In language learning, feedback is understood as any communication between the instructor and the student that provides information about the student's performance in a given task. When this communication breaks, the learning process is affected. So, the reality of having large classes promoted the idea of building a sustainable community among student peers, and at the same time providing the students taking Spanish Applied Linguistics with a unique learning experience.

The project

This project's vision was to provide opportunities for hands-on experience on campus in a sustainable way. We started working on very basic theoretical linguistic concepts in class and had the 4th year students observed how the theory was put into practice in a real first year Spanish class. Through these observations, fourth year students started gaining a sense of ownership when they were asked to give first year students feedback on the tasks assigned in class. Immediately, they got excited because they were working on something real. Afterwards, through class discussions, they began to feel a sense of learning community: a group sharing the same values who was actively learning together from each other. At the same time, they were individually very concerned with their own professional development. They were more aware of the problems they had with Spanish grammar, and started being more conscious of the mistakes they made. They tried to be a model for the first year students they were assigned, and each small success was taken to a higher level as days went by.

From each classroom observation task (four in total), the students were asked to reflect upon what they had learnt, to work closely with students whose progression in language learning was less obvious, and to produce language materials to support language learning. Each of the students in Span-441 made a conscious effort to incorporate the Hispanic culture into the materials they created, thus preserving the heritage of the Spanish language. Span-101 classes had only one undergraduate teaching assistant supporting the professor and this proved not to be enough for a class of almost sixty students. Students taking Spanish Applied Linguistics were used as human resources to the fullest and best potential in all classes. The course provided the students with opportunities:

- a) to be involved in the teaching/learning process with the mentorship of a faculty member, thus strengthening the undergraduate experience.
- b) to investigate the factors that contribute to successful language learning.
- c) to create a bank of supporting online supporting materials for first year Spanish language classes.

The course was designed to engage undergraduate students in project based learning to foster the integration of teaching and research. Theoretical applied linguistic concepts were introduced in class, and the experiential learning approach was used to allow the students opportunities outside the classroom to enact the concepts learned through classroom observations, tutoring, service learning, creation of supplementary materials and on-going reflection. This was an essential component of the course evaluation because students needed to examine what they had learned, how they had learned it, and how learning was applied in the first year class they were assigned to observe. All these tasks were intentionally linked to the academic goals of the course.

The specific tasks assigned to the students were:

- a) Assisting first year students: Students were assigned two first year students who they assisted closely throughout the semester.
- b) Observations: Students were asked to observe specific grammatical aspects which first years students were be learning. An observation form guiding them through the process was provided.

- c) Reflective Journal: Entries reflected concerns arising from class lectures, classroom observations, and meetings with the students.
- e) Creation of teaching materials: These materials included handouts, anticipation guides, concept maps, checklists, and other resources the students used to facilitate language learning. The students had to take into consideration that the key to effective learning materials is that they must be effective, efficient, and appealing to students. They should contain text, visuals, and other elements that will assist the diverse group of learners succeed. They should include analogies, scenarios, and examples that are motivating and interesting. Students were told that learning materials should use techniques that stimulate creative and critical thinking, and that they may contain reflective questions or ideas for organizing thinking. The key is providing the scaffolding that students need to be successful in the learning experience.
- f) Research project: The students were given the following choices to develop a research project: Learning Strategies: They had to consider how they encouraged the students assigned to them to develop their learning strategies. Taxonomies of learning strategies had to be presented and related to current trends in Second Language Teaching. Assessment and Testing in the Classroom: They had to discuss current practices and trends in assessment and testing in second language teaching. Specifically they had to examine the fundamental principles of testing and analyze how both formal and informal approaches to testing were used in Span-101. Computer Assisted Language Learning (CALL): They had to analyze the ways in which computer software was used to develop learners' language skills and examine how CALL related to teaching methodologies. They had to critically evaluate the software used in class and refer to developments in multimedia software and Internet applications that are successfully used in the field of second language teaching. Because the students used their journals and classroom observations and primary source of information for the data collection, no ethics was required.

Results

All the students who took Span-441, eleven in total, were actively engaged with all the activities assigned in the course. Their motivation was so high, that even though they only had to do four observations, the majority came to the Span-101 class at least once a week. The frequency in which Span-101 is taught is three times a week. This means that these 'teaching assistants' were exposed to a teaching experience thirteen times. Because there were so many assistants in the classroom and there was no physical space for them to be in, and because of fire regulations the instructor had to create a schedule for them to visit the class. A group of students came on Mondays, others came on Wednesday and the rest came on Fridays. In all, the Span-441 students assisted a total of twenty two first year students who expressed a huge gratitude for the work their assistants had done. The conceptual understanding and interpretation of what the students had experienced served as the introductory part of each lecture in Span-441. Participation in class was excellent and the students were very motivated to talk about their experiences with the students they were assisting and their reflections regarding the observations they had done in class. It was amazing to see them relate the theoretical concepts they were learning with the reality they were facing in the classroom.

Students created excellent teaching materials such as games, study guides, posters, practice tests, etc. Some students submitted only two materials they had used but others submitted up to ten.

For the final project, three students decided to work on evaluation, two on CALL and six on learning strategies. The students who worked on evaluation reported not being very

pleased with the way oral evaluation in particular was carried out in first year classes. They concluded that interviews were provided a more objective assessment of the students' oral abilities than a memorized dialogue. The students who decided to research on learning strategies were pleased with the progress their assigned students made. For their project, all of them used *Strategies for Success* by Douglas Brown, and followed the activities related to helping their students improve their learning strategies. The two students who investigated how CALL was used in Span-101 concluded that computer support is a way to monitor language learning in large language classes. They saw the value of this means as a way to carry out formative evaluation.

Conclusion

Spanish Applied Linguistics was designed to engage undergraduate fourth year students studying Spanish as a Foreign Language in experiential learning to foster the integration of teaching and research. Through the theoretical applied linguistic concepts which were introduced in class along with the experience they gained by interacting with the students they were assigned to assist, they were able to form a new conceptual understanding and interpretation of what they had experienced. This new conceptual understanding served as a guide when they engaged in tutoring, service learning, the creation of supplementary materials and the research project they submitted at the end of the term.

The initiative also proved to be really useful in regards the students' motivation. Besides the fact that the students put in many extra hours of their time to come to the Span-101 class, observe, and become engaged with the teaching learning process, they expressed their interest in continuing assisting the professors teaching Span-102. This is an indication of the students' willingness to complete the tasks assigned in the course because they wanted to do so. In addition, three students approached their instructor to extend their service to the community. The instructor invited a group of Secondary School teachers to her class on their professional development day. This visit provided the opportunity to establish connections between the Span-441 class and three Secondary School teachers teaching Spanish in Grades nine, ten, eleven and twelve, and at present four students from Span-441 are assisting three teachers in three different Secondary Schools in Kelowna.

Based on the Chinese proverb *Tell me and I will forget. Show me and I may remember. Involve me and I will understand*, Spanish 441 wove a new path in the pursuit of sustainability, creating a living laboratory within the Faculty of Creative and Critical Studies to support language teaching and learning.

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PREDICAMENTS IN THE ARCHITECTURE AND DESIGN EDUCATION (TURKEY AS AN EXAMPLE)

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Abstract

Architectural education –as the world's oldest design oriented vocational training– is being tried to improved in our country dependent on the central enforcing institutions. Due to this situation, educational institutions that have devoted themselves for centuries to raising salutary and distinctive generations in this profession have become unsuccessful.

Disregard for an intense and a supervised information obtaining process that should be applied in universal standards, the qualitative weakness of the legislation and the rules and the acceptance of the quality of the current vocational graduation in design education as adequate, have caused a significant decrease in the value of the offered structures and designs.

In an educational environment where the modern education is unfulfilled and the institutions that offer education in architecture, interior design, urban planning are destroyed and the traditional behavior and universal knowledge is not observed, future dynamics of professions remain inadequate.

When all these responsibilities are carried out by only one unifying and rule-making administration, and when chambers as nongovernmental organizations try to stay away from the common, contemporary, universal and liberal education policies, a vocational formation in which conceptual developments never mature is created.

The enforcing and the repressive administration system is trying to adapt a traditional education model that is consentient to the students' current capabilities (never requiring more) in our education system.

Expecting a low-level success –and being contended with that success– from students who have no background in design, who have no conceptual intelligence, who are only middle-school graduates and who enter vocational education institutions by chance, and expect them to practice a profession that is creative, constructive and authentic should be considered a huge mistake.

In this study, in the extent of the concrete reality of our country, we will examine the adverse developments in design education, the spacial insufficiencies, the difficulties in the training of teaching staff and repressive sanctions in education while considering the international contemporary design education systems and programs. We will also try to offer some options for solution.

Keywords: Architecture, design, Turkey, education

Architecture and Design Education

Architecture is a key profession that is related with the production of all sorts of designed-environments where life takes place. In another words,

"Architecture is an adventure, an experimentation and a continuous innovation. Architecture can be polemic, critical and self-critical."(Yürekli, 2009).

Architecture is a human activity that provides people with quality living environments and that increases the quality of life. In order to recognize architecture and to improve its education, we need to recognize the society and the culture first.

Architectural history dates back to the beginning of mankind. The need for human sheltering constitutes the root of this profession. For many centuries, it was taught and studied by the master-apprentice relationship. But the social structures began to change in the 18th century with the revolution in art. The emergence and the development of the industry have created new classes in the society. The new capitalist order, the transition from the peasantry to the working class and the formation of the bourgeoisie has created a need for new housing. The ever evolving technology necessitated the production of new and various types of buildings. However, the current production of that time could not meet these requirements. Therefore, in that environment, schools of architecture began to spread and develop from the beginning of the 19th century.

"Styles from the beginning of the 19th century were taught to young students in educational institutions called "the School of Fine Arts" and hence in a shorter time. However, being a graduate from one of these schools did not qualify one to implement his/her skills in the practical world. All work remained in the hands of the masters."(Yürekli 2009)

In the beginning of the 20th century, the world of architecture emphasized on a form of education that is capable of meeting the needs and perceptions of the versatile human life. The schools of architecture also began to take shape according to this new approach. Nowadays, the architectural education is carried out in the faculties of many universities around the world. The flow of information and the information technologies are developing rapidly and the world is rapidly shrinking and becoming more and more colorless due to the impact of globalization. We (as architects under UIA/UNESCO CHARTER FOR ARCHITECTURAL EDUCATION) are quite concerned with the qualitative development of the built environment in the future. We believe that everything that influences the way in which the built environment is made, used, furnished, landscaped and maintained should belong to the domain of architects. We feel responsible for the improvement of education for the future architects to enable them to work for a sustainable development in every cultural heritage.

Architectural education in our country is provided in different faculties within various universities under various majors such as architecture, architectural design, engineering, architecture and engineering, fine arts and art design. The education systems are shaped by the political structure in all countries of the world. This approach has been a valid system for all periods. In essence, it is the political powers that shape the entire education system. This is a fundamental problem especially in the developing countries. We make a transition to universities coming from an educational process (elementary, middle and high) that is formed by the political powers. The current approach in our education system is creating many difficulties in terms of creativity, aesthetics and visual expression all of which constitute the basis of architectural education. Whereas, the design education should reflect people's versatile lives, their multi-dimensional perceptions, routines, cultural & social values, traditions and needs *objectively*. Therefore, an education system that is unique, independent, modern and capable of developing its own rules will have positive benefits for the design education.

"Well-known architects of the twentieth century often mentioned the infertility of architectural education in schools. They pointed out that the architecture is a profession of culture and creativity. If Wright's Taliesin workshops, Gropius' Bauhaus and his works in the

USA and Architectural Association in the UK were able to school and graduate successful architects, that was due to one reason only: they created an environment in which the students could express their creativity in the most effective way.”(Erzen 1976)

The new political restructuring process that began in the 1970s started a restructuring process in the social and political / economic structures as well with factors such as production and globalization. During this process, political volatility affected (naturally) all universities directly. Changes and transformations greatly changed the functions of all universities. They turned them into buildings of mass education. YÖK (Higher Education Council) was established during this process and with the authority granted, the council started to shape our universities in a standardizing approach.

Political Fluctuation and Higher Education in Turkey

In our country, the first university was founded in 1933, ten years after the founding of the Republic. In 1946, the University Law was issued. Universities were made into general autonomies and legal personalities while the faculties were made into science and management autonomies and legal entities. The university took its place in the constitution as a public entity and a scientific & administrative autonomy according to the Article 120 of the 1961 Constitution. Academics could now become members of a political party and get actively involved in their operations. The university members and academics could no longer be dismissed by authorities outside of the university's own administration.

With the military coup d'état on 12 March 1971, all acquired freedoms, the right to strike and organize walks, the right to do meetings and demonstrations were banned. Magazines and newspapers were shut down. Dissenting voices of all sorts were silenced. The Article 120 was changed and if the freedom of education in universities was compromised, outside interference could be allowed according to the new clause. Mass political cases were opened and progressivist university students were executed. The scientific world felt the impact of the revolution very closely. The universities were formed by the political authorities. The loss of university autonomy status began in this period. For example, the daily life at the universities was highly affected, the studies of the academics were limited to the university resources, the number of years for which an academic can work at the same position were re-defined and only those publications pre-determined by the political authorities were indoctrinated. In 1973, the Universities Act was passed. YÖK (The Higher Education Council) was placed in Article 4 of this Act. However, it was later annulled by the Constitutional Court.

The military coup d'état which occurred on 12 September, 1980 is one of the most important turning points of the Turkish political life and highly affected our country and still continues to affect all the way from our current educational system to our social, economical and cultural life.

“The military coup d'état which occurred in 1980 and the subsequent military regime left deep scars in the country's political life. And the multi-party system to which we switched afterwards (or returned to) has been carrying these scars until today. We faced problems and painful periods caused not only by the military regime, but by the transition period. The search for a new economic model and the fundamental changes in the political geography of the world (especially in the early 1990s, such as the collapse of the socialist block, and so forth) turned this transition period into an even more challenging process.”(Tanör, Boratav, & Akşin, 1997)

The political change which was brought about by this occurrence caused many social, cultural and economic changes in our society. The military government that was established in 1980 changed almost every area of our country including the lifestyles of our society.

The internationalization of the capital on a global scale, the economic, cultural and political integration, the use of technology on a global level, the free movement and the worldwide growth of the market (the world becoming a single market) have created a form of interaction that is beyond the nation-state boundaries. As a result of this process, in our country

“Everyone accepted in time that the impact of all sorts of national regulations were restricted and that it is not possible to challenge the global logic of the capital in the real sense and that the material world (from production to consumption; from land to construction) has gradually expanded its boundaries and that the globalization process has rapidly integrated with the accelerating trends determined by the choice of the private capital.” (Keyder 2000)

1980's was an era where the education system, and the social, the cultural and the economical lives in our country were re-shaped. The pressure of that time was felt at all periods including today. Political power of that period decided to discharge 3854 teachers from the primary and secondary educational institutions and 120 academics from the universities. The same political power established a council in order to maintain discipline and order at the universities. Its effect is still ongoing and it varies according to each new political party's regime. It is centralized, authoritarian and standardizing. We are talking about YÖK (the Higher Education Council). According to the higher education law (numbered 2547) which was passed in 1981, all universities were replaced under the authority of YÖK (the Higher Education Council) in the institutional, the administrative and the academic sense. The first action of the Council was to...

“suppress the academics and the students of the left wing. The instatements of the academic (of the left wing) for professorship or assistant professorship were delay-ed. Their academic identities were offended by checking their hair and beards. The universities were no longer a center of free-thought, development and change, but a base for the police and the gendarmerie.” (http://politikakademi.org/2011/09/12-eylul-1980den-gunumuze-Türkiye)

Until 1981, the higher education system in our country consisted of various institutions.

*“Universities,
Academies under the authority of the Ministry of Education,
Two-year vocational schools and conservatories (some under the authority of other ministries, but majority was under the Ministry of Education),
Three-year education institutes under the authority of the Ministry of Education,
Yaykur (Education by mail)” (http://www.yok.gov.tr/web/guest/tarihce)*

Until 1961, all universities were established by the government, but after 1962, with certain rights bestowed by the 1961 Constitution, private higher education institutions began to be established. They were called a private higher education institutions. Their number reached 44 in between the years of 1962-1969.

“However, according to a law which was passed in 1973, these private higher education institutions were placed under the authority of the government. But another law which was passed in 1982 allowed private foundations to establish universities with no affiliation with the government whatsoever. 19 foundation universities were established between the years of 1990 and 2000. And their number is ever increasing.” (Günay D ve Günay A. 2011)

Foundation-State Universities in Turkey and a Brief History of Architecture Schools

Between 1933 and 1982, the number of universities (all of which were established by the government) increased to 19. The number was 27 in 1982. The first private university was founded in 1984. In 1992 the number was 53 (with 1 foundation university). According to 2014 data, we have now 108 government and 71 foundation universities in Turkey.

Table 1. Foundation Universities In Turkey. (Based on 2014 Higher Education Data)

Category	Number
Professor	3236
Associate Professor	1783
Assistant Professor	6069
Academic	3600
Academic Doctor	934
Lecturer	2906
Expert	290
Research Assistant	2908

Table 2. Government Universities In Turkey. (Based on 2014 Higher Education Data)

Category	Number
Professor	17634
Associate Professor	11669
Assistant Professor	25920
Academic	15538
Lecturer	6949
Expert	3447
Research Assistant	41156

According to 2013 data, there are 83 universities (government and foundation combined) in Turkey that provide architectural education. And it has been observed that since 2009, the number of students in these universities increased exponentially.

The history of architectural education in Turkey dates back to many years ago. The first architectural education in the Western sense started according to the Ecole des Arts Beaux model in an institution called Sanay-i Nefise, which was founded by Osman Hamdi Bey in 1882. This institution was later named the Academy of Fine Arts in 1928. Then it was called Mimar Sinan University until 1982 and then finally the Mimar Sinan University of Fine Arts.

“The Imperial School of Naval Engineering (Ottoman Turkish: Mühendishane-i Bahr-i Hümayun) was founded in 1773 and then it was expanded as the The Imperial School of Land Engineering in 1795 and started to offer architectural education in 1847. It was named Mühendis Mekteb-i Alisi in 1909 and then The School of Master Engineering in 1928. And finally, In 1944, the Istanbul Technical University (ITU) which opened its faculty of architecture in the same year and started to raise master engineer-architects, based on the German Technical University model. Yıldız Technical University was first founded in 1937. The faculty of architecture was opened in 1942, however in that period the school educated mostly technical staff. It was named Istanbul Government Academy of Engineering and Architecture in 1969, Yıldız University in 1983 and Yıldız Technical University in 1992. These two schools determined the architectural education in our country until the late 1950s. Maçka Technical School that started in 1954 (within the ITU) and the Middle East Technical University that started in 1956. They both established the foundation of today's architectural education. Karadeniz Technical University (KTÜ) was founded in 1963 and started to offer architectural education in the Faculty of Construction and Architecture.” (Dostoğlu, Bilsel, 2003)

Between the years of 1962–1969, we encountered private universities that pursued commercial goals rather than educational success. They offered education in a shorter time in highly limited buildings. They mostly offered engineering and architectural education. They had evening departments that provided diplomas (in a very short period of time) for those who

had to work during the daytime. They lowered the quality of the architecture profession. They acted contrary to the equality opportunity principle in the constitution. This is a topic that was discussed a lot and the first reaction came from the Chamber of Architects.

“These schools were not recognized by the Chamber of Architects and they were closed down in 1971 according to the higher education law numbered 1472. But later, with the establishment of the government engineering and architecture academies, they were turned into higher education institutions under the authority of such academies.” (Dostoğlu, Bilsel 2003)

Instead of these private universities that were closed in the 1970s, came the foundation universities in the 1990s. They opened divisions mostly in architectural education. Therefore, architectural education in Turkey was offered not only in government universities, but in foundation universities also. Architectural education (which is highly non-ordinary and versatile) is in a lot of trouble due to the changes in the economical, political and cultural arenas, the political and economical structure of our country, the fundamental changes in the higher education system, the impact of globalization (especially since 2000s), the volatile policies followed by the governments, the new extent of YÖK's (Higher Education Council's) authorities, the administration of the universities in a silent and non-autonomous approach, the attacks on the Chamber of Architects (by trying to decrease its authorities, cut down on its resources, sever its ties with the academic world and eliminate it completely). Insufficiencies in the secondary educational institutions, increasing demand for the design departments, insufficient number of faculty members and YÖK's reorganization and sovereignty over universities make it extremely difficult for the architectural education in our country.

“The fact that we live in a country that has a prime-minister and a mayor who once lived in illegally-constructed homes is an issue that is highly worth investigating.” (Yüreklı 2009).

Based on the above discourse, the difficulty of establishing a design education that is creative, unique and independent, under the current conditions of our country should be a whole another matter of discussion by itself.

Architectural Education and The Related Problems:

“In comparison with the educational methods of other disciplines, architectural education is a unique area in which large differences are experienced.” (Nalçakan, Polatoğlu 2008)

To acquire the knowledge, the skills and the competencies that are provided by the architectural education curriculum, some basic conditions (quality and quantity wise) must be pre-set. Architectural education grounds on design activities that take place face-to-face between an academic and a small group of students. It involves many applications and theories that are prerequisite of each other. These applications and theories may surface in any corner of the study period. The students must constantly question, research and view the social and the cultural world in three-dimension. Architectural education is a student-oriented education system and it requires long hours of non-stop study. The students must develop designs under the critiques of a group leader (the lecturer). At the end of the each term, they are required to do visual presentations via drawing boards (mostly for their project, studio and workshop classes). On the other hand, there many other applied courses that require long class hours and they must be carried out under the supervision of multiple lecturers only with a small group of students. All of the courses (theoric, applied and both) are designed to feed the project, studio and workshop classes.

Also, the field of architecture is fed from many disciplines. It consists of theory versus practice and technical training versus art education. Urban planning, interior design, landscape

architecture and industrial products used to be different departments under the major of architecture, but in time, they divided into separate majors.

The field of architecture is different than all other disciplines, because; only a small group of students are (and should be) allowed to take classes from a large number of faculty members, the education and the training period is quite long, practice architects are appointed temporarily, technical and study trips are made, students and teaching staff can work outside the legal workhours, there are many researcher and practitioner architects, conferences, panels and speeches must be made quite frequently, model workshops, computer labs and patented software programs are used, it requires numerous workshops /classrooms (open and closed), it must provide exhibition spaces, rich libraries and archives/storage spaces.

Various research was done in order to evaluate the current architectural education in Turkey and to compare the domestic and the foreign systems.

In one of these researches (*Küçükdoğu, Alioğlu, Dostoğlu, Esin, Coşgun, Enginöz & Aslan 2013*) a survey was conducted in the architecture faculties of 11 universities that had different education periods and that were in different geographic locations and that were selected equally among the government and the foundation universities. The results were compared and they are as follows:

In the architecture graduate curriculum

Number of students: 19-420 (undergraduate and graduate)

Total number of students: 179-1297.

In the architecture undergraduate curriculum

Quota: 40-134.

Number of students: 177-877 (undergraduate and graduate)

Number of full-time academics: 8-64.

Total number of academics: 23-99.

Total number of students (undergraduate and graduate) / Total number of academics:
9.21-19.02.

Total training space (incl studios) / Number of students (undergraduate and graduate):
1.22-8.94 m².

Total space / Number of students (undergraduate and graduate): 2.93-35.67 m²;

Total architectural design studio space / Total number of students (undergraduate and graduate): 1.12-6.1 m²;

Total exhibition space / Total number of students (undergraduate and graduate): 0.08-3.75 m²;

Model workshop space / Total number of students (undergraduate and graduate):
0.03-0.54 m²;

Computer & Lab space / Total number of students (undergraduate and graduate): 0.1-0.69 m²;

Library space / Total number of students (undergraduate and graduate): 0.15-27.4 m²;

Total other labs and workshop space / Total number of students (undergraduate and graduate): 0.25-5, 13 m².

According to the research in terms of the physical conditions, there is no m² and/or quantity criterion in the documents of the international accreditation agencies, however, in general, the classrooms, the laboratories, the network infrastructure, the materials, the equipment, the physical and technological resources involving the buildings and the land are designed properly enough to serve the purposes of the institutions, their care is provided and are in sufficient capacity. Nevertheless, areas for the private use of the students such as architectural design studios, water areas, didactic and interactive learning environments,

course and seminar areas, full-time faculty members, areas providing education in a studio environment, seminar rooms, lecture halls, offices, project study areas, exhibition areas, libraries, computer rooms, workshops and research areas are inadequate.

According to the research, the criteria in terms of the physical conditions should be as follows:

The number of full-time academic per student: 15

Classroom space per student: 8.00m^2

Studio space per student: 5.00m^2

Exhibition space per student: 3.0m^2

Computer lab space per student: 0.50m^2

Library space per student: 5.0m^2

Other spaces per student: 2.00m^2

Total spaces per student: 20m^2

(Küçükdoğu, Alioğlu, Dostoğlu, Esin, Coşgun, Enginöz&Aslan 2013)

The same research revealed the following increase in the number of the students studying in architectural schools:

2011: 4098

2013: 5631

When we compare the number of students versus the number of academics in our universities, we observe that we are not able to provide sufficient education and that needs to be the subject of another research

In another study, they compared architecture schools in our country versus the ones in Europe and in the USA (Nalçakan, Polatoğlu 2008). According to the study, the education period is usually 5 years in architecture schools in Europe and America. In Canada 6, France 5,5 and usually 5 years in Switzerland. Some universities are four years, but the courses are pretty intense. In Europe and in America, usually the undergraduate education and the responsibility of professional practice are given. Graduate studies are done in 1 to 3 years of training. The scopes of the courses are similar. Design, technology, architectural history, law and landscape are joint courses. The credits and the percentages of the design courses are different from the credits needed for graduation. In these countries, the compulsory education periods are very close to each other. Pre-school education is quite common. Students in high school can make their university choices according to their field of interest. In the same study, six government universities in our country and their architecture departments, courses, academics and the number of students were compared and the results showed that they apply different systems from the ones that are in Europe and in the USA. The study suggested that; to improve the quality of architectural education in our country, the secondary education system should be revised, separate question packages should be prepared for the architect candidates for university entrance exam, arts and sciences courses should be offered also, education period should be increased to at least 5 years and students should be in continuous contact with the educational process.

Table 3. Architectural Education in the World Universities and the Curriculum Coverage

Country	University	Curriculum Coverage	Design course credit-Ratio in total (%)	Education Period (yrs)	Credit
USA	Pratt University	Design. Technical training. Visual Communication. History of Architecture. Shaping. Cultural Training. Media. English. Social and Natural Sciences. Statistics. Professional Practice.	50-%28.57	5	175
Canada	Mc Gill University	Basic Courses. Design. Technical Training. Architectural Law. Economy. Architectural History. Landscaping.	24-%13.48	4+1,5	133+45
England	Cardiff University	Design. Technical Training. Architecture. Technology. Architectural History. Landscaping. Economy.	320-%53.33	5	360+240=600
Germany	Berlin Technical University	Design. Architectural History. Visual Presentation. Shaping. Technical Training. Architectural Law. Technology.	77-%42.77	5	180
France	Nancy School of Architecture	Design. Architectural History. Visual Presentation. Shaping. Technology. Landscaping.	No credit system	6	No credit system
Italy	Milano Politeknik	Design. Architectural History. Visual Presentation. Shaping. Technical Training. Technology. Math. Landscaping. Photogrammetry. Interior Design. Architectural Law Design. Technical Training. Architecture. Technology. Architectural History.	70-%20	5	350
Switzerland	ETH	Landscaping. Architectural Law. Computer Science. Project Management. Mathematics.	98-%36.98	4	265

Table 4. Architectural Education in Turkish Universities and the Curriculum Coverage

University	MSGSÜ	İTÜ	YTÜ	ODTÜ	DOKUZ EYLÜL	KTÜ
Credit	167	153	180	188	169	240
Hours	194	198	224	243	197	200
# of Courses	72	49	63	53	63	46
Project Course Credit	48	38	46	56	42	76
Project Course Credit %	%28.74	%24.84	%25.56	%29.79	%24.85	%31.67
Project Course Hours	32	62	62	84	56	62
Optional Course Credit	26	27	20	30	10	26
Project Course Hours	26	27	20	30	10	12
Building Knowledge Course Credit	16	-	8	-	8	4
Building Knowledge Course Hours	20	-	12	-	8	4

Construction Knowledge / Building Construction / Building Materials Courses Credits	15	7	12	-	10	12
Construction / Construction Practice Hours	26	8	15	-	10	12
Practice Project Credits	6	5	6	-	-	-
Practice Project Hours	8	8	8	-	-	-
# of Students (1. Year)	82	134	123	62	62	62
# of Academic	65	143	118	79	45	41
# of students/# of Academics %	%126	%90	%104	%78	%130	%150

Conclusion

Architectural education in our country dates back to a long long time ago and it is on huge demand. However, due to the preferences, the educational understanding and the intervention of political powers, it has undergone rather difficult times and still continues to do so. Current higher education policies are damaging our educational system. On one hand, they require the information, the skills and all the competencies expected from the architectural education, but on the other hand, they limit our ability to question, research and have a disciplined educational system. That is why the architecture departments are not in match with the other disciplines (that are within the same institution) and thus are constantly wearing and falling into a contrary position.

With the number of students increasing constantly and the architecture schools opening planlessly, the architectural education in our country is getting away from its goal. Because Turkey is an earthquake country, the architecture carries a vital importance. Next to medical and legal professions, it is the third most important profession. Therefore, it is imperative that we bring the Turkish architecture and architects to the desired levels and the non-governmental organizations like the Chamber of Architects, and the public must use their best endeavor to support us. The numbers should be increased on research on architectural education. Instead of opening new departments, the existing departments should be improved and their improvement should be encouraged.

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A RESEARCH ON THE EDUCATIONAL COUNSELING AND CAREER GUIDANCE IN ROMANIA

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Abstract

Young people need counseling and guidance to be able to discover abilities, inclinations and to outline their future. Career guidance and counseling should be made permanent from primary and secondary education. With a permanent reformed educational system that does not value counseling and vocational guidance of scholars, Romanian educational system has a major minus. But the insufficiency of counselors in the pre-university education, determines the high rate of disorientation of the potential students in choosing the faculty that they want to graduate from, or worse, determines school dropout. The article aims to present the main results of a sociological research conducted in two regions of Romania on a number of 900 students, in order to underline the need and usefulness of counseling and vocational guidance.

Keywords: Counseling, career guidance, Romania

Introduction

Careers guidance is a process that aims to provide individuals a clearer understanding of themselves and their potential for future career development. Particularly careers guidance helps people to:

- Clarify their goals for the future;
- Assess their career development needs at different points in their life;
- To understand the actual process of choosing a career;
- Take appropriate measures to implement these objectives (Ali & Graham, 1996: 1-2).

The main purpose of guidance is to assist individuals in the exploration of their complex needs, "to make greater sense of their current situation and to build confidence in their ability to complete the review process and move forward from the point at which they seek help" (Ali & Graham, 1996: 5).

A. G. Watts presents careers guidance as operating "at the interface between the individual and society, between self and opportunity, between aspiration and realism. It facilitates the allocation of life chances. Within a society in which such life chances are unequally distributed, it faces the issue of whether it serves to reinforce such inequalities or to reduce them" (Watts, 1996: 351).

Career counseling includes all counseling activities related to career choice on a lifetime. In the career counseling process, all matters regarding the individual needs (including work, family and personal preoccupations), are recognized as an integral part of career decision making and planning. Career counseling includes also activities related to the inadequacy of employment, mental health issues, stress reduction and development programs that improve work skills, interpersonal relations, flexibility, adaptability, and other development programs leading to self-agent (Zunker, 2006: 9).

Career guidance and counseling appeared in the early part of the 20th century, due to the increasing industrialization (Gysbers, 2008: 249).

Frank Parsons is known as the father of vocational guidance movement. He established the Vocation Bureau in Boston in the year 1908 and he promoted the concept of careers guidance. Parsons primarily pointed out that a clear understanding of the individual's skills, interests and limitations was necessary. Secondly, to know the requirements and conditions for various types of jobs was essential. Finally, a capacity to accommodate these two would lead to successful guidance (Gothard, Mignot, Offer & Ruff, 2001:10).

In a globalized world with continuous changes in the work environments and with fewer certainties, openness and flexibility are required and it is generally accepted that career guidance is a lifelong support process (Van Esbroeck, 2008: 36-41).

In the last part of the 20th century and the beginning of the 21st century, the work on the development and implementation of career guidance and counseling in educational settings intensified (Gysbers, 2008: 249).

Analyzing school guidance situations, career guidance cannot be separated from other types of guidance. In general three types of guidance are identified:

“- Vocational (career) guidance:

Support in relation to development, choice and placement in educational options and occupations or work roles

- Personal guidance:

Support in relation to personal and social development and well being

- Learner support:

Support to maximize the effect of the learning process. It includes support to acquire appropriate learning skills and methods, attitudes and motivation” (Van Esbroeck, 2008: 36-37).

With a perpetually reformed educational system and a institutional construction that does not value vocational interests of scholars, career guidance and counseling should be made permanent since primary and secondary education. But the deficiency of specialists (the inequitable ratio of 1 counselor to 800 students in pre-university education), maintaining blockage of the jobs in Romanian schools and high schools, will only confirm the hypothesis of school dropout and disorientation for students in the decisive stage of self-discovery and crystallization of skills, abilities and preferences.

Our research, based on a sociological survey conducted in 2010-2012 in two development regions of Romania on a sample of 900 students, aims to present the factual situation in our country regarding educational counseling and career guidance.

Research methods

In the study survey it was used the method of opinion investigation based on administered questionnaire, filled in by students in the last year of high school and by people who have finished high school in the South-West Oltenia and Wallachia South Regions.

The target group consists of 600 students in final years of high school in South-West Oltenia and Wallachia South Regions and 300 people who have finished secondary education.

Table 1. Sample structure

Interviewed people	South-West Oltenia Region	South Wallachia Region	TOTAL
Students in final years	250	350	600
People who have finished secondary education	130	170	300

The period to collect information was September 1st 2010-September 1st 2012.

Findings

The opinions of students in final years on career counseling and guidance

For start students were asked if they have plans for a future career.

Table 2. Answer to the question: Do you have a future plan for a career?

Future plan for career		
1.	Yes	64.7%
2.	I stated to outline it	27.3%
3.	No	7.5%
4.	I cannot appreciate	0.5%
Total		100%

Most students (64.7%) claim they have built a future plan, while 27.3% of the respondents barely started to outline it, 7.5% of them not having a single plan by the time of the research.

Table 3. Answer to the question: Who conducted the career counseling and guidance offered in school?

1.	Class master	57.8%
2.	Psychologist	11.2%
3.	Other people or institutions	12.7%
4.	I didn't benefit from counseling in school	17.5%
5.	I cannot appreciate	0.8%
Total		100%

A very important thing in the development of students is counseling. Young people need professional counseling and guidance to be able to discover their skills, inclinations and to outline a future. The study shows that in school, this is however taken into consideration, the class master being the one who guides young people. However, 17.5% of the respondents said they did not receive counseling in school, 12.7% partly received counseling, the fewest students being counseled by a psychologist (11.2%).

There is a marked lack of qualified personnel in the field of school counseling and guidance, the role of specialists being substituted by other people without appropriate qualification. Most respondents claim that the counseling and guidance services provided by the school were performed by the class master or other people or institutions (Niță, 2011:101).

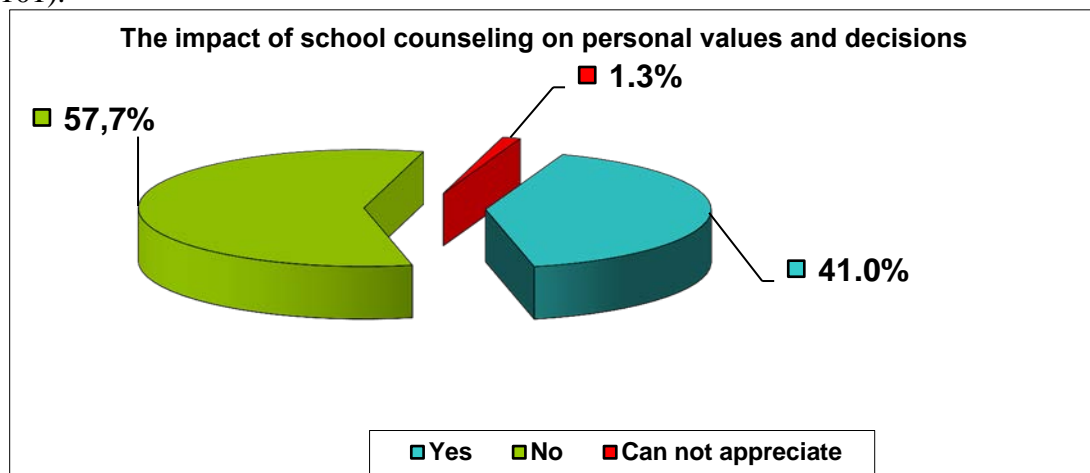


Figure 1. Answer to the question: Did school counseling have an impact?

The purpose of counseling is to actually change the behaviors of individuals and to attempt to discover and develop individual skills in order to achieve maximum results in job / profession they will practice, and especially to be satisfied with what they do at the future place of work. The counseling achieves its objectives if there is a change in the conduct of those who benefit from it. However, 57.7% of interviewed students believe that this counseling had no impact on building a set of values and the decisions they have taken or intend to take, and only 41% think that had a decisive impact.

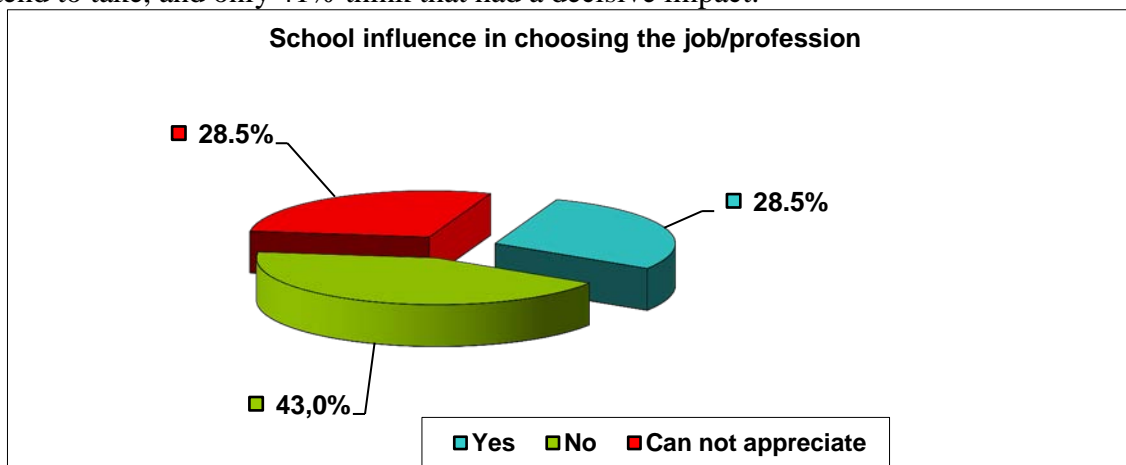


Figure 2. Answer to the question: The choice regarding your job/profession is due to the school?

Although the education received in school and especially the subjects studied in high school by each student should orient graduates towards a particular profession, 43% of the respondents are convinced that the choice of their job is not due to school, 28.5% admit that school has influenced their profession choice and 28.5% cannot appreciate it.

The opinions of people who finished high school studies on career counseling and guidance

Table 4. Answer to the question: Over the high school years did you benefit by counseling on career guidance?

1.	Yes	63.7%
2.	No	35.3%
3.	DK/ DA	1%
Total		100%

A percentage of 63.7% of people in the sample say that they haven't received, during the high school years, counseling on career guidance, only 35.3 percent say they had career counseling sessions.

Table 5. Answer to the question: If over the high school years you benefited from counseling on career guidance, who offered you these services?

1.	Through school by the school counselor	58.9%
2.	Through school by a foreign person	28.2%
3.	I received counseling services outside school	0.9%
4.	DK/ Cannot appreciate	12%
Total		100%

(This question was answered by the people who chose the variant "YES" at the previous question)

When asked who offered them these services, students said they received career counseling through school, by the school counselor (58.9%), or by a foreign person (28.2%).

Table 6. Answer to the question: To what extent do you consider these services have helped/ would have helped you?

1.	To a large extent	41.2%
2.	To a small extent	27.1%
3.	To a great extent	16.5%
4.	None at all	6.3%
5.	To a very small extent	3%
6.	DK/Cannot appreciate	5.9%
Total		100%

A percentage of 67.7% of the respondents consider that the counseling services helped or would have helped them to a large and great extent, while 27.1% opted for the variant *to a small extent*.

However, a 9.3 percent of the respondents said that the vocational counseling sessions would have helped or helped them to very small extent or none at all.

Conclusion

Analyzing research field data carried out in two development regions of Romania, South-West Oltenia and Wallachia South, we can observe that counseling and career guidance services are underdeveloped in our country. Even though over 60 % of the respondents said they had received such counseling in schools, in large part, it is not performed by persons qualified to do it, but by the class master, psychologist, school counselor. Thus, although most people who have finished a secondary education admit career counseling could have helped them to a “large” and “great” extent, about 60 % of students in final years claim that this type of action had no impact on them. In this context, we support to increase the number of qualified counselors in career guidance and counseling, so that each high school student can benefit freely from these specialized services.

Another important aspect highlighted by the study is that very few high school students or high school graduates resort to specialized career counseling on their own initiative, outside the educational institution, so we can see the importance of career counseling conducted in education institutions and at the same time we can highlight the need to develop national policies to focus on the implementation as compulsory of these counseling and career guidance programs in high schools.

The results confirmed the premises drawn, in order to discover the need and usefulness of counseling and career guidance and the exploitation benefits.

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ABBOT PREND DOCI, AN EXEMPLARY FIGURE IN THE ALBANIAN NATIONALISM

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Abstract

Prend Doci was born on 7th February 1846 in the Bulger village of Lezha. He was one of the first students in the Papnuer Seminar in Shkoder which began on the 2nd of August 1859 and after a short while, in 1861 he was sent to Rome at the Urban Propoganda College. Upon completion of his theological studies in 1871 he returned to Albania where he became a local priest in Korthpule (one of the poorest church in Mirdita). He then went on to become Chaplain for Archbishop Gasper Krasniqi and Abbot for She Lleshari in Orosh. In 1876-1877 he became a priest in Kalivare where he organized and influenced events during these years.

Keywords: Prend Doci, Albanian nationalism

Prend Doci on his nationalistic act

Speaking to the "Hylli i Drites" magazine (year XVIII, 1942, pg. 3-4), Father Pashke Bardhi O.F.M, gives a detailed talk on Prend Doci's religious acts, his literary and cultural work and political doings. Prend Doci always believed that Mirdita could be an independent entity during a tumorous time in Albania. He believed that the moment that Albania was free, the citizens would recognize that they could choose their own political powers. At the same time Prenk Bib Doda (Bib Doda's son) the elected chief in Mirdita, started to act so that he could form a Catholic Unity in Mirdita. This common interest united them in working together and fighting the oppresors which were then present in Albania. Prend Doci met with the Prince of Montenegro in order to unite powers and prepare for the upheaval against "High Gate". This decision for up heaval in December 1876 was made upon consulting 3000 local armed men which were then part of the consultation group in Mirdita. However the Montenegroen promise to assist in this movement remained just a promise.

It also became apparent that the Arberesh community and nearby Shkodra were not able to beat the Osman military present, meaning that the Revolutionaries in Mirdita were left few and lacking in weapons. The Osman military during this time were not fighting the Serbs or the Montenegroes as they feared a wider war within this region so they concentrated all their efforts in Albania. This meant that the Mirdita Resistance group failed to win over the Osman military.¹

Upon this failed attempt to free Mirdita, Francesk Malcynski (Austrian born but head of Dioceses church in Lesha) expels Prend Doci from his duties in the church². They had failed, the Turkish Army penetrated Mirdita and the members of the movement as well as Prend Doci were forced out of the country. On his journey out of Albania nearing Montenegro,

¹Pal Pjeter Doci, *Prend Doci, Abati i Mirdites-Jeta dhe vepra-*, Shtepia Botuese "Naim Frasheri", Tirane, 1997, pg.21-22.

² Cited by: Pal Pjeter Doci, *Prend Doci, Abati i Mirdites-Jeta dhe vepra-*, Shtepia Botuese "Naim Frasheri", Tirane, 1997, pg.21.

Dom Doci was surrounded by the Turks³. He put up a fight and resisted but was finally beaten and he had to surrender to them.⁴

Prend Doci immigrates

After spending a short while in prison in Guci together with the other members of the movement, they were then sent to Salonik and later to Istanbul in prison. His friendly relations with father Azarian (also a childhood friend) who was well connected to the Turkish Sultan Abdyl Hamiti, he managed to get freed out of prison. He was freed from prison very quickly as during this time in Istanbul, they were waiting for the arrival of Dervish Pasha who would object to this. Upon being informed that Prend has been freed he is said to have been angry "*What, he be released? Did not know that he have seen the insurgent cause of Mirdita?*"⁵ This statement ensured that Prend Doci was then never allowed in Albania again meaning that he was left roaming abroad for the next 11 years.

From Istanbul he went on to Rome, where the Propaganda Congregation sent him on as a missionary to Newfoundland in Canada, as a result staying on for a number of years.⁶ After this he returned to Rome in April of 1882, and he attempted to return to Albania with the help of his friends, but he failed. On 5th May 1883, the secretary of the Propaganda Congregation sends him as a missionary to Tivar, however the church was then occupied which meant that he had to be sent to Ulqin which was the closest city to Shkodra and his own city Lezha. Based on the autobiography of Dom Doci written by Father Pashk Bardhi, on his elongated stay in Montenegro, he met with King Nikola who informed Dom Doci that he planned to take Albania near enough the river Drin. Upon hearing this Dom Doci responded "*Excellences, you probably will be able to conquer all over Albania, but be aware that the Albanian would not have a friend ever*"⁷.

Upon some accusations that were found against Dom Doci, he was forced to flee Europe by being named the secretary of the first Apostolic Delegation in East India which he had to replace Cardinal Anton Agliardi. Dom Doci replace Cardinal Anton and ensured that his job in East India was done to the highest standard. Even though he had a bright future in Albania, he never attempted to return although he maintained contact with his friends. In 1885 he wrote a letter to De Rada in which he expresses his gratitude and his willingness to help him in his work for the good of the homeland.⁸

In autumn of 1886 he is named in Rome and later on becomes the head of Priesthood in Vatican. During this time he encounters an Anti-Albanian movement from a Patriarchal group from Istanbul. On a memoir written to the Cardinal Simeon (Head of the East Missions) he makes it clear that this Patriarchal group wants to open up schools in Albania which teach only Greek in order to put a stop to the Albanian descentastry. In this memoir, he argues that both Muslims and Christians in Albania "*The driving force of every Albanian, Muslim or Christian, is the love for the homeland and the sense of preserving his nationality and his language.*"⁹

³ According to Father Pashk Bardhi O.F.M., Dom Doci think because if they would leave all together will be dictated, so it was left alone with an old faithful. Ate Pashke Bardhi O.F.M., Hylli i Drites, "Emzot Prend Doci", Vjeti XVIII, 1942, Nr.3-4, pg.108.

⁴ Pal Pjeter Doci, *Prend Doci, Abati i Mirdites-Jeta dhe vepra-*, Shtepia Botuese "Naim Frasheri", Tirane, 1997, pg.25.

⁵ Ate Pashke Bardhi O.F.M., Hylli i Drites, "Emzot Prend Doci", Vjeti XVIII, 1942, Nr.3-4, pg.115.

⁶ Edwin Jacques, *Shqiptaret*, Karte e Pende, Tirane, pg.335.

⁷ Ate Pashke Bardhi O.F.M., Hylli i Drites, "Emzot Prend Doci", Vjeti XVIII, 1942, Nr.3-4, pg.116.

⁸ Cited by: Pal Pjeter Doci, *Prend Doci, Abati i Mirdites-Jeta dhe vepra-*, Shtepia Botuese "Naim Frasheri", Tirane, 1997, pg.40.

⁹ Cited by: Pal Pjeter Doci, *Prend Doci, Abati i Mirdites-Jeta dhe vepra-*, Shtepia Botuese "Naim Frasheri", Tirane, 1997, pg.41.

During his stay in Rome, he searched the archives and the Vatican library for documents. He managed to gather enough documents on the history of Mirdita which make Mirdita seem as a separate Catholic entity. This was enough to make him pursue this matter and ask the Religious Institutions to recognize this and therefore separate Mirdita from the Diocese in Lezha.

Prend Doci as the Abbot of Orosh

The Monastery of Orosh was maintained with the help of the Gjomarkaj in its original state and not allowed to be penetrated by the Lezha Bishops although they tried to take ownership of it.¹⁰ However on Preng Bib Doda's exit, and the clear weakening of Gjomarkaj left the monastery in a vulnerable state. The arrival of Dom Prend Doci ensured that the monastery was once again maintained and protected unlike other ones at the time. Dom Doci never gave up on re-entering his beloved country, Cardinal Agliardi recognized this and managed to convince the Turkish Sultan so that he could return to Albania as the "Abbot of Mirdita". His only conditions were that he would never again participate in political acts.

At the same time, with the blessing of Pope Leon XIII on the 25th October 1885, the Monastery of She Lleshari was once again reinstated, independent of The Diocese of Lezha. The Monastery of She Lleshari was declared as directly dependent on the Vatican and new church additions were made to this monastery, amongst them the Orosh and Spaci.¹¹ Doci was then named Abbot of Mirdita and that is how he finally made his way to Shkodra.¹²

On his arrival to Orosh he was praised by many of the locals in Mirdita. The Monastery of Orosh expanded in a short space of time and managed to gain 16 different church communities in 1894. The changes that he made to this monastery made it seem like "...residence that had shades in every city in Europe."¹³

Abbot Doci was characterized as always being willing to visit the different church communities, always ready to help out people in need therefore reaching out to everyone.¹⁴ His compassion really touched the local communities and this in turn eradicated many of the vices that were then present. Vices as such illegal weddings, eye for an eye revenge and many more started to disappear. His persistence and hard work saw to it that the number of clerks who had been educated was on the rise in the Monastery of Mirdita. He intended Mirdita to have cultural improvements and he ensured that 3 schools were opened in his own Monastery. (Orosh, Spac, Kashnjet)¹⁵.

He never stopped thinking of Albania as a whole although he spent a lot of time assisting his own local community. The fact that he was banned from political activism made it even harder to get involved in the dealings of Albania at the time. An English writer, Edith Durham, "Queen of the highlanders" as the Albanians called her, describes Prend Doci as "'a very intelligent man'"¹⁶. She based this on his political acts and his ideas for the future of Albania. According to Doci, it was not worth fighting the Turks at the time as Albania was also threatened on the other side by the Serbs and this posed the biggest threat at the time. There would be a time when the Turkish Empire would fall and the Albanians would then have to watch out for the Austrians and Russians.¹⁷

¹⁰ Ate Pashke Bardhi O.F.M., Hylli i Drites, "Emzot Prend Doci", Vjeti XVIII, 1942, Nr.3-4, pg.117.

¹¹ Ate Pashke Bardhi O.F.M., Hylli i Drites, "Emzot Prend Doci", Vjeti XVIII, 1942, Nr.3-4, pg.118.

¹² "Imzot Abat Preng Dochit", LEKA, X/1938, Nr.1-3, pg.73-75 (675-677).

¹³ Ate Pashke Bardhi O.F.M., Hylli i Drites, "Emzot Prend Doci", Vjeti XVIII, 1942, Nr.3-4, pg.119.

¹⁴ Ate Pashke Bardhi O.F.M., Hylli i Drites, "Emzot Prend Doci", Vjeti XVIII, 1942, Nr.3-4, pg.121.

¹⁵ "Imzot Abat Preng Dochit", LEKA, X/1938, Nr.1-3, pg.73-75 (675-677).

¹⁶ Edith Durham, *Venti anni di groviglio balcanico*, Felice le Monnier, Firenze, 1923, pg.221.

¹⁷ "E uno sbaglio, ora come ora, accarnici contro i Turchi. I Turchi ci possono poco danneggiare. In passato ci fecero molto male; pure, non ci distrussero. Ci minaccia ora un altro pericolo, che si fa sempre piu grande ogni giorno: il pericolo slavo. Io dico la Russia, con la sua religione fanatica, con le orde selvagge dei Serbi, con le

There came a time of unsettlement in Mirdita during the Constitution of Turks at this time. The people of Mirdita did not go to Shkodra to do their loyal ritual as they usually did.¹⁸ The Vizier questioned Doci on this however they were unprepared for the intelligent response he gave. Firstly he had returned to Albania on the condition that he was to stay away from political wars and secondly he was not the head of Mirdita people as Preng Bib Doda was, who at the time was integrated in Turkey. This was a way of removing doubt from him as the accusations were many against him as the political activist and influence amongst many. This response was also an intention to return Preng Bid Doda to Albania.¹⁹

During the events of 1910-1912, he was active in the most critical of moments for Mirdita and local cities although he was sentenced to spend his time in Shkodra as per his conditions.²⁰ According to a studier (Pal Doci) who spent time researching Prend Doci and his achievements writes that Prend Doci was actively involved with other famous figures at the time. He write to Ismail Qemali congratulating him on gaining Independence for the country. Doci had followed the works of Ismail Qemali and Luigj Gurakuqi very closely and regularly exchanged letters with each other often discussing the trials and tribulations of the country at the time. On the 16th December 1912 in the Orosh Abbey, there was an assembly in which 12 chiefs turned up and during this meeting they formed a bond which they hoped would stretch out across the country. All the attendants vowed that they would “*in the shadow of the flag they swore to die or to live.*”²¹

The danger that Albania was under attack ensured that Prend Doci was placed as the head of all assemblies in order to keep the country united against the threat by the neighboring countries, the bigger powers and Esat Pashe Toptani. He had an indifferent approach upon the arrival of Prince Vidi to be announced as the King of Albania although during the events in Albania in the summer of 1914 he supports him.

Prend Doci as the founder of the "Bashkimi" movement

Doci has written various poems but only two of those have been published.²² His literary contribution is linked to the formation "Bashkimi"²³. In 1899 Abbot Prend Doci founded the cultural and literary formation "Bashkimi", where many known clerks in the literary world participate such as: Archbishop Lazer Mjeda, Archbishop Jak Serreqi, Father Gjergj Fishta, Dom Ndoc Nika, Father Pashk Bardhi, Dom Mark Shllaku, Dom Dode Koleci and the famous patriot Luigj Gurakuqi. The formation of these famous clerks in this

bande dei Bulgari. Essa adocchia Albania e sogna travolgere gli Albanesi tutti, cristiani e mussulmani, nella rovina...

... Mussulmani e cristiani sono pieni d'amore per la patria albanese, indistintamente, e il popolo domanda perche noi altri non dobbiamo liberamente governare il nostropaese, come i Serbi e i Bulgari governano il loro. Certo che prima bisogna imparare ad organizzarci, e ci vorra del tempo. Se ora c'ingaggiassimo in un'altra guerra gli Slavi ci travolgerebbero. Badiamo ora ad intensificare la nostra propoganda e a far comprendere all'Europa che un altro popolo, oltre il bulgare e il serbo, aspetta la liberazione. Per ora il Turco e la nostra sola difesa contro l'invasione slava. Noi non dobbiamo cercare d'indebolirlo finche non saremo in grado de poter fare da noi ed essre riconosciuti anche dell'Europa. Verra giorno che l'impero turco andra in frantumi, deve venire; ma noi dobbiamo gurdarci quel giorno dal cadere in balia dell'Austria o della Russia. Bisogna aver fiducia nel tempo, il migliore dei maestri in questo genere di politica!". Edith Durham, *Venti anni di groviglio balcanico*, Felice le Monnier, Firenze, 1923, pg.221-223.

¹⁸ Joseph Swire, *Shqiperia. Ngritja e nje mbreterie*, Dituria, Tirane, 2005, pg.83.

¹⁹ Pal Pjeter Doci, *Prend Doci, Abati i Mirdites-Jeta dhe vepra-*, Shtepia Botuese "Naim Frasheri", Tirane, 1997, pg.66-67.

²⁰ For more see: Pal Pjeter Doci, *Prend Doci, Abati i Mirdites-Jeta dhe vepra-*, Shtepia Botuese "Naim Frasheri", Tirane, 1997, pg.63-78.

²¹ Pal Pjeter Doci, *Prend Doci, Abati i Mirdites-Jeta dhe vepra-*, Shtepia Botuese "Naim Frasheri", Tirane, 1997, pg.84.

²² Ate Pashke Bardhi O.F.M., Hylli i Drites, "Emzot Prend Doci", Vjeti XVIII, 1942, Nr.3-4, pg.125-126.

²³ "Imzot Abat Preng Dochi", LEKA, X/1938, Nr.1-3, pg.73-75 (675-677).

movement was not meant to be a religious stand but it was formed as a result of the conditions by a Turkish invasion where the Albanian language was prohibited. The only city that had any religious books in the Albanian language was Shkodra and this was the only way that this Bashkimi movement would go under the radar of the government. There were other members of this movement that would not be able to openly admit it due to fear.

In the course of 7 years, this movement worked very hard on a joint alphabet as it was clear that the South would use the Istanbul alphabet and the north would use an old Catholic one.²⁴

This is the alphabet that the magazine "Albania" used which was based in London, "Shpresa e Shqypnis and "Kombi" based in Boston. The system of this alphabet followed the journals "Shqyptari ne Bukuresht", "Perlindja e Shqyptarvet", "La Nazione Albanese" (albanian version), "La Nuova Albania"-*"Shqypnia e re"*, "Toska", "Besa", "Pellazgu" etc. Many famous cultural figures have used this same alphabet such as: Azdreni, Cajupi, Faik Konica, Sotir Peci, Fan Noli etc.²⁵

This movement published 32 pieces of work, the most important one being "Fjalori i ri i Shqipës". During his trials and tribulations abroad as well as in Albania, Doci never gave up on the Albanian language which he saw as an important element in order to wake and educate the Albanian population. Together with his most trusted ally Dom Dode Koleci and with the help of other church members, he managed to gather names of all the rare breed of flowers, animals and then translating them in Italian as well as Latin. The movement had decided at the beginning that Dom Dode Koleci would be responsible for the composition of the text, it could even be said that he was the author. The dictionary which contained 14.000 words was published in the Printing House of the Shkodra Jesuit, in two languages being Albanian and Italian.²⁶

The Constitution of the Young Turks allowed some kind of freedom on the cultural side in Albania. During 14-22 November 1908, the most famous intellectual figures at the time gathered so that they could decide on a singular alphabet to be used in Albania. The "Bashkimi" movement had two representatives such as father Gjergj Fishta and Luigj Gurakuqi whereas "Agimi" movement had Don Ndre Mjeda and Mati Logoreci. The "Bashkimi" movement opened up with a declaration during the Congress.²⁷ The common thoughts and interest was that the alphabet should be Latin based and after many discussions and compromise, the Congress decided that 2 variations of the alphabet would be accepted. The Istanbul alphabet which was then widely accepted throughout Albania and the latin based alphabet as created by the "Bashkimi" movement²⁸. On a telegram addressed to Prend Doci on the 22nd November 1908 it was written "Alphabet issue was resolved. It was agreed at the same time with little change Frasheri and society "Bashkimi" alphabets. Each other was expelled."²⁹ Therefore it is clear that the contribution that this patriot has made to Albania has greatly influenced the history of the Albanian population.

Prend Doci spent his remaining days in solitude, prisoner in his own home as an order had then come from the Austrian Council in Shkodra. A small army garrison would be monitoring his every move. On the 22nd of February 1917, he had severe ill health and as a consequence, the legendary and nationalist founder of the Mirdita Monastery died.

²⁴ Ate Pashke Bardhi O.F.M., Hylli i Dritës, "Emzot Prend Doci", Vjeti XVIII, 1942, Nr.3-4, pg.126-127.

²⁵ Ate Pashke Bardhi O.F.M., Hylli i Dritës, "Emzot Prend Doci", Vjeti XVIII, 1942, Nr.3-4, pg.127.

²⁶ Karl Gurakuqi, "50 vjetori i Fjalorit Bashkimi", Shejzat, II/1958, Nr.7-8, pg.223-226

²⁷ Ate Pashke Bardhi O.F.M., Hylli i Dritës, "Emzot Prend Doci", Vjeti XVIII, 1942, Nr.3-4, pg.128.

²⁸ For more see: Akademia e Shkencave e Shqipërisë. Instituti i Historisë, *Historia e popullit shqiptar II*, Botimet Toena, Tirane 2002, pg.391-396.

²⁹ Cited by: Pal Pjeter Doci, *Prend Doci, Abati i Mirdites-Jeta dhe vepra-*, Shtëpia Botuese "Naim Frasheri", Tirane, 1997, pg.129.

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CLUSTER ANALYSIS OF HUNGARIAN SSC AN EMPIRICAL RESEARCH STUDY

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Abstract

Shared services is an organizational model that aim to reorganize mostly the back-office service functions and centralize them into an internal service delivery center. The shared service model reached a high popularity in the last in the whole world but there are some countries and regions that are more successful in it than others.

Central-Eastern Europe and Hungary within it was very popular destination of new service delivery centers in the last decades. The relative proximity geographically, in time-zone, culture, language-knowledge and the availability of higher-educated and well-skilled workforce were the main drivers for the prominence of the region in the last decades. Hungary is the second most important country in the region in this shared service market.

This research study aimed to disclose how it be possible to disclose the evaluating factors and based on it to categorize into clusters those shared service centers that are operating in the Hungarian shared service market.

Keywords: Business services, shared services, outsourcing

Introduction

Organizations have always endeavored to find the ideal organizational structure. In the '70s the centralized structure was widespread, which is due to the fast and flexible market development, decentralization has been replaced by the '80s. In the 1980s companies to refresh their centers and to increase their flexibility many support functions were transferred to the divisions. It was behind the decentralization trend expected to accelerate the process and increase flexibility. (Bodnár & Vida, 2006) However the decentralization reported as a back steps with regard to standardization and economies of scale. The decentralization process for the global companies resulted a tangled network, which has failed to provide effective corporate communication between different departments and to attend uniformly to the customers. Therefore, within a short period of time an inverse process started. Global competition had strong pressure on companies to reduce costs through the restructuring, but thanks to techniques offered by the Internet without the loss of efficiency. The changes have made it possible to uniform the appearance to the customers, the development of Internet-based enterprise platforms, the redesign of the shared services and the introduction of organizational processes. (Thorniley, 2003) The companies once again turned to the centralization, but while retain the benefits of decentralization as well. Thus, the objective besides flexibility and adaptability was to connect the advantages of standardization and economies of scale. From the implementation of this model developed the shared services. (Berényi, 2014)

According to various statistics in parallel with the development of the shared service model its prevalence was gradually increased as well. Today, there is hardly a multinational company, which would have not now or is not thinking about setting up a service center in the near future. In 2003, according to the Hackett Group survey only about half of the

multinational companies had shared service center and another quarter of them planned the implementation of it within a year or two. (Thorniley, 2003) Similar data were reported by the Accenture survey from 2004. According to it more than 50% of the companies on the Fortune 500 list applied the shared service model and in 2004 and it is expected that more of them continued the growth. (Sutcliff, 2004) According to the survey of Alsbridge consulting firm from 2006, nearly 66% of the companies interviewed were applied the shared service model and an additional 12% of them envisaged to do it in the near future. (Alsbridge, 2007)

The model was launched in the USA in the 1980s, however the international expansion required much time and only appeared in Europe in the early 1990s, firstly in the Nordic region and Great Britain, than in the Iberian Peninsula and the Netherlands. In Central and Eastern Europe (CEE) and Hungary only later, in the late 1990s were established the first shared service centers. However, when the model was discovered in the region, a very dynamic growth began in the number of newly settled service centers. At the beginning of the 2000s in the Central European region 91 service centers established according to the UNCTAD survey, and nearly one-third of it in Hungary. (Chikán & Petényi, 2009) Thanks to the result of this growth, between 2005 and 2010 the business services sector showed the largest economic growth to almost 20% in Hungary. (NFM, 2010)

Since 1990 until 2013 a total of 80 international and domestic organizations created 86 shared service center in Hungary. The first center of these was the HP in 1996, but the real acceleration was perceived in the market since 2001. Firstly the most transactional-based, the highly standardized and mainly secondary education required business services were migrated to Hungary. These centers delivered typically two types of supported business processes (finance, accounting and IT services). Today, most of the service center has a wider profile, but these two areas are still dominant.

Research Aims

The aim of the research was to gain a current picture of shared services centers operating in business service market in Hungary by an empirical study and analyze their practice. Striving to carry out a market analysis, which is suitable for the detection of market movements and help the decision makers to understand and so the development of the sector as a whole of market movements. The research is focused on the domestic market as a part of shared service areas that previously did not or only partially tested. This research was part of the areas to be established to identify whether an organizational and market characteristics, operating on the basis of which the Hungarian market shared service centers arranged in clusters.

Research Methods

In the spring of 2013 73 different companies were identified that operate in Hungary at least a shared service center. The primer data collection was performed by a questionnaire survey. 50 centers of 47 companies filled out the questionnaire, so the request was a response rate of 62.5%.

Despite the precise definition of the research population the sample was not error-free. The answers showed that the sample also included service centers, which are not really deliver internal service activities (within the parent organization) but provide only outward. The reason of this fault was that these organizations consider themselves as a shared service center or in the literature they are seemed to be as a shared service center.

Of course, these centers were filtered out from the analysis, since in the shared service center concept there is a clear criteria about the definition that it needs to perform internal service in any case. So 47 centers of 44 companies remained in the database, which resulted a

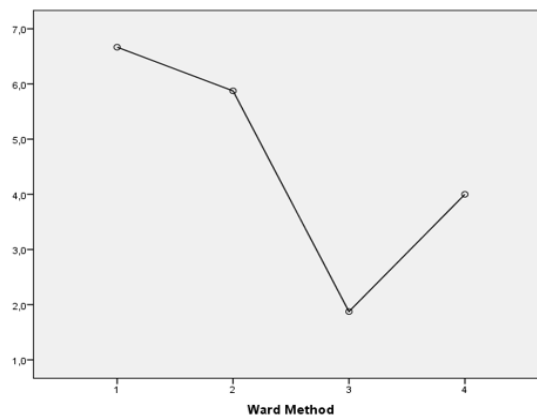
59% sampling rate. The survey examined the the practices of shared service centers, however the respondents were individuals of course.

Research Results

The compiled database based on the result of the questionnaire survey provided an opportunity to examine whether there are more or less homogeneous characteristics centers which form a well-defined groups (clusters). The applied research method was the cluster analysis. The research focused primarily on every aspects of the market-based operation in shared service model, but after all only seven aspects were installed. The cluster analysis results group averages that are showed at each aspects.

- **the number of different services provided by shared service center:** in this aspect, the research investigated whether the shared service center how many different services delivered at the time of inspection;

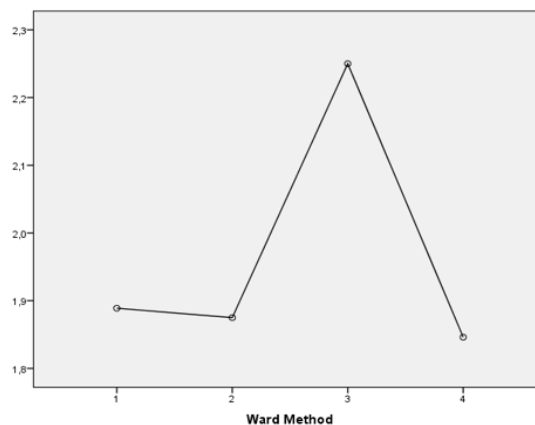
Mean of the number of different services



Source: own editing by SPSS program

- **value-adding of services provided by the shared service center:** in this case the research analyzed which category the provided services by the shared service centers belong on the basis of their added value. There are three main categories:
 - o low value-added service providers;
 - o half high and half low value-added service providers
 - o and those offering high value-added services.
 About the value-adding of the services was declared by the service centers.

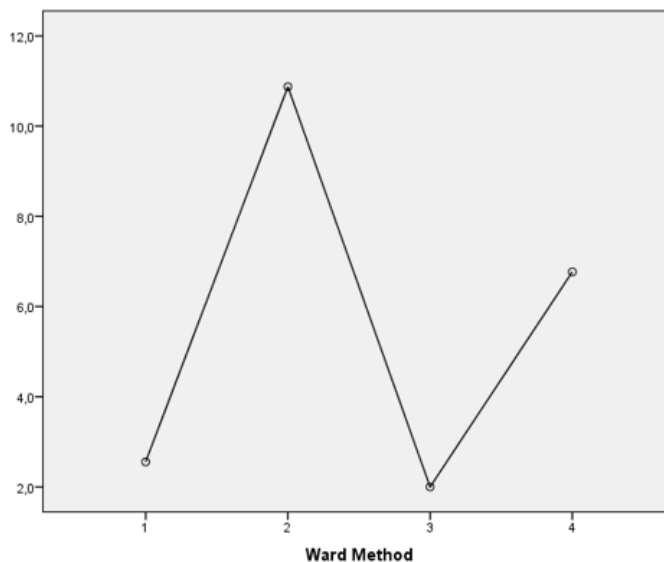
Mean of the Sevice Value-Adding



Source: own editing by SPSS program

- **the number of employees in the shared service center:** this aspect taken into account specified by the shared service center in the questionnaire with number of categories. Therefore, this is not accurate headcount data, but also on the basis of analysis of the number of categories;

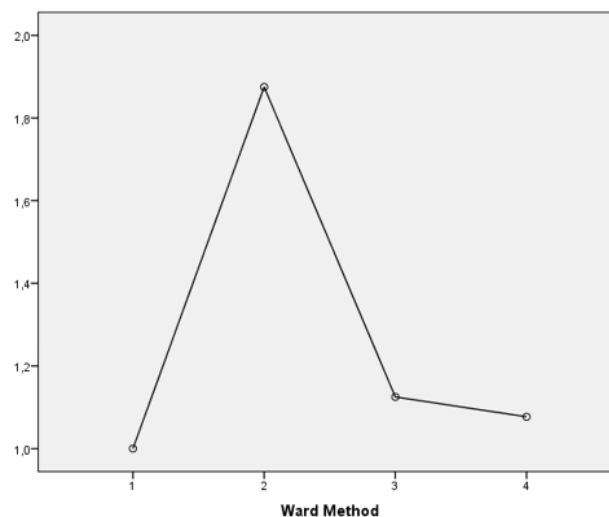
Mean of Service Center Headcount



Source: own editing by SPSS program

- **the number of established shared service centers in Hungary:** This data shows the number of centers operated on different locations during the investigation;

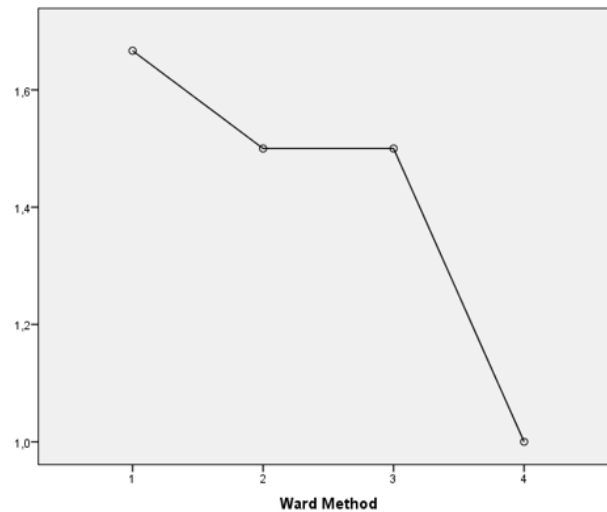
Mean of Site Number



Source: own editing by SPSS program

- **the geographical location of the shared service center's premises:** this aspect of the investigation was to explore the spatial location of the shared service centers in Hungary as a grouping criteria. The study created three alternatives as geographical location, which showed that there are centers in Budapest, Eastern Hungary or Western Hungary;

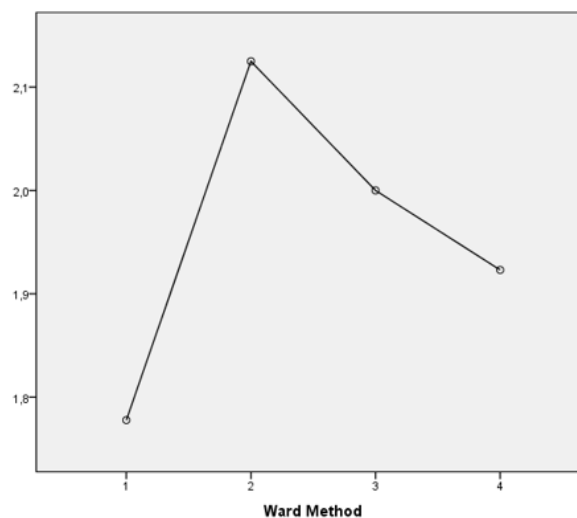
Mean of Geographical Location



Source: own editing by SPSS program

- **the organizational position of shared service center in the parent company:** the factor indicates where the shared service center is located within the body of the parent organization. During the investigation, three alternatives were distinguished: the self-service center division, operates within a divisional or the center is assigned to the headquarters;

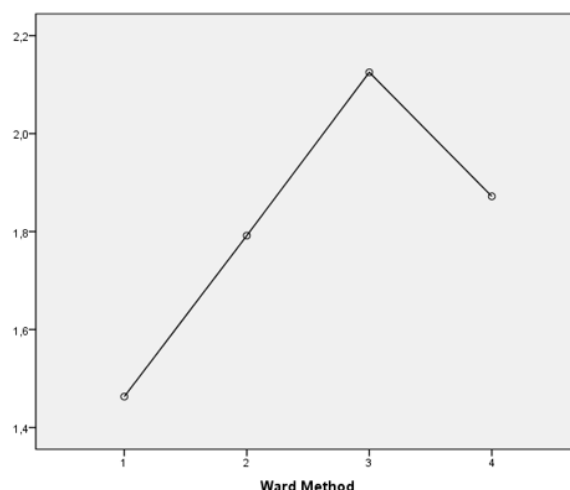
Mean of Organizational Position of Service Center



Source: own editing by SPSS program

- **the centralization of decision-making in the shared service center operation:** it shows at what level of the organizational hierarchy deal with the issues of service portfolio, service clientele. Three options were distinguished: the parent company's global center of the parent company's, regional center of parent company and in those division, where is the service center.

Mean of Decisional Centralization



Source: own editing by SPSS program

Carrying out of a cluster analysis resulted four, relatively homogeneous groups. In the development of each groups the seven criteria that explained briefly above prevailed, but the most dominant roles were played the headcount of centers and the number of services delivered by centers. The analysis resulted four relatively homogeneous, regards of service numbers well-balanced clusters whose characteristics are summarized in the next table.

Clusters of shared service centers operating in Hungary

<p style="text-align: center;">CLUSTER 1</p> <ul style="list-style-type: none"> - it includes 9 centers, that have at least 150 employees with one excuse; - the cluster is heterogeneous regards to the number of service delivered but typically these centers deliver 5-8 different service functions; - each center operates with one site either in Budapest or other location in Hungary; - regards to organizational position they operates as an independent division; - the decision-making is mostly centralized in the global headquarter 	<p style="text-align: center;">CLUSTER 2</p> <ul style="list-style-type: none"> - it includes 8 centers that have more than 500 employees; - centers typically deliver 5-7 different service functions; - these centers operates with 1-2 sites, one in Budapest and one in Eastern-Hungary; - regards to organizational position, these centers are within a division or direct under the control of headquarter of the parent company; - the decision-making is medium-centralized and usually decides on the regional level
<p style="text-align: center;">CLUSTER 3</p> <ul style="list-style-type: none"> - it includes 8 centers, mainly at least with 150 employees; - centers typically deliver 1-3 different service functions; - service centers typically operates in Budapest (one exception is in Easter-Hungary); - there is no low value-added services in the service portfolio of these shared service centers; - these centers are the least centralized in decision-making 	<p style="text-align: center;">CLUSTER 4</p> <ul style="list-style-type: none"> - it includes 13 centers that have between 200 and 400 employees; - the cluster is heterogeneous regards to the number of service delivered but typically these centers deliver 1-8 different service functions; - centers operating only with location in Budapest; - regards to organizational position, these centers are within a division; - regards to the service delivered it is not typical that these service centers deliver high valu-added services

Source: own editing by SPSS program

Conclusion

Examining the identified clusters can be said that the most important difference between the first and the third cluster is that the service centers related to third cluster offer higher value-added services and not centralized in the decision-making. The second cluster includes centers with large headcount, with many activities, that are moderately centralized.

While in the fourth clusters there are medium sized, rather low value-added centers that provides a varied number of services.

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THE EUROPEAN LABOUR MARKET AND ITS CHANGES

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Abstract

Since the 70s of the last century European labour market has passed gradual changes which are connected with consequences of industrial era dominating in Europe since the second half of the 19th century. Progressive implementation of labour-saving technologies, information and telecommunication technologies changed economic activity and consequently the labour market. The structure and character of economic activity and afterward contents and forms of work were changed as well. The accompanying phenomenon of these changes in the labour market was growing uncertainty and the level of unemployment which have been becoming a commonly solved problem of the EU countries since the 90s. The goal of the paper is to outline basic trends in the development of current changes in the labour market including new forms of the labour market both regarding the content of work and its forms and possibilities of job creation outside private and public sector, namely within social economy.

Keywords: Labour market, uncertainty of the labour market, labour-saving technologies

Introduction

Since the second half of the 19th century industrial society dominated in Europe. But in the last decades have become significant changes. The changes have had impact on economic activities and labour market: character of work, structure of production, contents and forms of work have been changing. A side effect of the changes is unemployment which has become a commonly discussed problem in the EU countries. The call for a common fight against unemployment was firstly published in 1994 by the European Commission in the document Growth, competitiveness, employment – challenges and ways forward for the 21st century (European Commission, 1994).

Changes in dependence between economic growth, volume and quality of workforce

From the long-term view, unemployment and insecurity of the labour market started to grow at the beginning of the 70s last century when labour-saving technologies appeared. These technologies weakened relations between economic growth and job creation. Owing to that, the world of work changed dramatically, free workforce started to pass from the industry to the service sector. Gradually the whole structure of the economy has changed, services are becoming dominant namely both in the share in GDP and in employment. With the time production of material property stopped being crucial for the economic growth, but production of knowledge and algorithms together with flows of information and their application have been becoming the most important. This caused a change in the relation between the capital and paid work.

If there had been a relation of mutual dependence between economic growth and volume and quality of workforce typical of the industrial society, in the post-industrial society the interconnection does not go anymore (Baumann, 1998). The factor of work was becoming marginal in relation to the economic growth. The relation between economic growth and labour was separated which can be proved with the fact that the economic growth

in the second half of the 20th century started to be reached even when the number of vacancies stagnated or increased very slowly (European Commission, 1994). Similarly the International Organisation of Labour states that 1% economic growth encourages increase in new workplaces by 0.3% while the relation keeps weakening (ILO, 2013).

Even demographic factors contributed to the tension in the labour market in the 70s since the amount of jobseekers was increasing. At the time, the economic theory accepted a conception of so called natural unemployment rate where unemployment was considered being a natural phenomenon. The conception of the natural unemployment rate supposes the existence of the lowest long-term sustainable unemployment rate corresponding with a potential product. There is the question of such unemployment rate which is typical of the economy at a certain stage of development. Efforts to reduce the natural rate by means of demand oriented economic policy of the government or the Central Bank will lead to the rise in inflation (Friedman, 1968)³⁰. But in the course of time it seems that the natural rate of unemployment keeps increasing which might be caused not only by labour-saving technologies, but also by the overall change in the type and organisation of labour (move from the importance of material production to nonmaterial one). It expels not only low-skilled workers, but also profession with higher qualification which is nowadays visible.

Changes in character of work and job description

Unemployment and uncertainty in the labour market which have become a consequence of insufficient job creation have been increasing together with changes in the character of work in post-industrial societies. Rapidly applied scientific inventions and findings help labour-saving technologies enter the work process and replace manual workers. Information and communication technologies ("ICT") prefer processes aimed at the reshape of mass to work with information. ICT application brings automation of work activities, improved management, acceleration of internal and external communication etc. Changes in the character of work cause the growth in the dynamics of sector changes. Traditional branches are suppressed and new branches based on new technologies are developing. The era when industrial enterprises fully provided the whole production process is gradually disappearing owing to outsourcing and offshoring (moving industrial production and services from domestic to host countries). Both these processes refer to a connection between industry and services and changes in the geography of industry (Dvoracek, 2007). On one hand the work performance is moving from closed premises to the field, closer to customers and clients. On the other hand, services owing to ICT are concentrated and carried out far from customers outside the territory of the state in economically more suitable areas with cheap labour force (Asian zones).

Changes in forms of work

Together with changes in the character and contents of work, forms of work are changing as well. Since the 70s a pressure on the rise in flexibility of the labour market as a consequence of fast changing environment where innovation and rapid change of production programmes can be noticed. To enforce higher flexibility of the labour market, employers are motivated by competitive pressure and effort for the highest effectiveness of invested funds. Together with changes in the character and contents of work, forms of work are changing as well.

³⁰ Milton Friedman by the criticism of Philips curve, which comes from mutual dependence of unemployment and inflation (unemployment can be reduced despite higher inflation), stated that the dependence is true only for a short-term. In the long term, the Philips curve is stabilised at a level of natural unemployment.

It is possible to ask a question how to define the term flexibility of the labour market, but it is difficult to find an unambiguous answer. The definition of the term might be found in many publications, e.g. A. Nesporová and S. Cazes: “*The conception flexibility of labour market is so complicated as its ideological interpretations. Flexibility in wider sense of the word means adaptability in contrast with rigidity.*” (Nešporová, Cazes, 2003). Flexibility of the labour market means ability to adapt to changes in the commodity and services market, but its growth is often connected with the loss of employees’ securities and the loss of stable work places. Currently, in the labour market we can see a decline in the importance of traditional occupational relations and an increase of diversities, individualization and uncertainty of work relations. Flexibility and uncertainty of the labour market are reflected in the conception of the dual labour market which was accepted in the 70s of the last century, similarly like a conception, which was originally worked out by American economists M. J. Piore and P. Doeringer (Piore, Doeringer, 1971). They divide the labour market into primary and secondary:

Workplaces created in *the primary sector of the labour market* distinguish themselves by high protection of workplaces, possibilities of a future carrier development and good working conditions. They provide high wages, extra bonuses, status, possibility of trainings and bigger chances in the labour market in the case of a job loss. It concerns workplaces set up in compliance with implementing more a more demanding technologies which are connected with the pressure on maximal use of highly specialised and qualified workforce.

Workplaces created in *the secondary sector of the labour market* are unsecured, have worse working conditions, lower work and legal protection of employees, poorer wage prospects, low possibility of personal development and also repetitive and long-term unemployment. In the secondary labour market there are mainly disadvantaged groups of inhabitants such as low skilled workers, handicapped people, mothers with children and the like.

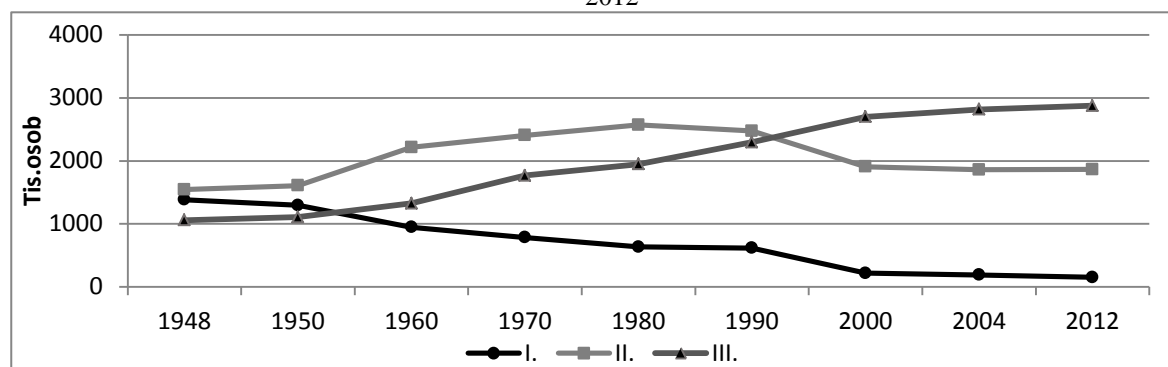
Other circumstances of changes in job descriptions are formal changes of the work which are reflected in a growth of unsecured contracts of employment. Share of employees in nonstandard workload such as forward and short term contracts, employing people by job agencies, work conditioned by trade licence and other atypical forms of employment is rising. These forms of work are in individual countries differently protected with the legislation from the risk of an unsecured job. “Economic and social mechanisms which are in the background of dualism of labour market are quite complete.” (Sirovátka, 2009). There are above all innovations, modernization and technological development requiring life-long learning, retraining and adaptation of skills which disadvantage nonqualified work. Amount of people threatened by the unemployment and job insecurity was gradually increasing and since the 90s of the last century has been showing unchanged high share of the long-term unemployment in the total unemployment. Unemployment and job insecurities in the labour market have become a part of social and economic reality of Europe together with developing disadvantaged groups of population in the labour market. These are characterised by the experience with repetitive or long-term unemployment. They do not have an access to a better job.

Czech labour market

Since the second half of the 20th century many significant changes have occurred in the Czech labour market. The amount of employed people in the labour market has increased because since the 60s women have been entering the working process which initiated feminization of work. The sector employment has changed: share of people in the primary sector (agriculture) fell at only 3% (about 150,000 people) in total amount of the employed at the time. On the other hand share of people employed in the secondary (industry and

construction) and tertiary sector (services) was going up to the year 1980, then a radical change happened and the share of people employed in the secondary sector started to fall at 38% (about 1,850 thousands of people) while in the tertiary sector the share of people employed keeps rising up to 59% (about 2,850 thousands) in the total amount currently employed people. The long-term trend in the sector economy characteristic of the reduction in the agriculture share and since the 80s even of the share of industry and at the same time growing role of services is reflected in the redeployment, see Graph 1.

GRAF 1 Development in the number of the employed in primary, secondary and tertiary sector in years 1948 – 2012



(Source: Czech Statistical Office)

The character of work is changing. The proportion of manual work is reducing, the proportion of intellectual work is rising. According to the classification of work (CZ-ISCO)³¹ in 2012 the share of mostly manually working people (farmers, craftsmen, repairmen, machinery operators, unskilled workers) accounted for 38% in the number of totally employed and 62% mostly intellectually working people (clerks, technicians, specialists, lawmakers, executives, employed in services and sale). The role and position of high-tech branches in the economy is often considered as a sign of the maturity of the society. In international comparisons, the share of people employed in high-tech jobs³² in the Czech labour market is low in 2008-2010: there were 3.2% people employed from the overall amount (about 160,000 employed). The character of work has been changing from physically towards psychologically demanding work. Requirements for workforce are rising, mainly for innovating and new technologies including information and communication technologies. The ability to learn, communicate, analyse, solve problems, change current knowledge into new one is a source of a competitive advantage. Lifelong occupation is on decline. Work as a core of the life is losing its strength. A part of the employed have a part-time job and fixed-term job. These jobs are even carried out by the self-employed (so called hidden self-employment). Work is also bought from so called agency employers, it means from employers who have – according to the law No 435/2004 Sb., on employment – a closed employment contract or made an agreement with a work agency which will temporarily assign the employee to a final user on the basis of a written agreement on so called a temporary allocation of employees. When having difficulties in selling the production, the employee can be easily dismissed. Owing to the form of employment, needed workforce is

³¹ Classification CZ-ISCO is national statistical classification of occupations made by the Czech Statistical Office to the fullest extent of international standards – International Standard Classification of Occupations.

³² Economic activities of high-tech sector are defined with a branch access by means of Classification of Economic activities (CZ-NACE) and is divided into two main categories: high-tech manufacturing industry and high-tech services. High-tech services involve audio-visual and information activities, activities in the area of ICT and research and development. High-tech manufacturing industry involves pharmaceutical production, production of computers and electronic parts, consumer electronics, optical apparatus, measuring, testing and navigational appliances, aeroplanes, spaceships and their facilities.

flexibly recruited when the demand for production is growing and on the other hand if it is lower, the workforce is operatively dismissed, because these workers are their employee. The share of part-time jobs account for about 5.5% from the total of the employed (in the EU27 on average nearly 20% employed). The share of fixed-term jobs is about 9% from the total of the employed (in the EU27 on average 14% employed). The share of agency employees in the year 2011 accounted for 4% from the total of the employed, at the time of economic expansion (2005-2008) the share accounted for more than 5% (just like the average in the EU27). The high share in total number of the employed show the self-employed. In years 2000-2012, number of the self-employed in the total employment was fluctuating between 14.2 – 17.2% where the self-employed without employees predominated (the share accounted at the time for 10-14%). In the developed EU countries (Germany, France, Austria) the share of the self-employed in the total number of the employed reached 5 -10%. It is possible to state that low flexibility in the Czech labour market connected with a low number of part-time and fixed-term does not reflect the real labour market flexibility. From statistical data on the self-employed it is not possible to distinguish exactly who really performs a job and who performs a hidden work activity and consequently to set an amount of workers whose position in the labour market is insecure. The development in the unemployment rate in the long-term shows that the unemployment rate which in the year 1999 exceeded 8% decreased at the time of economic expansion (in 2008 by 4%), but since the year 2009 has been again at the level of about 7%. It is proved that the paid job is becoming a valuable property. The labour market shows unchanged instability in the long-term, a disproportion between supply and demand for workplaces above all in the area workforce qualification of has been escalating. Even though the data of the sample survey of workforce (Czech Statistical Office: Labour Force Survey) during the year 2013 confirmed a slight increase in the total employment, the results of companies' statistics ČSÚ show a constant decrease in registered number of employees (regular workforce). It proves that the rise in employment takes place only in marginal areas of the labour market (ČSÚ - Comment). Insecurities in current labour markets are individually diversified but at the same time it is possible to identify their common impact on members of the whole social groups. Protected groups of population moving in the secondary labour market are handicapped persons, mothers coming back from maternity leave, persons above 55, young people under 20 without work experience whose insecurity in the labour market has been increasing during last years. (Sirovatka, , 2009).

Will social business become a solution of the unemployment?

Changes taking place in the labour market are showing continually high unemployment and increase of uncertainties coming from transformation of work forms and contents in post-industrial societies. They cause necessity to look for alternative solutions of job creations because the people are still dependent on incomes from work. A social business which even arises from the definition of social economy and social business for the Czech Republic itself can become a suitable alternative: "It is about a summary of autonomous private activities provided by different types of organisations which are targeted at a service to their members or local communities mainly by means of business. Social economy is aimed at a solution of employment issues, social cohesion and local development." (Mészáros, 2008). The most significant Czech researcher and most productive author in the area of social policy Magdalena Hunčová considers social economy as an alternative solution of a crisis of the social state (Hunčová, 2004). But the crisis of the social state is a part of general social transformations, primarily of the fact that the workforce stop being a factor of economic growth.

Acceptance of the conception of social economy by Czech society

Ability of the Czech society to understand the conception of social economy is strongly influenced by its history. The core of social economy might be found in self-help communities, voluntary and public beneficial activities which became a part of the Czech culture already during the 19th century. For example Women's production society established in 1871 with the help of Karolína Světlá and headed by Eliška Krásnohorská. They offered work to widows of soldiers killed in wars which provided them with a job opportunity and means of support. There is a question whether the historical example was a background of present occupation and integration social businesses in our country both with regard to social integration (people socially in need) of widows and possibility of income which the Women's production society provided. Historically it is possible to continue rich history of Czech co-operative societies whose beginning can be dated already since the year 1847 (the first Czech co-operative society was the Prague food and saving society). Development of mutual self-help social policy deals with was interrupted in the 20th century when quite strong social state was established. After 1989, social and economic development was significantly influenced by liberalistic ideology based on the belief in self-regulating market mechanism and in individualism. That is why the concept of social economy based on mutual help was accepted by the society only indifferently.

Conclusion

The world has dramatically changed. It is confirmed that the paid work has been becoming the valuable assets. The labour market has instability in the long-term, competition for workplaces has been intensifying. The development both in the European labour market and in the Czech labour market has been showing gradual trends in the character of work from physically towards psychologically demanding. The share of employees in nonstandard workload, such as fixed-term jobs, short-term employment contracts, employing people by work agencies, work based on trade licence, contract of work and other untypical forms of employment has been rising. Lifelong occupation is on decline, work as a core of the life is losing its strength, but people are still dependent on incomes from gainful employment and so the necessity to search for alternative solutions of job creations not only in business but also in public sector has been arising. In the Czech labour market registered number of employees keeps falling even together with the growth in total employment. This demonstrates that employment is only growing in marginal parts of the labour market. (ČSÚ: Comment). A social entrepreneurship can become a suitable alternative. Although it is possible to recognise mentioned changes in the labour market and gradual destruction of social state, public authorities – academic and scientific communities warn about the low intensity in the acceptance of the conception of social economy in comparison with other European countries.

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SOCIAL DIMENSION OF THE EU FULFILLING DEMOCRATIC LEGITIMACY OF INTEGRATION GROUP

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Abstract

The social aspect of market economy is a pillar resulting from historical experience and geographic context. The EU is a model of social dimension of integration. The current welfare state encounters fundamental problems related to social changes like long-term unemployment, demographic ageing, intergenerational tension and emergence of new risks. The existing inability of the EU to eliminate the crisis results in unexpected political events and increases the risk in development sustainability. Solution is in accelerated economic growth and welfare state policy reform from the perspective of the focus on social investment and knowledge economy.

Keywords: Integration, social investment, economic growth, the EU, globalisation, economic crisis

Introduction

Europe represented a combination of free markets and extensive social protection for decades. There was an effort to combine economic effectiveness and social justice. The EU managed to balance significant differences in the quality of life in a whole range of issues. Social commitments in relation to employee rights, social dialogue, gender equality and measures preventing all forms of discrimination along with the task it has in the issues of environment and consumer protection are thus both an outcome and a reason of social transformation in Europe. Societies are especially profiled by globalisation in the EU. It would be misleading to believe that there is an eternal European social model, which is currently exposed to a globalisation shock and economic crisis. As the number of traditional institutions and communities gradually decreases, European society is becoming more diverse, the issues of identity and nationality resonate, and the feelings of uncertainty are increasing.

Current Risks of Welfare State

After welfare state achieved its original objectives (coverage of population, poverty reduction, birth-rate) it started being endangered by fundamental problems related to social changes like long-term unemployment, demographic ageing, intergenerational tension, emergence of new risks. Redistributive effects of the mechanism by means of social and mechanic tax transfer are limited. Intergenerational transmission of inequality remains at high levels. Social policies are confronted with the economic crisis and growth in social expenditure. We have recorded a growth in the risk of covering an illness, old age, dependence, children, family conflict and work life, demand for requalification and growth in qualification. Political representations represented in the EU have been trying to combine competitiveness and economic growth, growth in competitiveness and solidarity, and justice and social cohesion especially since the 1990s. The current risks also include boundless

individualism, ongoing scepticism, desolidarising and unethical approach to many areas of life. Discussion and formation of a value framework need to be led from a perspective of three values – sustainable development, human rights and democracy. The key value bases of modern social policy include humanism, solidarity, social justice, equality, freedom, responsibility, and the ability to solve emerged social risks. The European community has been particularly profiled by globalisation over the last years, having made the social reality of Europe more complex. In the past, welfare state used to solve or mitigate any emerging issues by achieving its objectives and by efforts of generations. Welfare state is protected for several reasons, especially because it increases the degree of freedom, redistribution and social cohesion improve cohesion not only for the poor but for all those affected.

The social phenomenon in Europe has undergone various metamorphoses in development. We can discuss a continual process of civilizational changes. The term social means to manage to create a socially fairer system in order to be able to substantiate each step both morally and economically each year, and, first of all, economy needs to be able to accept such measures. Modern society is characterised by a plurality of values, which are often incongruous or even conflicting. It is related to the existence of values inherited from the previous regime, and present values, based on the rules of pluralist democracy, market economy and the rule of law. Respect for fundamental values enables cooperation, reduces conflicts, and enhances social cohesion. System changes require changes in values and behaviour. The current value orientation can be divided into several spheres, predominantly including orientation to happiness, family, health as well as success, wealth and social status. Another sphere includes mental values and a relation to profit, and, lastly, privacy and active life with friends. Interconnection between family values and social values is an important issue.

The current generation seeks to draw on the experience, even though it encounters globalisation shock. Ways have been being searched since the 1990s, one of them being an active welfare state. Social protection and labour market have been reorganised. Economic liberalism has appeared instead of the Keynesian policy and mixed economy. The source of economic performance (growth driven by demand) of the Keynesian approach is income redistribution by means of social help, whereas for neoliberals, the protective function of welfare state restricts market regulation in the sphere of social and medical and social goods, and the creation of a solvent social demand by means of private insurance products. Efforts to maintain social function and to solve the problems of unemployment and social exclusion by welfare state policy remain the ambitions of the EU. The interventions adopted so far have rather had a character of a one-way transfer of the included towards the excluded from the system. Activation has become a preferred method.

The crisis of the last decades has been reflected especially in a conflict between growing financial requirements, extensively indebted social protection systems and global recession resulting in a reduction of resources. We deal with a crisis of expenses, a crisis of effectiveness and a crisis of legitimacy. The crisis also includes the issues of welfare state reconceptualization related to the building of European social policy. The created value system is pluralist, however often conflicting and incongruous. Value instability, boundless individualisation and desolidarising have led to disintegration of identities and a feeling of alienation. Whole richness created by people in the culture of social relationships has been reduced to money.

Welfare state is a stratification system. We can comparatively and historically specify alternate stratification systems, which are characteristic of welfare states. The accession of the Slovak Republic in the EU needs to result in a more resolute effect of changes focused on increasing national awareness at supra-regional and European dimensions. European social models are examined in the context of internationalisation. Globalisation, global recession,

ageing and demographic development are challenges for all countries of the world. New welfare state development could become a principle of a balance between the necessity of market economy and social needs. Functioning of welfare states should cover the present as well as future requirements. We need to find both theoretical and practical changes in the integration of the objectives of redistribution and understanding of how to mutually interconnect material and cultural necessities.

Social exclusion is considered to be a result of social solidarity system failure in the EU. Emphasising the inclusion needs requires time and social capital. Applied instruments of ensuring social justice, income and expense redistribution, growth and expansion of the public sphere and increase of expenses need to get to the background from the centre of our attention, and policy perceiving a life story as a whole and enabling individuals to overcome a period of low income needs to be implemented, as most of us sometimes experience it. An inability of the market to develop social capital, on which social integration depends, occurs. Social and human developments are considered to be complementary aspects of development. Cultural diversity and welfare state weakening appear dangerous. Free multicultural society cannot coexist with neoliberal ideas within state functioning.

The EU aims at enabling citizens increase the extent of their prosperity, solidarity and safety in the era of globalisation. We cannot carry it out without a common reference framework and common understanding of a probable impact of significant social changes we face. Considerations on solving the economic recession are based on the need of new money, which would revive economy. Negotiations of the EU financial representatives in September 2014 did not provide this possibility, and their conclusions remained in the classic approach to solving the problem, i.e. the way of better source utilisation, structural reforms, encouragement of private investments, and encouragement of EIB activities. The recommendation to solve the problem of a lack of investment by means of labour market liberalisation, removing the barriers of common market, decrease of the level of employee social protection, pay growth prevention, and public services privatisation appears problematic based on the experience since 2007. Cyclical development since that year has enabled diagnosing the problem by implementing a radical restrictive fiscal policy in the monetary union states. Budget cuts have led to a fall in public finance and subsequent recession. Development can be implemented by means of national investment programmes.

The modern world is heading to a dangerous confrontation. Not only the Ukraine civil war and related possible military expansion to other countries but also restrictive measures adopted in economy (sanctions) affect both sides of the conflict. Further threat to the social models of the EU states is coming in an agreement between the USA and the EU, which is being prepared, under the name Transatlantic Trade and Investment Partnership (TTIP). Non-transparent negotiations within a small group of the involved lead us to necessary carefulness so that the EU does not give up its results achieved after World War II and the economic arrangement with an ideological basis of arrangement based on values and principles of justice, solidarity, subsidiarity and peace. The foundations of the EU based on acquired social and environmental achievements can be challenged.

Some experts realise that the post-modern world crisis affects the whole globalised society, causes civilizational crisis (through the ongoing economic, financial and moral crises), and points to a critical condition of the sustainability of peace and peaceful solution of tension and conflicts. On the one hand, globalisation increases demands on the ability of a person to adapt to permanent changes, however it establishes requirements for stable value orientations with regard to emerging multicultural communities on the other. Globalisation requires the implementation of global ethics, based on the principle of tolerance. It represents an identity manifested in openness, responsibility and humanism. Global ethics is based on an assumption that there are universally valid moral standards serving as a model of behaviour

of the humankind. The essence of global ethics is thus a generally recognised rule of humanity. The question is how to enforce such ethics in social, economic and political reality.

The EU is a political project, and the question of the future is whether the economic liberal model, in which European institutions refrain from interfering in the functioning of economy, will be followed, or European integration will be used to strengthen social functions which individual states cannot carry out effectively. The European social model needs to be thought out and treated institutionally. Welfare state is a necessary precondition of the existence of democracy, open society and an inevitable precondition of social peace. Social policy needs to contribute to economic growth and elimination of social conflicts in terms of social justice. By revealing and mitigating social injustice, social policy should lead to emancipation, freedom, justice, inclusion and cohesion.

Interaction of Economic Policy and Labour Market

Global economy has everything necessary available for its functioning, however it does not function well. The conditions of new economy encounter a problem of great polarity in society. Economic performances of individual countries differ, which can also be claimed about the quality of life of people in the given country. The world is full of local unrests due to religious and racial reasons and reasons related to the quality of life, however with mostly economic interests, whether directly or sophisticatedly pursued by a certain scenario. Terrorism as an instrument of inhuman approach to solution is used in favour of economic interests of globalising economy. The values of justice, solidarity and equality have been overshadowed in politics and economics. It seems that global solidarity deficit will not shift the development forwards. Economically, culturally and politically stronger part of the European countries needs to realise that the absence of the values of democracy, solidarity, humanity and tolerance will be difficult to implement in an environment of poverty, lack of education, undeveloped educational and healthcare systems. Value framework cannot be implemented in globalised economy without global democracy. Democracy needs to prevail over private issues. The way leads through a synergic globalisation of all system elements. Financial sector has affected economic performance of the countries, and the negative consequences still affect us.

Attention is drawn to the views of many experts at the time of global crisis. Professor S. Garelli prepared so called mental competitiveness roadmap for 2007 – 2050, specifying the most significant factors which will affect global environment. The most significant existing factors are included in the following Picture 1.

Picture 1 The most significant existing factors of global environment

High	I M P A C T	Foreign currency supplies	Collapse on real estate market	New interest in Africa. Explosion of the US national debt	Financial system of Asia. Risk of region destabilisation.
Low				US dollar gradually depreciated	Capital expansion of Asian companies
Year		2010	2011	2012	2013

Source: Garelli, S., 2007.

A discrepancy between economic growth and employment has been recorded in the sphere of labour market. There are inversely proportional shifts within these quantities. The level of unemployment in the age group of 20 – 64 in the EU (27) was 70.3 % and 68.5 % in 2013. In Slovakia, the levels of 68.8 % and 65 % were recorded in the given years. Employment decrease in the monitored period was also recorded in classic welfare states. The decrease was by 4.1 % in Denmark, 12.2 % in Norway, 2.5 % in Iceland, 0.6 % in Sweden, 3.4 % in Austria, 0.3 % in the Great Britain, 0.8 % in Belgium, 7.9 % in Spain, 2.1

% in Italy, and 2.5 % in Finland. Employment increase was recorded in the given period by 0.1 % in the Czech Republic, 3.1 % in Germany, 2.8 % in Slovenia, 1.0 % in France, 4.2 % in Cyprus, and 7.3 % in Netherlands. The unemployment levels in selected EU countries in June 2014 were as follows: 10.2 % in the EU (27), 11.5 % in the EU (17), 8.5 % in Belgium, 6.9 % in the Czech Republic, 6.5 % in Denmark, 5.1 % in Germany, 10.2 % in France, 24.5 % in Spain, 15.2 % in Cyprus, 6.8 % in Netherlands, 5.0 % in Austria, 10.1 % in Slovenia, 13.8 % in Slovakia, 8.0 % in Sweden, 8.8 % in Finland, 5.1 % in Iceland and 3.4 % in Norway.

Within the sphere of economic growth, GDP per citizen is provided for the period between 2008 and 2013 as a percentage change in the last year compared to the base year: -0.1 % in the EU (27), -4 % in the EU (17), -0.1 % in Belgium, -1.0 % in the Czech Republic, 0.0 % in Denmark, 1.1 % in Germany, -0.7 % in Spain, 0.3 % in France, -4.8 % in Cyprus, 0.3 % in Netherlands, 2.2 % in Slovenia, 4.8 % in Slovakia, -1.6 % in Finland, -0.6 % in Sweden, -0.3 % in the Great Britain, 1.0 % in Iceland and -0.7 % in Norway.

Global competition emerges with an increasing pressure on social cohesion, and considers education to be the key institution able to affect the given indicators. Ensuring equal opportunities in education is among the key principles of education policy. The EU strategy includes building knowledge society and knowledge economy. European cooperation in the sphere of education and professional training is outlined in the programme Education and Training 2020. The strategic framework specifies the following objectives: to make lifelong learning and mobility a reality; to improve the quality of education and training; to promote the equity of opportunities, cohesion and active citizenship; to enhance creativity, innovation and entrepreneurship at all levels of education and training. Instruments to support mobility in lifelong learning are being developed in the EU. This policy should facilitate the recognition of qualifications, skills and competences and thus use the potential of the EU labour market.

The global crisis results in a number of changes in the view of fundamental factors affecting societal development; in changes in relationships between economic growth and employment, or economic recession and employment reduction. These relationships have always existed and will further exist; only their dependence has changed, as it is affected by economic market development. The first such fact is that companies have learnt to regulate employment. However, the phase of a short-term revival did not result in reinstating the original values of the numbers of employees. By reducing the number of employees, employers ensure production volumes from the pre-crisis period. Part-time jobs for short-term works that have been created by agencies so far require offer diversification by new and more creative offers on the labour market. It appears that the economic crisis has also caused the phenomenon of uncertainty. Both employers and employees have reached a period of turbulent changes, whose development seems unpredictable. Labour market participants face day-to-day uncertainty from the viewpoint of succeeding on the market, global consumption development and the development of overall demand and adequate costs.

Labour Market and Gender Disparities

Gender equality is an expression of socially fair democratic society. The EU considers this fact to be the key principle of its functioning. One of the spheres with significant gender inequality is unemployment and pays. Both genders face the effects of the economic crisis nowadays, their working and living conditions have deteriorated, and their position on the labour market has weakened. However, women were burdened by unemployment, more frequent career interruptions and lower pays even before the crisis. Unemployment levels of women between 2008 and 2012 were as follows: 11.1%, 12.9 %, 14.6 %, 13.6 % and 14.5 %. The development of gender pay gap in Slovakia between 2005 and 2012 in % was as follows (Table 1).

Table 1 Development of gender pay gap in Slovakia

Year	2005	2006	2007	2008	2009	2010	2011	2012
%	28.4	29.9	25.8	24	25.4	24.7	24.02	24.1

Source: ISPZ Trexima, Bratislava

The share of working women in Slovakia is 44 %. In 2012, the level of economic activity reached 50.7 % for women and 68.4 % for men. European average is between 10 and 15 % of reported gender difference. The highest values within this indicator were reported in the Czech Republic, Estonia (the highest), Germany, Austria and the Great Britain. The lowest values were recorded in Slovenia, Italy, Poland, Malta and Luxemburg with the values ranging between 2.5 % and 8 %.

According to ISPZ Trexima Bratislava, pay structure for women and men in the second quarter of 2014 was as follows: average gross monthly pay of women was 813 euros in the following structure: 73 % base pay, 8 % bonuses, 8 % extra pay, 9 % reimbursement, 2 % others, 0.1 % standby duty. Average gross monthly pay of men was 1,059 euros in the following structure: 69 % base pay, 12 % bonuses, 7 % extra pay, 9 % reimbursement, 3 % others, 0.3 % standby duty.

We state considerable pay disproportions between individual EU countries ranging between 2.5 % and 27 %. It significantly affects the economies of individual countries. The level of gender pay gap under the conditions of Slovakia is 24.2 %, which is quite high also in the EU terms. Differences are subsequently reflected in the level of pensions, where women are paid 22.1 % lower pensions than men on average. Democratic principles in the sphere of gender equality, formulated in official documents, are only applied in the life of society with difficulties; however we can state a positive decreasing trend. We can hope that this gender difference will gradually decrease following economic boom.

It is adequate in relation to the economic crisis to point out to several issues regarding poverty and poverty threat. From the gender viewpoint, women (13.3 %) are more endangered by poverty than men (13.2 %) in Slovakia. The level of poverty risk based on gender (after social transfers) is as follows (Table 2).

Table 2 Level of poverty risk following social transfers (2013)

	Men	Women
Individual	-23.5 %	-17.5 %
At the age of 65 and more	-5.9 %	-9.0 %
Other persons	-15 %	-20.3 %
Pensioners	-5.8 %	-8.8 %
Unemployed	-45.9 %	-43.2 %
Employed	-6.6 %	5.6 %

Source: The Statistical Office of the Slovak Republic, Bratislava

Increasing values in the indicator of poverty risk level have been recorded since 2007. Reasons include high unemployment, low pays and gradually restricted social system. Share of employees working for minimum pay (352 euros) is +27 % with a 0.65 % share of men and a 0.62 % share of women. The greatest share of employees with minimum pay is in Prešov region (2.87 %), in the age category to 20 years of age (9.10 %) and with basic education (3.50 %).

Conclusion

Europe cannot recover from the crisis without a change of logic in the approach to its solution. Euro will be saved by the economic government and the European budget for growth, as integration deepening is a way how to maintain the quality of life. Tension on financial markets and its impact on financing have decelerated economic growth. Solution is an accelerated growth, primarily in developed economies. Adopted Europe 2020 strategy,

with the priorities of innovation, green growth, education, employment development, poverty reduction, concurrently laid foundation stone of the fiscal union, an agreement on deeper integration, cooperation and harmonisation in further spheres, and an incorporation of community institutions means that the EU is taking a way of political integration, which should result in democratic, transparent and effective community. It will be necessary in the research work of the upcoming years to focus attention on the following issues: an analysis of selected social issues in counterpart systems; studying of new approaches to the typology of welfare states and orientation on a suitable model; a solution of the arrangement and financing of social protection in counterpart systems; a formation of a value framework of the 21st century in the process of overcoming negative effects of globalisation and economic crisis; a formation of a reasonable sufficiency of resources in social policy with regard to the given economic situation; an assessment of whether our ability to lay the foundations of a sustainable system of relationships between the market economy and a social system is increasing; an analysis of the issues of non-fulfilment and relativisation of social policy principles in relation to disrupting social cohesion; and ensuring of new quality in the development of intellectualised services and their impact on economic structure.

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COST ASPECTS OF COMPLIANCE IN REGARD TO THE VALUE ADD OF APPLIED MEASURES TO ENHANCE ETHICAL BUSINESS CONDUCT

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Abstract

Compliance management systems provide assurance for a company and help to stir the business in accordance with internal and external rules and regulations. This paper elaborates on the cost aspect of compliance. Compliance measures cost money and it is asked by business executives if the money spent on compliance is wisely spent. Starting from a conceptual approach and based on a laboratory experiment concrete suggestions for meaningful activities are made.

Keywords: Compliance management systems, costs, value add

Introduction

Last year the World Bank concluded from surveys done with over 130.000 business organizations in 135 countries that over a third of them identify corruption as a major constraint. (World Bank, 2013). On the other hand, legal requirements demand a reaction from business organizations: "Companies are held accountable, through their records, for compliance with laws." (Willis, 2005, P. 91) With this trend towards an increase of legal obligations, it can be concluded that compliance management systems are more likely to be installed as an answer to modern challenges. Compliance management systems can help in this regard. The question about costs and value add of compliance management systems is valid and demands a discussion with a broader horizon. The value add can be defined in different terms such as image, reputation, internal improvements etc. For the purpose of this paper a monetary definition is in scope. The value add is defined as the positive impact reached compared to a scenario where no impact from an application of a compliance management system to reduce the overall costs is reached. Always keeping in mind that compliance is a cost driven function in the first place with governance character, it must be noted that the compliance function as of today is very differently installed in organizations. First of all compliance management costs depend on the people employed and the size of the organization. The quality of services rendered plays a crucial role, too.

I.

Research has focused on the possible measures which can be taken within the framework of a compliance management system. This is understandable because first of all measures have to be applied to ensure an integer business conduct. Building on this applied compliance seeks out to understand if measures have an impact or not. Only those measures should be applied which do have an impact. The need in the business has been recognized as "generating new empirical evidence to establish more directly the ROI [Return Of Investment] of Compliance and ethics activity could be of significant assistance to the business community." (Greenberg, 2009, P.21) The longing for an ROI of compliance is understandable as every entrepreneur wants to know whether the taken investment is

worthwhile. The basic costs to bear in mind are personnel costs, travel costs and infrastructure costs such as office space. Compliance management systems aim at risk reduction, therefore when a risk definition is created, it can be tried to encounter this risk with specific activities. A risk for an organization may be defined as the impact it has on the organization (e.g. financially) and the probability of realization. This can be illustrated by one of the scenarios from an experiment which was conducted to test whether assumed cause-effect relationships are valid. In one scenario participants of the experiment were asked whether they would make a facilitation payment to get a colleague who is held up through the customs quicker. This scenario is deemed realistic as the fact that facilitation payments at the borders are made in specific countries has a high probability. The impact of a single facilitation payment is rather low for the organization, on an imaginative scale from 0 to 10, where 0 means no impact and 10 means high impact. The reason for that is that the execution of a facilitation payment can lead to investigations or fines, but they would be limited to a small number of persons being involved, possibly single persons. If not executed in a systematic way, the organization itself would most likely not be in focus of an investigation. Of course it has to be taken into account that persons who receive a facilitation payment can be public officials. In the example the facilitation payment might have an impact of 2, this means a rather low impact. The probability from 0 to 10 might be 4. This guessing is based on the experience management has with the application of such a forbidden practice. A simple formula could be formulated as result of impact times the applicability to calculate the risk for the organization. This risk could be evaluated with a monetary value connected to the calculated value. It must be kept in mind that risks are always a construct of perceptions. Risky activities for one group of persons might be completely risk free for another group of persons. The activities which are applied to prevent facilitation payments are the use of instructions, the information via a circular to the topic and the possibility to call a hotline telephone number with a compliance specialist who can consult. Detective mechanisms might be based on control activities. As long as the costs of compliance measures applied are smaller than the risk costs materialized in the risk scenario the application of compliance management systems seems meaningful. For that purpose it is necessary to enhance the risk assessment with the costs which are incurred. If compliance measures can prevent the materialization of risk, the general equation would be

$$\text{Calculated risk costs} - \text{Costs of compliance} = \text{Value add of compliance}$$

Figure 1. Relationship between costs and value add of compliance
Source: Own depiction

The figure above shows that the value add of compliance depends on the calculated risk costs and the costs of CMS activities which have been deducted from them. The benefit over the period of time would be to see what kind of risks can be addressed via CMS and which have also a financial impact. In a laboratory experiment by the author compliance measures were tested which seemed to positively influence the decision behavior of individuals. The hypotheses underlying the testing procedures demanded that there is a difference in the decisions taken by persons who have been ethically sensitized compared to persons which did not experience such a treatment. The results for the laboratory test which show a significant difference between control and treatment group are shown below:

Variable	Item	Significance level
Control	Making a donation	0,004
Control	Payment to "black listed" external partner	0,000
Control	Payment to supplier	0,004
Information	Invitation to go skiing with competitor	0,009
Instruction	Video Beamer	0,010
Instruction	Facilitation Payment	0,024
Instruction	Mergers and Acquisition	0,000
Reporting	Reading News	0,034
Reporting	Documentation of invitations	0,017

Figure 2. Overall result of items with significance level <0,05

Source: own illustration

The table shows that for 4 out of 5 variables items could be identified which can be judged as influential. For the variable *Sanction*, for no item the null hypothesis could be rejected. For all other items relating to the hypotheses the group means can not be judged as significantly different. The conclusions drawn can not be stated without a risk of mistake. To illustrate the findings, the variable *Instruction* is closer examined. The hypothesis on *Instruction* states that the more instructions are given the higher the influence on legal/ethical right decision. Instructions can be given on different layers of the hierarchical organization. A top-down approach normally gives general guidance and rules from the top level which has to be refined on sub levels. It can be the cases that in a very small unit consisting of only a few employees detailed instructions are given. It must be considered that instructions are not in contradiction with other regulations: "Policy statements naturally suffer from some of the same defects as ethical codes. Policies cannot cover all possible situations; they are not prioritized, and they may lead to conflicting and potentially incompatible instructions." (McDonald & Zepp, 2007, P.62)

The variable *Instruction* was tested in 4 items: "Video Beamer", "Mergers and Acquisitions", "Check of Business Consultant" and "Facilitation Payment". For three of the items, the Mann-Whitney test shows an asymptotic significance value of 0,010, 0,000 respectively 0,005 which indicates that the hypothesis both groups are the same (H_0) is rejected. As the assumption of equal means is rejected, it can be concluded that there is a significant difference between the groups concerning the variable *Instruction* in the items "Video Beamer", "Mergers and Acquisitions" and "Facilitation Payment". The alternative hypothesis for the variable with that item would be "The more instructions are given the higher the influence on legal/ethical right decision." For the item "Check of Business Consultant" the hypothesis H_0 could not be rejected.

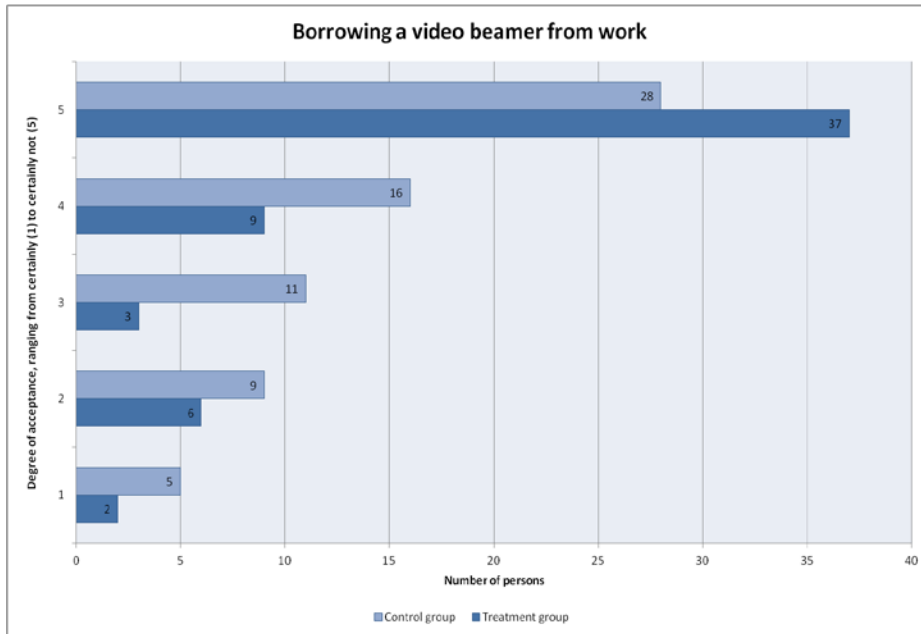


Figure 3. Borrowing a video beamer from work
Source: own illustration

In the item “Video beamer” both the treatment and the control group are mainly of the opinion that the borrowing of company assets for private purposes is not in the interest of the organization. The treatment group was manipulated in the way that a hint was given to them that it is written down that the borrowing is forbidden to take the beamer overnight. The control group which did not have this hint shows similar answering behavior, but a stronger tendency towards a higher degree of ethical behavior is noted in the treatment group. With a two-tailed asymptotic significance value of 0,010 it can be concluded that the hypothesis concerning ethically sensitized persons and ethically not sensitized persons making a payment to the same degree can be rejected with an error probability of 1,0%. This means that the hypothesis H1 is valid for the population.

As noted before this range is small, but the instruction does have a significant influence.

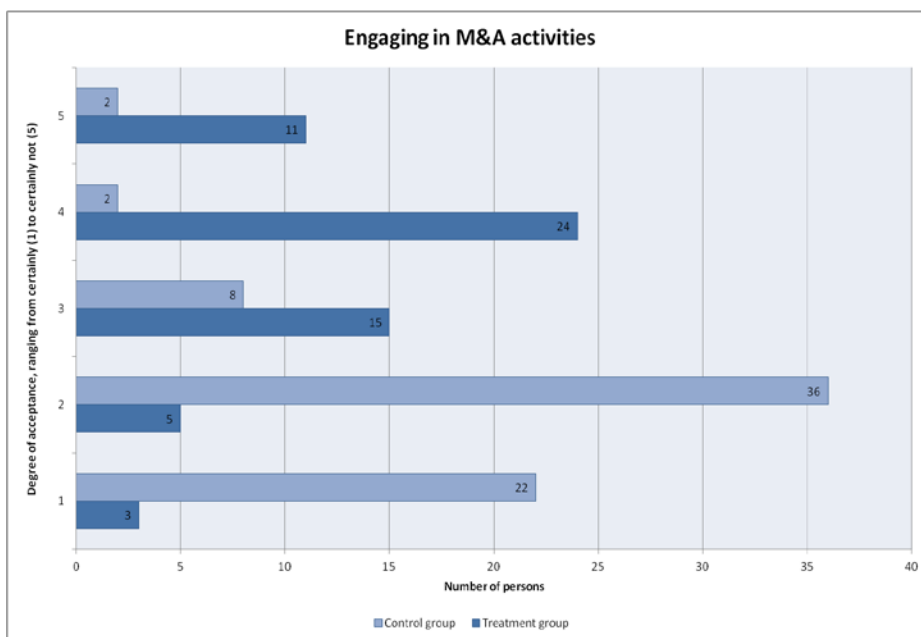


Figure 4. Accepting a M&A-Deal proposal
Source: own illustration

The item “Mergers and Acquisitions” shows a strong degree of consent in the control group. 22 persons would certainly and 36 persons would almost certainly accept the proposals. In the treatment group this is only true for 3 persons concerning a certain acceptance and almost certain acceptance. In the treatment group 24 persons would rather not accept the proposals and 11 persons would certainly not accept the proposals. The significant difference lies in the manipulation of the variable. The treatment group was informed that M&A specific instructions revealed risks which are not covered. Furthermore with a two-tailed asymptotic significance value of 0,000 it can be concluded that the hypothesis concerning ethically sensitized persons and ethically not sensitized persons accepting the proposal for a M&A Deal to the same degree can be rejected with an error probability of 0%. This means that the hypothesis H1 is valid for the population.

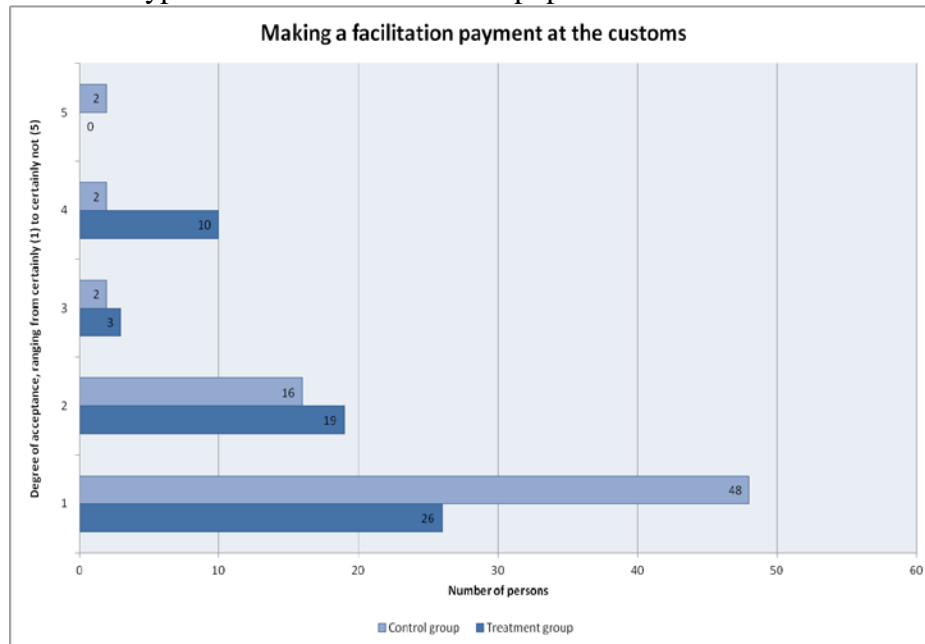


Figure 5. Making a facilitation payment
Source: own illustration

The third item facilitation payment shows a high degree of consent from both treatment and control group. 26 persons of the treatment group and 48 persons of the control group would make a facilitation payment to customs authority. The instruction which forbids such kind of payments was given to the treatment group, but even with this instruction almost half of the person in the treatment group would make a facilitation payment in the situation which puts a lot of pressure on the test persons. The test persons were confronted with a situation in which a team member is held up at the airport. Only with the payment of US\$ 150 which is requested by the authorities at the airport in Nigeria the person can pass. This shows that the introduction of an instruction does have a significant influence, but the instruction can not hinder the engagement totally. The rejection by 2 persons in the control group, but no persons in the treatment group reveals that there are individuals who judge despite the fact that they did not receive an instruction in an ethically right way. Furthermore with an asymptotic two-tailed significance value of 0,005 it can be concluded that the hypothesis concerning ethically sensitized persons and ethically not sensitized persons making a facilitation payment to customs authorities to the same degree can be rejected with an error probability of 0,5%. This means that the hypothesis H1 is valid for the population. This result underpins research on regulatory aspects which deem coercive measures success factors: “Coercive enforcement measures remain an essential ingredient in any compliance

regime, even where a high degree of compliance is realized via the twin forces of moral obligation and social influence.”(Sutinen & Kuperan, 1999, P. 187)

Overall, the hypothesis H0 could be rejected for 4 of 5 variables, as a significant difference between the treatment group and the control group was calculated in specific items. For one variable the significance level does not allow for rejection of the hypothesis H0. From the item analysis it can be shown that not all items led to this conclusion. A few of the items apparently do not have a significant influence. It appears that given information must be very precise and concrete otherwise it does not have the desired effect. General information is not helpful. Sanction mechanisms obviously play a minor role in improving ethical behavior. The reporting schemes or requirements do also not have a major impact on the sensitization of ethical acting. Practical conclusions are that compliance management systems do have a positive influence generally. The highest influence can be attributed to activities which are based on Information, Controls, Instructions and Reporting. However these activities must be designed specifically to individual needs. Bringing in context the topic of costs of compliance and the results of the laboratory experiment it seems most promising to select first of all activities which can be implemented swiftly. The creation of an instruction might be done rather fast.

Control activities are appropriate measures to decrease the corruption risk. The costs for the implementation depend on the types of controls. Labor intensive controls might be the double or triple checking of payments and bills. This could be supported by an IT work flow e.g. in the area of payments. Other controls might be the use of an independent assessor. For all control scenarios it would be possible to calculate a cost estimation. This estimation could be used to approximate a value add for the compliance function.

Another cost-efficient lever to ensure that business is done in accordance with rules and regulations would be the use of instructions. As compliance measures instructions have been found out to be very effective. The costs associated with that would be the draft and publication of the instruction and beforehand the knowledge which has to be gained to be able to publish an instruction which is useful. This is a labor-intensive process, but research shows that this is well invested money and costs are recovered as these measures are perceived to be very effective.

Conclusion

Admittedly the monetary consideration is only one way to look at the value add of compliance. A pure focus on costs would be a limiting view as effects which are not easily measurable are not considered. The costs which compliance activities inherently cause must be seen in proportion to the risk costs. If risk costs are very high then seemingly moderate to high costs of compliance can still produce a value add as the value add outweighs the risk costs. The same costs of compliance in a risk free environment do not produce a value add as they can be judged superfluous. In a risk free environment expenses for compliance can be saved. Therefore a regular cost monitoring seems necessary. Only with a holistic view on both costs and value add a weighted judgment of the right balance is possible. It is task of the management to judge on the necessity of the scope of the compliance management system and the scope. This can be done via risk assessments which also include business experience and experience in specific markets and with the products/projects which are sold. The question about the ideal compliance management system is foremost a question about the risk portfolio, the size of the company and the attitude of its employees. An organization being located in rather low risk countries and operating in these countries is exposed to a relative low level of risk and might therefore not need a complex compliance management system. Multinational conglomerates are encountered with a higher risk portfolio as they operate in lots of countries, several of these are more risky countries. The size of the company has also

an impact of the compliance management system. A small or medium enterprise might not have the need to formulate a compliance management system as the owner can give clear directions and the employees know what is expected of them. The bigger the organization the more probable is the need for a stronger formulated compliance management system. Training activities which are necessary as preventive measure as one example are resource intensive and demand if done on a personal base a compliance management system which has the capability to provide personal trainings, possibly tailored to specific target groups. The approach via only online trainings which are cheaper does not have the same effect as personal trainings which offer the participants the possibility to ask questions and discuss scenarios. Finally it can therefore be concluded that the budget for compliance should be based on the risk the organization is encountering. Several compliance measures can be installed relatively inexpensive, but to ensure proper risk mitigation, savings should not be made on preventive measures as the costs which might be incurred by fines can be a lot higher.

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ONLINE LEARNING CHALLENGES: NEED FOR EVOLVING MODELS

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Abstract

This paper proposes that online learning theory can be enhanced by looking at research outside of education. Models such as the Community of Inquiry and the Transactional Distance Theoretical Model provide a utility toward structuring, conceptualizing, understanding, and analyzing online education. The ongoing research based on these models continues to explore and recommend as practice that the instructor holds "the keys" as to how the online learning environment will be formulated, shaped, and conducted. The assertion from this perspective continues that instructors through proper or improper structuring, guidance, and/or facilitation and design of their online learning environments may or may not be successful in their teaching. Research outside of education explores implications for online education from a biological and human behavior perspective, which includes analysis of innate brain wiring and emergent research regarding student emotional responses. If we think in terms of the online learning context and the apparent innate desire by all while learning to "connect" to one another, mirroring neurons and the advancement of their understanding could and should be monitored closely as more information and evidence emerges that may have valuable revelations about improving learning and learning outcomes within asynchronous learning environments. "Setting up" the space for learning is not enough for an online educator to understand. Having insight into one's own and others' personal relational dynamics and group dynamics is critical in facilitating online learning environments. Understanding the psyche of individuals and having the ability to intuit human behavior is equally important.

Keywords: Online learning, Learning models, Community of Inquiry, Theory of Transactional Distance, Emotional learning, Mirroring

Introduction

Showing a dramatic upward trend over the past decade, universities across the United States have not only increased their online course offering, but enrollments as well. Enrollments of students taking at least one online course rose from 1.6 million to 6.7 million during the ten-year period from 2002 to 2012 (Allen and Seaman, 2013). Undoubtedly, by any standards these are dramatic increases, which signal a clear shift in how postsecondary students are learning in the U.S. With these dramatic increases in online enrollments, researchers have been attempting to respond to demands placed on them to help guide educators and administrators alike with classroom and learning dynamics issues, budgetary, institutional change, management and policy making issues. For all intertwined with online education, especially students, face a myriad of challenges. With the maturation of online

learning and its subsequent research still in its earliest stages, current research models need refinement and new horizons of exploration to advance the understanding of the educational transactions presented within the virtual learning environment. New demands, such as those mentioned previously, and rapidly evolving technologies impose an almost constant state of change upon virtual learning environments, which present a profound impact on the online educational process, and likewise, subsequently challenge the online learning research community, as well.

Multiple Perspectives

From a student's perspective, participating in online learning environments through the use of 21st century technologies and the flexibility of "anytime, anywhere" accessibility has many advantages. Through online enrollment, students can choose when and where to participate in their learning. The continuous accessibility to any given learning environment or set of materials without the need to report to a physical location provides many opportunities to the learner. All of these advances maximize the flexibility in accommodating many students' increasingly busy and hectic lifestyles.

Even with these advances and advantages, online learning has not been without its critics. For years online learning has come under fire from naysayers as lacking the ability for social exchange and all of the positive attributes that have been postulated that come with the social aspects of classroom learning. On the opposite side of this conundrum is the distance issue for all participants, both in time and proximal distance created by these virtual learning environments. The latter perspective being the one that critics have honed in upon often contends that online students lack the immediacy and interactions that occur between students and also between educators alike due to this distant nature both in time and space. In fact, fifteen years prior to this writing, research by Bullen (1998), found that some students felt detached from other students or isolated while learning online. Further, this research also identified that students often felt as if the delay in online communications reduced the dynamics of online discussions.

When surveying the literature regarding online learning, by and large it is fairly easy to identify that this research to this point has worked to address students' needs as a means of resolving online classroom dynamics and practices issues from an educator's perspective by which instructional input adjustments are codified to aid or guide students' learning and engagement. In other words, from this research perspective the instructor is often regarded as to having the sole responsibility and control for whether or not students have the ability to navigate their learning environment, construct the learning materials in a meaningful way, and to attain new knowledge, or not.

As noted in O'Regan (2003) asynchronous learning research has in part sought to explore other students' centric needs, such as emotions, while learning. More recently these notions have been evolved through studies by contemporary researchers (Cleveland-Innes and Campbell, 2012; Berenson, Boyles, and Weaver, 2008; Lee, 2012; Shen, Wang, and Shen, 2009; Van Raaij and Schepers, 2008). As these authors' have uncovered, clearly, there is much more to be learned about online learning when considering students' perspectives, needs, and desires.

Purpose and Study Method

This paper attempts to thread current research, both from within online education, as well as outside the online educational realm that may enhance current models and thinking in an attempt to aid in the formulation of new perspectives toward expanding both the body of ideas and knowledge toward virtual learning environments. Furthermore, the intent of this paper is to expand the vision and scope of online learning research by suggesting it be more

exploratory, interdisciplinary, and inclusive in its vision toward other of bodies of research that abound outside of its domain. Finally, this paper also sheds light on research from neuroscience, cognitive science, and eye tracking studies and provides notions for assimilation toward online learning research as new and fertile ground toward broadening concepts and future research regarding learner dynamics and asynchronous learning environments.

Exploration of online learning challenges in the 21st century and needs for creating or evolving current online educational models requires extensive insight into the body of knowledge surrounding virtual education research. An in-depth content analysis was conducted in order to identify major determinants, which have not been taken into consideration with respect to online learning practice and research. Some of these determinants were discussed in educational, as well as science-related research, but have not heretofore been associated and applied in the area of online learning. These factors will be carefully examined in this paper as they play an important role in the evolution of education and learning research. Specifically, in this paper the authors utilized both conceptual and relational content analysis. The conceptual content analysis was used to identify elements which may be an additional determinant to the online learning process. By using relational analysis, the authors went one step further and examined a qualitative relationship among the identified concepts and prominent current models of distance and online learning. In addition, to secure the objectivity of the findings, the method was combined with professional observations and experiential knowledge. The applied methods are primarily aimed to answer "what" questions, that is, what elements/concepts may be added to advance current models. Their main limitation is the inability to detect causal ("why" questions) links among explored elements.

The explored issues along with the discussion highlights in this paper may be beneficial to educators who seek to extend the teaching experience beyond the traditional understanding of the online learning approach. These study results may also provide school administrators valuable insight about difficulties and challenges that online instructors and students face. Finally, the authors believe the significance of this paper lies in its discovery and linkage of determinants that are not postulated with regards to online learning environments. Therefore, this paper both fills gaps and expands the current body of literature in the domain of online learning.

Prominent Models

Within the last century, a cadre of educational models have been conceptualized, theorized, researched, and implemented (e.g. Bloom's Taxonomy, Vygotsky's Zone of Proximal Development, constructivism, humanism, etc.). Most of these models address learning from an instructor centric perspective whereby the instructor serves as the head of the learning environment, thereby having the sole onus of addressing students' learning as a one-to-one or one-to-many exchange. Likewise, though correspondence, telecommunication, and later Internet-based education have been present throughout the last fifty-plus years or so, much of today's online learning emerged with wide public adoption and availability of the Internet through the World Wide Web in the mid-1990s. Along with this, educational research began to emerge and solidify to address these new electronic mediated learning environments for many and all ages. Most, if not all of today's online learning are derived from, or to some extent, in part from these many established traditional classroom frameworks, models, principles of design, or theories.

A prime example of this would be Garrison, Archer and Anderson's (2000) Community of Inquiry (CoI) model. In an attempt to refine and explain the educational and transactional issues in online learning environments, these researchers postulated a model for

conceptualizing online learning environments. In their model, the authors theorized asynchronous learning environments consist of three learning domains: (1) social presence, (2) teaching presence, and (3) cognitive presence. At its core, the CoI's constructivist approach was distilled from prior research by Henri (1992), as well as those from Chickering and Gamson's (1987) findings and recommendations. With specificity, the CoI model and the authors' ideas for further evolution will be discussed further, later within this paper.

Likewise, an older but equally prominent theoretical model regarding critical aspects of distance education is Moore's Transactional Distance Theoretical Model (TDT). TDT and the research associated with it emphasizes the importance of knowing the nature of transactional distance for the implementation of educational activities, especially collaborative learning in the online environment. Looking at this model's history, a first comprehensive attempt to set the fundamentals of distance education and the theory of transactional distance was made by Moore in the early 1970's (Moore, 1972). According to Moore, transactional distance is "...not simply geographical separation of learners and teachers, but more importantly, it is a pedagogical concept. It is a concept describing the universe of teacher-learner relationships that exist when learners and instructors are separated by space and/or time" (Moore, 1993, p. 22).

As it has been conceptualized, the nature of TDT is determined by three interdependent elements. These three are not technologically related elements/issues, but elements that underlie fundamentals of the teaching and learning process. Moore named the elements as: (1) dialog, (2) structure, and (3) learner autonomy. This initial theoretical framework has gradually evolved with its structure and coherency becoming more transparent (Shank, 2006; Lemark, Shin, Reed & Montgomery, 2005; Wikeley&Muschamp, 2004). In order to realize the TDT model's evolution, it is important to recall Moore's first conceptualizations. Moore introduced three key elements which he based his theory upon. He analyzed possible interactions in distance education at the time and classified them into three types: (1) the interaction between learners and teachers, (2) the interaction between students themselves, and (3) the interaction that takes place between students and subject content (Moore, 1989).

Due to the development of communicational technology and Web-based learning, Hillman and Wills (1994) enriched Moore's typology with an additional type of interaction: learners interface/technology interaction. By doing so, these two authors highlighted the significance of knowing how to use technology as an intermediary factor in interaction with the teachers, students, and educational material.

While models such as the CoI and TDT provide a tremendous utility toward structuring, conceptualizing, understanding, and analyzing online education, much of online learning theory and research to date utilizing these conceptualized models, as mentioned previously, has centered upon the constructs and facilitations of the online learning environment by the instructor to address online learners' needs. That is, that the ongoing research continues by and large to explore and recommend as practice that the instructor holds "the keys" as to how the online learning environment will be formulated, shaped, conducted, and learning amongst participants will proceed. Additionally, the assertion from this perspective continues, that instructors through proper or improper structuring, guidance, and/or facilitation and design of their online learning environments may or may not be successful in their teaching.

Research Outside of Education

Understanding how students learn in both asynchronous learning environments, while mediated, and through the use of academic technologies is crucial toward addressing their needs. Knowledge regarding these issues provides us a basis by which we can assume the

majority of our students will respond toward designed learning materials and interactions. However, emerging research outside of the domain of education may provide cause for online learning researchers and educators to take notice. This research explores implications for online education from a biological and human behavior perspective which includes analysis of innate brain wiring and emergent research regarding online student emotional responses. Within the following section the authors will attempt to identify emergent research from a variety of other fields of study that the authors believe holds promise toward evolving current online educational models, research concepts and perspectives toward online learning.

Mirroring

Perhaps one of the brightest spots for online learning researchers resides within today's neuroscience research. Fairly recent discoveries in monkey and later human brain function have uncovered the presence of what are called mirroring neurons. These unique neurons seem to fire in different regions of the brain while an individual is either acting and/or observing actions of another, hence the term "mirroring neurons." Is this an important discovery? Though research regarding mirroring neurons is still in its early stages, many neuroscientists seem to think so as indicated by the following, "...mirroring neurons evolved in humans so we can learn from observation and learning" (Ehrenfeld, 2011).

Though the discovery of these neurons has been noted, much about them has yet to be uncovered. At present much speculation about their purpose and function continues to exist within the neuroscience community. From their 1998 research, Gallese and Goldman speculated upon mirroring neuron's purpose and function by stating "Detecting another agent's goals and/or inner states can be useful to an observer because it helps him anticipate the agent's future actions, which might be cooperative, non-cooperative, or even threatening. Accurate understanding and anticipation enable the observer to adjust his responses appropriately (Gallese and Goldman, 1998, pp. 495-496)."

Additional subsequent research from Fogassi, et al. (2005), as stated in Iacoboni's (2008) study *Mirroring People: The New Science of How We Connect With Others*, makes pointed statements toward the intent of our mirroring neurons by stating: "...strongly support the hypothesis that we understand the mental states of others by simulating them in our brain, and we achieve this end by way of mirror neurons" (p. 34). Further, Iacoboni himself (2008) states: "We 'share' this same space and thereby get literally closer to each other. I think one of the primary goals of imitation may actually be the facilitation of an embodied 'intimacy' between the self and others during social relations" (p. 69), referring to mirroring neuron's role when two individuals face each other to communicate and inadvertently imitate one another's physical behaviors (e.g. hand gestures, stance, facial cues, etc.).

Studies of human nonverbal imitation behaviors have been well researched over the years. However, one study in particular by LaFrance (1982) looked at teachers and students' arm and torso positioning within traditional face-to-face classroom settings classifying when students used their opposite arm (teacher's right arm, student's left arm) as mimicking and when teachers and students used their anatomically correct arm (teacher's right arm, student's right arm) as mirroring. When correlated, this research found that higher rapport occurred when students mirrored their instructors, as opposed to mimicking them. Again, Iacoboni hypothesizes, "The intimacy of self and other that imitation and mirror neurons facilitate may be the first steps toward empathy, a building block of social cognition..." (Iacoboni, 2008, p. 70).

Though controversial, one such mirroring neuron researcher has gone so far as to posit from their discovery that most major advances in human history can in some way be attributed to these important neurons (Ramachandran, 2000). While other researchers hold a somewhat more conservative viewpoint of mirroring neuron's related roles in human's social

cognition and learning, "When mirror neurons are understood to come from associative learning, they are no longer mesmerizing, but they continue to raise important questions about both the psychology of science and the neural bases of social cognition" (Heyes, 2010, p.789).

Perception and Cognition

Cognitive load, limitations of short-term memory, and dual coding of audio/pictorial stimuli are also worth mentioning and are additionally fairly unexplored, but significant determinants of learning in an online environment. Educational research regarding the mental mechanics of learning and learning material design within virtual learning environments has produced materials focusing upon issues such as cognitive load and positive principles of instructional design (Sweller, 1988; Sweller, Van Merriënboer & Paas, 1998; Paas, Renkl, & Sweller, 2003). In Clark, Nguyen, and Sweller (2006), the researchers view cognitive load as refers to the capacity of human working memory (or short-term memory) and its ability to simultaneously process information as part of the multimedia learning process.

Within the context of online learning, there is little argument that online learning is not highly associated with multimedia. According to the above-mentioned authors, extraneous cognitive load imposed by the design of multimedia learning materials and an LMS interface (i.e. visual/audio elements that the learner perceived from the screen) can significantly reduce the learner's capacity to process, organize, and store new information. Extraneous cognitive load refers to the design of instructional or presentation media, and it directly relates to a learner's ability to keep one chunk of information in working memory while searching for another chunk of information. Research about the limited capacity of short-term memory strongly supports these claims. Numerous empirical studies since the late 50's (Miller, 1956; Shiffrin, and Nosofsky, 1994; Baddeley, 1992) suggest that capacity of short-term memory to process new information is quite limited. More specifically, an average human working memory can process up to seven pieces or chunks of information simultaneously.

Therefore, online students report that they are frequently overwhelmed by the amount of items (links, visuals, navigation, activities, resources, etc.) displayed on the screen. Rubel and Wallence (2013), stated that "in the online environment the variety, quantity, and complexity of course design has a direct correlation with the online learner's cognitive load and performance in the online environment" (p.10). In the same vein the author Zhang (2013), in the study focused on web-based language learning, suggested " the more links [the] learning interface includes, the more cognitive efforts learners will have to pay; the more the relationship of web browser is complicated, the more the learners need to spend time understanding or memorizing those learning paths, and the cognitive load becomes higher and higher " (p.137). Undoubtedly, multiple sources of information including rich multimedia increase the extent of cognitive load which our students are experiencing during the process of online learning. Based on dual-coding theory and findings regarding limited capacity of working memory, Mayer and Moreno (2003) proposed the entire set of principles for reducing cognitive overload during the process of multimedia learning. Principles such as segmenting, eliminating redundancy of information, signaling or weeding help instructional designers to design more effective instructional materials and multimedia learning environments.

Finally, a new avenue of recent research focused on eye tracking casts interesting facts regarding online learning behavior. Innovative eye-tracking technology is used to track eye movement and map the area or screen or multimedia elements that attract the learners' attention. Studies conducted by various researchers (Rehder, and Hoffman, 2005; Mayer, 2010; Hyona, 2010) indicated that empirical findings regarding eye tracking may provide valuable insights about online learning environments. However, contemporary online

learning concepts and theories pay little or no attention to these novelties.

Emotional Learning

Converse to the sundry of virtual learning models and frameworks, resides plain and simple, students' emotions--How students perceive their online learning experience. There is a rich body of literature that indicates the importance of emotions in learning and education in general. We as authors believe that developing the emotional aspects of learning is even more significant in a virtual environment due to lack of immediate contact amongst students. Within the substructure of online learning research, the importance of understanding students' learning needs for a humanizing sense of connectedness within their learning environment is beginning to emerge. For example, in Enbody and Severance (1998), the researchers explored the link between types of delivery media, teaching presence, and learning in an online environment. Based on observations or qualitative findings, these authors argue that the utilization of a variety of multimedia (e.g. video) contribute to the process of humanizing distance education and developing students' emotional presence in a virtual learning environment. Also, as discussed in Campbell and Cleveland's (2005) findings, brain science research has indicated that emotion has a significant impact on learning processes and outcomes. These authors concluded in their research that "it seems reasonable to suggest that a learner's ability to construct and confirm meaning, and indeed engage in reflection and discourse, may be enabled or constrained by emotion" (p. 4). It is also from this stance that Campbell and Cleveland argue for a revision of the CoI model. In their view, the CoI should integrate an additional fourth component along with social, cognitive, and teaching presence: emotional presence.

Clearly the intent of any learning environment is centered upon the primary transactional exchange between student and educator regarding what is to be learned. Without this exchange, learning is hindered or arguably nonexistent. Collaboration between the learner and the instructor is known as immediacy. Some of the earliest research on teaching immediacy was conducted in the 60's by Mehrabian (1967, 1969), which suggested that nonverbal behaviors helped to reduce the physical and psychological distance between teachers and students. A plethora of subsequent research conducted by Andersen (1979); Anderson, Norton and Nussbaum (1981); Gorham and Zakahi (1990); and Christophel (1990) all reaffirm positive student outcomes exist when the teacher is at the center of the students' attention and engaging students during the learning process and exchange.

CoI teaching presence research by Sheridan, Kelly, and Bentz (2012) noted the distinction between an instructor being present within an online learning environment and projecting a presence toward the learners. Additionally, this study identified that the top five instructor behaviors elicited by both graduate and undergraduate online learners as most important for their success in online classes were: (1) fluid communication, (2) instructor disposition, (3) quality materials, (4) clarity in instruction, and (5) timely feedback. Items such as communication and clarity were consistent with prior research by Durrington, Berryhill, and Swafford (2006) and White, Roberts, and Brannan (2003). While instructor disposition and the emotional components students defined, such as an instructor possessing or expressing toward students understanding, humor, empathy, enthusiasm, a positive attitude, etc., suggest a desire for students wanting to establish some emotional and/or trust connection toward their instructor. Additional research by Cleveland-Innes and Campbell (2012) and others (Derks, Fischer, & Bos, 2007; Marchand & Gutierrez, 2011; O'Regan, 2003; Lehman, 2006; Perry & Edwards, 2005) similarly realized a variety of emotional components within online learning communities.

In Cleveland-Innes and Campbell's (2012), as noted previously, the researchers expressed that identifying which emotions are present in common human exchange and then

identifying which are present in online learning environments is vital toward understanding online learning environments. Likewise, these researchers argue that "unexamined, seemingly visceral and unconscious" emotions are not appropriate in reflective pedagogical design (p. 285). Furthermore, they recommend that online instructors realize their ability to understand and reflect upon their own emotions while learning and to use these insights in their online classroom management behaviors. These findings, though somewhat differing from Sheridan, Kelly and Bentz's (2012), reflect the concept that instructors need to communicate and project more of themselves and their personal dispositions in online learning settings than simply structuring the learning environment and facilitating activities and discussions. While Derks, Fischer, and Bos, (2007) stated, "...we argue that emotional experiences in reaction to online others may have the same quality, but have a lower duration than in F2F (face-to-face) situations. (p.16.)" From this view online educational research needs to be more inclusive and thoughtful with respect toward all individuals' humanizing and emotional needs when interacting online with one another.

Final Thoughts and Conclusion

- Each person associated with the online learning environment faces the challenge of learning while mediated from one another. Online learning environments often are highly, or totally asynchronous, in which all interactions typically take place through various forms of technologies. These technologies are used by both students and the instructor to communicate both course information and content, as well as often times used to facilitate discussion between all parties. The requirement to master one or more technologies initially in order to access materials, along with the standard of not being able to communicate live in real time often must be overcome prior to the learner having the ability to address the learning content properly.

If we think in terms of the online learning context and the apparent innate desire by all within an online learning environment to "connect" to one another, as noted in similar prior "presence" research by Burgoon, Buller, Hale, and deTurck (1984) and Gunawardena (1995), mirroring neurons and the advancement of their understanding could and should be monitored closely as more information and evidence emerges that may have valuable revelations about improving learning and learning outcomes within asynchronous learning environments.

Human gesture and nonverbal communication behaviors have been widely studied (Napier, 1980; McNeil, 1992; Goldin-Meadow, 1998, and McNeil, 2000). Now, consider the research by Sheridan, et al., (2012), which found students strongly desire an instructor that projected humanistic or (instructor) dispositional behaviors into an online learning environment. One solution, the use of video, appears to be reaffirmed in Lazarevic (2010) when thinking about how to solve both the mediation of the communications and constructing online presence. In this research, online students who were presented with short video introductions to weekly assigned learning tasks were found to have a greater perception of facilitated teaching presence than their counterparts within a control group. Additionally, in Lazarevic's research, students were also found to have a higher retention and recall when it came to assignment instructions if they also viewed a similar descriptive explanatory video.

All my online courses so far, make you feel... you know, you are an independent for the most part. And you do not have so much teacher interaction; in fact for most of the teachers, I even do not know what they look like when I take an online course. So when she comes on (the Instructor for ENTO 115), it kind of gives some extra sense, how am I gonna put this, you do a work because the teacher is kind of there with you, you know what it is she looks like... It adds another sense of learning. You can hear and see it. It is kind of like when you move to the college, your mom is not there to tell you what to do all the time. But when

she comes over to your apartment, she is actually there, and you want to make sure that it does look good. It is just like the parent figure or big brother or something. She is out there. Getting done with the assignment is definitely increased by seeing her (Lazarevic, 2010, p. 140).

As well, Bickmore & Picard, (2005) found the following when researching human-computer relationships: Meta-relational communication – being very clear up front about the roles of each of the parties in a human-computer relationship, and checking in from time-to-time to see how everything is going and making adjustments as needed – is very important for managing user expectations and making them feel understood and cared for. Being conscious of the use of social deixis in the interface, including such language features as politeness and forms of address, allows the design of more consistent interfaces and interfaces which are more tailored to individual users or classes of users.

And, as noted by Klein (Klein, Moon, & Picard, 2002), appropriate use of empathy by a computer can go a long way towards making them feel understood and alleviating negative emotional states such as frustration.

Perhaps most importantly, thinking about human-computer interactions as relationships allows designers to take a long-term view of these collaborations and the ways in which these relationships should unfold over time. While reliability and consistency are highly prized in most aspects of interface design, there are some applications areas in which variability is important for keeping the user engaged in the task (Section 7.2 Lessons for the HCI Practitioner, para. 3)

"Setting up" the space for learning is not enough for an online educator to understand. Having insight into one's own and others' personal relational dynamics and group dynamics is critical in facilitating online learning environments. Understanding the psyche of individuals and having the ability to intuit human behavior is equally important.

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COMPANIES' INTEREST IN ENTERPRISE SOCIAL NETWORKS IN THE CZECH REPUBLIC

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Abstract

To a degree, the development of organizations in the current competitive environment of an information society depends on the abilities to share and use employees' knowledge on all business levels better and faster than the competition. Findings from international studies and research that have been conducted show that enterprise social networks can provide a range of advantages for modern human resource management. The reasons mentioned reveal the necessity of primarily determining interest in using the enterprise social network in the Czech Republic. A poll was conducted on the basis of intentional non-random choice, and research questions were posed to company managers. An overall comparison of the data gathered indicates two main resulting tendencies and point to an incipient trend in the Czech Republic.

Keywords: Enterprise Social Networks, Enterprise, Human Management

Introduction

A company that demands prosperity in the current turbulent and globalizing environment should pay particular attention to information technology in managing human resources (Pitra, 2007). As of 1998, Belcourt and Wright had already supported the following statement: "*An intelligent and effective work force can be a competitive advantage for a company.*" [2] On the basis of their research, Christidis, Mentzas and Apostolou (2012) present the advantages resulting from the use of the enterprise social network from the perspective of firms and employees. The reasons documented include the following: increased cooperation between employees, knowledge transfer and greater visibility not only between co-workers, but also directed towards company leadership. A case study by the authors Riemer and Scifleet (2012) investigates developing knowledge of work processes on the Yammer platform. The results show that the enterprise social network, among other benefits, provides space for innovative ideas and a conversational medium for building relationships. Figure 1 graphically illustrates a 5-C model of the location of ESN among information and communication technologies for supporting knowledge-intensive work, where the basic factors of the Yammer enterprise social network are coordination, cooperation and communication. These factors are mutually interconnected and correlate tightly with each other.

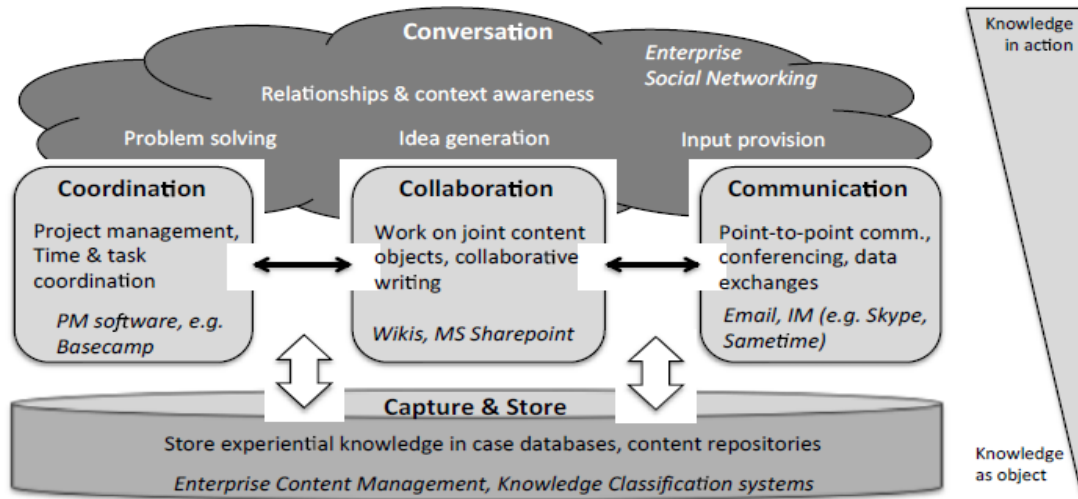


Fig 1 The 5-C model: placing ESN among established concepts and ICT for supporting knowledge-intensive work

The company Microsoft published research in cooperation with the company Ipsos on a sample of 4,787 employees across Europe (Microsoft survey on enterprise social use and perceptions, Ipsos, 2013). The research was aimed at the enterprise social network and its perception by employees. As shown in Table 1, respondents believe (overall 37%) that their manager understands the added value provided by social tools with the goal of increasing employee cooperation, but still currently underestimates this benefit (overall 34%).

	Total	Gender		Age			
		Male	Female	18-24	25-34	35-44	45+
My supervisor understands the value of providing social tools in order to improve employee collaboration.	37%	38%	37%	50%	41%	36%	33%
My manager underestimates the benefit of social tools in the workplace.	34%	35%	32%	40%	40%	34%	26%

Tab. 1 Enterprise social use and perceptions

On the basis of the studies mentioned above, the goal of this paper is to determine whether managers of Czech companies are interested in using enterprise social networks.

Research and the Results of Companies' Interest in Enterprise Social Networks in the Czech Republic

For determining enterprise social network interest and actual use, a poll was conducted on the basis of intentional non-probability sampling. The investigated sample used businesses that participated in the Kontakt 2014 trade fair in Pardubice. A total of 30 Czech companies participated in the trade fair, and a managed interview was conducted with each manager of the given firm.

The investigated sample was comprised, according to legal form of business, of 16 limited liability companies, 12 joint-stock companies, 1 general partnership and 1 state-owned company. The breakdown of the investigated sample by company size is the following: 5 medium-sized companies (50-250 employees), 17 medium-large companies (250-5000) and 8 large (5000 or more employees). The breakdown by OKEČ (The Branch Classification of Economic Activities) is the following: 1 company of type C – Mining and quarrying; 12 companies of type D – Manufacturing industry; 2 companies of type G – Wholesale and retail trade, repair of motor vehicles and the production of personal goods,

mostly household goods; 2 companies of type I – Transporting, storage and communications; 4 companies of type J – Financial intermediation; 9 companies of type K – Real estate activities, Business activities.

For verifying enterprise social network (ESN) interest and actual use, the following research areas were established:

RA1: Whether managers understand the concept of the enterprise social network.

RA2: Whether businesses use ESN and are interested in further information about ESN.

From the answers to the research questions focused on the first research area, it was shown that 57% of respondents do not know the difference between online and enterprise social networks. After processing the acquired information relating to the second research area, it was shown that 30% of respondents use an enterprise social network in their company, 13% of respondents use only elements of ESN and the remaining 57% of respondents do not use any enterprise social network. Among the ESN products mentioned were Yammer, Chatter, Sharepoint, and the company's own ESN. Of the respondents, 43% expressed interest in further information concerning enterprise social networks.

A comparison of the relationships between ESN knowledge and interest was conducted. Fig. 2 shows that respondents who are familiar with and use ESN also are interested in further information about ESN. Respondents who are not familiar with and do not use ESN are not even interested in further information about ESN. It is possible to explain this result by the fact that the respondents are not acquainted with the attributes and possible advantages of installing ESN in a company.

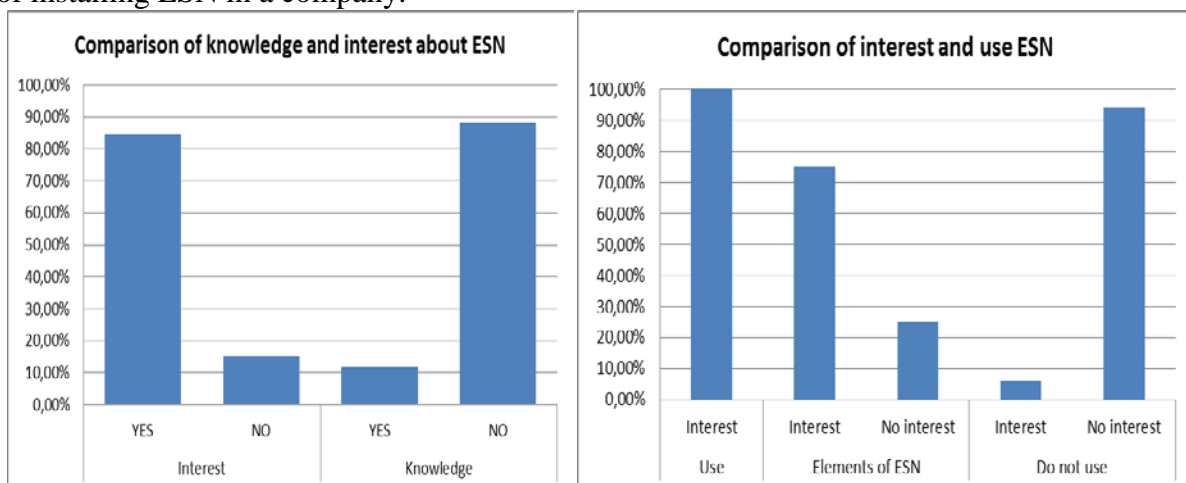


Fig. 2 A Comparison of ESN Knowledge and Interest; A comparison of ESN Interest and Use

Furthermore, an overall comparison of the three following factors was conducted: ESN knowledge, its use and interest in ESN. Fig. 3 graphically depicts the two main resulting trends that illustrate the results described above.

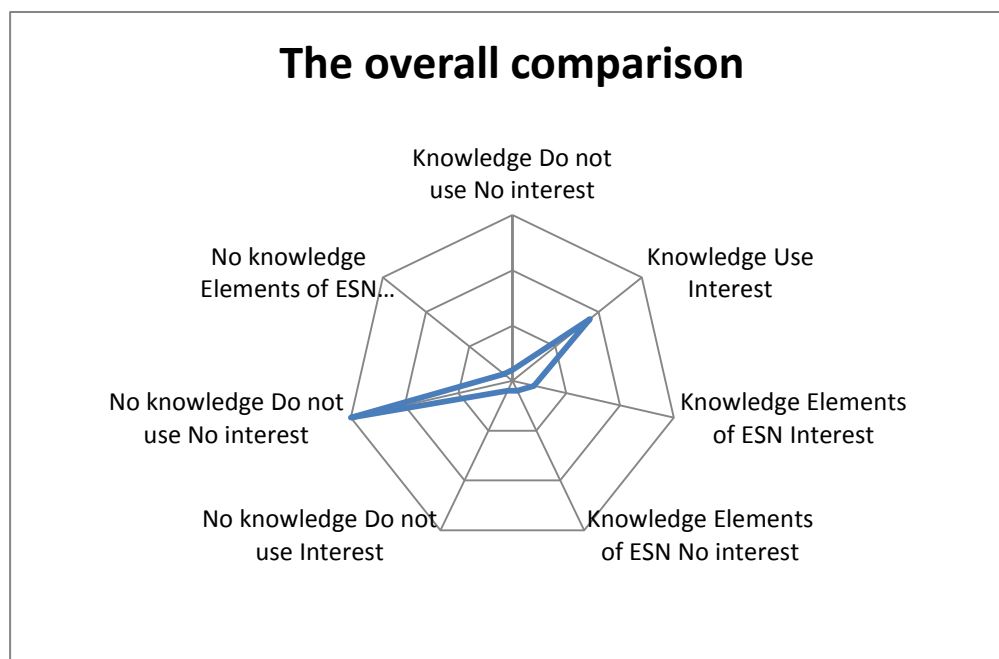


Fig. 3 Overall Comparison

From the overall comparison, it is possible to come to the conclusion that it is possible to see research potential in companies already using an enterprise social network and to determine why management implemented this internal network within company management. In contrast, it would be interesting to determine what method to use to persuade companies and management to implement ESN.

Conclusion

This paper addresses information technology and actual managerial trends that carry over into human resource management. The results of international studies show an incipient corporate trend towards using enterprise social networks. A range of firms already understand the advantages via successful implementation. It is necessary to mention that even enterprise social networks have their shortcomings in the form of insufficient acceptance by management and employees as well as insufficient IT support and circumspect fears concerning a decrease in employee performance (Ward, 2012).

As Pitra (2007) says, it is necessary to overcome aversion to changes and unwillingness to learn new methods and to accept a sophisticated modern tool for streamlining the company's overall system of management.

Enterprise social networks can offer managers in the Czech Republic sophisticated business software for managing human capital and worker performance. The question is whether enterprise social networks will show a rising or falling trend in the Czech Republic.

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PROCESS MANAGEMENT–NEW WAY OF SELF-GOVERNMENT FUNCTIONING

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Abstract

The article deals with processes, their identification and the key elements of process management, which enable the process approach in self-government. It also compares process and functional approaches from the viewpoint of management.

We present a particular example of a municipal office, demonstrating individual types of processes, and continuing with their analysis and a proposal of process management implementation under particular conditions.

Keywords: Process management, process, functional approach, process approach

Introduction

Self-government represents an inseparable part of any societal system. It concerns each citizen by means of social, political, legislative and economic tools. Self-government in Slovakia is currently facing several key challenges, defined in most of concept documents dealing with the public administration reform. Constant pressure on the increase in effectiveness and professionalism also requires the application of new tools in the sphere of management. Process management is gradually finding its place in the public sector, even though it is originally an approach applied in entrepreneurial environment. The submitted article is dealing with this issue in broader contexts.

Present Conditions of the Functioning of Self-Governmental Units of Municipalities in Slovakia

Financial and economic crisis, lasting already several years, has significantly affected the enforcement of fiscal decentralisation principles. It has confirmed the importance of respecting certain principles, aiming at maintaining the greatest possible economic stability of municipalities. Based on the competencies of municipalities, they can be summarised as follows:

Table 1 Competencies and duties of municipalities

Competence of municipalities	Number 30 th April 2005	Number 1 st January 2011	Increase 2011/2005 in %	Number 1 st January 2012
Civil protection	98	93	-5.1	93
Transportation	84	171	103.6	171
Finance, asset administration	727	1,265	74.0	1,265
Culture	82	105	28.0	105
Defence	20	22	10.0	22
Fire protection	50	60	20.0	60
Business, tourism, consumer protection	104	103	-1.0	103
Agriculture	102	142	39.2	142
Regional development	6	24	300.0	24

Social affairs	151	233	54.3	233
Complaints and monitoring	65	96	47.7	96
Education	116	224	93.1	224
Public procurement	136	315	131.6	315
General internal administration	931	1,142	22.7	1,142
Health service	50	65	30.0	65
Environment	345	454	31.6	454
TOTAL	3,067	4,514	47.2	4,514

Source: own processing

The table shows an increase in the competencies which represent content and performance in the functioning of self-governmental units of municipalities. They include transferred as well as original competencies, i.e. the overall increase is approximately 47 % - 50 %, suggesting a half more performance.

Meanwhile, several significant changes have occurred in the competence of municipalities, which has also reflected in financing of the related competencies, as most of those delegated to municipalities were not financially covered, which affects the functioning of self-governments and their successful fulfilment of tasks and duties. The changes include:

- share of municipalities in the revenues of individual income taxes from business, which were received by municipalities, has decreased from 70.3 % to approximately 65.4 %. This income represented a decisive self-financing source of municipalities;
- income tax increased, which resulted in a decrease in business activities;
- municipal revenue base decreased after imposing the tax from the alienation of property in the amount of 19 %;
- the extent of regulatory measures in the form of exemptions from local taxes has increased;
- decision-making rights of municipalities regarding the usage of their own resources have been restricted;
- the amount of compulsory expenses of municipalities imposed by state (e.g. in the sphere of education, social affairs, etc.) has increased.

These changes in financing conditions cause financial problems to municipalities in the form of decreasing self-financing ability, which further results in the increased inability to draw from the EU funds, as municipalities have no means to pay a certain amount upon their provision. There are further increases in obligations of municipalities resulting from loans, while their paying off and the principals paying off have increased by 47 %. Inconsistent collection of claims has also reduced actual means necessary for the given municipality. Individual approach of municipalities in terms of their ability to eliminate risks of crisis development is adopted in such cases.

All these circumstances encourage us to consider and look for reserves and new solutions. One of the possibilities is process management, aimed at the development and optimisation of an organisation's operation in order for it to respond to customer – citizen's requirements effectively, efficiently and at the same time economically, and to carry out tasks imposed by state successfully.

The broader context of process management is dealt with in the following part of the article.

Process Management – Definition and Relations

The process approach represents a new orientation, focusing on the process, which is comprehended as a chain of activities, operations and sub-processes. Upon studying related literature, one finds out that a significant factor upon process management development was the process approach towards quality creation, assurance and development. "The process

approach is currently particularly present in quality management systems, where it is understood as its inseparable part. Systematic identification and management of processes applied in an organisation, and particularly interaction among such processes, have been called process approach” (Závadský, 2004).

In order for an organisation to function effectively, it needs to identify and manage a number of related activities. Already the process management development itself suggests what its basis is. However, different authors comprehend it with small differences. The key elements of process management are process orientation, horizontal management and knowledge person philosophy. The basis of a process-managed organisation is a change in understanding of performance of work from the performers of activities to the owners of processes. Therefore, besides a simple process resetting, culture change should also occur upon the formation of a process-managed organisation.

Similarly, according to Teplická (2004), the basis of process management is process approach based on the principle of management and mutual impact of all organisational processes so that they fulfil defined goals. It is important that there is no process in an organisation for which no one is responsible. Each process needs to have:

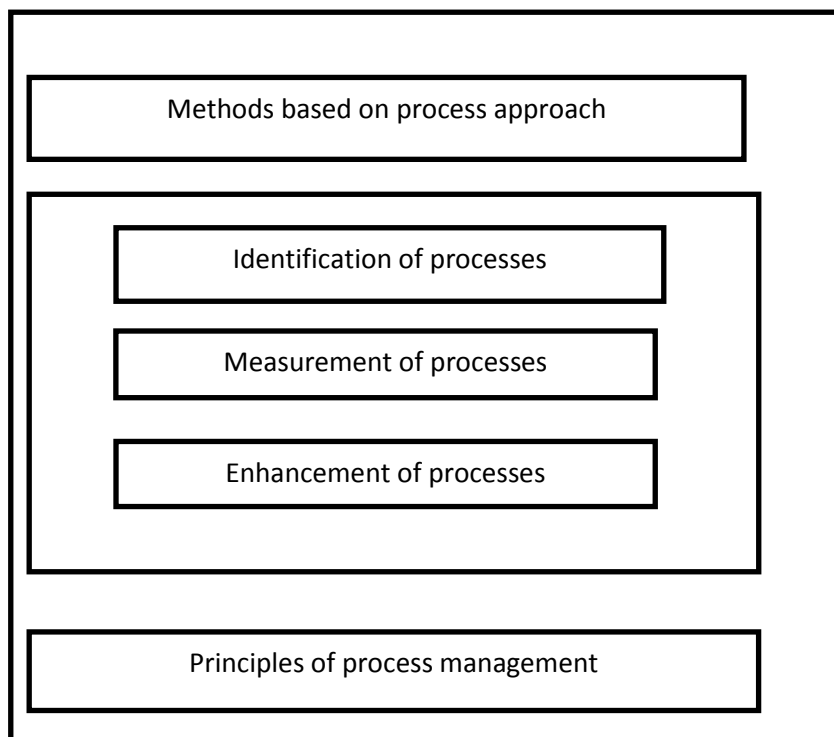
- **inputs** and a supplier of inputs;
- **owner** – an operator of transformation;
- **outputs** and a consumer of outputs;
- **measurable output parameters** (indicators) to evaluate the efficiency of a process;
- **target values** of output parameters.

In order to understand better all problems of process management, it is necessary to be familiar with its basic components and principles, since their interconnection is very close.

Different instructions in the form of key principles and management principles have been created in the sphere of process management. Even though their application is individual for each company or organisation, the basis always remains the same.

“Process management is an integrated concept of business processes management, and it is in contrast with functional management system. Process management is a systematic identification, visualisation, measurement, evaluation and constant enhancement of business processes” (Závadský, 2004).

The proposed definition of process management reflects its three key components (see the picture). It means that the management of processes is carried out in the phases incorporating its content, i.e. that the content of process management comprises identification, measurement and enhancement of all processes. The identification and visualisation of processes is meant to ensure the creation of basic structural framework, i.e. a process system. The identification particularly aims at finding out logical relations and mutual interaction of processes. The objective of measurement and evaluation of processes is to monitor their level by means of selected or all characteristics – process attributes, and performance indicators related to them. Enhancement aims at achieving a change which will increase or decrease a process level, obviously in a positive direction. (Závadský, 2004).



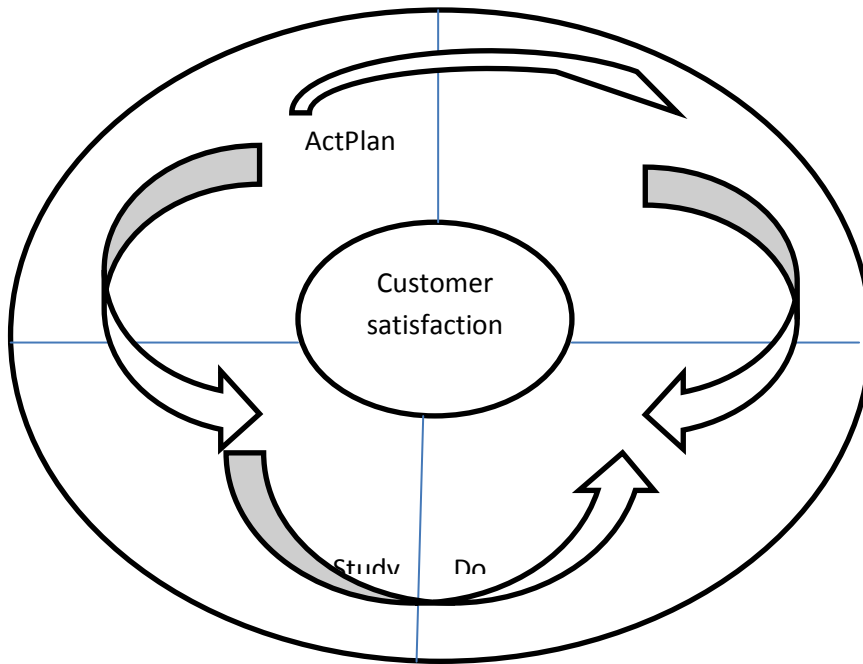
Picture 1 Basic components of process management (Závadský (2004))

Fiala and Ministr (2003) introduce four key principles of process management, which help carry out the development of own business, i.e. a unique approach towards process management. They are:

1. the specification of strategic intention and objectives, which will be thoroughly notified downwards whole company within its organisational structure by means of the specification of particular objectives of individual processes and decisions at the levels of teams and partial organisational units;
2. the definition of processes and their mapping, focusing on the key processes crucial for company's success and survival;
3. the application of the ownership of top management process, aiming at the enhancement of processes by means of personal responsibility, constant engagement, continuous notification of business strategic process objectives and decision-making, corresponding to process thinking;
4. the change of organisational structure of a company based on reductions of the amount of communication links and bureaucracy by means of support of managerial effort, and processes mapping.

It is an open dynamic system with activities as the key component. Similar definition of process management was introduced by Šmída (2007, p.30), who comprehends it as systems, procedures, methods and tools of continuous ensuring of maximum performance, and particularly of constant enhancement of processes. They result from clearly defined organisational strategy, and they aim at achieving specified strategic objectives.

A common feature of several definitions is constant enhancement of processes. The course of the processes is necessary to understand as a permanently repeated cycle, which can always be improved. This issue was dealt with by Deming, who created a cycle of the enhancement of processes, shown in the following picture.

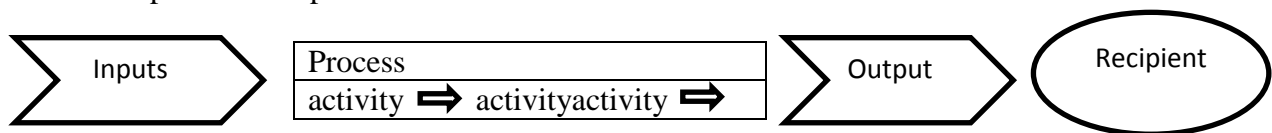


Scheme 1: Deming’s cycle(Evans, Lindsay (2005, p. 636)

Deming’s cycle comprises four phases. The first step is Plan, in which a plan of what should be enhanced is set up. It is followed by Do phase, in which the plan is applied in practice(Grasse, 2008, p. 79). The third phase is Study. Some authors still denote it as Check phase, which was also incorporated into the name of Deming’s cycle (PDCA - plan-do-check-act). This phase includes the verification of pilot study results, determination of whether the given process efficiency has improved, and it also identifies further possibilities which could be applied(Evans, Lindsay, 2005, p. 636 - 639). In the last phase Act, measures meant to ensure whether enhancement or repeated achievement of results are adopted and carried out(Grasse, 2005, p. 80). If the applied measures have not succeeded or have not led to the specified objective, the whole cycle repeats until there is satisfaction with achieved results.

It is necessary in this relation to characterise the process.

The term process is the key word in process management, and literature defines it differently. The simplest way of its definition is related activities, changing inputs to outputs for the recipients of outputs in the course of transformation.



Scheme 2: Scheme of the process

According to Grasse (2008, p. 7), process represents “a set of mutually related or mutually operating activities, which add value to inputs, using sources, and change them to outputs, which have their customers.”

The complex definition of process was introduced by Šmída (2007, p. 29), who defined process as “an organisational set of mutually related activities and/or sub-processes, dealt with by one or several organisational units, or one organisation (company process) or several cooperating organisations (intercompany process), consuming material, human, financial and information inputs. Their outputs are products having a value for external or internal customer – citizen”.

Process is thus a set of mutually related activities, dealt with by one or several organisational units. These activities add value to inputs and change them to outputs of different forms. Input is a defined and financially specified value, while output has a form of goods, product or service(Grasse, 2008, p.7).

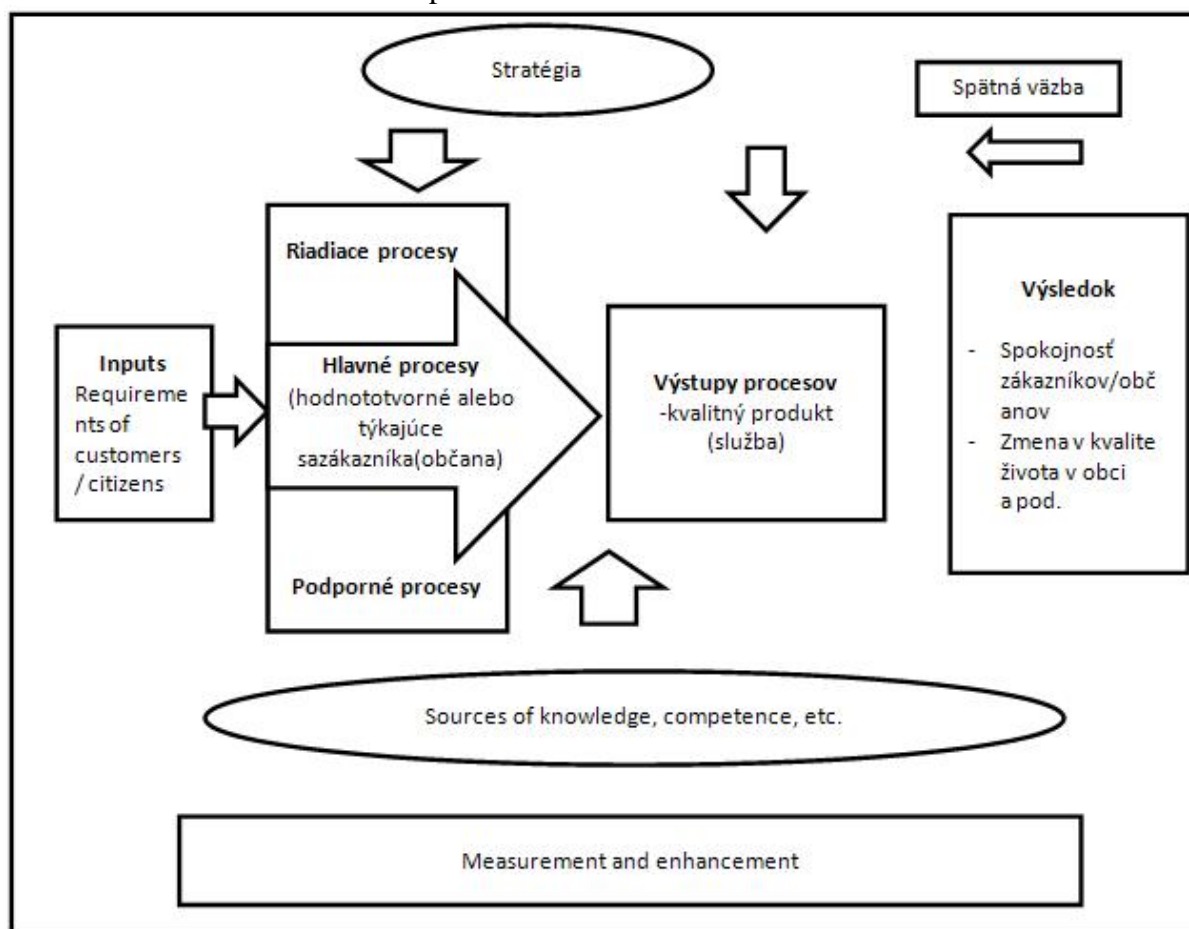
From the material viewpoint, output can be:

- material (lighting, operation of a house of culture, ...);
- administrative (collection of fees for litter collection, calculation of property tax, verification of deeds, population census, ...).

A great extent of these processes led to their division as well as merging from the viewpoint of their importance as well as purpose as follows:

- substantial (key) processes, fulfilling the reason of the existence of the given organisation (office). They result in the given product of different form, i.e. a measurable performance;
- management processes– created by managerial processes, they ensure the management and development of performance in an organisation as well as the functioning of other auxiliary processes;
- auxiliary (operating) processes, which help ensure the substantial processes.

The combination of these processes is shown in Picture 2.



Picture 2 Division of processes in the context of transformation process in self-government

Stratégia – Strategy

Spätná väzba – Feedback

Riadiace procesy – Managing processes

Hlavné procesy (hodnototvorné alebo týkajúce sa zákazníka / občana) – Substantial processes (value-creating or related to customer / citizen)

Výstupy procesov (kvalitný produkt / služba) – Outputs of processes (quality product / service)

Výsledok: spokojnosť zákazníkov / občanov/ zmena v kvalite života obce a pod. – Result: satisfaction of customers / citizens / a change of the quality of life in a municipality etc.

Comparison of Process and Functional Managements

Process and functional managements represent two concepts, providing their own views of the possibilities of functioning in an organisation. They should not be comprehended as two opposing concepts, as the process approach follows functional management and regulates it according to its principles.

The key element of functional approach is labour division among the functional units of an organisation. This is reflected in organisational structure, where the given organisation is divided into individual departments on the grounds of expertise. Thus created units carry out partial process activities, while the whole process is complexly followed. If we want to enhance the functioning of an organisation as a whole, we need to enhance the efficiency of each department (Grasse, 2008, p. 40-41).

In functional management, one department can perceive a different department of the same organisation as a competitor, which is reflected in negatives regarding the functioning of the whole organisation. A problem is also the loss of time caused by following bureaucratic rules in mutual communication. We should neither forget about information misunderstandings occurred upon the transfer of activities among departments. However, even a greater problem would be if departments did not exchange information at all (Mateides, Závadský, 2005, p. 31).

As emphasis put on knowledge collected into functional units is characteristic of the functional approach, it is necessary to coordinate and check them. Places with many employees not creating any added value thus occur. Organisation is thus arranged in the form of multilevel pyramid controlled from one centre with restricted responsibility and competences. Moreover, employee loyalty inclines to a functional unit, not an organisation as a whole. It results in restricted implementation of changes, as employees protect their functional positions, and prefer their own interests to interests of the whole (Grasse, 2008, p. 40-41).

Závadský (2004, p. 21) states that functional management is predominantly oriented on outputs. It is focused on consequences, and does not investigate reasons of the achieved results. Tools of the evaluation of the results of organisation's activities can include financial economic analysis, revealing the places with low productivity or high costs. However, adopted measures focus on individual functional levels of management, aiming at the elimination of revealed insufficiencies.

On the contrary, process management is not only focused on the result of work but also on the way and course of its achievement. Work is not carried out separately within individual organisational units, but it is dealt with and it cooperates with the other units of an organisation.

Table 2 Basic differences between functional and process approaches to management

Functional approach	Process approach
Local orientation of employees	Global orientation by means of processes
Problem of the transformation of strategic objectives to indicators	Interconnection of strategic objectives and process indicators. Process approach is thoroughly characterised by the following: Think globally, act locally
Orientation on external customer. Employees do not know the meaning and interconnection of internal customers and suppliers – minimum interoperation with other activities	Existence of internal and external customers. Employees know what inputs they use to carry out activities and from whom they take them over, and what outputs they provide to whom in order to carry out the related activities – interoperation with other activities
Problematic definition of responsibility for the results of processes and the creation of value for customers	Responsibility and creation of value for customers is specified on the grounds of processes
Communication by means of the “layers” of organisational structure	Communication within the course of the process
Problematic attribution of costs to activities	Direct attribution of costs to activities
Decisions are influenced by the needs of activities (functions)	Decisions are influenced by the needs of processes and customers
Measurement of activities is isolated from the context of other activities	Measurement of activities reflects their required impact and performance within a process as a whole
Information is not regularly shared between activities	Information is a subject of common interest and is standardly shared
Employees are remunerated on the grounds of their contribution to the given activity	Employees are remunerated on the grounds of their contribution to the efficiency of a process, respectively an organisation as a whole
Participation of employees in problem solution is zero, or it is only restricted to activities they carry out	Substantial problems are regularly solved by teams established within process activities from all levels of an organisation

Source: Grasse (2008, p. 47)

Besides the preceding key differences, there are further differences between these two ways of management.

Table 3: Differences between functional and process managements

	Functional management	Process management
Basic principle	Labour division	Grouping of activities
Organisation as a system	Coordination of separate elements	Synergic effect (the resulting effect is created from many parts)
Organisational structure	Steep pyramid	Flat, horizontal organisational structure
Powers and responsibilities	Only for a department, or operation of the given department	For the whole process, everybody equally participates in results
Relationship to subordinates	Orders, directive approach, frequent checks	Coaching, management of people on the basis of own awareness, indirect support
Indicators	Economic analysis	Analysis of processes, each process shows which indicators best evaluate it
Orientation	Consequences	Reasons
Qualification	Less demanding	Demanding (control of the whole process)
Communication	Vertical	Horizontal

Source: Štangová (2009, lecture on Management of Processes in Public Administration)

Process View of the System of Management in Self-Government

Based on our own mapping of processes in several particular municipal offices of municipalities we selected and analysed in the form of face-to-face meetings, we identified 97 processes on average, divided as follows:

54 key processes,
13 management processes,
30 auxiliary processes.

According to individual departments, they are divided as follows:

the department of economic and operational activities and social affairs:

24 processes

the department of taxes, fees, cash, culture and sport:

30 processes

the department of asset management, environment and crisis management:

16 processes

the department of records, construction activities, registry:

27 processes

The summary characteristics implies that most processes are carried out at the department of taxes and fees – up to 31 % of the given amount of 97 processes, and the least number of processes is carried out at the department of asset management – 16 %. The analysis also showed the share of the aforementioned types of processes according to departments. This evaluation of processes was carried out from the viewpoint of logical sorting of performances according to organisational division of the office, not from the viewpoint of significance or workload. This view is crucial for the creation of standards and departmental job content.

While the functional model is based on strictly defined organisational structure, process model is based on quite flat organisational structure, enabling operational defining of process spheres as well as own processes in a structure.

Condition of Process Management in Slovak Self-Government

Studied materials, available information as well as the own analysis of this issue within our research offer the following conclusions:

There is no systematic monitoring of process management implementation in the organisations of self-government, although several municipalities in Slovakia have implemented process management in their functioning.

Process management presupposes certain organisational arrangement, for which self-governments are often neither financially nor professionally prepared. The research showed generally little knowledge of employees of the respective organisations, institutions of self-government, on process management.

There is no clear identification and inclusion of activities creating organisations' performance.

There are no clear methods to evaluate individual processes. Several concepts interrelate or condition, a strictly single concept thus cannot be considered. Basically, all modern management concepts are summarised under the name: NEW PUBLIC MANAGEMENT.

Information comprehension of process management prevails over technological features.

Expectations and Future – Open Issues of Process Management

The need to implement process management results from the financial situation of public finance, and it is a basis of the achievement of the necessary quality of self-government's performance, which presupposes the following steps:

- the facilitation of decision-making processes;
- the change of working procedures and their precise specification;
- precise identification of processes in their structures;
- precise financial remuneration of employees at respective offices;
- the change of work arrangement according to the organisational structure of offices;
- and others.

What is expected from the implementation of process management in self-government?

- performance professionalization in self-government;
- greater creativity upon ensuring the development of the needs of citizens;
- transparency and better information on the system of handling public financial means as well as inputs – material and others;
- the guarantee of standard outputs from the viewpoint of quality and costs;
- the summarisation of activities and the specification of responsibilities for results;
- the standardisation of services;
- the measurement of processes from the viewpoint of economy and effectiveness;
- adaptability to changes caused by the needs of current functioning of public administration and self-government;
- but particularly the reduction of costs of individual programmes in their structure.

Conclusion

The process management is an efficient way of management, previously verified in the business sphere, where it resulted in significant savings of financial means.

The present situation of permanent lack of public finance results in still greater pressure on looking for reserves as well as streamlining of activities, which can be helped by the discussed process management.

We realise that there is currently no systematic monitoring of the implementation of this avant-garde method in self-government, and legislation does not create pressure on its implementation. Process management can therefore be a challenge for the solution of several problems, which common practice of self-government functioning encounters on a daily basis.

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PRODUCT CHOICE ATTITUDE FORMATION: IT IS A MATTER OF A COLLECTIVE OR PERSONAL IDENTITY?

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Abstract

So far, specific social factors have been recognised as having a strong impact on the formation of consumer attitudes towards foreign products. At the same time, it has been argued that there is a need to explore other parameters that may affect the product choice attitude formation. In this context, this article explores cultural aspects that are associated with both, the collective and the personal identity of individuals by investigating whether and to what extent these aspects influence overall foreign product openness. The results allow us to argue that cultural aspects related to the collective identity have a significant impact on attitudes towards foreign products, while other aspects, related to the personal identity of individuals, seem to affect this attitude formation to a lesser extent .

Keywords: Collective identity, Personal identity, foreign products openness, preference, liking, trust, intention to buy

Product choice attitude formation

It is a matter of a Collective or Personal identity?

Introduction

In today's marketplace where globalization of markets has increased the means and the domination power of global brands within national boundaries, it is essential to understand the importance of the country of origin as a standing out criterion that influences the purchase likelihood. On the other hand, the impact of globalization generates national consciousness and activates ethnocentric tendencies that shape the consumer's behaviour. In this context, the in-depth knowledge and understanding of the factors that determine the relationship and influence the balance between local and global orientation of consumer's intention is of particular importance to marketers. Adopting the dynamic view which claims that situational factors are useful in understanding consumers' judgements and decisions (Donnel et al., 2014), the recession times, that hit the Greek business environment, provide a relevant background in order to approach and forecast consumer's behaviour towards local and imported products.

The following research intends to throw some light on the above topic by focusing on the cultural dimensions of the collective and personal identity that influence the behaviour of consumers feeling strong economic pressure. The contribution of the particular research is twofold: First, it departs to handle specific but so far sporadically investigated cultural dimensions as broader Identity-related constructs that are of great relevance in the particular period, since they are related to the perceived economic and cultural threats. This

contribution of the particular study is in line with Escalas' view, (2013) that the broad conceptual approaches which were followed so far are out-dated and should not be preferred by researchers, since other, more "granulated" approaches focused on specific situations and self-related aspects, may offer much more valuable insights into consumer decision making. The second contribution of our research stems from the fact that we are investigating four different aspects of foreign product openness, namely : liking, preference, trust and buying intention which have not so far been simultaneously treated.

Theoretical background – Literature review

The particular paper falls within the theme of product nationality and explores issues associated with consumer ideologies (Dmitrovic & Vida, 2010). More precisely, the particular research explores consumer ideologies that are being affected by stimuli related to product nationality. Placing the study in a broader perspective, it falls within the domain of consumer preference formation (Axsen et al., 2013; Obermiller & Spangenberg, 1989; Veglegh & Steenkamp, 1999) and is closely related to the consumer culture theory which refers to "*theoretical perspectives that address the dynamic relationships between consumer actions, the market place and cultural meanings*" (Arnould and Thompson, 2005, p. 868).

In general, the formation of those consumer ideologies accrues through both cognitive as well as affective and normative processes. This also occurs because of the mutual influences that exist between those three processes around which major theories have been developed . Theories like the information integration theory, the categorization theory and the accessibility-diagnostics model and the Halo effect theory (s. Dmitrovic & Vida, 2010, p.151-152), are some of the main approaches that explore cognitive processes, while the Theory of Reasoned Action (TRA) (Fishbein & Ajzen, 1975) and the Social Identity Theory (Tajfel, 1981) intend to interpret the consumption choices through affective mechanisms. Lastly the study utilises, the consumer ethnocentrism construct (Shimp & Sharma, 1987;Shih-Tung et al., 2013) which is closely related to normative dimensions and is being widely used in order to capture normative processes. In this later approach, it is argued that there are four factors that form ethnocentrism: socio-psychological factors, political, economic and demographic ones.

It must be also realised that, in a globalised world, "cognitive information may be losing its meaning..." (S. Liefeld, 2004; Samiee et al., 2005), in contrast with the affective processes which seem to have a negative effect on consumer ethnocentrism in several ways.

Finally, it must be taken into consideration that social structure seems to play an important role in the self-concept development, (Andronikidis, 2013), one shouldn't undervalue that "*...the recent economic recession reminds us that the normative facet of processing mechanism gains its importance in times of economic hardship...*" (Dmitrovic & Vida, 2010, p. 161). Within this quite wide conceptual framework, the particular research is based on normative dimensions and particularly on the ethnocentrism view as regard to the cultural identity dimensions.

The formation of attitudes, perceptions and, ultimately, preferences towards products of different origins and backgrounds, is being affected by the interaction of the individual with the social context in which he/she belongs. Signaling theory justifies this by recognising that the purpose of most human behaviours is to signal value to others and the interactivity between the individual and his/her social context leads to the formation of distinctive identities. As far as product selection, consumer attitudes toward products, preferences and consumption decisions, various approaches for utilising and combining normative, affective, cognitive perspectives have been developed. Among them, the one proposed by Vida (2008) claiming that affective and normative constructs, (namely consumer ethnocentrism and

patriotism) are stronger determinants of domestic consumption than rational (cognitive) mechanisms, could be considered as the dominant view.

In addition, the personal identity, which according to Erikson (1950), represents one's set of goals, values and beliefs, builds the collective identity, which largely refers to groups to which one is a member. This notion refers to the social identity, and the cultural identity, which are both an aspect of the self and a reference for a group to which one belongs, or the national identity which is understood as the set of meanings owned by a given culture that sets it apart from other cultures, or any other kind of group identity. The social identity (Tajfel & Turner, 1986) has been defined as the set of values internalized from the groups to which one belongs, as well as the affective valence assigned to group membership. As mentioned earlier, although the social identity refers to any group to which a person belongs, the cultural identity refers to specific cultural groups.

Several socio-psychological constructs concerning the relationship of the individual with "in-groups" or "out-groups" plays a central role in the formation of his/her attitudes, beliefs and behaviour. These are, *Patriotism* (in-group directed antecedent) (Balabanis & Diamantopoulos, 2004). *Cultural openness*, *Cosmopolitanism*, *Nationalism or Anti-globalisation* are "other-directed" antecedents to the formation of product attitudes, while *Consumer Ethnocentrism* (CE) belongs to the normative factors, since, according to the Shimp & Sharma (1987), *CE is an individual's tendency to view domestically manufactured products as being superior ...and hence, CE deals with the consumer beliefs about the appropriateness and morality of purchasing foreign-products*. Sharma et al. (1995) later proposed that the antecedents to ethnocentrism include consumer openness to foreign cultures, patriotism, collectivism-individualism and conservatism. At the same time, patriotism, nationalism etc., are among the main "in-group" identifiers. Our decision to examine the particular cultural-related personal identity dimensions is based on the fact that, as it is widely recognized, "...when competitive pressures increase in the domestic market place, consumers' affective and normative responses may become prevalent."(Dmitrovic et al., 2009, p.524).

Research Framework

Objective

Given the dynamic character of the collective identity formation and the particular political and economic as well as social conditions that prevail in Greece at this point in time, the particular research explores the impact of cultural-related personal and collective identity dimensions on foreign products openness.

Methodology

We utilized theory and empirical knowledge regarding collective and personal identity in order to investigate the foreign product openness by Greek consumers. Before proceeding with the main constructs of our research, we should note that we incorporated a filter question as regard the respondents' prior travel experiences. This was decided since as Samiee et al. (2005) suggest that travel experience along with socioeconomic status, foreign language skills and gender, are influencing consumers' proficiency at recognising foreign brand origin. "In-group" directed antecedents (like patriotism) as well as "other-directed" antecedents (like cultural openness, anti-globalisation and cosmopolitanism) were chosen. Moreover, dimensions that are embodied in Personal Identity, which are related to Values-and beliefs-driven cultural-related dimensions and may have an indirect impact on the particular attitude formation, were also included in the survey. These were: Job-related competitiveness, Immigrant-related workforce and Cultural threat, as well as Perceived

Household economic confidence. The established measures that were utilised in order to form our research tool, are presented next in the results section.

After checking the robustness of the selected constructs, we first explored the mutual interaction of collective and personal identity factors. Then, the endorsement of each to the product openness was investigated by searching for possible moderating impact either from CI or from PI on the dependent variable of product openness.

Sampling

The main research procedure is built on a pre-test of the research tool, among ten individuals. Important observations were made at this stage and were utilized further in the main research stage, on the basis of which the instrument was fine-tuned. Regarding the main research procedure, data were collected by means of a self-completion questionnaire that was administered to respondents, which were adults consumers who are responsible for household purchases. A total of 144 fully completed questionnaires from the described sample safeguarded the external validity of the study.

Results

Regarding the results of Reliability analysis of the scales utilized in our study, Cronbach alpha proves that all reliability scores are above or very close to .7, the threshold Nunnally (1978) recommended for basic research, indicating good reliability. More precisely, the coefficients for the collective identity dimensions were as follows: Cultural openness (7 items based on de Royter et al. (1998); Suh & Kwon's (2002) scales), $\alpha=.890$, Patriotism (10 items based on Kosterman and Feshbach's (1989); Heath and Tilley (2005) scales), $\alpha=.901$, Anti-globalisation (6 items based on Levanon and Lewin-Epstein (2009) scale), $\alpha=.694$, Cosmopolitanism (4 items based on Cleveland and Laroche (2007) scale), $\alpha=.692$. As regards the Personal Identity dimensions, Job-Related Competitiveness (6 items based on Sivadas et al. (2008) scale), $\alpha=.732$, Immigrants-Related / Workforce Threat (5 items), $\alpha=.759$ and Immigrants-Related / Cultural Threat (3 items), $\alpha=.730$, and Households Economic Confidence (2 items), $\alpha=.802$, all based on Levanon and Lewin-Epstein (2009) scale, and Attitudes toward Foreign Products (Preference, Trust, Liking, Intention to Buy), Cronbach $\alpha=.830$.

The distribution of the particular dimensions showed that the mean scores were from positive (around 4), to neutral (around 2.5-3 in a 5-point scale). More analytically, Overall Cultural Openness (N:144), $MS=4.33$, Overall Cosmopolitanism (N:144), $MS=4.23$, Overall Job-Related Competitiveness (N:143), $MS=3.86$, Overall Patriotism (N:142), $MS=3.47$, Overall Anti-globalisation (N:144), $MS=2.94$, and Overall Immigrants-Related / Job-Related Threat (N:144), $MS=2.96$, Overall Immigrants-Related / Cultural Threat (N:144), $MS=3.02$, Overall Household Economic Confidence (N:144), $MS=4.61$.

For the Scale Intercorrelations, Correlation analysis proved that most of the dimensions were found to be significantly and positively related to the rest, or at least to some of them. Of course, since the dimensions selected were occasionally measuring contradicting notions (ie. Immigrants threat and globalisation) it was expected that some dimensions would either not be significantly correlated or negatively correlated with others.

To test our proposed models, we conducted regression analysis examining whether collective and/or personal identity dimensions predicted attitudes towards foreign products. As illustrated in Table 1 below, the overall model fits well, since Overall Identity dimensions significantly predicted Overall Attitude. The same applies for the Overall Collective Identity dimensions on Overall Attitude, but not for the Personal Identity ones. When Personal Identity dimensions were tested, their effect on Overall Attitude as well as on each of the four

attitude-related indicators disappeared. Only three models were proved to have significant predictability on $p < .05$ level. These are: Job-Related Competitiveness to Preference, Job-Related Competitiveness to Intention to Buy and Immigrants-Related / Cultural Threat to Liking. This sporadic and still weak predictability demonstrates the lack of predictability of the Overall Personal Identity dimensions on Overall Attitude.

On the contrary, as far as the collective dimensions are concerned, Anti-globalisation and Patriotism appear to be strong predictors of the Overall Attitude formation and its indicators separately (preference, trust, liking, buying intention). However, among those predictors exceptions exist, mostly related to Cultural Openness and Cosmopolitanism.

Table 1: Regression Analysis	Adjusted R ²	df	F	Sig
OVERALL IDENTITY DIMENSIONS				
Collective & Personal Identity → Overall Attitude	.186	2	7.539	.000 s.s.
Collective & Personal Identity → Preference	.158		6.377	.000 s.s.
Collective & Personal Identity → Trust	.066		3.028	.013 s.s.
Collective & Personal Identity → Liking	.121		4.926	.000 s.s.
Collective & Personal Identity → Intention to Buy	.141		5.680	.000 s.s.
COLLECTIVE IDENTITY DIMENSIONS				
Overall Collective Identity → Overall Attitude	.102	4	5.058	.001 s.s.
Overall Collective Identity → Preference	.130		6.340	.000 s.s.
Overall Collective Identity → Trust	.023		1.834	.126 n.s.
Overall Collective Identity → Liking	.057		3.150	.016 s.s.
Overall Collective Identity → Intention to Buy	.059		3.224	.014 s.s.
Cultural Openness → Preference	-.014	7	.714	.660 n.s.
Cultural Openness → Trust	.016		1.333	.239 n.s.
Cultural Openness → Liking	-.010		.799	.590 n.s.
Cultural Openness → Intention to Buy	.028		1.581	.146 n.s.
Patriotism → Preference	.108	10	2.707	.005 s.s.
Patriotism → Trust	.033		1.484	.152 n.s.
Patriotism → Liking	.119		2.908	.003 s.s.
Patriotism → Intention to buy	.067		2.005	.038 s.s.
Anti-globalisation → Preference	.146	6	5.082	.000 s.s.
Anti-globalisation → Trust	.071		2.822	.013 s.s.
Anti-globalisation → Liking	.060		2.526	.024 s.s.
Anti-globalisation → Intention to Buy	.121		4.290	.001 s.s.
Cosmopolitanism → Preference	-.007	4	.761	.552 n.s.
Cosmopolitanism → Trust	-.010		.634	.639 n.s.
Cosmopolitanism → Liking	-.004		.862	.488 n.s.
Cosmopolitanism → Intention to Buy	-.014		.509	.729 n.s.

PERSONAL IDENTITY DIMENSIONS				
Overall Personal Identity → Overall Attitude	-.002		.686	.409 n.s.
Overall Personal Identity → Preference	-.003	1	.521	.472 n.s.
Overall Personal Identity → Trust	-.003		.641	.424 n.s.
Overall Personal Identity → Liking	.002		1.233	.269 n.s.
Overall Personal Identity → Intention to Buy	.006		1.878	.173 n.s.
Job-Related Competitiveness → Preference	.055	6	2.385	.032 s.s.
Job-Related Competitiveness → Trust	.015		1.372	.230 n.s.
Job-Related Competitiveness → Liking	.007		1.171	.326 n.s.
Job-related Competitiveness → Intention to buy	.071		2.800	.013 s.s.
Immigrants-Related /Workforce Threat →Preference	.003	5	1.089	.369 n.s.
Immigrants-Related /Workforce Threat →Trust	-.019		.467	.801 n.s.
Immigrants-Related /Workforce Threat →Liking	.024		1.710	.136 n.s.
Immigrants-Related /Workforce Threat → Intention to Buy	.027		1.779	.121 n.s.
Immigrants-Related / Cultural Threat → Preference	-.008	3	.640	.591 n.s.
Immigrants-Related / Cultural Threat → Trust	-.012		.424	.736 n.s.

Immigrants-Related / Cultural Threat → Liking	.049		3.453	.018	s.s.
Immigrants-Related / Cultural Threat → Intention to Buy	.016		1.760	.158	n.s.
Households Economic Confidence → Preference	.004	2	1.285	.280	n.s.
Households Economic confidence → Trust	-.014		.028	.972	n.s.
Households Economic Confidence → Liking	-.006		.539	.584	n.s.
Households Economic Confidence → Intention to Buy	.001		1.091	.332	n.s.

Managerial Implication and Further Research

Are there other emerging forces of ethnocentric and collective actions versus global integrity? Which is the unique mix of local and global consumer's identity that will be activated during this period of economic attack? Will the multi-cultural influences inhibit or fuel the consumer's ethnocentric tendencies? The above research questions emerge and invite researchers to provide answers, particularly during turbulent times when many threats become challenges redefining and readjusting the economic scenery. It is therefore crucial to recognize and reinforce the healthy forces that will be able to rebuilt and resume the economic confidence, suggesting new strategies and tactics in order to internalize values like country and community as well as to influence consumption patterns. Apart from the above questions that remain unexplored and are thus calling for further research, the particular study joins the research body which recognizes "the importance of looking beyond Consumer Ethnocentrism Theory at other relevant psychographic variables.." (Sharma, 2011,p285) in order to understand the consumers' motives and behaviour. The particular study also allows us to argue that consumer's attitudes toward foreign products are collectively rather than personally influenced. Along this line, consumers disconnect their consumption patterns from their economic confidence or even from their own identity as citizens and/or workers, probably because they believe that foreign products are their only option, or simply because they fail to connect openness towards products with openness towards foreign countries or even foreigner people.

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DATABASE MANIPULATIONS AS RELATION-TYPE OPERATIONS

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Abstract

The paper points to highly useful symbiosis of manipulations in databases and operation on relation-type mathematical structures. The common context of n -ary relation tools and database structures means is discussed and the correspondence between n -ary relation operations and standard database constructions is examined. Also some relevant mathematical problems are pointed out.

Keywords: N -ary relation, relation data model, projection, selection, join, E -join, θ -join

Introduction

Relationships among elements of a number of sets often arise in real-life events and lead to investigation of important properties of discrete algebraic structures. For instance, there is a relationship among the name of the passenger, the name of the aircraft carrier, flight number, departure point, destination, departure time, and arrival time. Such relationships may be expressed in terms of n -ary relations. In [5] and [6] the authors dealt with the basic aspects how they can be used to represent in a unified way computer databases. These representations evidently help answer the questions about the information stored in databases. Also they point to the correspondence between some database information manipulations and n -ary relation operations. In the sequel most of standard database information manipulations is described using n -ary relation tools. The paper is organized as follows. First preliminary concepts on relations and relevant database terminology are reviewed. In the following main part database manipulations and corresponding relation operations are investigated.

Preliminaries

The *ordered n -tuple* (shortly *n -tuple*), denoted by (a_1, \dots, a_n) , is the ordered collection of elements that has a_1 as its first element, a_2 as its second element, ..., and a_n as its n th element.

Let A_1, \dots, A_n be finite sets. The *Cartesian product* of the sets A_1, \dots, A_n , denoted by $A_1 \times A_2 \times \dots \times A_n$, is the set of n -tuples (a_1, \dots, a_n) , where a_i belongs to A_i for $i = 1, \dots, n$. In symbols,

$$A_1 \times A_2 \times \dots \times A_n = \{(a_1, \dots, a_n) \mid a_i \in A_i \text{ for } i = 1, \dots, n\}.$$

An *n -ary relation* on sets A_1, \dots, A_n , denoted by R , is any subset of their Cartesian product, ie.

$$R \subseteq A_1 \times \dots \times A_n.$$

The sets A_1, \dots, A_n are the *domains* of R and n is its *degree*. In a special case $n = 2$, denoting $A_1 = A, A_2 = B$, we speak about a *binary relation from A to B* and if moreover $A = B$ about a *relation on A*; in case $n=3$ also the word *ternary* is used.

In order to manipulate information in a database effectively (the time is the most decisive factor), various methods for representing databases have been proposed. One of the most important methods, based on the concept of an n -ary relation, is said to be the *relation data model*. In the relevant terminology ([2], [4] among others) a database consists of *records*, which are n -tuples. The entries of the n -tuples are called *fields*. In this manner the relational data model represents a database of records as an n -ary relation. Since relations representing databases are often displayed in a table form, they are said to be *tables*. With a view to the definition of a relation, records are elements of the relation and fields are its domains.

Information Manipulations in Databases as n -ary Relation Operations

There are essentially two types of operations with n -ary relations useful to describe information manipulations in databases. The first type concerns operations based on standard set operations with fruitful applications in construction of new databases (*union, intersection, difference, Cartesian product*). The second type may be characterized as operations that are virtually motivated by the aspects of desirable information manipulations (*projection, join, selection*). Besides the mentioned operations there are a variety of further special operations (*special join-type operations among others*) utilized in database theory.

Union, intersection, difference

Let R, S be n -ary relations on A_1, \dots, A_n . Since both are subsets of $A_1 \times A_2 \times \dots \times A_n$, they can be combined in any way two sets are traditionally treated. Apparently, the resulting set will be again an n -ary relation on A_1, \dots, A_n . The *union* of R and S is the n -ary relation $T = R \cup S$. The *intersection* of R and S is the n -ary relation $I = R \cap S$. The *difference* of R and S is the n -ary relation $D = R - S$.

Example Let R and T be 3-ary (ternary) relations on $N(\text{Student Number}), S(\text{Student Surname}), M(\text{Major})$ given as databases of records by the following Tables 1 and 2:

N	S	M
1	Novak	History
2	Vrana	Physics
3	Thomas	Maths
5	Barta	Economy

Table 1 Ternary relation R

N	S	M
1	Novak	History
2	Vrana	Economy
4	Brown	Maths
2	Vrana	Physics
6	Kabat	Music

Table 2 Ternary relation T

Then the ternary relations $R \cup T, R \cap T, R - T, T - R$ are given as databases of records by the following Tables 3, 4, 5, 6.

	S	M
1	Novak	History
2	Vrana	Physics
2	Vrana	Economy
5	Barta	Economy
4	Brown	Maths
6	Kabat	Music

Table 3 Ternary relation $R \cup T$

N	S	M
1	Novak	History
2	Vrana	Physics

Table 4 Ternary relation $R \cap T$

	<i>S</i>	<i>M</i>
3	Thomas	Maths
5	Barta	Economy

Table 5 Ternary relation $R - T$

<i>N</i>	<i>S</i>	<i>M</i>
2	Vrana	Economy
4	Brown	Maths
6	Kabat	Music

Table 6 Ternary relation $T - R$

In words, database corresponding to $R \cup T$ contains records that are in Table 1 or Table 2 (in case that a record is contained in both, in the resulting database appears only ones), database corresponding to $R \cap T$ records that are simultaneously in both Tables 1 and 2, database corresponding to $R - T$ records that are in Table 1 but not in Table 2, database corresponding to $T - R$ records that are in Table 2 but not in Table 1. Notice that in all cases the resulting tables are of the same structure.

Cartesian product

Let R be an m -ary relation on A_1, \dots, A_m , S an n -ary relation on B_1, \dots, B_n . The *Cartesian product* of relations R and S , denoted by $R \times S$, is an $(m+n)$ -ary relation on sets $A_1, \dots, A_m, B_1, \dots, B_n$ such that $(a_1, \dots, a_m, b_1, \dots, b_n) \in R \times S$ if $(a_1, \dots, a_m) \in R$ and $(b_1, \dots, b_n) \in S$. It is apparent, that database corresponding to $R \times T$ contains records made up by connecting every row of the table corresponding to R with every row of the table corresponding to S . The resulting table corresponding to $R \times S$ will contain the number of columns that equals the sum of columns in corresponding databases and the number of the records in the table corresponding to $R \times S$ equals the product of the number of records in both databases.

Projection

Let R be an n -ary relation on sets A_1, \dots, A_n and $k \leq n$. The (i_1, \dots, i_k) -*projection* of R , denoted by R_{i_1, \dots, i_k} , is a k -ary relation on sets A_{i_1}, \dots, A_{i_k} defined by if $(a_1, \dots, a_n) \in R$ then $(a_{i_1}, \dots, a_{i_k}) \in R_{i_1, \dots, i_k}$.

Verbally, the R_{i_1, \dots, i_k} projection is obtained by deleting $(n - k)$ components of each n -tuple $(a_1, \dots, a_n) \in R$ leaving the i_1 th, i_2 th, \dots, i_k th components. When the relation R is given by the database of records in a table form (with n columns), then the resulting table of R_{i_1, \dots, i_k} projection will have k columns. Notice that fewer rows may result - this happens when some of the n -tuples in the relation R have identical values in each of the k components of the projection and only disagree in components deleted by the projection.

Example Let R be a 5-ary relation on sets N (*Student number*), S (*Student surname*), M (*Major*), P (*Professor*), L (*Lecture room*) given as database of records by the following Table 7. Then its projection $R_{3,4}$ is the binary relation shown in Table 8.

<i>N</i>	<i>S</i>	<i>M</i>	<i>P</i>	<i>L</i>
1	Novak	History	Kren	384
2	Vrana	Physics	Moor	384
3	Thomas	Maths	Ross	384
5	Barta	Economy	Dale	384
3	Thomas	History	Kren	381
1	Novak	Physics	Moor	381
5	Barta	Maths	Roos	381
1	Novak	Economy	Dale	381

<i>M</i>	<i>P</i>
History	Kren
Physics	Moor
Maths	Ross
Economy	Dale

Table 7 5-ary relation R
Table 8 Binary relation $R_{3,4}$

Selection

Let R be an n -ary relation on A_1, \dots, A_n and θ boolean condition containing sets A_1, \dots, A_n or their elements respectively. The *selection* R_θ of R is an n -ary relation on A_1, \dots, A_n that consists of all n -tuples of R for which the condition θ holds true. Verbally, the result of selection R_θ is the restriction of R in the sense that some rows of the table are omitted according to condition θ .

Example Let R be a ternary relation on $N(\text{Student Number})$, $S(\text{Student Surname})$, $M(\text{Major})$ given as databases of records by the following Table 9 and $\theta: S = \text{VRANA}$. Then the resulting relation R_θ is given by the Table 10.

N	S	M
1	Novak	History
2	Vrana	Economy
4	Brown	Maths
2	Vrana	Physics
6	Kabat	Music

N	S	M
2	Vrana	Economy
2	Vrana	Physics

Table 9 Ternary relation R

Table 10 Ternary relation R_θ

Join

Let R be an m -ary relation on A_1, \dots, A_m , S an n -ary relation on B_1, \dots, B_n . The *join* of R , S , denoted by $J_p(R, S)$, where $p \leq m, p \leq n$, is a $(m+n-p)$ -ary relation that consists of all $(m+n-p)$ -tuples for which there exist m -tuple $(a_1, \dots, a_{m-p}, c_1, \dots, c_p) \in R$ and n -tuple $(c_1, \dots, c_p, b_1, \dots, b_{n-p}) \in S$.

Verbally, the result of the join operation is a new relation from two given relations by combining all m -tuples of the first relation with all n -tuples of the second relation, where the last p components of the m -tuples coincide with the first p components of the n -tuples. This operation is used to put together two tables that share some identical fields.

Example Let R be a 5-ary relation given by Table 7 and S be a 4-ary relation on sets $M(\text{Major}), P(\text{Professor}), L(\text{Lecture room}), C(\text{Credits})$ given by the following Table 11.

Then the join of R, S , $J_3(R, S)$ is shown in Table 12.

M	P	L	C
History	Kren	384	6
Physics	Moor	384	8
History	Kren	381	6
Maths	Ross	381	8
Economy	Dale	381	6

Table 11 4-ary relation S

N	S	M	P	L	C
1	Novak	History	Kren	384	6
2	Vrana	Physics	Moor	384	8
3	Thomas	History	Kren	381	6
5	Barta	Maths	Roos	381	8
1	Novak	Economy	Dale	381	6

Table 12 6-ary relation $J_3(R, S)$

E-Join

Let R be an m -ary relation on A_1, \dots, A_m , S an n -ary relation on B_1, \dots, B_n and suppose that $A_i = B_j = A$ for some $i=1, \dots, m, j=1, \dots, n$. The *E-join* of R, S with respect A , denoted by $J_E(R, S)$ is a $(m+n)$ -ary relation on $A_1, \dots, A_m, B_1, \dots, B_n$ that consists of all $(m+n)$ -tuples for which the values of the common set A are equal. Verbally, the result of *E-join* is a new

relation constructed by combining all m -tuples of the first relation with all n -tuples of the second relation, for which the values of common set (attribute) A are equal (this motivates the concept and its notation).

Example Let R be a 4-ary relation on sets $M(Major), P(Professor), L(Lecture room), C(Credits)$ given by the following Table 13, S a 6-ary relation on sets $N(Student number), S(Student surname), M(Major), P(Professor), L(Lecture room), C(Credits)$ given by Table 14. Then the E -join of R, S with respect to $Professor(\text{from } R) = Professor(\text{from } S)$, $J_E(R, S)$ is shown in Table 15.

M	P	L	C
History	Kren	384	6
Physics	Moor	384	8
History	Kren	381	6
Maths	Ross	381	8
Economy	Dale	381	6

Table 13 4-ary relation R

N	S	M	P	L	C
1	Novak	History	Kren	384	6
2	Vrana	History	Moor	384	8
3	Thomas	History	Smith	381	6
5	Barta	Maths	Moor	381	8
1	Novak	Economy	Lear	381	6

Table 14 6-ary relation S

M	P	L	C	N	S	M	P	L	C
History	Kren	384	6	1	Novak	History	Kren	384	6
Physics	Moor	384	8	2	Vrana	History	Moor	384	8
Physics	Moor	384	8	5	Barta	Maths	Moor	381	8
History	Kren	381	6	1	Novak	History	Kren	384	6

Table 15 10-ary relation $J_E(R, S)$

θ -Join

Let R be an m -ary relation on A_1, \dots, A_m , S an n -ary relation on B_1, \dots, B_n . Further, let $A_i = B_j = A$ for some $i=1, \dots, m, j=1, \dots, n$ and θ be a boolean condition containing values of the common attribute A . The θ -join of R, S with respect to A and θ , denoted by $J_\theta(R, S)$ is a $(m+n)$ -ary relation on $A_1, \dots, A_m, B_1, \dots, B_n$ that consists of all $(m+n)$ -tuples for which the values of the common set A satisfy condition θ . Verbally, the result of θ -join is a new relation constructed by combining all m -tuples of the first relation with all n -tuples of the second relation, for which the values of common set (attribute) A satisfy condition θ .

Example Let R, S be relations given by Tables 13, 14.. Then their θ -join, $J_\theta(R, S)$, with respect to L and $\theta: Lecture\ room(\text{from } R) \neq Lecture\ room(\text{from } S)$ is shown in Table 16.

M	P	L	C	N	S	M	P	L	C
History	Kren	384	6	5	Barta	Maths	Moor	381	8
History	Kren	384	6	3	Thomas	History	Smith	381	6
History	Kren	384	6	1	Novak	Economy	Lear	381	6
Physics	Moor	384	8	3	Thomas	History	Smith	381	6
Physics	Moor	384	8	1	Novak	Economy	Lear	381	6
Physics	Moor	384	8	5	Barta	Maths	Moor	381	8
History	Kren	381	6	1	Novak	History	Kren	384	6
History	Kren	381	6	2	Vrana	History	Moor	384	8
Maths	Ross	381	8	1	Novak	History	Kren	384	6
Maths	Ross	381	8	2	Vrana	History	Moor	384	8
Economy	Dale	381	6	1	Novak	History	Kren	384	6
Economy	Dale	381	6	2	Vrana	History	Moor	384	8

Table 16 10-ary relation $J_\theta(R, S)$

Remark Obviously E -join operation is as a special case of θ -join operation. With a view to very frequent use of E -join in applications it is usually treated separately

Conclusions

Informatics besides mathematics plays undoubtedly an integrating role in all with real-life occupying disciplines. The progress in informatics is primarily determined by new technologies and particularly by the development of software engineering. The symbiosis between mathematics and informatics initiated historically computing processes. The present total influence of computers to all spheres of life together with free access of all individuals to computers, information nets and sources shifts the essence of such symbiosis strongly to logical processes. From the viewpoint of a current user the logic is naturally (sometimes unknowingly) employed when manipulating and browsing in databases. For more sophisticated approach mathematical tools to perform operations on databases are advisable. It may evidently help to answer queries about the information stored in databases. The use of extensive relation algebra tools may be beneficial to solve important problems in database theory. For instance, the testing procedures for composite keys, the properties of composite keys with respect to database operations and optimization problems. It may also set problems concerning algebraic properties of the operations on the special types of n -ary relations motivated by database manipulations.

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TO STAY OR NOT TO STAY: THAT IS A QUESTION

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Abstract

Emigration and immigration, particularly of young individuals, raise social, economic, and cultural problems for both the recipient and donor countries. Substantial fluctuations in these rates make coherent adjustment and planning for the resulting social processes at best difficult, at worst ineffective. We have undertaken a study of the behavior and motivation of university students as they enter the university educational system and begin their studies with an aim to provide a measure of predictability in this phenomenon.

To identify important factors which influence a young person's choice between continuing studies in a native university and a foreign one we have carried out a longitudinal study of about fifty Lithuanian students at three time instances: At t_0 , the time they choose between emigration or staying in their home country for their university education; at t_1 , soon after they arrive and first encounter their chosen environment; at t_2 , some six months or so after their direct experience of their chosen environment. The investigation was carried out with respondents drawn from universities in Lithuania and Great Britain. The information was collected through in-depth interviews using ethnographic techniques, initiated with a questionnaire designed to identify some four hundred binary values but allowing additional exploration of naturally arising motivational factors.

Keywords: Lithuanian students, migration, state, environment, influences

Introduction

While Lithuania was under Soviet rule, emigration was not a significant process: to the West it was prohibited by government decree, to the East it was simply not attractive. Emigration from Lithuania to the West started with the re-establishment of independent Lithuania in 1990. Initially it was viewed as a benign process, driven by pent up curiosity and the realization of economic benefits, and was expected to abate. During the last decade however, the attitude towards emigration has changed, as the cultural, demographic, economic, and social consequences have begun to be appreciated.

Thus one finds in the Lithuanian Demographic Yearbook the statement "In 2005–2013, 401.8 thousand residents emigrated from Lithuania." (Demographic yearbook 2013, p 114/ <http://osp.stat.gov.lt/services-portlet/pub-edition-file?id=2992>). This number may not seem very significant on the scale of a country such as the USA, but on the scale of Lithuania this represents about fifteen percent of the total population. This number is sufficiently large to guarantee serious social, economic, and cultural consequences in itself; for example it is comparable to the current unemployment rate. Because a significant part of the outflow consists of academic youth one can expect only a magnification of the consequences, even if some students return home after their studies. Indeed perhaps the simplest indicator of problems is provided by the recent (and traumatic) efforts to reorganize the national educational establishment to cope with a decrease in the number of enrolled students.

Insights from the research on the Lithuanian emigration

The recognition that emigration could raise serious problems was accompanied by efforts on the part of sociologists, anthropologists, historians, as well as other researchers to characterize and understand the phenomenon. Most of the early empirical studies involved small samples (rarely exceeding one hundred), encountered opportunistically, and concentrated on social and socio-economic reasons for emigration. Among the reports with a larger number of respondents is that of Simanskiene and Pauzoliene (2012,148), who used questionnaires to assess the state of 412 persons, concluding that most emigrants left the country for economic reasons, but did note that individuals with high professional qualifications also emigrated while seeking an environment allowing more self-expression or to take advantage of career possibilities. A number of studies evaluated the consequences of emigration on the national scale, with, for example, Berzinskiene, Butkus, and Matuzeviciute (2014,333) stating: "Over the past decade significantly increased flows of emigration from Lithuania pointed out the relevance of immigration impact assessment on national economic growth, as the country is losing economic, scientific, technical, innovative potential." Damudiene (2013, 107 - 110) commented that migrating individuals often cannot explain the motives for their decisions but did characterize economic, socio-cultural, political, psychological, geographical, and demographic factors in terms of "pull" and "push" variables. Rudzinskiene and Paulaiskaite (2014,76), using a sample of 140 respondents, also concluded that while most emigrants left the country for economic reasons, but also noted that there was a significant economic benefit from emigrants in the form of remittances. As Lithuanian government services became more functional (and the scope of its activities expanded) and integrated with European Union support, government data became the basis for many of the studies; on the whole the assertions mentioned earlier were confirmed (though perhaps with better statistical indices). Improved technical services allow selecting populations for study, such as reported by Aidis, Krupickaite, and Blinstrubaite ("The loss of intellectual potential: migration tendencies among university students in Lithuania", 2005). Other researchers reported student attitudes about emigration (Merkys et al., 2006), explored student motives for seeking employment outside of Lithuania (Skackauskaite, 2007), considered "brain drain" and the reverse processes (Didzgalvyte, Pukeliene, 2010), as well as aspects of internal migrations (Kvedaraite et al., 2011; Repeckiene et al, 2009; Matulionis et al., 2010).

A first order summary of the available information on emigration in Lithuania might be as follows: On the population level emigration rates seem to be governed by a ratio of the apparent benefits (mostly concrete economic ones, but also as anticipated wider opportunities) to the perceived difficulty in making the transition (mostly from uncertainties about what will be encountered). Student behavior seems to accord to that of the population as a whole, perhaps modified by a larger optimism factor. The available information does not give insight into the mechanisms that lead to the described state of affairs. Knowledge of such mechanisms will be needed if an effective policy to modify emigration rates is to be developed.

What is specific in students' emigration research?

In this paper we report on an attempt to integrate three features in a novel way to understand the mechanisms underlying the emigration process: a) We study students, b) We introduce variables which reflect student motivations, and c) We carry out a longitudinal study, with the same students being repeatedly followed over a significant time period. These choices were the result of a number of considerations which we now briefly discuss. They range from purely personal preferences to systemic considerations.

We chose to study the emigration of students partially because by being a well characterizable sample they are easier to study, but primarily because their migration impacts

strongly, over a long time period, all processes and systems in the life of a nation. Changes in the behavior of students cause changes not only in the nation's internal processes but also in the relations developed with the rest of the World. Thus, as some of the studies mentioned earlier have recognized, it is practically important to understand the behavior of this group.

The same attributes of students that make it easier to study them also raise the possibility that there might be variables more important with students than with the general population. Being a student makes immersion in an educational process inevitable, so that information, judgment, and communication patterns are likely to be more varied than in the general population. Thus study of this group needs to be more open-ended and to rely on feedback interactions, thus leading to an interview approach.

Developing a framework that makes prediction possible

Finally we note that we use a dynamical systems approach in this investigation because we are interested in developing a framework that makes prediction possible (see Vaisnys, Buivydas, Ramanauskaitė, 2010; Ramanauskaitė, Vaisnys, 2009). Key to the use of this methodology are a) the simultaneous characterization of both the system we are interested and of its environment, and b) a search for relationships between past state variable values and current state values. If such relations are to be found the observations must be longitudinal, describing behavior over a significant span of time. Empirical evidence about the absence of such a relationship would also be of scientific interest.

In a certain sense a longitudinal study is never ending and always just beginning, so that any report is preliminary. In our investigation we have observations at two time instances (with partial data available for a third time instance). While this is formally sufficient to characterize a system, we know from prior experience that more extensive time sequences are needed. In this report we concentrate on some qualitative conclusions based on the observations, present examples of system and environmental variables which are not usually observed in more standard statistical investigations, and also demonstrate that the variables of interest are indeed time varying, something that is necessary to this approach.

The population for the study was constructed by choosing five sub-populations of ten students or potential students each: group 1 – pupils graduating from intermediate school and leaving for a foreign university, group 2 – students graduating with BA from Lithuanian university and leaving for a master's program at a foreign university, group 3 – pupils graduating from intermediate school and entering a Lithuanian university, group 4 – students graduating with BA from Lithuanian university and entering a master's program at a Lithuanian university, group 5 – students returning after studies at a foreign university to enter a Lithuanian university. The respondents were drawn from Lithuanian students in Lithuania or Great Britain, the student group assignment being made at the time of the first interview occurring at t_0 . In the Lithuanian educational system the time t_0 was during the summer. Each respondent was interviewed again at a time, denoted by t_1 , soon after encountering his/her designated environment, typically in the Fall after the student had been in the new environment for about a month or two. A third interview was held, arranged after the person had been immersed in the designated environment for about a year. Further interviews will be held as the students approach the end of their programs. The information was collected by in-depth interviews using ethnographic techniques, initiated with questionnaires designed to identify some four hundred binary values but allowing additional exploration of naturally arising motivational factors.

To indicate the sort of data that is obtained we present Figure 1 and Figure 2.

Figure 1

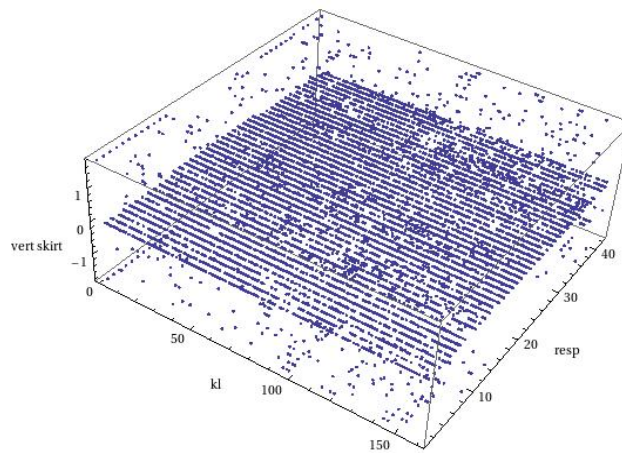
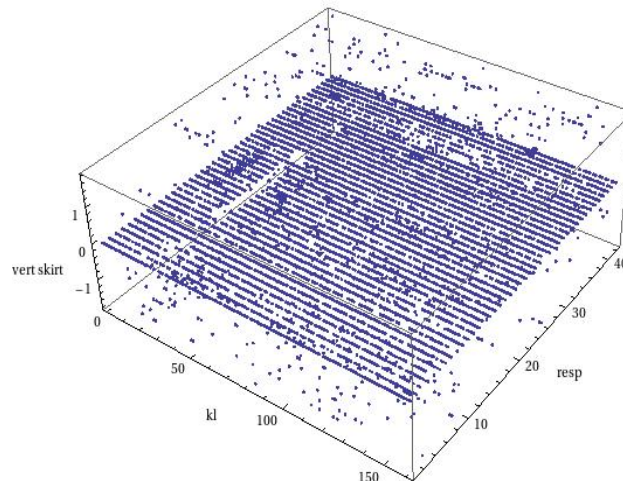


Figure 2



In both figures the horizontal axes reference a subset of the questionnaire entries, labeled by "kl" (160 out of 400 possible), and the respondents, labeled by "resp", respectively. In Fig.1 the vertical axis is the difference in subject responses between those given at t_1 and those given at t_0 , while in Fig.2 we show the difference in subject responses between those given at t_2 and those given at t_1 . The figures clearly show that there are significant changes in the values assigned by respondents with the passage of time, and a closer examination of the responses indicates that there are systematic differences in the behavior of the sample groups group1 – group 5.

Changes of state when facing the new environment

We now turn to a more detailed examination of those aspects in the data that are probably more characteristic of student migrants than the general population. We couch the presentation in terms of assertions that involve a combination of both the binary responses and of the individuals in the sample group and scale the overall response between 0 and 100. We use the signs $<$, $=$, $>$ to highlight the direction of changes, if any, with time (t_0 , t_1 , t_2).

Q1: Are you sufficiently informed about the program you are in?

	t0	t1	t2
gr1	33	< 42	< 58
gr2	14	< 57	< 71
gr3	29	= 29	< 73
gr4	56	< 78	< 89
gr5	29	< 57	= 57

Only a small number of students felt that they knew what they were getting into when choosing their studies (t0). It is striking that gr3 (students in Lithuanian universities) continued to feel lost well after (or perhaps not) engaging in their program of study (t1). A more detailed examination of the interview material reveals that many of the students feel they are not in a program they really wanted and that to many it was surprising to think that they could have gathered relevant information before making their decisions.

Q2: Are you fellow students motivated?

	t0	t1	t2
gr1	58	= 58	< 67
gr2	29	< 86	> 57
gr3	57	= 57	> 43
gr4	33	< 44	= 44
gr5	71	> 57	= 57

We can note that largest changes occur with students making a change in their environment – gr 2 Lithuanian students encountering foreign MS students, gr5 Lithuanian students returning after study in a foreign university.

Q3: Do you think you must study many unnecessary subjects in your program?

	t0	t1	t2
gr1	50	> 33	> 8
gr2	43	= 43	> 29
gr3	43	= 43	> 29
gr4	78	> 44	> 22
gr5	14	< 43	> 29

Recall gr4 corresponds to students studying in Lithuanian universities, and while initially they feel being subject to irrelevancies, their attitude changes to that typical of most students within about a month. Students returning from foreign educational programs (gr5) felt that their earlier programs had been more relevant.

Q4: I am choosing my studies in accord with my preferred residence location?

	t0	t1	t2
gr1	0	= 0	= 8
gr2	14	= 14	< 29
gr3	71	< 86	> 43
gr4	100	= 100	> 78
gr5	86	= 86	> 71

Note that students choosing studies at a foreign university (gr1 and gr2) do not appear to make their selection on the basis of a desire to live in that country and that such a proclivity does not develop after a year of residence. With persons who study in Lithuania there is a strong relation between choice of study location and residence location, decreasing over a year time span. The in-depth interviews reveal that this change can be attributed to dissatisfaction with their educational programs.

In conclusion

While it is too early to attempt construction of a data based quantitative model for the behavior of students in choosing between domestic and foreign study several qualitative generalizations can be presented. The first generalization is not about the system chosen for study (a student population) but about the environment of that system (as characterized in a systems approach): the Lithuanian higher educational establishment will need to improve not only on the content and delivery of its programs, but also in informing society (and especially future students) about its goals and expectations. Not unrelated to the above comment are several generalizations about the students themselves from the in-depth interviews. For example, researchers were struck by how poorly informed potential students were about the alternatives for further education that they were considering, be they foreign or domestic. Not only did they not have accurate information about the programs themselves but they did not have a realistic awareness of the environment in which they would have to live. In trying to clarify how such a situation might arise in the information age we found that most students relied on their peers for information, essentially ignoring such sources as parents, teachers, or even general news sources. This gave rise to a virtual reality which was self-sustaining, relatively closed to outside influences, maintaining the assumption that foreign educational institutions are much better than domestic ones. Thus many students were disillusioned by their experiences. What is particularly fascinating is that even the best students seemed to accept the assumptions of this virtual community. Their good fortune was that such students were admitted to high quality programs, and would indeed get a good education receiving it under favorable financial circumstances, and did not have to be disillusioned. In the end all students probably suffer from, as George Bernard Shaw has remarked, "the single biggest problem in communication (is) - the illusion that it has taken place".

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CULTURE AND CONNECTIONS

PRELIMINARY RESEARCH AND PRESERVATION- RESTORATION INTERVENTIONS FOR WOOD ICONS

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Abstract

The preservation-restoration intervention means making efficient again a product of human activity, the preservation consisting of multiple actions whose purpose is to treat and keep valuable cultural artifacts, both mobile and immobile. The restoration of works of art implies the establishment of a work methodology specific for each object, in compliance with general principles, the principle of minimum intervention being the basis of every methodological restoration proposals. The purpose of restoration is to restore the potential unity of the object. The restoration interventions must be recognizable without producing a historical or esthetic fake, reversible and performed with materials compatible with the original. For this reason, the first and most important action undertaken in order to treat a work of art is scientific documentation, consisting of analysis, tests, written, photographic and drawn documentation, all of these necessary in order to emphasize the technological aspects of the conservation status of the studied objects, as well as the proof of evolution of the performed interventions. The methodological preservation and restoration operations undertaken on the surface of the “Virgin Mary's Entrance into the Church” icon from the Jitianu Monastery Collection (Craiova, Romania) have been done following a thorough scientific analysis and in accordance with the restoration principles. The purpose of the biological investigations has been to confirm the active attack of xylophagous insects, the recommendation being the treatment of the wood with a bioacid introduced in the flight orifices through injection and brushing. The physico-chemical investigations done through the FTIR (Fourier transform infrared spectroscopy) and XRF (X-ray fluorescence) techniques have shown degradations caused by the work technique, by identifying the type of primer and pigments used in the painting of the icon. The restoration interventions that have been undertaken have been thought and applied based on the types of degradation existing on the surface of the wooden structure and painting layer, following scientific research based on modern restoration principles, always and inalienably respecting the authenticity of the object. During the restoration process, the reversibility and compatibility with the original of the materials used, as well as the legibility of the interventions made.

Keywords: Restoration, preservation, mobile patrimony, wood icons, degradation factors

Introduction

Before any intervention of conservation and restoration of icons on wood, it is necessary to make a scientific documentation containing physical, chemical and biological analyses, consolidation and cleaning tests, as well as a written, photographic and drawn

documentation. The documentation must be reveal the scientific nature of the restoration, and also highlight the technological aspects of icons, the state of preservation and the conservation - restoration methodological operations performed on the studied objects.

The scientific research carried out before the restoration operation, like the microscopic examination of the paint layer stratigraphy, composition of the nent materials through FTIR (Fourier transform infrared spectroscopy) technique and XRF (X - ray fluorescence), aim the proper understanding of the studied object and helps to identify the chemical composition of the materials used in making the work. These studies are useful in preparing a restoration methodology specific to each particular item, the results obtained after the research being those which argue each intervention of conservation and restoration on the work (ACS, 2013).

If the term conservation refers to a set of actions aiming at the treatment and care of valuable cultural objects, both mobile and immobile, intervening on the microclimate to minimize the degradation of cultural property (Ionescu, 2010), the restoration implies the methodological moment to recognize the work of art in its physical consistency and its dual aesthetic and historical polarity in order to be for transmitted to the future (Brandi, 1996). Restoration involves the intervention on the work, following the principle of minimal intervention and aims to restore the potential unit of the object.

Taking into account the principles of conservation and restoration of heritage values, the restorer faces conservation issues of the original artistic features, with certain forms of degradation that can influence, sometimes fundamentally, the aesthetic appreciation (Boldura, 2013).

The study case study chosen to illustrate all the methodological conservation - restoration operations is the icon of the 19th century - "The Mother of God goes into Church", painted in tempera on wood, in the Jitianu Monastery Collection (Craiova, Romania). The icon "The Mother of God goes into Church" comes from the Church of Bîrzeiu - Gilort (Gorj County, Romania) and is currently in Jitianu Monastery Museum Collection, a collection that includes the major genres of Romanian ancient art as icon painting, embroidery, silverware, wood and stone carving.

Since the degradation of the artwork is a result of uncontrolled evolution processes that have various causes, with an interdependence between these cases, one creating favorable conditions for the entry into action of the other, it was necessary for the icon painted in tempera on wood in the Jitianu Monastery collection to be carried out biological, physical, chemical investigations. There were also analyzed the changes suffered in time by it, to decide the treatment and to act efficiently on the causes that generated numerous degradations. Thus, by their reduction, it was also secured the long - term protection of the work.

On the icon "the Mother of God goes into Church" made in tempera on wood, several physical, chemical, biological and anthropogenic factors acted simultaneously, which generated degradations in the wooden structure and the paint layer. The changes caused by the microclimate instability were the main cause of physical factors, being also influenced by the original material in the work of art, like the hygroscopic nature of wood.

Conservation status of the painting on wood has been influenced by humidity, the more pronounced degradation occurring when it was repeated the cycle of increase and decrease of humidity, each change in the quantity of water in the wood substrate causing expansions and contractions, which caused major problems in the conservation of the wooden structure and paint layer.

The adsorption and desorption process has led to dimensional changes and at the same time has had an effect on the physical properties of the icon made from organic materials. The hygroscopic materials swelled and contracted as a result of changes of humidity values,

causing successive dimensional and shape changes, that have lowered their resistance and elasticity. The sudden loss of water modified the volume of wooden structure, favoring the emergence of craquelures, detachments and finally the appearance of gaps up to the wooden structure.

Another factor that acted on the icon was temperature, the degradation driven by it influencing directly the relative humidity, thereby determining the size change of the expansions - contractions support and causing numerous chemical processes (Moldoveanu, 2003).

The excessive temperature values have influenced the production of specific degradation processes on the icon, the emergence of dryness situations causing contractions on the wooden structure, which caused craquelures and cracks on the paint layer surface which over time turned into deep gaps of the color film.

The icon "the Mother of God goes into Church" has been exposed for a long period of time to various types of physical and chemical changes, with these agents largely contributing the anthropogenic factor. The object did not have its own storage and appropriate treatment conditions to keep and prolong its conservation status, but has been in contact with untrained persons who handled and conducted improper actions on the paint layer and the wooden support.

The wooden structure presents on the entire surface adhering deposits, poorly adherent and compact fatty deposits or as dregs, which is due to a stratification of tar and dust, made by weathering, which in contact with water and sweat have adhered to the surface of the substrate. Tars are fat particles from the incomplete combustion of the wax components of the manufactured candles. They have cause fatty, sticky deposits that have contributed to the reinforcement of adhesion connections of dust and dirt.

It is known that candles have often a heterogeneous composition, rarely consisting only of beeswax, which is the least harmful, in the composition of candles entering also paraffin, microcrystalline wax, fully unrefined hydrocarbon parts, etc. Paraffin wax is obtained from fuel oils (paraffin) and through distillation, purification and crystallization is obtain mineral wax. Thus, when candles burn, very fine coal particles are eliminated, which are the result of the complete combustion process and tars which are as we said fat particles making the candle.

By the long exposure to candle flames there were developed on wooden support of the icon, specific residue depositions, oxidations and accidental carbonizations of depth and breadth.

The slightly convex bending of the countertops depends on how the wooden plank was cut and is due to the natural aging process of the wood and water loss in the substrate. The panel was cut across the wooden fiber and on the entire surface of the reverse side there could be sees traces of manual processing. Although the panel was finely processed there were distinguished traces of chisel and fiber abnormalities. The nodes being oriented perpendicularly and transversely on the fiber panel had the tendency to be expelled because of the tension created in those areas due to microclimate changes compressing and constantly expanding the panel wooden fibers.

The presence of nodes also influenced the emergence of cracks, the phenomenon being due to the excessive stresses on a relatively small unit of volume. Other types of cracks of the substrate were those formed as a result of the dimensional movement of the wood caused by humidity and temperature sudden variations.

On the entire surface of the icon, both on the back and the paint layer, there were the flight holes and galleries arising from a xylophagous attack. They embrittled the wood, the moisture being thus able to easily penetrate into the depth of the wooden structure, causing losses of support material.

Weakening and the emergence of gaps in the wooden structure were produced by the combination of several factors. Thus, there was a symbiosis between the 1st degree colonizers represented by fungi and 2nd degree colonizers, xylophage insects. Since cellulose is the main constituent of wood, it provides a favorable environment for the development of fungi, their action resulting in the loss of chemical integrity of the wooden structure, thus allowing xylophage insects to develop and weaken the wood's stamina. With this component's loss, due to biological attack, the wooden fiber decayed and with the mechanical action there were formed lacunar spaces of various sizes and shapes.

Other forms of degradation found on the back of the icon, on the support, were the cuttings that occurred after the manual chisel processing of the wooden structure, the fractures due to some external mechanical factors and numerous holes and lacunar areas practiced in the support for mounting of various types of hangers. Here were also observed many stuck adhesive labels that were not compatible with the wood and inscriptions made by anthropic factor with inappropriate material. The anthropic factor, through careless handlings and storages of the icon, has also produced numerous bumps and scratches on the wooden structure surface.

In the paint layer, the icon painted in tempera on wooden support presented old age craquelures as a network, which were determined by external mechanical factors and also moisture variations, which with the swelling and contraction of the support, have caused changes in the wood size thus causing movements of the painting's substrates. The paint layer losing its elasticity over time could not follow the same movements of the support, causing its breakage in horizontal and vertical networks. Also due to the same factors, there also appeared cracks of the primer layer and implicitly the painting.

The gaps found in the paint layer were produced naturally by the aging of the binder and forced through repeated and aggressive cleanings. They were caused by the weakening of adhesion between the layers of the painting, determined by the penetration of moisture into the substrate through cracks and craquelures. Thus, on the surface of the paint layer there were deep gaps until the primer and wooden structure and surface gaps. The surface ones were the film gaps were of old varnish that has lost its elasticity, causing it to become brittle and easily get away from the color film. In some areas, it was exfoliated with color film, thus leaving only the preparation layer, the whole process being favored by the presence of micro - cracks and the constant movement of the support.

Adherent and poorly adherent deposits visible on the color film surface of the icon "the Mother of God goes into Church" have appeared from the action of external factors such as airborne particulates, solid, liquid and gas contaminants. They were deposited on the surface of the varnish film and were embedded in it, mostly by the mechanical frictions from dusting, condensation, relative humidity and air flow speed. The natural resin varnish has undergone a process of browning, the cause of this phenomenon being represented by the presence of light and oxygen.

The surface of the coating layer has shown in some areas, particularly at the bottom of the icon, agglomerations due to heat sources. When icons present in the paint layer carbonizations and fire burns from candles, besides the affected area, due to the high temperature, the varnish contracts and it gathers in small brown granules.

In the category of damages caused by anthropic factors there were observed erosions, scratches and various inappropriate interventions like the repaintings and adding different materials to decorate the surface. The erosions occurred due to circumstance washing with detergents, bleach, homemade soaps as well as the anthropic attempts to revive the color layer with oil lamp, water, lower tar, thus producing environments for the growth of microorganisms. As inappropriate interventions, on the surface paint layer of the icon, there

were found repaintings and various unscientific operations, as the application of inappropriate material to cover the lacunar areas.

The biological deposits found both on the surface of the paint layer as well as the back of the icon were droppings left by insects trapped in spider webs as well as various residues appeared on the surface of the paint layer after the xylophagous attack. The conservation of the paint layer thus depends, in the first instance, on the support's condition, its reaction with the environment as well as for most, on the anthropic factor.

After analyzing the technological processes for the execution of the icon and after assessing the conservation status of the wooded structure and the paint layer, there were conducted investigations aimed at the object's stratigraphy. Thus, the object was observed in direct light and grazing, in UV light, under the microscope and the optical stereomicroscope. With these methods there were highlighted the forms of degradation of the support and paint layer as well as the technique peculiarities of making the icon.

The biological investigations have been carried out on the surface of the icon after there were observed flight holes with morphology specific to xylophagous insects present in both the back and the surface of the paint layer. In order to verify the biological activity of the insects, the object was monitored over a period of two weeks, and then specific tests were carried to check the adherence to needle in the flight holes, as well as the water content in them. Photographs were also made with the optical microscope Nikon AZ 100, where there were highlighted bodies of the insect *Anobium punctatum*, and in a flight hole tunnel, image magnification of approx. 50x, it could be observed the laying of eggs with xylophage insect eggs, a sign that the biological attack was active.

Following the tests conducted on the icon it was confirmed the active presence of xylophage insects, which resulted in making a biocide treatment with Per-Xil by injecting biocide in flight tunnels and brushing the entire surface of the support. After the biocide was absorbed into the wood, the icon was sealed with plastic, thus achieving a micro - gassing thus allowed the biocide to act in a controlled space.

To analyze the stratigraphy it was necessary as a first step to sample the loopholes that allow this, on the surface of the icon and embedding in synthetic resin to be seen and photographed with the optical microscope Leica DM LS. It was used this semi - destructive technique to be able to photograph with the microscope and stratigraphically analyze the composition of component materials by FTIR technique.

The first method to identify the stratigraphy was to analyze the macroscopic characteristics perceived by the naked eye or with a magnifying glass that could zoom 10x-15x, then the microscopic analysis of up to a 100x magnification. The stratigraphic analyses helped to observe the number of primer layers in the composition of preparation layer, existing on the icon surface, at the same time being able to observe the primer's granulation and the small impurities presented in it.

The investigations made to identify the nature of the pigments used in making paint layer were carried out by XRF technique by a specialist. The advantage of the method is that the analysis is performed directly on the surface investigated not destroy and there can be used surfaces of several cm² from homogeneous and inhomogeneous materials.

Other advantages are that the analyses can be simultaneous and rapid; they can be performed in situ with equipment portable to the cultural assets of all types and sizes, being able to be applied to conductive and non - conductive materials. The XRF technique is very used in the analysis of the first layers of the surface and for a first determination of the nature of cultural asset substances (Marincaș, 2003).

Following XRF tests conducted on the paint layer of the icon "the Mother of God goes into Church", there were obtained seven graph pairs which told exactly what type of pigments there were used on the examined areas. Thus, it was found that the icon has a

gypsum primer, which chemically is dihydrated calcium sulfate (Istudor, 2011), gold foil and as pigments there were identified cinnabar red, iron ocher, iron oxide, copper - green, yellow, lead white and a little blue enamel. The result of the XRF analysis also contributes to establish the period of the icon.

The FTIR (Fourier Transform Infrared Spectroscopy) analysis is a technique which analyzed the types of chemical bonds of a molecule through the production of an infrared absorption spectrum. Thus, after tests conducted it was revealed in all analyzed samples, the presence of calcium sulphate, indicating that primer layer is gypsum. Also, it was also highlighted a protein binder, probably glue. In several samples it was found a resin similar to shellac, possibly from the coating surface layer and it was also identified a silicate that can come from the bolus under the gold leaf.

Depending on the results of the investigations made on the surface of the icon painted in tempera on wood, it was proposed and carried out a conservation and restoration methodology, supported by tests of the proposed operations. Initially there was a prophylactic consolidation aimed at ensuring the separation of the paint layer and preventing the process of accentuated degradation of the paint layer to the stage of production of gaps. The prophylaxis was followed by a heat consolidation, through the application of hot glue onto the surface of the foil, pressing with a hot spatula and applying a cold press to remove water from the substrate by the condensation of the water in the glue solution.

Degreasing and grouting gaps were the following operations made on the icon surface of the paint layer. The degreasing was necessary to ensure the putty holding that was to be applied to prevent its expulsion. The putty was performed with fish glue mixed with purified chalk mountain powder and applied in several layers, taking into account the thin on fat rule.

Treating gaps requires an intervention on the damages and not aims at completing the artwork. If icons have gaps in a percentage higher than 20 % or they are spread on areas where there were details that can only be reconstructed by making a fake, the correct decision is not to putty the gap because the putty polish is the first phase of the final aesthetic presentation. All the putty gaps will have to be chromatically integrated which in some cases is impossible without making a fake. If the gaps have very large sizes there will be a putty edging of their borders, putty that will prevent the peeling of the paint layer and will be integrated with shades reproducing the color of clean wooden support.

In order to remove different types of deposits present on the surface of the paint layer there were initially conducted cleaning tests using the solubility triangle and seeking to check the efficiency of the various substances in the removal of adherent and poorly adherent deposits. Thus, after the tests it was determined that there is a deposit on the surface of icon arranged in an uneven layer of the varnish film, and besides the chemical removal of depositions it was also performed a mechanical cleaning by using the scalpel.

Another important step was the chromatic integration or retouch, being one of the last stages of the final aesthetic presentation in the conservation - restoration approach of an object of fine art. The operation had to be subordinated to those fundamental principles of restoration that require the readability of the intervention as aesthetic attitude and reversibility as technical execution. It aims to restore the motifs and figural elements to the extent that existing landmarks allow us.

The chromatic integration of putty areas was performed by reconstituting the motifs and figurative elements to the extent that existing landmarks allowed us. The large and small putty were integrated in rittoco and tratteggio technique, using water colors and egg yolk emulsion.

The tratteggio technique is based on coloring large putty areas, using for this a network of fine lines drawn vertically with a tipped brush; they are obtained from the decomposition of tones forming that color and placing them in transparent, superposed layers,

the reconstruction of the basic tone being achieved optically by juxtaposing color tones of chromatic retouch.

The integration of color erosion and small gaps of color film was made in *rittocco* technique. The technique is achieved by decomposing the original tone in juxtaposed points that optically reconstruct the original tone of the intervention area. After varnishing the work, some areas were also chromatically integrated and in varnish colors, taking into account the dosage of used diluents used (oil essence and turpentine) to obtain a gloss according to the original material. The last performed operation was the varnishing, made with dammar varnish in concentration of 12 % and aiming at protecting the paint layer.

A scientific documentation is required in the conservation - restoration process of icons on wood. The restoration interventions performed were designed and implemented based on the types of degradation existing on the wooden surface structure and the paint layer after a scientific research based on modern principles of restoration, permanently and inalienably respecting the object's authenticity.

The research results help the restoration process, taking into account during operations of the used materials' reversibility and compatibility with the original, as well as the readability of the performed interventions.

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BIO-RESIDUAL STUDIES AND TREATING GUNNY SACKS WITH COUMARINS EXTRACT ON SEED PROTECTION AGAINST COWPEA BEETLE, *CALLOSOBRUCHUS MACULATUS* (FAB.)

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Abstract

Cowpea beetle, *Callosobruchus maculatus* (Fab.) (Coleoptera: Bruchidae), is the most important storage pest of cowpea. The quantification of cowpea losses through *C. maculatus* is very desirable. Coumarins possess controlling cowpea beetle. Both Ethanol and Chloroform extracts of Murraya, Kumquat and Celery plants were studied. Murraya ethanol extracts was more efficient than chloroform, as it induces higher percentage of reduction in the progeny, also protects cowpea seeds till 6 months when using the higher concentration (4%). Gunny sacks were treated with different extracts of the three of plants as an application method for protecting stored grain from infestation and ethanol extracts was a more effective than chloroform. The effect of the extracts on the weight loss of cowpea seeds was studied. The reduction percentage in weight increased from zero to 13% and 17.10% after nine months for both chloroform and ethanol kumquat extracts, respectively at the higher concentration used.

Keywords: *Callosobruchus maculatus*, Coumarins, Bio-residual, seed protection

Introduction

Cowpea, *Vigna unguiculata* (L.) (Leguminosae), is the major grain legume crop in many countries in the tropics and subtropics regions for human as well as for animal food. Its value lies in its high protein content (23-29%, with potential for perhaps 35%); and its ability to fix atmospheric nitrogen, which allows it to grow on, and improve poor soils (Steele, 1972 and Duke, 1990, Parck et al. 2003 and Rahman and Talukader, 2006). Cowpea plant, *Vigna spp* greatly suffered from the attack by several insect pests, especially of family Bruchidae, *Callosobruchus maculatus* (Fab.) which induce higher damage to the yield of one of great protein source.

Cowpea seed beetle, *C. maculatus* (Fab.), is the most important storage pest of cowpea throughout the tropics (NRI, 1996). *C. maculatus* consumed 50-90% of cowpea in storage annually (IITA, 1989). Frequently, farm storage for six months was accompanied by 70% seed infestation and about 30% weight loss and virtually unfit for consumption (Singh and Len, 1985). These percentage losses are mere estimates. The quantification of cowpea losses through *C. maculatus* is very desirable. The control of the cowpea beetle in developing countries depends mainly on chemical insecticides and fumigation. These methods, however, cause serious problems such as development of insect resistant strains and toxic residue. Therefore, it is necessary to develop more selective and safer materials which might fulfill

these requirement natural products including plant constituents and formulations appear to be promising in this respect (Ismail and Shahat, 1996; Dimetry et al. 2007 and Ismail et al., 2011). In the present study three plants i.e. Murraya, Kumquat and Celery were chosen to elucidate their anti-feedant and protectant against cowpea beetles *C. maculatus* that destroy cowpea seeds. As well as application of the plant extracts (ethanol and chloroform) as a protectant from cowpea seeds in storage.

Materials and methods

Bio-residual effect

Seed treatments

In this experiment, 250 grams of treated and untreated seeds were stored for 1, 3, 6 and 9 months after treatment and before exposing to the insect infestation. Treated seeds were placed in glass jars (250cm³), using 25 g of the seeds/jar. All treatments were replicated 3 times. Five pairs of the newly emerged beetles were released in each replicate for five days. At the end of the five days, the infested seeds were taken out and kept in clean jars. When the adults started to emergence, they were counted until no more emergences occurred.

The persistence activity of plant extract for protecting stored cowpea seeds against the beetle's *C. maculatus* was estimated by the use of the following equation:

$$\% \text{ Reduction in emergence} = B-A/B \times 100$$

Where: B= Number of adults emerged in control.

A= Number of adults emerged in treatment.

The application of plant extract to protect stored seeds in gunny sacks:

Water emulsion of the tested plant extract was used for sack impregnation for 30 seconds, then they were dried using a fan. Six gunny sacks were used for each treatment and a similar number of control, which impregnated in water and emulsifier only. Following treatment, the gunny sacks (20x20 cm) were filled, each with 250 grams of cowpea seeds. Seeds of each treatment were placed in the experimental storage cage. Control sacks were placed as well as separately in other cage. Fifteen pairs of newly emerged adults were immediately released after treatment in each cage, including the control ones. Treated gunny sacks containing seeds as well as the untreated gunny sacks (control) were stored for nine months under laboratory conditions. All sacks were investigated monthly until nine months. The number of seeds with holes on seeds was counted. The effectiveness of tested extracts on protecting stored seeds in gunny sacks was estimated by calculating the percentage of reduction in seeds infestation and reduction in the total output of eggs.

$$\% \text{ Reduction of cowpea with eggs} =$$

$$\frac{\text{Cowpea seeds with eggs in control} - \text{Cowpea seeds with eggs in treated}}{\text{Cowpea seeds with eggs in control}} \times 100.$$

$$\% \text{ Reduction of cowpea with holes} =$$

$$\frac{\text{Cowpea seeds with holes in control} - \text{Cowpea seeds with holes in treated}}{\text{Cowpea seeds with holes in control}} \times 100.$$

Also, the percentage of weight loss of seeds caused by *C. maculatus* was determined during storage. The percentage of reduction in the cowpea seeds weight was estimated according to the following equation:

$$\text{Weight reduction (\%)} = \frac{\text{Initial weight} - \text{final weight}}{\text{initial weight}} \times 100.$$

Results and discussion

Bio-residual studies

Table (1) described the bio-residual effect of both extracts of three plants, *Murraya*, Kumquat and Celery. *Murraya* ethanol extracts was more efficient than chloroform, as it induces higher percentage of reduction in the progeny, also protects cowpea seeds till 6 months when using the higher concentration (4%).

The effectiveness of the extracts decreased by long storage of the seeds, through the different concentration used. The same trend was obtained with chloroform extract, however with lower effect than ethanol.

Kumquat, ethanol extract was efficient as protectant. The effect lasts for three months with 87.14 % reduction of the progeny at 4% concentration. The decrease in bio-residual effect was in parallel with increase in storage period. Ethanol extract was more active than chloroform one.

Celery, ethanol extract at 4% reduced the progeny of cowpea beetles by 78.86 % after one month and decreased to 66.16 % after nine months.

So, it could be concluded that *murraya*, ethanol had a bio-residual till six months when using 4 % as it gave 93.06 % reduction in progeny, followed by kumquat, then celery at the same concentration.

The data obtained in this investigation were in good agreement with those of **Risha et al., (1990)** who found that soybean oil caused higher percentage reduction of *Callosobruchus chinensis* progeny when applied on faba bean seeds. They also added that, increase of storage period of treated seeds, its efficiency decreased significantly.

Bhaduri et al., (1985) proved that extracts of *Tridax procumbeus* were significantly efficient in reducing the population of *Callosobruchus maculatus* and protecting the cowpea seeds for 6days after treatment.

Sharma, (1985) reported that extracts of three flours decreased adult emergence of *Rhizopertha dominica*.

El-Kholy, (1997) found that the extract of *Brassica napus* achieved different reduction in F1 progeny of *Sitophilus oryzae*. The reduction reached 100 % at 4% concentration.

The tested *Rosmarinus officinalis* (L)) (Lamiaceae) demonstrated an insecticidal activity vis-à-vis the parameters of the *C. maculatus*. Their use in stored legumes protection is a promising alternative to synthetic pesticides without adverse effects on the environment and consumers, their constituents are biodegradables with short half-lives, **Douiri, et al. 2013 and 2014**.

Effect of treating gunny sacks with plant extract on seed protection:

Gunny sacks were treated with different extracts of the three of plants as an application method for protecting stored grain from infestation. The sacks were filled with constant weight of cowpea seeds and were subjected to the infestation with the beetles, and kept for nine months. Percentages of reduction in seeds with eggs and with holes were counted every month and reductions (%) of seeds weight were determined.

From table (2) it was noticed that *murraya*, both extracts kept its seeds healthy without any infestation (100% reduction in infestation) for one month, then began to decreased gradually with storage period: till it reached 37.0, 39.0 and 40.0 for ethanol

Table (1) Efficiency of tested plant extracts on cowpea seeds protectant against *C. maculatus* during storage (Bio-residual effect).

Duration of storage after seed treatment	Treatment	Concentration % W/ V	Mean number of adult emergence		Reduction of progeny (%)		
			Ethanol	Chloroform	Ethanol	Chloroform	
One month	Murraya	1	118±2.03	145±2.31	39.17	25.25	
		2	112±1.07	55±1.98	42.27	20.10	
		4	9±0.99	56± 2.13	96.36	71.13	
	Kumquat	1	76±1.94	81±1.39	60.86	58.24	
		2	74±1.32	74±1.45	61.82	60.30	
		4	12±1.14	22±1.21	93.81	88.65	
	Celery	1	111±2.03	132±2.35	42.29	31.63	
		2	109±2.01	121±2.112	43.78	37.96	
		4	41±2.11	78±1.42	78.86	59.80	
	Control	----	194±2.34	194±2.34	--	--	
	Three month	Murraya	1	136±3.14	167±1.77	35.24	20.71
			2	130±2.10	156±2.11	38.11	25.48
4			11±2.25	78±1.79	95.67	62.85	
Kumquat		1	99±1.79	89±2.37	52.81	57.00	
		2	97±2.73	84±1.66	53.85	60.61	
		4	27±1.23	33±1.98	87.14	84.28	
Celery		1	122±3.11	143±2.99	41.90	31.62	
		2	119±1.22	131±1.55	43.33	37.90	
		4	53±1.71	85±2.39	74.76	59.52	
Control		----	210±2.16	210±2.16	--	--	
Six month		Murraya	1	140±1.99	174±1.87	30.69	13.27
			2	134±3.01	157±1.97	33.66	22.86
	4		14±1.34	84±2.35	93.06	58.41	
	Kumquat	1	117±2.64	102±2.36	42.54	49.98	
		2	110±0.10	97±2.98	45.07	51.50	
		4	44±1.79	41±1.44	78.21	79.70	
	Celery	1	127±2.00	145±2.37	37.13	28.63	
		2	124±2.07	128±1.58	38.62	36.21	
		4	59±2.67	84±1.33	70.79	58.42	
	Control	---	202±3.01	202±3.01	--	--	
	Nine month	Murraya	1	199±2.01	200±1.22	11.95	10.16
			2	195±2.01	194±1.50	12.16	11.71
4			98±3.01	104±2.38	56.25	53.57	
Kumquat		1	144±2.66	147±1.58	35.71	34.16	
		2	139±1.79	143±2.35	37.95	36.37	
		4	79±2.19	104±1.11	64.73	53.57	
Celery		1	145±2.13	162±2.74	35.27	27.27	
		2	139±1.79	165±2.97	37.94	35.68	
		4	74±2.23	93±0.90	66.16	58.48	
Control		---	224±2.70	224±2.70	--	--	

Table (2) Efficiency of tested plant extracts of murraya on cowpea seeds stored in gunny sacks protectant against *C. maculatus* during storage.

Plant extract	Duration of storage after treatments (month)	Concentration (%W/V)	Reduction in cowpea with eggs (100%)		Reduction in cowpea with holes (%)	
			Ethanol	Chloroform	Ethanol	Chloroform
Murraya	1	1	100.00	100.00	100.00	100.00
		2	100.00	100.00	100.00	100.00
		4	100.00	100.00	100.00	100.00
	2	1	91.00	89.50	95.20	93.00
		2	93.00	89.50	97.40	94.00
		4	94.00	91.00	98.00	95.00
	3	1	84.24	82.00	86.70	86.40
		2	86.67	83.21	88.20	87.10
		4	87.66	85.51	90.00	88.20
	4	1	78.70	74.50	80.50	79.50
		2	80.00	77.00	82.44	80.00
		4	81.74	79.97	84.50	81.00
	5	1	70.00	65.00	79.50	77.50
		2	72.50	76.50	81.00	78.50
		4	74.00	68.50	82.33	80.00
	6	1	65.10	53.20	78.21	75.40
		2	68.20	55.40	79.43	77.34
		4	69.70	56.00	79.90	78.00
	7	1	58.71	49.50	67.00	63.00
		2	60.41	51.00	69.00	65.00
		4	62.50	53.50	70.50	66.60
	8	1	48.50	39.00	63.00	44.50
		2	50.10	40.50	65.50	47.50
		4	52.40	43.40	66.70	48.00
	9	1	37.00	29.00	38.50	32.00
		2	39.00	31.00	39.50	33.40
		4	40.00	32.50	41.00	34.50

extract of 1, 2 and 4 % concentrations, respectively after nine months. From table (2) it is clear that 69.7 % reduction in cowpea with eggs (%healthy seeds) after 6 months at 4% ethanol extract. However, 79.90 % reductions in cowpea with holes in the same time with the same concentration used from ethanol extract. In all cases, ethanol extracts was a more effective than chloroform.

When the sacks were treated with kumquat extract, (Table 3) it showed that these extracts kept seeds un-infested totally by the beetles for one month. After nine months, the healthy seeds reached 55.44 % (reduction in cowpea with eggs) and 56.5 % (reduction in cowpea with holes) at 4 % with ethanol extract.

Table (3) Efficiency of tested plant extracts of Kumquat on cowpea seeds stored in gunny sacks protectant against *C. maculatus* during storage.

Plant extract	Duration of storage after treatments (month)	Concentration (%W/V)	Reduction in cowpea with eggs (100%)		Reduction in cowpea with holes (%)	
			Ethanol	Chloroform	Ethanol	Chloroform
Kumquat	1	1	100.00	100.00	100.00	100.00
		2	100.00	100.00	100.00	100.00
		4	100.00	100.00	100.00	100.00
	2	1	85.44	82.00	87.00	85.40
		2	88.50	84.50	89.00	87.50
		4	89.40	85.70	90.50	88.50
	3	1	78.20	76.66	84.67	82.00
		2	80.40	76.71	86.21	85.00
		4	81.22	79.48	88.21	86.20
	4	1	75.00	72.50	82.40	79.50
		2	76.90	74.00	84.00	81.00
		4	77.50	75.50	86.50	83.00
	5	1	74.00	71.00	81.50	77.50
		2	75.00	71.00	82.00	78.50

		4	76.00	72.00	83.50	79.00
6	1		71.70	68.00	79.77	76.00
	2		72.00	70.50	80.44	76.90
	4		72.50	71.50	82.00	77.77
7	1		66.66	65.00	77.00	74.00
	2		68.00	66.00	78.00	75.00
	4		69.50	67.00	78.50	75.50
8	1		56.00	52.00	63.00	61.00
	2		57.50	53.00	65.50	62.00
	4		58.77	55.55	67.00	62.50
9	1		52.70	49.00	54.00	52.74
	2		54.50	51.55	55.77	53.66
	4		55.44	52.31	56.50	54.00

On the other hand, chloroform extract caused 52.31 % and 54.0 % reduction in the infestation either with eggs or holes, respectively at the end of the experiment. In the period of storage, ethanol extract was superior than chloroform. From table (4) celery treatment kept the seeds un- infested for 1 month, with all the concentrations used.

The infestation reached 67.99 % (with eggs) and 69.00 % (with holes) for ethanol extract after storage for nine months, while it was 63.17 % and 65.50% for chloroform one, using the higher concentration which prove to be safe from the pharmacological point of view.

Celery can also be used as a protectant agent for cowpea seeds for a period of eight month storage from beetle infestation (table 4, 7). In the second rank came kumquat, than murraya with nearly equal protection degree.

Dimetry, et al. 2007 stated that the efficacy of different formulations of the *Citrullus colocynthis* active ingredients in powder or emulsifiable concentrate in cowpea stored in different storage sacks (damour, polyethylene, gunny plastic and jute) protection against *Callosobruchus maculatus* attack was evaluated. All the formulations used were effective bioinsecticides against *C. maculatus*. And no adult *C. maculatus* was recorded during seven months of storage when damour sacks for storing cowpea seeds treated with alcohol or chloroform extract powder formulations were used. Different formulations used had no adverse effect on seeds' germination.

Study the effect of the extracts on the weight loss of cowpea seeds

To study the effect of the extracts on the weight loss of cowpea seeds, table (5) presented the data obtained. The seeds in sacks treated with murraya extracts, chloroform and ethanol decreased in weight from 250 grams till 147.6 and 175.0 grams respectively after storage for nine months at 1% concentration, the percentage reduction of weight increased from zero at the beginning of the experiment to 41.60 and 30.0% for chloroform and ethanol extracts respectively after nine months.

From table (6), kumquat when used to treat the gunny sacks protected the seeds from infestation and in turn from seed weight loss. No loss in weight was observed after 2 months storage, however low decrease in weight began after that time, from 247.5 g. for the chloroform extract at 4% concentration.

On the third month, the weight began in decreasing till reached 217.5 g. after nine months. For ethanol kumquat extract, the decrease in seed weight started after 4 months from 245.00 g. till reached 217.55 at the end of the experiment, versus 132.57 g. for the control. The reduction percentage in weight increased from zero to 13% and 17.10 % after nine months for both chloroform and ethanol kumquat extract, respectively at the higher concentration used.

The results of the present investigation go parallel with those reported by Ismail et al., (1995), they reported that eucalyptus, dodonea, guava powdered leaves and orange fruit peel

were toxic to (*Challosobruchus quadrimaculatus* Fab.) under laboratory condition, however orange fruit peel and eucalyptus leaves were more repellent.

On the same subject, Lehrer, (1983) on his investigation on the toxicity of the plant material to *Challosobruchus maculatus* beetles, concluded that neem oil protected the cowpea throughout six months storage period and only 5% of their initial weight was last after six months of storage and 18% after 10 months. With peanut oil 27% of cowpea weights were lost after 6 months. It appears that neem oil has insecticidal properties.

Recently, many authors investigated different plants containing different organic chemical groups to protect cowpea seeds from infestation with *Challosobruchus maculatus*, from these, Shaaya et al., (1997) in Botswana used powdered plants widely distributed in southern Africa to control *Challosobruchus maculatus* in cowpea seeds.

Table (4) Efficiency of tested plant extracts of Celery on cowpea seeds stored in gunny sacks protectant against *C. maculatus* during storage.

Plant extract	Duration of storage after treatments (month)	Concentration (% W/V)	Reduction in cowpea with eggs (100%)		Reduction in cowpea with holes (%)	
			Ethanol	Chloroform	Ethanol	Chloroform
Celery	1	1	100.00	100.00	100.00	100.00
		2	100.00	100.00	100.00	100.00
		4	100.00	100.00	100.00	100.00
	2	1	94.50	92.50	96.50	94.00
		2	96.50	93.70	97.00	95.00
		4	97.50	95.00	98.50	96.00
	3	1	90.00	87.01	90.50	89.44
		2	91.22	88.36	93.24	91.00
		4	92.78	88.73	94.21	92.46
	4	1	88.86	85.00	90.00	87.00
		2	90.00	87.44	91.00	88.00
		4	90.50	88.80	92.50	89.50
	5	1	83.50	81.00	86.00	83.00
		2	84.00	82.00	87.50	85.00
		4	86.50	83.50	89.50	87.77
	6	1	81.60	78.00	85.00	81.00
		2	82.00	80.50	86.44	82.77
		4	82.50	81.00	86.90	84.00
	7	1	77.60	75.00	80.00	77.55
		2	79.50	77.00	82.00	79.00
		4	80.00	79.00	83.50	80.11
	8	1	69.00	66.50	74.00	72.00
		2	71.00	67.00	75.50	74.50
		4	73.00	69.50	77.70	75.00
	9	1	61.00	57.00	65.70	61.00
		2	62.77	59.21	67.99	62.77
		4	67.99	63.17	69.00	65.50

Table (5) Efficiency of tested plant extracts of murraya on the percentage of weight loss of cowpea seeds caused by *C. maculatus* during storage (Initial weight 250grams).

Plant extract	Duration of storage after treatment (month)	Concentration (% W/V)	Weight of seeds after storage		Reduction of weight (%)	
			Ethanol	Chloroform	Ethanol	Chloroform
Murraya	1	1	250.00	250.00	0.00	0.00
		2	250.00	250.00	0.00	0.00
		4	250.00	250.00	0.00	0.00
		Control	250.00	250.00	0.00	0.00
	2	1	247.50	242.50	1.00	3.00
		2	250.00	242.50	0.00	3.00
		4	250.00	245.50	0.00	2.00
		Control	242.00	242.50	3.00	3.00
	3	1	240.00	227.50	4.00	9.00
		2	245.00	227.50	2.00	9.00

		4	247.00	230.00	1.00	8.00
		Control	225.00	225.00	10.00	10.00
	4	1	227.00	225.00	9.00	10.00
		2	242.00	225.00	3.00	10.00
		4	242.00	225.00	3.00	10.00
		Control	225.00	225.00	10.00	10.00
	5	1	232.50	230.00	7.00	8.20
		2	237.50	232.00	5.00	8.10
		4	240.00	232.00	4.00	7.00
		Control	227.50	227.50	9.00	9.00
	6	1	221.30	220.00	11.70	12.00
		2	224.50	220.00	10.20	12.00
		4	227.70	224.25	8.70	10.30
		Control	217.50	217.50	13.00	13.00
	7	1	208.75	202.50	17.50	19.30
		2	211.00	206.50	16.60	11.40
		4	235.00	213.50	6.80	14.60
		Control	197.50	197.50	21.00	21.00
	8	1	191.00	173.00	24.60	31.80
		2	193.00	178.75	23.80	29.50
		4	206.00	181.00	18.30	28.60
		Control	167.50	167.00	33.00	33.00
	9	1	175.00	147.60	30.00	41.60
		2	182.50	152.60	27.00	39.50
4		195.00	162.50	22.00	35.50	
Control		132.75	132.75	47.30	47.30	

Table (6) Efficiency of tested plant extracts of kumquat on the percentage of weight loss of cowpea seeds caused by *C. maculatus* during storage (Initial weight 250grams).

Plant extract	Duration of storage after treatment (month)	Concentration (% W/V)	Weight of seeds after storage		Reduction of weight (%)	
			Ethanol	Chloroform	Ethanol	Chloroform
Kumquat	1	1	250.00	250.00	0.00	0.00
		2	250.00	250.00	0.00	0.00
		4	250.00	250.00	0.00	0.00
		Control	250.00	250.00	0.00	0.00
	2	1	250.00	250.00	0.00	0.00
		2	250.00	250.00	0.00	0.00
		4	250.00	250.00	0.00	0.00
		Control	242.50	242.50	3.00	3.00
	3	1	250.00	245.00	0.00	2.00
		2	250.00	245.00	0.00	2.00
		4	250.00	247.50	0.00	1.00
		Control	225.00	225.00	10.00	10.00
	4	1	242.50	237.50	3.00	5.00
		2	242.50	242.50	3.00	3.00
		4	245.00	242.50	2.00	2.00
		Control	225.00	225.00	10.00	10.00
	5	1	240.00	230.00	4.00	8.00
		2	242.50	232.50	3.00	7.00
		4	242.50	242.50	3.00	3.00
		Control	227.50	227.50	9.00	9.00
	6	1	222.50	230.00	11.00	8.00
		2	225.00	231.00	10.00	7.60
		4	237.00	231.00	5.00	7.50
		Control	217.50	217.50	13.00	13.00
	7	1	214.25	213.25	15.30	15.70
		2	219.25	215.50	13.90	14.80
		4	224.50	224.25	11.20	11.30
		Control	197.50	197.50	21.00	21.00
	8	1	211.25	208.25	18.50	17.70
		2	210.00	213.00	17.60	15.80

		4	222.25	221.75	15.10	12.30
		Control	167.50	167.50	33.00	33.00
	9	1	212.00	210.50	18.10	16.50
		2	212.50	212.50	18.00	15.00
		4	217.55	217.50	17.10	13.00
		Control	132.75	132.75	47.30	47.30

Table (7) Efficiency of tested plant extracts of celery on the percentage of weight loss of cowpea seeds caused by *C. maculatus* during storage (Initial weight 250grams).

Plant extract	Duration of storage after treatment (month)	Concentration (% W/V)	Weight of seeds after storage		Reduction of weight (%)	
			Ethanol	Chloroform	Ethanol	Chloroform
Celery	1	1	250.00	250.00	0.00	0.00
		2	250.00	250.00	0.00	0.00
		4	250.00	250.00	0.00	0.00
		Control	250.00	250.00	0.00	0.00
	2	1	250.00	250.00	0.00	0.00
		2	250.00	250.00	0.00	0.00
		4	250.00	250.00	0.00	0.00
		Control	242.50	242.50	3.00	3.00
	3	1	250.00	250.00	0.00	0.00
		2	250.00	250.00	0.00	0.00
		4	250.00	250.00	0.00	0.00
		Control	225.00	225.00	10.00	10.00
	4	1	250.00	242.50	0.00	3.00
		2	250.00	246.70	0.00	1.80
		4	250.00	250.00	0.00	0.00
		Control	225.00	225.00	10.00	10.00
	5	1	246.00	242.50	1.60	3.00
		2	247.00	245.00	1.00	2.00
		4	250.00	247.50	0.00	1.00
		Control	227.50	227.50	9.00	9.00
	6	1	241.00	235.00	4.00	6.00
		2	242.50	240.00	3.00	3.00
		4	247.50	246.00	1.00	1.00
		Control	217.50	217.50	13.00	13.00
	7	1	238.75	229.92	5.50	9.03
		2	244.75	233.25	3.10	6.50
		4	245.50	238.25	2.80	4.70
		Control	197.50	197.50	21.00	21.00
	8	1	232.50	224.75	7.50	11.10
		2	237.50	226.00	5.50	8.00
		4	243.75	233.00	2.50	6.80
		Control	167.50	167.50	33.00	33.00
	9	1	227.00	217.50	9.00	13.00
		2	232.00	225.25	7.00	9.00
		4	237.50	231.25	5.00	7.50
		Control	132.75	132.75	47.30	47.30

In small scale storage systems in Nigeria, Okonokwo and Okoye, (1996) used cheap and safe materials that would not contaminate food products in acting as grain protectants. Popoola (2013) concluded that the botanicals employed are potential insecticides for protection of stored dates from *Oryzaephilus surinamensis* infestation and also, that botanicals have advantages over broad-spectrum conventional pesticides, because they affect only target pest and closely related organisms, equally they are effective in very small quantities, decompose quickly, and provide the residue free food and a safe environment to live.

According to the obtained results, it could be stated that the tested compounds played an important role in controlling the bruchid *C. maculatus*. These compounds may be used as components in (IPM) programmes for controlling this insect pest and to avoid pollution of environment and hazards to man or animals.

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CATALYTIC ALKYLATION OF C₂-C₄ HYDROCARBONS

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Abstract

The aim of this paper is development putting metals on pillar structured clay for catalytic alkylation of light hydrocarbons. The pillar structured bentonite obtained with modifying polyhydrocomplex of chromium (III) chloride. Pillar structured bentonite was used for preparation 0.5-1.0% Ru/Carrier (modifying bentonite) support catalysts where is realized alkylation of C₂-C₄ hydrocarbons. Process of alkylation is carried out at partial pressure of hydrogen 0.5-1.0MPa. The outcome of high octane number components 2.2.4 three-methylpentane and 2.2.3 three-methylpentane achieved about 40%. At alkylation butane-butene mixture yield of isooctane achieved 60%.

Keywords: Catalyst, bentonite, alkylation, butane, butene, motor fuels

Introduction

Gasoline, one of the major derivatives of crude oil, is used throughout the world as a motor vehicle fuel. The environmental protection requirements are stiffening in the world, and a number changes have been made in the quality indexes of motor fuels. In particular, for gasoline the content of benzene and sulfur have been introduced – a maximum 0.1 wt. % and 10ppm respectively (Euro-5 standart). Decrease in the maintenance of aromatic hydrocarbons, especially benzene in motor fuel is an actual and urgent problem. Toxic action of benzene and a product of its incomplete oxidation benzopyrene- cancerogenic substance accumulated in an environment, renders negative influence on safety of ability to live of people and fauna [1]. Necessity to improve technology of oil refining and its separate stages for reduction of the maintenance of benzene and its derivatives. One of such processes is catalytic hydrodearomatization-transformations of aromatic hydrocarbons to cyclohexane and its derivatives. However, the maintenance in oil distillates heterocyclic compounds which deactivate catalysts, demand their perfection and more detailed studying of the mechanism catalytic transformation of hydrocarbons [2-4].

Besides it, there is a way to produce motor fuels by alkylation and oligomerization of light gases which does not contain aromatic hydrocarbons. Intensive development of secondary processes of destructive processing of crude oil has led to occurrence at oil refining plants resources of C₂-C₄ hydrocarbons. Except for oil gases also contain basically C₁-C₄ hydrocarbonic gases where some of amount are burned. All these data has induced interest to study of producing alkylate being as components of motor fuels from hydrocarbons C₂-C₄.

One of such processes is alkylation isoalkanes with light olefinic hydrocarbons, typically C₂ and C₄ olefins, in the presence of an acid catalyst, usually sulphuric acid (H₂SO₄) or hydrofluoric acid (HF). The quality of gasoline as a fuel in internal combustion engines is

measured by its octane rating. Gasoline is produced in several grades of octane rating. The product, alkylate has a high-octane value and is blended into motor and aviation gasoline to improve the antiknock value of the fuel. Alkylate is one of the best gasoline blending components because it is a clean burning, very low sulphur component, with no olefinic or aromatic compounds and with high octane and low vapour pressure characteristics. The development of sustainable active and selective catalysts for the alkylation of light hydrocarbons to replace the unfriendly homogenous systems such as sulfuric, hydrofluoric acids and transition metal complexes currently applied in the industry still remains a challenge[5].

The purpose of this work was to study transformation of light gases C₂-C₄ at presence of the ruthenium – chromic support catalyst where as carrier is served pillar structured montmorillonite containing in native bentonite clay.

Experimental

Materials and apparatus

The raw bentonite clay was collected in South Kazakhstan. The weight% chemical composition was measured as (SiO₂) 54.0-60.0, (Al₂O₃) 13.0-16.0, (Fe₂O₃) 4.0-6.0, (MgO) 2.0-3.0, (Na₂O) 1.0-2.0, (H₂O) 8.0-11.0, and other ingredients 6.0-9.0. Cation-exchange is 66.4mmol/100.0g clay. Chromium (III) chloride, sodium hydroxide were of analytical grade, and used without further purification to prepare chromium polyhydrocomplex. Other chemical reagents HClH₂SO₄, H₃PO₄ and RuOHCl₃·4H₂O were of analytical grade. Acidity of environment supervised by means of digital pH meter OP-208/1. Concentration of HCl acid is varied from 1.0% up to 15.0%. X-ray diffraction samples were measured using a Rigaku D/Max 2200 VPC powder diffractometer with CuK α radiation, accelerating voltage of 40 kV, emission current of 30mA, and scanning speed of 10⁰/min was used to determine the crystal phase composition of the prepared carrier at 20⁰C. The acidity of the bentonite, pillar-structured montmorillonite and catalysts was investigated by FTIR spectroscopy. For the IR studies, the calcined Ru/ Pillar-structured montmorillonite sample was pressed into self-supported wafers and introduced in an IR cell allowing in situ treatments in controlled atmospheres and temperatures from -176⁰C to 550⁰C and connected to a vacuum system with gas dosing facility. Before to the adsorption measurements the sample of catalyst was pretreated in the IR cell at 350⁰C for 2h in flowing Ar about flow rate 30cm³ per minute. Afterwards, the catalyst was evacuated at 350⁰C during the 3h under dynamic vacuum of 1·10⁻³Pa, cooled down to -30⁰C, and NH₃ dosed at increasing pressures about 10- 100Pa. The IR spectrum was then recorded after each dose. The textural properties of the support catalysts were evaluated from the N₂ adsorption-desorption isotherms obtained at 77K over the whole range of relative pressures, using a Micromeritics ASAP-2000 apparatus. Specific surfaces of catalysts calculated from these isotherms using the BET method in the 0.005-0.25 P/P₀ range. Temperature – programmed study catalysts were carried out in a semiautomatic Micromeritics TPD/TPR 2900 apparatus interfaced to a computer. Amount of Ru on support catalysts were determined using a Perkin-Elmer 3030 atomic absorption spectrophotometer. The determination of the composition of feeds and products was carried out by chromatograph Chrom-4 with a Flame Ionization Detector (FID). The conditions were the following: columns: 3m x 3mm, filled by «Chromaton –N» processed with liquid phase «Polyethylenglycoladipate» (15 wt.% of the carrier). Temperature of a column 373K, temperature of the evaporator 423K. Carrier gas: argon, with 50 cm³/min flow rate.

Synthesis of pillared clays and catalyst

Preparation of pillared clays carried out as in [6, 7, 8]. Suspension of bentonite clay prepared in water and mixed up during 4 h, pH-water extract of clay makes ~ 8-9. The

polyhydroxocomplex of chromium obtained by adding gradually the solution of sodium hydroxide to aqueous solution of chromium(III) chloride. Concentration of chloride chromium change from 5.0 to 30.0 mmole Cr^{3+} per gram clay. For prevent from coagulation of the solution polyhydroxocomplex of chromium it slowly added to suspension of clay. After endurance this system during the 24 h at room temperature, excess water was removed in a rotary evaporator. Subsequently the impregnate was dried at 120°C in air for 6 h and finally calcined in air 500°C for 4 h. After cool off it to the room temperature obtaining mass was pounded to a powder and sifted. Powder of pillar structural bentonite particles about the size 2.0 mm was impregnated by aqueous solutions of $\text{RuOHCl}_3 \cdot 4\text{H}_2\text{O}$ at room temperature. Subsequently, excess water was removed at mixing, was dried at 110°C in air for 6 h and finally calcined in air at 400°C for 4 h. Chemical analysis revealed chlorine contents were changed from 0.5 to 1.0 wt % respectively.

Reduction of catalyst and alkylation

Catalytic alkylation butane- butylene fraction (15% isobutylene 30% butylene ,10 % n-butane and 40% isobutane) was carried out in a continuous flow fixed-bed reactor at the range of temperature $130\text{-}180^{\circ}\text{C}$ and pressure of gas fraction 0.2-2.0MPa. Prior to alkylation catalyst were heated in a stream of hydrogen ($50\text{cm}^3/\text{min}$) at a rate $5^{\circ}\text{C}/\text{min}$ up to a final temperature 300°C and kept at that temperature for 2 h. Typically, the reactor was loaded with 10.0g of catalyst with a pellet size of 2.0mm diluted with ceramic particles the same pellet size (mass catalyst: mass ceramics = 1:1). Then, the catalysts were cooled to temperature of alkylation in the same flow of hydrogen. The optimum of the applied process parameters – temperature, pressure and amount of catalyst based on the results of preliminary experiments.

Results and discussion

Textural Properties of bentonite

Natural bentonite clay has a little specific surface about 60 m^2 per gram and lose their porosity at heating above 110°C to $20\text{m}^2/\text{g}$. Preliminary experiments treatment bentonite clay with HCl, H_2SO_4 and H_3PO_4 gave to conclude that more effective render hydrochloric acid. Using hydrochloric acid with concentration about 6.0-8.0%wt changed the ratio $\text{SiO}_2/\text{Al}_2\text{O}_3$ from 4.0 up to 21.0. Increase the concentration of HCl from 4.0% up to 15.0% lead to destruction of the crystalline lattice structure of montmorillonite (fig. 1 curve 6). It means transformation of aluminum to the solution. The treating samples of bentonite clay with HCl (C=6.0-8.0%) not increase their thermostability. One of the way giving thermostability to native clay is to modify with a large ions for support between the layers of the mineral. Modifying bentonite clay by polyhydroxocomplexes Cr(III) leads to growth of a specific surface from 64 up to $260\text{m}^2/\text{g}$, total volume of porous from $0,18\text{ cm}^3/\text{g}$ up to $0,54\text{cm}^3/\text{g}$, interlaminar distances from 0.90 up to 2.04nm (table 1, fig 2).

The maximal distance 2,00 - 2,04 nanometers corresponds to concentration of chromium about 15-20 mmole per gram of clay where between the layers settle down polyhydroxocomplex ions of chromium [8].

Increase the concentration of chromium above 20 mmole per gram of clay does not lead to the further growth of distance. It is probably connected by that in a solution there are not hydrolyzed forms of chromium chloride which do not influence formation pillar structures. The similar phenomenon with polyhydroxocomplex ions of iron (III) also was revealed in [9].

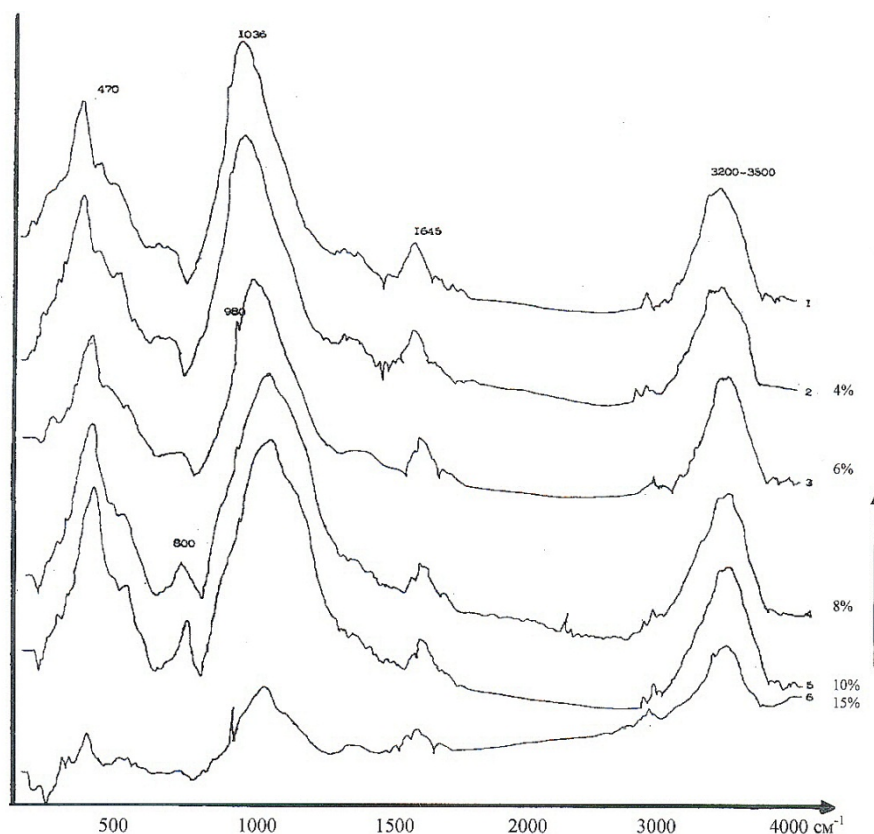


Fig.1 IR spectrum bentonite clay by treating with HCl:1-native clay; 2- sample treated with 4% HCl; 3- 6%; 4- with 8% HCl; 5- with 10% HCl; 6- with 15% HCl;



Fig.2 The pellet of ruthenium putting catalyst on the pillar structured montmorillonite

Table 1 Some parameters of pillar structural montmorillonite modified by chromium

The maintenance of ions chromium, mmol/g.clay	S, m ² /g	d ₀₀₁ nano meter	Total volume of porous, cm ³ /g	Loss of thermostability	
				T, °C	SSP, m ² /g
-	64	0,90	0,18	140	20
5	130	1,30	0,40	360	80
10	160	1,60	0,46	440	110
15	240	2,02	0,50	500	220
20	260	2,04	0,54	560	240
30	240	1,90	0,51	500	230

Modifying montmorillonite minerals (MM) containing in bentonite clay gives to them heat resistance. The specific surface of samples (containing 15-30 mmole Cr³⁺) were defined after heat treatment at 180°C are 240-260 m²/g and increasing the temperature up to 500-

560°C decreases this value insignificant to 220-240 m²/g, accordingly. Not modified bentonite clay lost their porosity at 140°C, and a specific surface made 20 m²/g.

To elucidate the nature of Lewis and Bronsted acid sites studied of the South Kazakhstan bentonites held infrared spectroscopic study using the adsorption of molecules of ammonia (table 2).

Table 2 - Acidity of the South Kazakhstan bentonite according to the thermal desorption of ammonia molecules

Sample	Content of acid centers	Amount of acidic centers			
		weak 50-100 ⁰ C	medium 200-300 ⁰ C	strong > 300 ⁰ C	total
Horizon 1(depth 0.5-1.0m)	%	64	26	10	100
	micromoles NH ₃ /g	32	13	5	50
Horizon2(depth 1.0-2.0m)	%	66	25	9	100
	micromoles NH ₃ /g	33	13	5	51
Horizon 3(depth 3.0-4.0m)	%	65	25	9	100
	micromoles NH ₃ /g	32,5	8,5	5	50
Treated with 4%HCl	%	33	27	40	100
	micromoles NH ₃ /g	66	54	80	200
Treated with 8% HCl	%	30	30	40	100
	micromoles NH ₃ /g	69	69	92	230
Treated with 10%HCl	%	40	30	30	100
	micromoles NH ₃ /g	80	60	60	200

The bentonite clay containing montmorillonite has different types of acidic centers and used to prepare Ru support catalysts for alkylation.

The table 3 shows results of alkylation of butane-butylene fraction on the support catalyst containing ruthenium.

Table 3 Results of alkylation of butane-butylene fraction (15% iso-butene: 30% butene и 50 % n-butane and iso-butane) 0.5%Ru/MM (modified montmorillonite) catalyst (25cm³).

Parameters			Yield of liquid hydrocarbons, %об.				Unreacted gas,%	Selectivity by iso-octane,%	
			2,2,3-trimethyl pentane	2,4,4-trimethyl pentane	2,5-dimethyl hexane	others,% vol.			
1			2	3	4	5	6		
T,K	P, MPa	V,h ⁻¹	0.5%Ru/MM						
403	0,2	100	8,0	12,0	3,0	6,0	71	23	
	0,5		12,0	18,0	4,0	8,0	48	34	
	1,0		13,0	21,0	6,0	10,0	50	40	
	2,0		14,0	20,0	6,0	16,0	52	40	
413	0,2	100	16,0	31,0	8,0	9,0	36	55	
	0,5		18,0	38,0	7,0	10,0	27	63	
	1,0		22,0	38,0	5,0	11,0	24	65	
	2,0		21,0	38,0	5,0	12,0	25	64	
423	0,2	100	17	34	11	9,0	25	66	
	0,5		19	41	14	8,0	18	76	
	1,0		20	44	13	7,0	16	77	
	2,0		21	43	12	7,0	18	76	
453	0,2	100	16,0	30,0	7,0	13,0	40	53	
	0,5		18,0	31,0	7,0	15,0	34	56	
	1,0		19,0	31,0	4,0	14,0	32	54	
	2,0		19,0	30,0	4,0	13,0	34	53	
423	1,0	150	18,0	26,0	6,0	16,0	30	50	

		200	16,0	20,0	7,0	14,0	40	43
		300	11,0	14,0	8,0	11,0	41	33
		350	9,0	13,0	6,0	9,0	63	28
453	1,0	150	16,0	24,0	8,0	21,0	31	48
		200	13,0	18,0	9,0	18,0	42	40
		250	11,0	16,0	7,0	14,0	52	34
		300	8,0	12,0	6,0	8,0	66	26
		350	6,0	9,0	4,0	3,0	81	19

Experimental results shows that in the presence of supported ruthenium and rhodium catalysts formed 2,2,3-trimethylpentane, 2,4,4-trimethylpentane, 2,5-dimethylhexane and high octane motor fuel components. At 0.5% Ru / γ -Al₂O₃, 0.5% Ru / MM, 1,0% Rh / γ -Al₂O₃ and 1,0% Rh / MM at a temperature of 413-423 K and pressures of 1.0 MPa, an yield of iso-octane is 50-60% at a selectivity of 63-65%.

Conclusion

On the basis of theoretical and experimental studies of catalytic conversion of light hydrocarbons C₂-C₄ improve domestic natural aluminosilicates for alkylbenzene production, which can be qualified as new developments in the field of energy-saving technologies and harmless technology for petrochemical industry.

Using the South Kazakhstan bentonite, consisting mostly of montmorillonite, followed by modification to "pillar structure" in the petrochemical process of catalytic conversion of C₄ -C₆ alkanes of normal structure to the high-octane components of motor fuels It was established that the modification of bentonite comprising montmorillonite by polyhydroxocomplexes of aluminum, iron, chromium and zirconium lead to formation of a "pillar structure" exhibiting thermal stability to 500°C. The study of light hydrocarbon conversion reactions revealed that bentonite treated by polyhydroxocomplexes of metals is very different in properties from the raw natural minerals. On the basis of the electronic spectra of acid-base indicators adsorbed on the surface of bentonite and study of the IR spectra of the ammonia molecule, established the presence of both Bronsted and Lewis acid sites in Keles bentonite. At 0.5% Ru / γ -Al₂O₃, 0.5% Ru / MM at a temperature of 413-423 K and pressures of 1.0 MPa, an yield of iso-octane is 50-60% with 63-65% selectivity.

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TIME DOMAIN FINITE DIFFERENCE NUMERICAL METHOD OF ANALYSIS OF DIRECT LIGHTNING ELECTROMAGNETIC PULSE AT GROUND HORIZONTAL WIRE

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Abstract

Nowadays, there are many different studies to analyze the transient process for the spread of the lightning electromagnetic pulse in transmission line with distributed parameters. According to the researcher's interests, works are focused into different directions. This paper presents a model of analysis of the weaning process of spreading the lightning electromagnetic pulse at ground wire located horizontally with the numerical method of finite differences in time zone. Through this study, we can estimate the values of the step voltage, touch voltage, electromagnetic compatibility problems and the over voltage analysis. The mathematical model of ground wire is described by differential equations with partial derivatives of hyperbolic type, whose solution is made with the numerical method of finite differences. Discretizing in space and time is accomplished with the Lax-Wendroff method.

Keywords: Ground horizontal wire, transmission line

I. Introduction

An electromagnetic pulse (EMP), also sometimes called a transient disturbance, is a short burst of electromagnetic energy. It may occur in the form of a radiated, electric or magnetic field or conducted electric current depending on the source. Electromagnetic pulse is commonly abbreviated EMP, pronounced by spelling the letters separately (E-M-P).

EMP is generally damaging to electronic equipment, and its management is an important branch of Electromagnetic Compatibility Engineering (EMC). At higher energy levels, an EMP event such as a lightning strike can cause more widespread damage to aircraft components and other objects.

The damaging effects of high-energy EMP have been used to create EMP weapons, both nuclear and non-nuclear. These weapons, both real and fictional, have gained traction in popular culture.

An electromagnetic pulse is a relatively short burst of electromagnetic energy. Its shortness instances means that it will always be spread over a range of frequencies. Pulses are typically characterized by: the type of energy (radiated, electrical, magnetic or conducted); types of EMP divided broadly into natural, man-made and weapons effects. Types of natural EMP event include: Lightning Electro-Magnetic Pulse (LEMP). The discharge is typically an initial huge current flow, at least kilo-amps, followed by a train of pulses of decreasing energy and electrostatic discharge (ESD), as a result of the two charged objects coming into close proximity or even contact. The range of frequencies present pulse envelope or waveform, duration and amplitude. As with any electromagnetic signal, EMP energy may be

transferred in any of the four forms: electric field, magnetic field, electromagnetic radiation and electric conduction.

In general, only radiation acts over long distances, with the others fields, acting only over short distances. There are a few exceptions, such as a solar magnetic flare.

An EMP typically contains energy at frequencies from DC to some upper limits depending on the source. The whole range of concern is sometimes referred to as "DC to daylight", with optical (infrared, visible, ultraviolet) and ionizing (X and gamma rays) ranges being excluded.

Most pulses have a very sharp leading edge, building up quickly to their maximum level. The classic model is a double-exponential curve which increases steeply, by quickly reaching a peak, and then decays more slowly. However, pulses from a controlled switching circuit often take the form of a rectangular or "square" pulse.

EMP events, usually induce a corresponding signal in the victim equipment, due to coupling between the source and the victim. Coupling usually occurs most strongly over a relatively narrow frequency band, leading to a characteristic damped sine wave signal in the victim. Visually, it is shown as a high frequency sine wave growing and decaying within the longer-lived envelope of the double-exponential curve. A damped sine wave typically has much lower energy and a narrower frequency spreading than the original pulse, due to the transfer characteristics of the coupling mode. In practice, EMP test equipment, often injects these damped sine waves directly, rather than attempting to recreate the high-energy threat pulses.

Minor EMP events, and especially pulse trains, cause low levels of electrical noise or interference which can affect the operation of susceptible devices. For example, a common problem in the mid-twentieth century was the interference emitted by the ignition systems of gasoline engines, which caused radio sets to crackle and TV sets to show stripes on the screen. At a higher level, an EMP can induce a spark, for example when fuelling a gasoline-engine vehicle, such sparks have been known to cause fuel-air explosions and consequently precautions must be taken to prevent them.

The direct effect of a very large EMP is to induce high currents and voltages in the victim, damaging electrical equipment or disrupting functions. A very large EMP event, such as a lightning strike is also capable of damaging objects such as trees, buildings and aircraft directly, either through heating effects or the disruptive effects of the very large magnetic field, generated by the current. An indirect effect can be the electrical fires caused by the heating. Most engineered structures and systems require some form of protection against lightning to be designed in. These damaging effects have led to the introduction of EMP weapons. Types of natural EMP events include: Lightning electromagnetic pulse (LEMP). The discharge is typically an initial huge current flow, at least mega-amperes, followed by a train of pulses of decreasing energy.

II CONTENTS

II.1. Grounding wire modeling. The parameters.

The case that will be taken into consideration is for uniform horizontal earthing (conductor) length l_p area S_p radius R_{cu} and placed into land at depth h (Fig. 1). Specific electric resistance of the soil is ρ_{tokes} and the relative dielectric constant of the soil is ϵ_r .

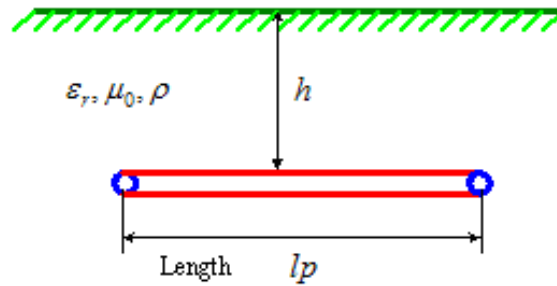


Fig. 1: Ground wire located horizontally

Uniform horizontal grounding system parameters R (resistance), L (inductivity), C (capacity) and G (conductivity) per unit length do not change, i.e. e . are constant. Calculation of parameters per unit length of horizontal grounding system is made uniform by the formulas:

$$R_0 = \rho_{cu} / \pi / (Rcu^2 - (Rcu - \delta)^2) \quad (1)$$

$$L_0 = (\mu_0 / \pi) * \ln(2h / Rcu) \quad (2)$$

$$C_0 = \pi \epsilon_0 \epsilon_r / \ln(2h / Rcu) \quad (3)$$

$$G_0 = \pi / \rho_{tokes} / \ln(2h / Rcu) \quad (4)$$

$$\delta = \sqrt{2 * \rho_{cu} / \mu_0 / 2 / \pi / f} \quad (5)$$

Where δ is the penetration depth of the wave

II.2. Solution approximation of hyperbolic partial differential equations with time domain finite differences and with Lax-Wendroff method.

In this study, will be analyzed the spread of the lightning wave, by Lax-Wendroff method, useful to solve various electromagnetic systems in the area of time. This method can be successfully used for solving temporary phenomena in power transmission lines. In our study, Lax-Wendroff method was adapted for the analysis of voltage wave spreading in a uniform horizontal earthing and presents results below, including computer efficiency by using MATLAB's method. This method is used by making discretization in space and time. Line differential equations take the form:

$$-\frac{\partial u}{\partial x} = R * i + L * \frac{\partial i}{\partial t} \quad (6)$$

$$-\frac{\partial i}{\partial x} = G * u + C * \frac{\partial u}{\partial t} \quad (7)$$

In matrix form we will have:

$$-\frac{\partial}{\partial x} \begin{bmatrix} i(x,t) \\ u(x,t) \end{bmatrix} = \begin{bmatrix} 0 & G \\ R & 0 \end{bmatrix} * \begin{bmatrix} i(x,t) \\ u(x,t) \end{bmatrix} + \begin{bmatrix} 0 & C \\ L & 0 \end{bmatrix} \frac{\partial}{\partial t} \begin{bmatrix} i(x,t) \\ u(x,t) \end{bmatrix} \quad (8)$$

where $i(x,t)$ and $u(x,t)$ are respectively the current and voltage wave in line at a point x and time t . To solve these equations (2) the method of Lax-Wendroff's, [1-6] will be used, where time derivatives (t) for j -step time and derivatives position (x) for k -step in space; in the above equations (2), we replace the respective approaches:

$$u(x,t) \Big|_{j,k} = \frac{1}{4} (u_{k+1}^j + u_k^j + u_{k+1}^{j-1} + u_k^{j-1}) \quad (9)$$

$$\left. \frac{\partial u(x,t)}{\partial t} \right|_{j,k} \approx \frac{1}{2} \left(\frac{u_k^j - u_k^{j-1}}{\Delta t} + \frac{u_{k+1}^j - u_{k+1}^{j-1}}{\Delta t} \right) \quad (10)$$

$$\left. \frac{\partial u(x,t)}{\partial x} \right|_{j,k} \approx \frac{1}{2} \left(\frac{u_{k+1}^j - u_k^j}{\Delta x} + \frac{u_{k+1}^{j-1} - u_k^{j-1}}{\Delta x} \right) \quad (11)$$

Index, respectively $k = 1, 2, \dots, K$, and $j = 1, 2, \dots, J$, and steps in space and time respectively $\Delta x = l_p / K$ and $\Delta t = T / J$ and where l_p denotes the length of grounding horizontal (line) and t is the time of the analysis of wave spreading online (earthling). We have selected small equidistant intervals to facilitate our solution by fragmented length and time of analysis, simultaneously.

By substituting (10) in (8), we obtain discretization equations systems in space and time:

$$v_k^j - v_{k+1}^j + A_{vk} (i_k^j + i_{k+1}^j) = -v_k^{j-1} + v_{k+1}^{j-1} + B_{vk} (i_k^{j-1} + i_{k+1}^{j-1}) \quad (12)$$

$$A_{ik} (v_k^j + v_{k+1}^j) + i_k^j - i_{k+1}^j = B_{ik} (v_k^{j-1} + v_{k+1}^{j-1}) - i_k^{j-1} + v_{k+1}^{j-1}$$

where the coefficients near the currents and voltages are calculated with the formulas, respectively:

$$A_{vk} = -\left[\frac{R}{2} + \frac{L}{\Delta t} \right] * \Delta x \quad , \quad A_{ik} = -\left[\frac{G}{2} + \frac{C}{\Delta t} \right] * \Delta x \quad (13)$$

$$B_{vk} = \left[\frac{R}{2} - \frac{L}{\Delta t} \right] * \Delta x \quad , \quad B_{ik} = \left[\frac{G}{2} - \frac{C}{\Delta t} \right] * \Delta x \quad (14)$$

Marking vector of tensions and currents, in the form:

$$V^j = [v_1^{jT}, v_2^{jT}, \dots, v_{K+1}^{jT}]^T \quad , \quad I^j = [i_1^{jT}, i_2^{jT}, \dots, i_{K+1}^{jT}]^T \quad (15)$$

and the composite vector X^j , in the form (16) we will have:

$$X^j = [v^{jT}, i^{jT}]^T \quad (16)$$

we obtain the solution

$$X^j = A^{-1} * (B * X^{j-1} + D^j) \quad (17)$$

Formula (17) provides the composite vector in step (8) (j) of the time by using the values of the step (j-1). Matrices A and B are formed by (13) and (14) the boundary conditions, and the principal vector depends on the values of external resources received in time.

II.3. Numerical Example

For the analysis of electromagnetic wave spread of the lightning strike, an earthling with horizontal placement is taken on the ground, Fig 2

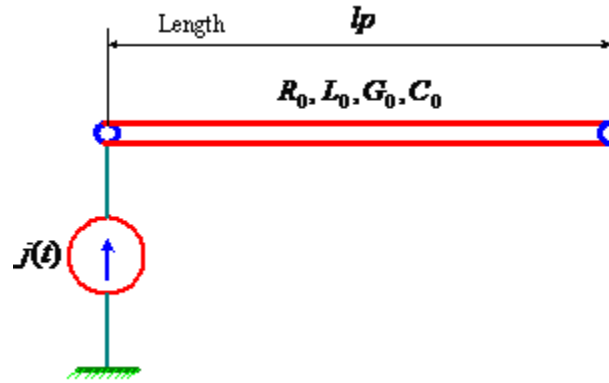


Fig. 2: Lightning current source and horizontal ground wire

Physical parameters are l_p , ϵ_r and ρ_{ground} which during the simulation scheme variables are taken. Striking wave of lightning is modeled with an ideal source of electricity, of the form:

$$i(t) = 1.04 * \text{Imax}(e^{-t/T_1} - e^{-t/T_2}) \quad (18)$$

where

$$T_1 = 0.365434 * TR \quad (19)$$

$$T_2 = Ts / 2.282835 \quad (20)$$

$$I_{\max} = 150 \text{ [A]} \quad (21)$$

$$T_s = 2 * 10^{-6} \text{ [s]} \quad (22)$$

$$T_R = 77.5 * 10^{-6} \text{ [s]} \quad (23)$$

$$f = 1 \text{ [MHz]} \quad (24)$$

Other parameters

$$\mu_0 = 4\pi * 10^{-7} \text{ [H/m]} \quad (25)$$

$$\epsilon_0 = 8.85 * 10^{-12} \text{ [F/m]} \quad (26)$$

The relative dielectric permeability of the soil

$$\epsilon_r = 10 \quad (27)$$

Specific electric resistance of the grounding conductor

$$\rho_{cu} = 16.8 * 10^{-9} \text{ [\Omega m]} \quad (28)$$

$$\rho_{tokes} = 100 \text{ [\Omega m]} \quad (29)$$

$$S_p = 50 \text{ [mm}^2\text{]} \quad (30)$$

$$l_p = 20 \text{ [m]} \quad (31)$$

$$h = 0.5 \text{ [m]} \quad (32)$$

$$R_{cu} = \sqrt{S_p / \pi / 10^6} \text{ [m]} \quad (33)$$

II.3.1. Propagation of current and voltage lightning strike at horizontally ground wire

The first case relates to the analysis simulation of the spread of the current wave of lightning and grounding voltage wave horizontal length [m], at three points: front grounding $x = 0$ [m], middle grounding $x = 10$ [m] and its end $x = 20$ [m].

The current wave of proliferation caused by thunder lightning, shown in Fig 3:

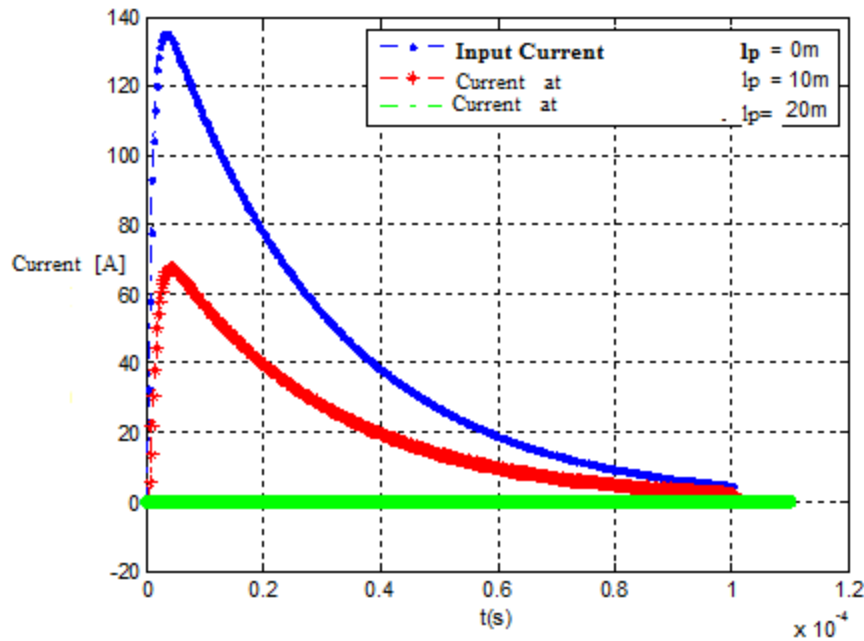


Fig. 3. Propagation of current lightning wave for $l_p=20$ [m], $\epsilon_r=10$ and $\rho_{ground}=100$ [Ωm]

Spreading the voltage wave, caused by lightning strike is given in Fig 4:

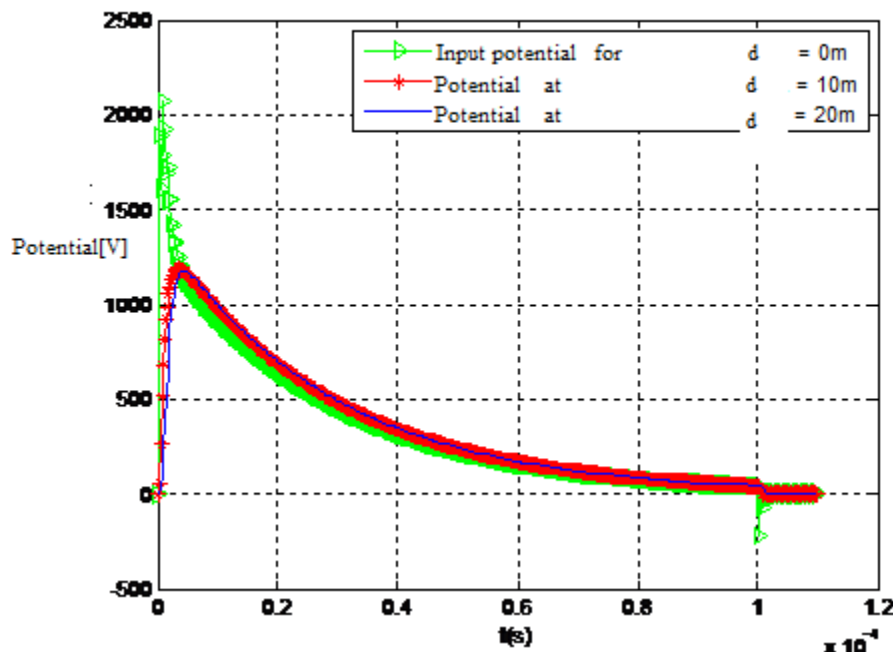


Fig. 4. Propagation of voltage lightning wave for $l_p=20$ [m], $\epsilon_r=10$ and $\rho_{ground}=100$ (Ωm)

II.3.2 The law of the time domain change of input impulsive impedance Z_{imp} as a functions of wire length l_p

For the length of the grounding system l_p which vary from 5 to 25 [m] by the analysis, we obtain dependence of resistance impulse Z_{imp} in the function of the length of the grounding system, Fig 5:

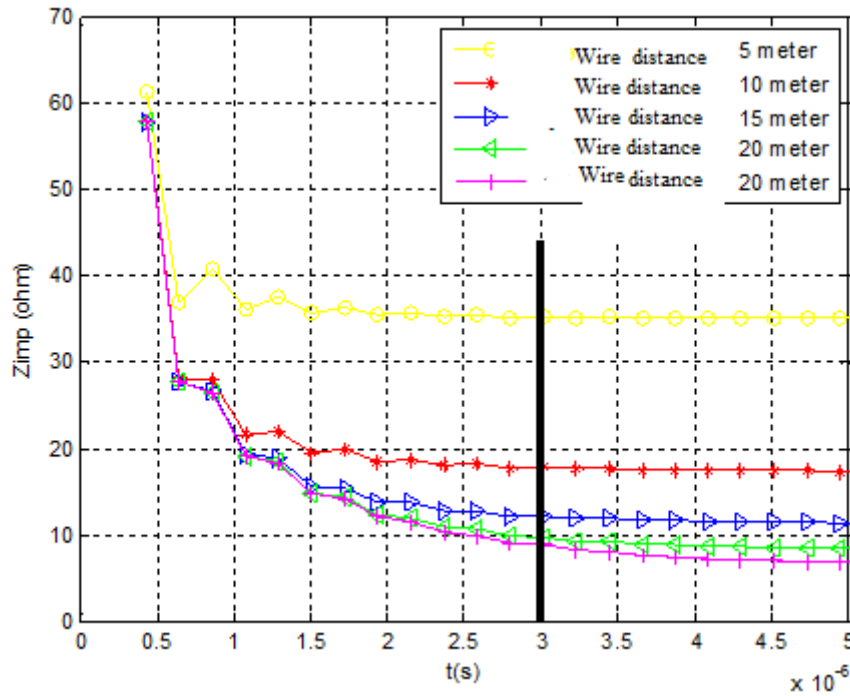


Fig. 5. The law of change of input impulsive impedance for $\epsilon_r=10$ and $\rho_{ground}=100 [\Omega m]$

Hence, as seen graphically, Fig 5, impulsive resistance entry Z_{imp} is inversely proportional to the length of the grounding system; and it is reduced with the time, up in value $Z_{stabilised}$, stable regime. The time in which Z_{imp} takes values $Z_{stabilised}$, is called stabilization time wave process of lightning and for our case is $t_{stab}=3 \cdot 10^{-6}$ sec.

II.3.3 The law of the change of input impulsive impedance Z_{imp} in time domain as the function of relative dielectric permeability of ground : ϵ_r

From our analysis of the case for relative dielectric constant of the earth, ϵ_r , that differs from value 5 to 15, we obtain by simulation, the impedance of Z_{imp} the relative dielectric constant of the soil, wherein is the proper ground, Fig 6:

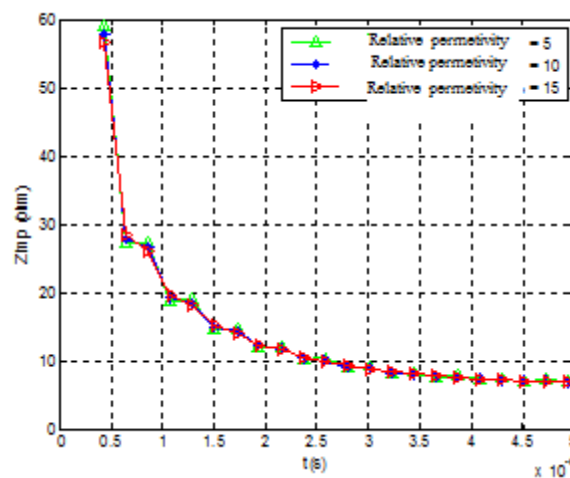


Fig. 6. The Law of the change of input impulsive impedance for $l_p=25[m]$ and $\rho_{ground}=100 (\Omega m)$

Consequently, as it turns out graphically in Fig 6, the resistance impulse entry Z_{imp} for our case depends heavily on the relative dielectric constant of the soil ϵ_r , wherein is the horizontal proper ground

II.3.4 The law of the time domain change of input impulsive impedance Z_{imp} as a function of electric specific resistance of the ground, ρ_{ground} .

From the analysis, in our case the specific electric resistance of soil ρ_{ground} which varies from 50 to 150 [Ωm], we take impedance Z_{imp} specific electric resistance of the earth wherein is the proper ground, given in Fig 7.

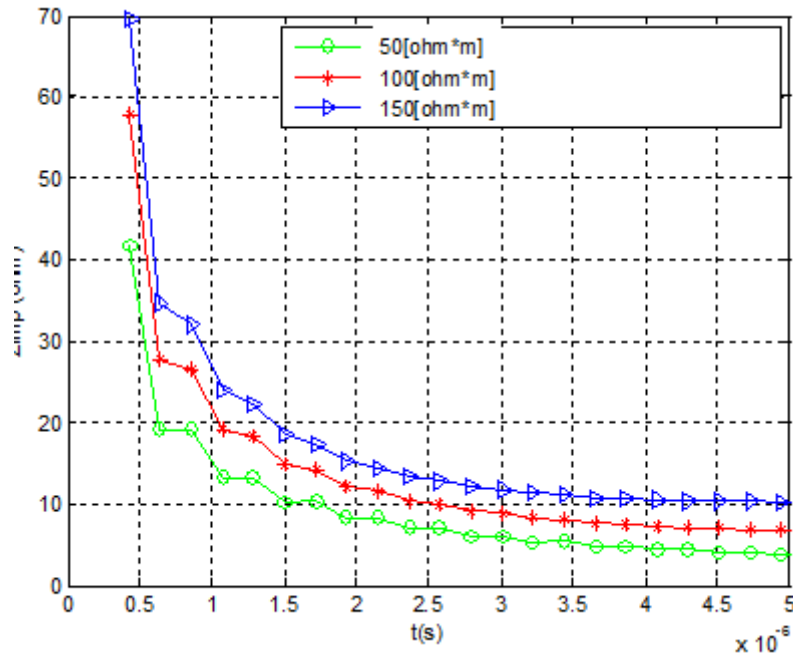


Fig. 7. The law of the change of input impulsive impedance for $l_p=25[m]$ and $\epsilon_r=10$

Hence, as it turns out graphically in Fig 7, the resistance impulse entry Z_{imp} is proportional to the specific electric resistance of the soil ρ_{ground} wherein is the proper horizontal ground.

Conclusion

Our paper studies a technique for simulating the time zone areas and provide more electromagnetic wave in a transmission line, consisting of a uniform horizontal earthing set in the ground at a certain depth by Lax-Wendroff method. Through a program in MATLAB have managed to analyze the spread of the wave of voltage / current law to analyze the change of resistance of impulse entry l_p , ϵ_r , and ρ_{ground} . As a result of the graphs obtained, it is clearly observed that the change entry of impulsive resistance Z_{imp} is inversely proportional to the length of horizontal grounding system l_p and in proportion to the specific electric resistance of the soil, ρ_{ground} where is puted the horizontal ground.

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VLORA`S WOMEN AND CERVICAL CANCER HEALTH BELIEFS

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Abstract

Cancer in general in Albania is an increasing problem and cervical cancer is the **third most common** gynecologic **cancer** among all **women**. Refer to European Code Against cancer an important action for women to help to prevent cervical cancer is to take part in organised cancer screening programmes. The study aims to identify in women health beliefs about cervical cancer. This is a transversal and analytical study with a sample of 210 healthy women from Vlora city with different socio-economic and educational levels. A self-administered questionnaire that assesses the health beliefs components about cervical cancer was the data collection instrument. The results highlighted low risk perception relative to cervical cancer. Most of women believe that cervical cancer as dangerous as all the other cancers and uncertainties about the chances to recover from it exist among them. Misunderstandings and high sensitivity relate to cervical screening. Relationship between perceived benefits, emotional, economic barriers and Pap test uptake was found. Large numbers of women never screened. The results indicated that to improve the women's attitudes to health, to encourage adherence to cervical screening and to avoid misconceptions due to lack of information conversations with health operators and the designing of effective prevention strategies based on health beliefs are fundamental.

Keywords: Women, health beliefs, barriers, cervical cancer, screening

Introduction

The cancer in general in Albania is an increasing problem. In the absence of the National Cervical Screening Program, cervical cancer is diagnosed in the last stage, therefore incurable with high prevalence in deaths, despite the fact it may be detected early (NCCP 2011, p. 30). Cervical cancer is caused by sexually transmitted infection with certain types of Human Papilloma Virus [HPV] (WHO, 2013). Infection with HPV is common, and in most people the body can clear the infection by itself, but sometimes the infection does not go away and becomes chronic, especially when it is caused by certain high-risk HPV types, can eventually cause cervical cancer. It can affect women of all ages, but is more common in the age group 30-35 years (Sastre-Garau X et al., 1996). Also, according to the American Cancer

Society (ACS, 2013) cervical cancer tends to occur in midlife and the risk of dying from cervical cancer increases as women age. The Papanicolaou (Pap) smear (test) is the single most successful cancer screening tool in modern medicine. Based on evidence, screening via regular Pap test, which consists of specimen collection and interpretation of the cellular material decreases the incidence and mortality of cervical cancer (Justin Lappen & Dana R. Gossett 2012; Sengul D et al., 2014). Many low-income women do not have ready access to adequate health care services, including Pap smear. This means they may not get screened or treated for cervical pre-cancers (ACS, 2013). Reference to (WHO, 2013; NCI, 2014) regular screening of women between the ages of 21 and 65 years with the Pap test decreases their chance of dying from cervical cancer. If screening includes the Pap test and the HPV test, it should be repeated every 5 years. Refer to European Code Against cancer taking part in organised cervical cancer screening programmes help women to prevent cervical cancer (WHO, 2014). In conditions where the current cervical cancer screening programs and practices in Albania are, however casual or nonexistent (Poljak et al., 2013), the study based on the conceptual framework Health Belief Model (HBM) the most commonly used theory in health education, promotion and screening (National Cancer Institute [NCI], 2005) will assess women health beliefs about cervical cancer. From "Theory at a Glance: A Guide For Health Promotion Practice (Second Edition, 2005) in a base of HBM there are four concepts: perceived susceptibility, perceived severity, perceived benefits, perceived barriers. HBM suggests that behavior is also influenced by cues to action and self-efficacy. Perceived susceptibility or personal risk is the beliefs that a person has about the chances of getting a condition with potential change strategies to help the individual develop an accurate perception of his or her own risk. Perceived severity represented the beliefs about the seriousness of a condition and its consequences and recommended action. Perceived benefits are the beliefs about the effectiveness of taking action to reduce risk or seriousness and explain how, where and when to take action and what the potential positive results will be. Perceived barriers represent beliefs about the material and psychological costs of taking action with potential change strategies like reassurance, incentives, assistance and correct misinformation. Cues to action represent factors that activate "readiness to change" and provide "how to" information, promote awareness. Self-efficacy represent the confidence in one's ability to take action. Different studies found this model very valid and reliable tool in assessing and understanding the women's health beliefs, respect of cervical cancer and Pap test (Walsh JC, 2006; Tacken MA et al., 2007; Guvenc G et al., 2011).

Materials and methods

Purpose

The purpose of this study is to identify health beliefs about cervical cancer in normal women. To assess the prevalence of screening among them and if there are differences in health beliefs between women screened and not screened.

Method and samples

This transversal and analytical study was conducted with women who worked to several institutions and private enterprises in Vlora city between May and July in 2014. The sample study consisted of 210 normal women, with different socioeconomic and educational background.

The inclusion criteria were: Women in the target age group (25-65 years) old without history of hysterectomy.

The exclusion criteria were: Women outside the target age group (25-65) years old.

Data collection instrument

Data were obtained using a structured, self-administered questionnaire adopted in base of theoretical, conceptual framework Health Belief Model reference to survey instrument, the Cervical CAM of Cancer Research UK (2011). The questionnaire was divided into sections regarding beliefs of cervical cancer and Pap test. Also, included were general demographic characteristics and questions regarding Pap test utilization by women, in mode to assess the prevalence of screening. Ethical approval and support was granted by the respective Directors where the study was carried out. The study was also approved by the relevant ethics committee, and written informed consent was obtained from each participant. The questionnaire was completed by 234 women, but 24 of them did not meet the inclusion criteria of the study so were not included in the statistical analysis.

Data analysis

All the data were entered and analysed using Epi Info™ 7 software version 7.1.3.10 for Windows (CDC-Epi Info™). Descriptive statistics and Chi-square tests were used to analyse the data. Single table analysis were used to assess the association between components of Health Belief Model for cervical cancer and women who had a Pap test. P values $\leq 0,05$ were accepted as statistically significant.

Results

- *Participant characteristics*

The sample consisted of 210 women, aged between 25 – 65 years old. Mean = 38.04, $SD \pm 9.34$, whereas 150 (73.17%) of them were employed full time.

Table 1. Level of education*

Variables	n	(%)
8-year school	39	18.57
High school	62	29.52
Professional school	13	6.19
University degree	79	37.62
Master degree	15	7.14
PhD degree	2	0.95

Table 2. Marital status*

Variables	n	(%)
Married	171	81.43
Single	25	11.90
Divorced	12	5.71
Widowed	2	0.95

*p-value of all variables > 0.05 .

- *Pap test uptake*

Table 3. Pap test prevalence

Variables	Yes	No
	N(%)	N(%)
Have you ever had a Pap test	87(41.43%)	123(58.57%)
<i>If yes, how many time in the 5 past years</i>		
Variables	N	%
1time	58	63.74
2 times	20	21.98
3times	11	12.09
More than 3times	2	2.20

- *Health beliefs components*

Perceived sensitivity

Variables		How do you judge your risk to get cervical cancer			P- value
		I have a big risk	I have a low risk	I don't know	
		N (%)	N (%)	N (%)	
Have you ever had a Pap test	Yes	15(17.86%)	27(32.14%)	42(50.0%)	0.345
	No	13(10.74%)	42(34.71%)	66(54.55%)	
		Do you believe that you have cancer lesions			P- value
		Yes	No	I don't know	
		N (%)	N (%)	N (%)	
Have you ever had a Pap test	Yes	13(14.94%)	27(32.14%)	35(40.23%)	0.914
	No	17(13.82%)	53(43.09%)	53(43.09%)	

Perceived risk

Variables		How dangerous is cervical cancer compared with others				P- value
		More dangerous than others	Equal to others	Less than others*	I don't know	
		N (%)	N (%)	N (%)	N (%)	
Have you ever had a Pap test	Yes	18(45.%)	50(44.64%)	7(23.33%)	12(42.86%)	0.1903
	No	22(55.0%)	62(55.36%)	23(76.67%)	16(57.14%)	
		Chances to heal from cervical cancer			P- value	
		Good chances	Not so good	I don't know		
		N (%)	N (%)	N (%)		
Have you ever had a Pap test	Yes	32(41.56%)	41(46.59%)	14(31.82%)	0.267	
	No	45(58.44%)	47(53.41%)	30(68.18%)		

*p-value of all variables >0.05, exclude less dangerous than others, p=0.05.

Perceived benefits

Variables		Do you feel satisfied after the Pap test exam			P- value
		Yes	No	I don't know	
		N (%)	N (%)	N (%)	
Have you ever had a Pap test	Yes	68(78.16%)	2 (2.3%)	17(19.54%)	0.0001
	No	59(48.36%)	5(4.1%)	58(47.54%)	
		Is useful the regular Pap test examination			P- value
		Yes	No	I don't know	
		N (%)	N (%)	N (%)	
Have you ever had a Pap test	Yes	84(96.55%)	1(1.15%)	2(2.3%)	0.000
	No	86(70.49%)	7(5.74%)	29(23.77%)	
		Pap test can detect cancer lesions before symptoms			P- value
		Yes	No	I don't know	
		N (%)	N (%)	N (%)	
Have you ever had a Pap test	Yes	52(59.77%)	4(4.60%)	31(35.63%)	0.0005
	No	40(32.79%)	12(9.84%)	70(57.38%)	

Emotional barriers

Variables		<i>The Pap test exam is painful</i>			P- value	
		Yes N (%)	No N (%)	I don't know N (%)		
Have you ever had a Pap test	Yes	23(26.44%)	57(65.52%)	7(8.05%)	0.000001	
	No	23(26.44%)	26(21.31%)	73(59.84%)		
			<i>Doing a gynecologic exam is uncomfortable</i>			P- value
			Yes N (%)	No N (%)	I don't know N (%)	
	Yes	24(27.59%)	63(72.41%)	0(0.0%)	0.015	
	No	41(31.31%)	73(59.35%)	9(7.32%)		

Economic barriers

Variables		<i>Pap test is necessary if you don't have problems</i>		P- value	
		Yes N (%)	No N (%)		
Have you ever had a Pap test	Yes	76(44.44%)	95(55.56%)	0.063	
	No	11(28.21%)	28(71.79%)		
			<i>Is expensive the Pap test examination</i>		P- value
			Yes N (%)	No N (%)	
	Yes	45(35.16%)	83(64.84%)	0.022	
	No	42(51.22%)	40(48.78%)		
			<i>Economic impossibility affects the regular screening</i>		P- value
			Yes N (%)	No N (%)	
	Yes	56(37.09%)	95(62.91%)	0.045	
	No	31(52.54%)	28(47.46%)		
		<i>Limited access of Pap service affects the regular screening</i>		P- value	
		Yes N (%)	No N (%)		
Yes	63(41.18%)	90(58.82%)	1.00		
No	24(42.11%)	33(57.89%)			

Feelings of anxiety

Variables		<i>Fear of the results</i>		P- value	
		Yes N (%)	No N (%)		
Have you ever had a Pap test	Yes	44(34.38%)	84 (65.63%)	0.009	
	No	43(53.09%)	38(46.91%)		
			<i>Can you speak freely about cancer</i>		P- value
			Yes N (%)	No N (%)	
	Yes	51(40.16%)	76(59.84%)	0.666	
	No	36(43.90%)	46(56.10%)		
			<i>I will be very scared if I reveal to have cancer</i>		P- value
			Yes N (%)	No N (%)	
	Yes	72(40.68%)	105(59.32%)	0.320	
	No	15(46.88%)	17(53.13%)		

Cues to action

Table 10. Cues to action and Pap test uptake					
<i>Variables</i>		<i>Promotional campaigns on television and radio</i>		<i>P- value</i>	
		Yes	No		
		N (%)	N (%)		
Have you ever had a Pap test	Yes	28(32.18%)	59 (67.82%)	0.11	
	No	54 (43.90%)	69(56.10%)		
			<i>Conversations with health operators</i>		<i>P- value</i>
			Yes	No	
			N (%)	N (%)	
		Yes	82(94.25%)	5(5.75%)	0.00009
		No	91(73.98%)	32(26.02%)	
			<i>Conversations in community</i>		<i>P- value</i>
			Yes	No	
			N (%)	N (%)	
		Yes	23(26.44%)	64(73.56%)	0.51
		No	27(21.95%)	96(78.05%)	

Discussion

The general characteristics of the participants shows that the average age of women was 38.04 years, and 73.17% of them were employed full time.

37.62% of women in the study (table 2) had university degree, followed by high school diploma, with 29.52%.

Table 2, shows that 81.43 % of women were married and 11.90% were single. Level of education (Table 1), employment and marital status shows no a statistically significant ($p>0.05$) association between women screened and not screened. This is in contrast with other studies were women with a lower educational level reported being screened less than those with higher level (Kristensson JH et al., 2014). Also, in other studies the most significant predictors of Papanicolaou test use were marital status (being married), the lack of barriers, a family history of the cancer, older age, and increased perception of seriousness (Boonpongmanee C et al., 2007; Berardi R et al., 2013).

Cervical cancer is a preventable disease, and a key aspect of its prevention is the detection of the premalignant lesion by cervical screening. (Morris M et al., 1996). But, in our study, as shows the Table 3, 58.57% of women reported that they never had a Pap test in their lives. Reason indicated was the lack of gynecological problems, so they did not need Pap test screening. However, 63.74% of the women screened reported that in the five past years had a Pap test only once.

Table 4 shows perceived sensitivity and its association with Pap test uptake. No statistically significance ($p>0.05$) association between women screened and not screened for this component of HBM was found. The largest percentage of women screened and not screened report that don't know the risk that they have to get cervical cancer. However, in same means women screened and not screened reported to have low risk to get cervical cancer. The same situation presented for the belief that women have if they have cancer lesions. Factors perceived as lack of sensitivity and negligence about cervical cancer were found in previous studies (Ersin F, et al., 2013)

Table 5 shows perceived risk and its association with Pap test uptake. No statistically significant ($p>0.05$) association between women screened and not screened was found for this component. The two groups of women presented with same means regarding the danger of cervical cancer and the chances to heal from it. The only difference in means reported for

the variable less than others where women not screened had the highest percentage (76.67%). Also, this group reported the highest percentage (68.18%) that they don't know what are the chances to heal from cervical cancer. That demonstrates that perceived sensitivity and perceived risk to cervical cancer and health motivation is quite low. Even if HBM suggests that personal risk is associated with potential change strategies to help the individual develop and accurate perception of his or her own risk. A study conducted by Lee et al (2002) *identified* that a large proportion of women who do not have regular smears, have a low perceived susceptibility. Also, a study conducted among low-income women found misperception of them about their perceived risk of cervical cancer (Asiedu GB et al., 2014)

Table 6 shows perceived benefits and its association with Pap test uptake. This results were statistically significant ($p=0.0001$) for the variable if they feel satisfied after the Pap test exam. As shows Table 6, 78.16% of women screened report high level of satisfaction. There was also an association between women screened and if Pap test can detect cancer lesions before symptoms ($p=0.0005$).

Table 7 shows emotional barriers and its association with Pap test uptake. It was found a correlation between the two groups of women and the knowledge if Pap test exam is painful ($p= 0.000001$). Also, 65.52% of women screened report that Pap test exam is not painful. 31.31% of women not screened report that doing a gynecologic exam is uncomfortable. The relationships between patterns of multiple health behaviors and use of recommended cancer-screening tests was demonstrated (Meissner HI et al., 2009)

Table 8 shows economic barriers and its association with Pap test uptake. For this component of HBM were included four variables. There's *not* a *statistically significant* difference *between* the two groups of women regarding the question; if Pap test is necessary in absence of problems; even though 44.44% of women screened and 28.21% of women not screened reported yes. Statistically significant p value =0.022 cited about the cost of Pap test exam. 51.22% of women not screened report that Pap test is expensive. Also it was found a correlation between the two groups of women and if the economic impossibility affects the regular screening ($p= 0.045$). Almost half of women not screened agree the fact that the regular examination depends on it. The results of our study are similar with other studies where economic inequalities in the use of cancer screening are higher in countries without population-based cancer screening programmes. (Palència L et al., 2010). Also a study found that patients with some form of health insurance were more likely to have had a health maintenance visit for breast, cervical, and/or colorectal cancer screening (Carney PA et al., 2012).

Table 9 shows feelings of anxiety and its association with Pap test uptake. Statistically significant p value = 0.009 was found for the fear of Pap test results. 53.09 % of women not screened report to have fear for the results. Even if for the other variables about anxiety was not found a *statistically significant* difference *between* the two groups of women, most of women who had had a Pap test and those who had never had one, report that could not speak freely about cancer and cancer scared them especially if the test reveals positive results. Fear, inadequacy of health insurance and financial problems were frequently addressed in previous studies. (Ersin F et al., 2013).

Table 10 shows cues to action and its association with Pap test uptake. For this component of HBM, 43.90% of women not screened report that promotional campaigns on television and radio are effective ways to increase the knowledge and participation in screening.

Conversations with health operators were statistically significant ($p=0.00009$), where 93.25% of women screened and 73.98% of women not screened found them very effective. Also, conversations in community were cited by the women of the two groups with *not statistically significant* difference. A study conducted by Gillam SJ (1991) which analyzed

the contribution of the health belief model in cervical screening identified numerous ways of encouraging uptake. Those cited by women`s in the study were, also included.

Conclusion

This study identified a series of women`s health beliefs about cervical cancer and its screening. Most of the perceived barriers identified were statistically significant. These perceived barriers (as cited in the study were previously studied using the Health Belief Model) influenced attendance rates at cervical cancer screenings globally.

The results of the study suggests that we can increase attendance on screening, informing women of their susceptibility to cervical cancer, and encouraging a belief that active participation can minimize the likelihood of developing invasive cervical cancer.

All this it could be possible enhancing the communication. That, also was highlighted by the women participating in the study. Communication about disease, in this case about cervical cancer and screening is not a one way process so we as health personnel need to understand the women`s perceptions and concerns and respond to them. Addressing perceived barriers will help eliminated negative attitudes towards attending cervical screening.

So, to improve the women's attitudes to health, to encourage adherence to cervical screening and to avoid misconceptions due to lack of information conversations with health operators and the designing of effective prevention strategies based on health beliefs are fundamental.

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ANALYSIS OF CLINICAL CHARACTERISTICS OF NON-MEDICAL USE OF TROPICAMIDE BY DRUG ADDICTS IN THE REPUBLIC OF KAZAKHSTAN

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Abstract

The article presents data on the issue of non-medical use of tropicamide in the Republic of Kazakhstan. The authors analysed the clinical characteristics of the polydrug abuse as a result of combined use of opioids and tropicamide by sampling drug addicts seeking narcological aid. Results indicate malignant state of substance addiction associated with the underlying opioid addiction.

Keywords: Tropicamide, polydrug abuse, opiates

Introduction

Currently the Republic of Kazakhstan faces a steady growth in chemical addictions as a result of increased circulation of traditional drugs and the emergence of new psychoactive substances.

Since November 2013 the government has been actively focusing on the over-the-counter drug problem, taking a number of measures to restrict the distribution of psychotropic medications. Such medications include pharmaceutical forms that contain desomorphine, codeine, ephedrine and cyclopentolate.

To prepare most of the over-the-counter drugs, a drug addict would have to perform a number of interim chemical reactions at home, which requires the use of certain precursors.³³ This fact to some degree deters the expansion of desomorphine, codeine and ephedrine abuse in our country. Cyclopentolate (tropicamide), unlike other medications, is a solution for ocular administration and therefore can be used by addicts without any preliminary treatment. Furthermore, tropicamide is often used in combination with such traditional drugs as the opioids (heroin), effectively offsetting negative vegetative effects of the latter.³⁴

Over the three quarters of the year 2013, retail sales of tropicamide in the Republic of Kazakhstan increased 226 per cent in the amount of units sold and 216 per cent in monetary terms, compared to the same period of 2012.³⁵ These figures leave us wondering about the real growth in the popularity of this medication among drug addicts in our country.

³³ Shibanova, N. I. (2006). On some issues of the use of narcotic or potent substances based on the results of intoxication evaluations. *Narcology*, 6, 53-56.

³⁴ Mokhnatchov, S.O., Rokhlina, M.L., Usmanova, N.N. (2012). Clinical manifestations of tropicamide abuse. *Narcology*, 2, 44-50.

³⁵ Monitoring of retail sales of eye-drop medications in the Republic of Kazakhstan
http://viortis.kz/files/35_roznica_ls_1_20

At the same time, no official statistical monitoring of the extent of non-medical use of tropicamide is being done. Furthermore, there is scarcity of research on this subject matter.³⁶

The purpose of our research consisted in the analysis of the extent, as well as the study of characteristics of non-medical use of the tropicamide medication by drug addicts seeking narcological medical aid.

Materials and Methods

By design, this research can be described as an observational and cross-section study.

The research subjects were drug addicts with polydrug addiction to opioids and tropicamide, who underwent the inpatient course of treatment at the Republican Scientific and Practical Centre for Medical and Social Problems of Drug Addiction during the period between October 2013 through September 2014.

The sample was formed retrospectively and continuously. The inclusion criterion was the diagnosis of combined (polydrug) addiction to several psychoactive substances pursuant to ICD-10 F19.2, with one of the psychoactive substances being tropicamide. The research excluded under-age persons, persons with associated mental disorders or decompensated somatic pathologies. The selection formed using the criteria above consisted of 118 persons. Prevalence of tropicamide addiction among patients receiving care during the study period was 23.9%.

The study utilised patient history data, as well as the objective status and dynamic characteristics of the study group's patients' condition, gathered from the medical records (inpatient and outpatient card). The study employed the sociological, clinical psychological and statistical research methods.

Results of the research

Men formed the largest part of the study group: 99 persons (83.9%). Average age of the group was 29.1 ± 6.4 years, with youngest age being 18, and the oldest — 41. Table 1 presents the age distribution of the group. All group members were of socially active age. Majority of the group members were married (official or civil marriage) — 67 persons (56.8%) and had the immediate microsocial environment — 90 persons (76.3%). 38 persons (32.2%) were unemployed, with only 23 persons (19.5%) had a regular job.

Table 1. Social and demographic indicators of the study group

	Study group (n=118)	
	Absolute Amount	Percentage
Age range		
18–24	31	26.3%
25–35	64	54.2%
Over 35	23	19.5%
Marital status		
single	31	26.3%
married	44	37.3%
civil marriage	23	19.5%
divorced	20	16.9%
Closest circle		
parents	32	27.1%
family	46	39%
relatives	10	8.5%
friends	2	1.7%
unaided living	28	23.7%

³⁶ Zabransky, T. ed. (2012). *National Report on the Drug Situation in the Republic of Kazakhstan for 2012 (Drug Situation 2011)*. Astana/Prague: Republican Scientific and Practical Centre for Medical and Social Problems of Drug Addiction, CADAP, 114.

Employment		
regular employment	23	19.5%
temporary job	52	44.1%
unemployment	38	32.2%
education	5	4.2%

Hereditary burden of chemical addictions and psychiatric disorders is presented in Diagram 1. It was established that the group presents almost evenly with hereditary burden of both chemical addictions and psychiatric disorders (schizophrenia, manic depressive psychosis, adaptation disorders).

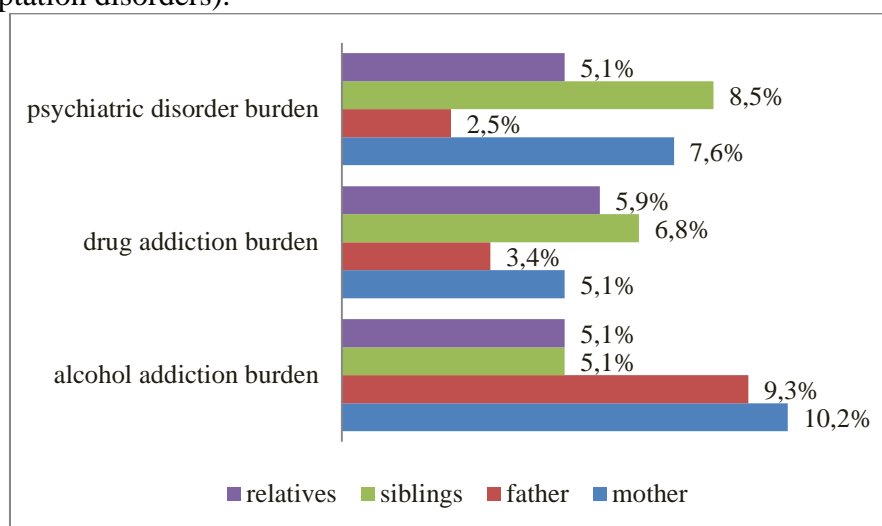


Diagram 1. Hereditary Burden in Study Group Patients (n=118)

Average length of tropicamide abuse in the study group amounted to 3.47 ± 2.1 years, in the 1–9 year range.

Along with tropicamide abuse, 17 persons (14.4%) were addicted to natural opium, 92 persons (78%) — addicted to heroin, and 9 persons (7.6%) — to synthetic opiates (tramadol, desomorphine).

The following reasons were given for the first use of tropicamide: search for new sensations — 23 persons (19.5%), submissive motive (peer pressure) — 44 persons (37.3%), to compensate for the shortage of opiates — 51 persons (43.2%).

As factors contributing to systematic tropicamide use after the first tries the following were named: general over-the-counter availability — 39 persons (33.1%); cheap price when compared to traditional drugs — 51 persons (43.2%); more pleasant experience — 28 persons (23.7%).

In all cases tropicamide addiction was of secondary nature and complicated the primary opioid addiction. Length of polydrug abuse of the primary drug and tropicamide averaged at 22.7 ± 11.3 months. Etiopathogenesis of the polydrug addiction was of the substitution variety (to compensate for the lack of the primary drug) in 52 cases (44.1%), corrective variety (for attenuation of unwanted side effects of the primary drug) in 47 cases (39.8%) and of true variety (a prominent tropicamide addiction competing with the primary drug addiction) in 19 cases (16.1%).

All subjects administered both the primary drugs and tropicamide intravenously, on average 2-3 times per day. Drug doses were significantly higher than the maximum therapeutic doses — on average by 6.4 ± 3.2 ml per day. Maximum daily dosage reached 14.9 ± 5.9 ml.

Clinical course of tropicamide addiction was characterised by quick rate of onset of psychopathological symptoms. Psychological dependence in subjects developed within

9.1±3.8 weeks; regular use — at 12.1±4.1 weeks, and physical dependence developed within 14.7±4.4 weeks. Tropicamide abstinence lengths were shorter than those of opioids (7.5±4.7 and 8.5±6.9 months respectively).

Clinical complications resulting from tropicamide abuse were registered in 53 cases (44.9%): intoxicational psychosis in Hx — 19 subjects (16.1%); post-injection purulent complications of the soft tissues in Hx — 7 subjects (5.9%); cardiovascular toxicity — 11 subjects (20.8%); nervous system involvement — 21 subjects (39.6%).

Discussion of Results

The study revealed that the non-medical use of tropicamide is secondary to the opioid dependence. This fact correlates with previous research on pathomorphism of opioid addiction in the post-Soviet bloc.^{37,38} Tropicamide use among drug addicts in Kazakhstan is most commonly caused by the need to substitute the narcotic effect of heroin, inflow of which has been limited by the state anti-drug campaigns. Upsurge of "popularity" of this medication can be explained by the insufficiently effective measures toward treatment and rehabilitation of opioid dependence and constitutes its complication.

Clinical characteristics of tropicamide addiction revealed in this study are indicative of the malignant course of the addiction (high speed of addiction syndrome development, pronounced toxicity and high rate of complications). Also notable is the fact that tropicamide dependence is prevalent among persons of active social age with a developed immediate social circle, which can further contribute to popularisation of this substance. Analysis of the motivation behind trying such medications for the first time speaks to the necessity of strengthening measures to restrict the drug-store distribution of a number of medications through.

Conclusion

Study of the issue of non-medical use of medications like tropicamide remains a highly relevant topic for the addiction science of the Republic of Kazakhstan. Much needed is thorough clinical research which would allow identification of the targets for therapeutic interventions and development of medical and social rehabilitation programmes for the corresponding group of addicted individuals.

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³⁷ Mokhnatchov, S.O., Rokhlina, M.L., Usmanova, N.N. (2010). On abuse of cyclopentolate (cyclomed). *Narcology*, 10, 40-44.

³⁸ Tumilovich, Ye.Yu. (2011). On the issue of non-medical tropicamide use in Perm region. *Meditinskaya ekspertiza i pravo*, 1, 17-19.

PELVIC FLOOR MUSCLE TRAINING VERSUS NO TREATMENT FOR URINARY INCONTINENCE IN WOMEN

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Abstract

Pelvic floor muscle training is the most commonly used physical therapy treatment for women with urinary incontinence (UI). According to the World Health Organization bladder problems affect more than 200million people worldwide. Urinary incontinence is a disorder that affects women far more frequently than men; 85% of people suffering from urinary incontinence are women. According to existing studies and literature few women go to consult a therapist who specializes in urinary incontinence in our country. Talking about UI, it is a taboo for most women, especially for women living in small cities or rural area. The purpose of the study was to determine the effects of pelvic floor muscle training for women with urinary incontinence in comparison to no treatment. This is a randomized control trial and to gather information was used a questionnaire(ICIQ-SF), and personal contact with patients. The patients were randomly allocated into two groups, the control group and the experimental group. The experimental group practiced PFME at home, the control group didn't practice PFME at home. The study indicates that physiotherapy has a key role in the conservative treatment of UI and is less costly than other methods of treatment. PFME gives good results in controlling involuntary loss of urine. This treatment isn't very recognized in Albania. One of the best ways to introduce this method will be from the family doctors and from maternity staff who treats the most effected patients, future mothers.

Keywords: Urinary Incontinence, Pelvic Floor Muscle Exercise, Pelvic floor, Physiotherapi

Introduction

Pelvic floor muscle training is the most commonly used physical therapy treatment for women with urinary incontinence (UI). According to the World Health Organization bladder problems affect more than 200million people worldwide. Urinary incontinence is a disorder that affects women far more frequently than men; 85% of people suffering from urinary incontinence are women. Women experience UI twice as often as men. Various factors may affect the development of UI. The most well known are, pregnancy and childbirth, menopause, overweight and obesity, hormonal disorders, and muscle weakness of pelvic diaphragm.

According to existing studies and literature few women go to consult a therapist who specializes in urinary incontinence in our country.

Talking about this kind of problems it is a taboo for most women, especially for women living in small cities or rural area. For them it is difficult to even consider a therapist for such personal problems. Most of the cases women blame their self's for these problems. Urinary Incontinence has a large impact on the quality of their lives, they are obliged to

restrict their outings outside of their houses. UI limits them in their daily activities as in the professional, social and family aspects. Incontinence creates psychological disorders such as anxiety and depression. Limits their physical activities such as walking, running, exercising or swimming. One of the ways to come to the aid of people with such condition as urinary incontinence it is conservative treatment whose main elements are lifestyle modifications (physical activity, dietary habits, and weight loss), bladder control exercises, and pelvic floor muscle training (PFMT).

This treatment it is not very popular or recognized too much in Albania.

Materials and methods

Purpose

The purpose of the study was to determine the effects of pelvic floor muscle training for women with urinary incontinence in comparison to no treatment.

Method and samples

For this randomized control trial were selected randomly 40 women over 18 years old. These women we separated in 2 different groups; "Control Group" and "Experimental Group".

Experimental Group including 19 women, practice PMFE (pelvic floor muscle exercise) exercises at home and Control group including 21 women didn't practice the PMFE exercises.

This study was conducted in the period February-April 2014 in the specialized rehabilitation center "Fisiomed" and "Woman Center" at the "Queen Geraldine" maternity in Tirana.

Inclusion criteria

- Were included in this study women aged over 18 years old who have given birth at least once.

Exclusion criteria

- Were excluded from the study women under 18 years of age and those who had not giving birth.

Data collection instrument

Participants were briefed on the purpose of the study and their inclusion in the study was made with their written consent. Ethical approval was granted by the ethics committee of University of Medicine of Tirana and all patients were fully informed of the plan and goals of treatment. The participants were also informed that they could withdraw from the study at any time without suffering any ill effects whatsoever.

They were evaluated before application musculatures pelvic exercises and again after 12 weeks of application of these exercises. To gather information a questionnaire was used by "International Consultation on Incontinence Questionnaire (ICIQ-SF)", and personal contact with patients.

Data analysis

In our statistical analysis we used the "T- Student" test for two sample groups. This is a test that is used to test differences within a group in two different periods or the difference between the two groups in the same period.

T-student Test was used to detect the effects of application of PFME exercises and to compare the change of the situation between the two groups before and after application of pelvic floor exercises. The value of $p < 0.05$ was considered significant value.

Women were randomly divided into two groups;

Group A (experimental group), $n=19$ served as intervention and received a 3 month intensive pelvic floor exercise protocol while

Group B (control group), $n=21$ served as control and received no therapy

Therapy procedure

All women in group A were instructed about pelvic floor anatomy and how to control pelvic muscles voluntarily. Kegel's pelvic floor muscle therapy (PFMT) protocol was used for 3 consecutive months. The exercise comprised of 10 repetitions of 8 contractions each; with contraction held for six seconds and two minutes rest in between each contraction. At the end of each session, three to four fast 'flicker' contractions were added. At 12 weeks, the number of contractions per repetition had been increased to twelve. Women in group A regularly attended physiotherapy clinic for three months (36 sessions) with additional follow up pelvic floor exercises at home daily. Some women who missed their sessions were requested for compliance in future. The effectiveness of biofeedback assisted PFMT was assessed pre and post training in group A and this was statistically compared with group B (at 1st week and after 3 months).

Results

According to the data in table 1 the average age of participants in the experimental study group is $38 + -5$ SD and the control group was $38 + -6$.SD. As you can see there is no any noticeable difference in the age of patients in both groups .

	Group A (n=19)	Group B (n=21)
Variables	Mean \pm SD	Mean \pm SD
Age(years)	38.84 ± 5.5	38.67 ± 6.0

After 3 months of treatment we have an noticeable improvement of the IU situation on group A (Tab2). After applying the PFME of this group have decreased the frequency, quantity of urine and number of used protectors, $p^{**} < 0.001$.

Variables	Time conducted				P value
	Beginning of the study		After 12 weeks		
	N	%	N	%	
<i>How often do you leak now?</i>					
Less than a week	1	2.6%	4	10.5%	<0.001
2 - 3 times a week	0	0.0%	6	15.8%	
About once a day	3	7.9%	6	15.8%	
Several times per day	5	13.2%	3	7.9%	
Continually	10	26.3%	0	0.0%	
<i>How much do you usually leak?</i>					
A few drips	1	2.6%	5	13.2%	<0.001
Small amount	0	0.0%	8	21.1%	
Average amount	3	7.9%	6	15.8%	
Large amount	15	39.5%	0	0.0%	
<i>Number of times toileting during the night</i>					

1	1	2.6%	7	18.4%	<0.001
2	0	0.0%	11	28.9%	
3	5	13.2%	1	2.6%	
4	9	23.7%	0	0.0%	
5	4	10.5%	0	0.0%	
<i>Number of times toileting during a day</i>					
1	0	0.0%	1	2.6%	<0.001
2	1	2.6%	8	21.1%	
3	0	0.0%	10	26.3%	
4	6	15.8%	0	0.0%	
5	12	31.6%	0	0.0%	
<i>Number of pad or brief changes during the day</i>					
0	1	2.6%	4	10.5%	<0.001
1	0	0.0%	12	31.6%	
2	3	7.9%	3	7.9%	
3	4	10.5%	0	0.0%	
4	10	26.3%	0	0.0%	
5	1	26.3%	0	0.0%	

In group B we don't have any significant improvements of the incontinences situation because the "p" value is not significant in the number of used protectors $p = 0.267$; in the frequency of urination at night = 0.056; and the quantity of urination $p=0,005$ (tab3) at the beginning of the study and after a period of 3 months.

Table 3. Differences between controls at the beginning and after 12 weeks					
Variables	Time conducted				P value
	Beginning of the study		After 12 weeks		
	N	%	N	%	
<i>How often do you leak now?</i>					
Less than a week	0	0%	2	4.8%	0.001
2 - 3 times a week	2	4.8%	0	0.0%	
About once a day	2	4.8%	2	4.8%	
Several times per day	5	11.9%	12	28.6%	
Continually	12	28.6%	5	11.9%	
<i>How much do you usually leak?</i>					
A few drips	0	0%	1	2.4%	0.005
Small amount	2	4.8%	2	4.8%	
Average amount	8	19%	12	28.6%	
Large amount	11	26.2%	6	14.3%	
<i>Number of times toileting during the night</i>					
1	1	2.4%	2	4.8%	0.056
2	5	11.9%	8	19%	
3	12	28.6%	8	19%	
4	3	7.1%	3	7.1%	
<i>Number of times toileting during a day</i>					
1	0	0.0%	2	4.8%	0.001
2	1	2.4%	3	7.1%	
3	4	9.5%	8	19%	
4	11	26.2%	7	16.7%	
5	5	11.9%	1	2.4%	
<i>Number of pad or brief changes during the day</i>					
1	4	9.5%	4	9.5%	0.267
2	8	19%	11	26.2%	
3	9	21.4%	6	14.3%	

With regard to the comparison of two groups at the beginning of the study and 12 weeks after application of pelvic musculatures exercises it was noticed a significant difference in the frequency of urination $p = 0,00$ after 12 weeks, compared with the $p = 0.821$ at beginning of the study, and the amount of urination $p=0,00$ after 12 weeks compared with $p = 0.262$ at the beginning of the study (Table 4).

There have been no significant difference in the number of used protectors $p = 0,00$ compeered with the $p = 0.002$ at the beginning of the study. (Tab.4).

Independent Samples Test T - test

Table 4. Differences between controls and experiments at the beginning and after 12 weeks			
Variables	Control	Experimental	P value
	T	T	
<i>How often do you leak now?</i>			
Base line	0.227	0.227	0.821
After 12 weeks	4.254	4.272	0.000
<i>How much do you usually leak?</i>			
Base line	-1.134	-1.128	0.264
After 12 weeks	4.255	4.252	0.000
<i>Number of times toileting during the night</i>			
Base line	-3.580	-3.533	0.001
After 12 weeks	3.747	3.821	0.001
<i>Number of times toileting during a day</i>			
Base line	-2.296	-2.301	0.027
After 12 weeks	2.265	2.322	0.027
<i>Number of pad or brief changes during the day</i>			
Base line	-3.501	-3.432	0.002
After 12 weeks	5.459	5.493	0.000

Discussion

Urinary incontinence is a common problem for women. Its incidence increases with age and estimates of the prevalence of urinary incontinence in women varies from 10% up to 40%.^{2,3} However, these figures do not reflect the true magnitude of the problem, because of under-reporting arising from social embarrassment.

Factors commonly affecting the prevalence of urinary incontinence are: age, gender, race and residing in a nursing home. Life events like pregnancy, child birth and menopause have major implications for urinary incontinence. Other risk factors are obesity (body mass index of over 30), high impact sports (e.g. trampolining, pole vaulting), chronic respiratory disorders causing chronic cough, and intra-abdominal masses causing increase in intra-abdominal pressure. . Pregnancy and vaginal delivery are main risk factors for the development of urinary incontinence. Prevalence of urinary incontinence increases during pregnancy and decreases following delivery, although overall postpartum prevalence still remains higher than before pregnancy. Estimates of the prevalence of SUI during pregnancy and two to three months after delivery varies between 6% and 67%, and 3% to 38% respectively.⁴ SUI also increases with parity. In primiparas who deliver vaginally, it has been associated with decrease in pelvic muscle strength by 22–35% between pregnancy and the postpartum period.⁵ The prevalence of urinary incontinence has been reported to increase with age. A large epidemiological study of 27,936 Norwegian women suggested a gradual increase in prevalence with age which peaked at around mid life (50 years).⁶ Rud et al. and Enhorning et al. found that maximum urethral closure pressures tend to decrease with age. They reported a 2–4% decrease in the functioning of the urethra after the age of 40 years.⁷

In modern medicine, pelvic floor muscle training is the most commonly recommended physical therapy treatment for women with stress leakage of urine. It is also used in the treatment of women with mixed incontinence, and less commonly for urge incontinence. The content of pelvic floor muscle training programs is highly variable. Bok et al stated the theoretical basis for pelvic floor muscle exercise in USI management on the basis of muscular changes; hypertrophy and increase in muscle mass and tone that occur after specific strength training.⁸ Miller et al. showed that this simple maneuver could reduce urinary leakage by 98.2% with medium cough, and by 73.3% with a deep cough, after only one week of training.⁹ Slack et al. recommended a dedicated pelvic floor physiotherapy service and found a reduction of 33% in the surgical and urodynamic work load following its use.¹⁰ A 10-year follow-up study of women by Cammu et al comprising pelvic exercise for stress incontinence concluded that pelvic floor training is initially successful and there is 66% chance that favorable results will persist for at least 10 years.¹¹ Adjuncts, such as biofeedback or electrical stimulation are commonly used with pelvic floor muscle training. In randomized trials, about 50% patients with sacral nerve stimulation achieved complete continence while a 50% improvement in main incontinence symptoms was observed in about 87% .¹² Ishiko et al. advised a supplement of intravaginal oestriol along with pelvic floor exercise in postmenopausal women and found that this resulted in a higher cure rate of incontinence.¹³ Women, who do intensive supervised pelvic floor exercises during pregnancy reduce their chances of leakage postpartum during the first year after childbirth. Pregnant women without prior urinary incontinence who were randomized to intensive antenatal PFMT were less likely to report urinary incontinence in later pregnancy or post partum (about 30-56% less).¹⁴

Our results demonstrate ameliorating the symptoms of urinary incontinences PFME after application.

This brings forth the possibility that although pelvic floor exercises are effective in managing UI yet, longer duration intensive regimes, strict protocol adherence, patient compliance and possible adjuncts like electromyography biofeedback ,magnetic therapy or nerve stimulation may obtain more tangible results in the multiprous female population.

Conclusion

The study indicates that physiotherapy has a key role in the conservative treatment of IU and improve the quality of life of persons with IU and is less costly than other methods of treatment. The therapeutic effect is Usually Enhanced When The PFMT program is taught and supervised by a specialist Physiotherapist.

This treatment is little known in Albania it is applied only in to private rehabilitation centers. It would be essential and very helpful the introduction of this treatment in all women care centers and hospitals at primary level, secondary and tertiary healthcare in our country.

Further research is necessary to address issues of adherence and the effect of the 'type' of pelvic floor muscle exercise (number and duration of contractions, frequency and duration of sessions, total regime period etc). Health professionals need to find ways to instruct and encourage predisposed women to perform pelvic floor muscles exercises.

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DESIGN AND INTEGRATION OF A HUMAN-ROBOT PHYSICAL INTERACTION PLATFORM WITH PURPOSES OF MEDICAL DIAGNOSIS AND REHABILITATION OF UPPER LIMB

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Abstract

In this paper a human-robot physical interaction system with purposes of diagnosis and rehabilitation of upper limb is proposed. An underactuated haptic device with six degrees of freedom is used, with low inertia and low joint friction. Adaptive control technique is used for passive haptic guidance and active exploration, in order to compensate the dynamic uncertainty of the human operator in the loop. To validate the experimental platform, a procedure is established with three steps: i) knowledge of the haptic interface (interaction with the kinematic virtual environment), ii) navigation in a virtual pipe with changes in the geometric characteristics (verification of position, velocity, collisions and runtime), and iii) haptic guidance in a structured path based on a clinical protocol (study of convergence and energy). Environmental conditions such as temperature, humidity, lighting and noise are characterized with purposes to define experimental conditions. In this work, we assess based on the NASA-TLX protocol, the workload perception of simple temporal-spatial tasks.

Keywords: Diagnosis, Rehabilitation, Haptic guidance, Virtual training, Adaptive control

Introduction

Robotics has revolutionized the world of medicine being an assisting tool for analysis and physical therapy. Robots have systems that evoke movements through protocols which identify and evaluate dynamic movements and impaired coordination. For systems of human-robot physical interaction, classic assessment schemes refer to the measurement of physical variables that describe the performance of the robotic system, particularly the convergence and energy exchange between the robot and the human operator. However, several experimental results in the Advanced Robotics and Haptic Interfaces Laboratory in the Hidalgo State University in Mexico, using different platforms for physical interaction has been possible to observe that the performance not only depends on the task defined in the

robot (energy and convergence), also the human operator perception (mental or perceptual activity, physical demand, temporal demand, effort, performance and frustration). Haptic guidance and virtual exploration in diagnosis and rehabilitation provides tactile and kinaesthetic stimuli on patients with neuromuscular disabilities. Effects of reactive guidance depend essentially on the quality of the close loop controller and on its implementation where its design is subjected to human-centred engineering criteria such as stability, efficiency, bandwidth and latency. However, the dynamic action of the closed loop system is not necessarily ergonomic, affecting the user's perception of the guidance action and thus, the benefits in a therapy. To this end, we assess based on the NASA-TLX protocol, the workload perception of simple temporal-spatial tasks on a haptic guidance system. With the human operator in the loop, under conditions in upper limb motor disability, the uncertainty in the control loop is high, for this reason is used an adaptive control that estimated the dynamics of the haptic device with the human operator in the loop. Results indicate that human-oriented assessment complies with and it is consistent to the advanced performance of the adaptive controller, becoming a viable alternative for haptic assisted rehabilitation.

Background in medical robotics in rehabilitation

In the past half century, research studies have focused on the effects generated by using biofeedback therapy (instrumentation applied to physiological processes) in the treatment of motor deficits in upper and lower extremities, caused from brain injury trauma, cerebral palsy or tendon injuries of the spine; all this in order to make comparisons between this type of therapy and conventional (based physiotherapy routine exercises) [1]. Damage to the central nervous system can lead to alteration of motion control upper and lower limbs, face major difficulties in relation to the activities of daily life. Several studies showed that therapy-based rehabilitation oriented tasks repetitive motion helps improve movement disorder in these patients [2,3]. Unfortunately, the repetitive nature of the therapy, which requires consistency and uniformity in the physical task demands precision and effective patient management by the physiotherapist. This situation caused the need to employ new methods to be more economical and efficient procedure for neurorehabilitation. In order to enhance the relationship between the result and the cost of rehabilitation, robotic devices are being introduced in clinical rehabilitation, achieving more effective and convincing results [4,5]. Neurorehabilitation based robotic devices has had a breakthrough in this field, as well as introducing greater accuracy and repeatability in the ratio of physiotherapy exercises. Precise quantitative measurement of parameters using robotic instrumentation in order to ensure the recovery of the patient. Another benefit is that robotic devices can be implemented for the purpose of enabling telerehabilitation exercises at home and make the rehabilitation treatment is more effective. People with a physical disability are demanding the benefits of dedicated actions in the field of prevention, promotion, care, rehabilitation and habilitation for maximum development of their potential as writing again, move objects on natural biomechanical performance as well as tasks involving coordination of both upper limbs; all with the purpose of achieving family and social integration and thus an adequate quality of life. Using haptics, physical therapy purposes, have been implemented in recent years in the area of neurorehabilitation, in order to reduce patient recovery time. The disability movement as a result of a neurological injury can be characterized by involuntary movement (biomechanical signals with changes in frequency and amplitude representative of abrupt changes of the limb), and limited movement of the hemiplegic type (biomechanical signals representing low frequency and amplitude of spastic conditions). In this article a haptic platform with OMNIhaptic device for virtual exploration and haptic guidance is proposed. Environmental conditions such as temperature, relative humidity, lighting and noise are characterized. The evaluation is carried out on 204 people, who were measured blood

pressure and heart rate. After each stage of the experiment, were evaluated protocol NASA TLX.

Justification

Systems of physical human-robot interaction, technological tools represent high performance training; its applications in surgery, tool management, entertainment and remote operation of complex robotic systems and unmanned mobile vehicle for validating the interest of the scientific community to propose new and innovative strategies in construction, planning, control, decision under contingency operation in environments with uncertainty. In the literature various contributions in this regard are reported, as well as strategies that validate the performance, some refer to the measurement of physical interaction variables, however the vast majority of the proposals constitute the use of protocols that rely on subjective tendency perception user in developing a training task. To our problem, the neurorehabilitation of a disabled patient motion, which prevents the ability to perform controlled movements or volunteers, using a conventional rehabilitation (routine exercises) has benefits; however they are more limitations. The disadvantages are: i) The doctor provides a diagnosis based on their experience and personal opinion, but there is no clinical evidence based support. Despite the skill to determine physiotherapy exercise a particular patient does not guarantee that really the right neurorehabilitation [6] is induced; ii) The activity of conventional physiotherapy does not consider homogeneous biomechanical changes on the anatomical planes of the patient, as they depend on human error; and iii) There is no procedure for characterization and motion analysis to define the task of proper physical therapy and changes that should be subject during treatment. Furthermore, the interfaces used hitherto not consider the human operator in the loop and the uncertainty arising from disability, so stabilization techniques must adapt to changes in the dynamics of the system as a whole. Similarly, it is not considered the performance of the interface from the point of view of the human operator.

The problem and solution

The purpose of neurorehabilitation is to help a patient regain function and independence and improve their quality of life both in physical performance and socially. To do this, based on practice and repetition controlled and supervised; The patient performs a model-based learning a normal engine that affects neuromuscular activity eliminate abnormal with biofeedback, rehabilitation from neuroplasticity, and interaction between posture and movement program. The focus, which somehow is the scientific / technological problem and the proposed solution represents the design and build an experimental robotic platform in stable conditions, which ensure neurorehabilitation of patients with upper limb disabilities voluntary movement, the following characteristics:

- a) To contribute to the characterization of anatomical movements (kinematic) and spatio-temporal from specific movement tasks involving biomechanical movements of the shoulder, elbow and wrist.
- b) A method of motion analysis according to the form factor of the biomechanical signals (runtime, maximum and minimum, critical points and form factor) for defining the clinical condition of the patient.
- c) A method for analyzing the performance of the patient - robot interaction from the energy involved in neurorehabilitation, and the effects of motion correction.
- d) A planning strategy of the space-time task as a reference of motion (position and velocity) for the controller used in the robotic device (haptic), and consider the motion analysis of the previous subsection.

- e) A adaptive control technique for robust, stable and optimal that consider the dynamic of the haptic device, the uncertain dynamics of human operator bounded by the physiological limits of kinesthetic strength, high workability in the workspace and task-space neurorehabilitation, and allows path tracking.

The goal

Characterization and evaluation, based on the relationship between the user, the haptic interface and the environmental conditions during a physical task in local kinesthetic exploration and haptic guidance through a human-robot physical interaction using the NASA TLX protocol to define the workload.

1. Design a virtual environment that allows the task of virtual navigation with local kinesthetic guidance for upper limb with involuntary movement, using the phantom omni haptic device.
2. Classify the elements necessary to carry out the task of kinesthetic guided navigation in the interface of an active 3D tube and a circumference of active and passive conditions.
3. Design a survey that allows mediate subscales of the NASA TLX protocol, during the subsequent evaluation to the task of kinesthetic guided navigation.
4. Develop navigation task kinesthetic guidance, obtaining vital signs before and after each experiment; apply the instrument to 248 persons performing the task, and NASA TLX assessment protocol.
5. Develop the interface, files and programs needed to capture, store and process the data collected in the application of the instrument based on NASA TLX protocol; environment (light, temperature, relative humidity and noise) and parameters of the platform (movement, strength and collision) during the navigation task with kinesthetic guidance by human-robot physical interaction.

The experimental platform and the task

The PHANToM Omni has 6 dof in position and 3 dof in force feedback. In each case, there are three actuators. The efficiency of the PHANToM haptic devices depends on factors such as low friction joint, low inertial dynamics and free movement of mechanical backlash, allowing them closer to realism touch interaction.

Figura. 6.1 Experimental platform based on PHANToM OMNI haptic device



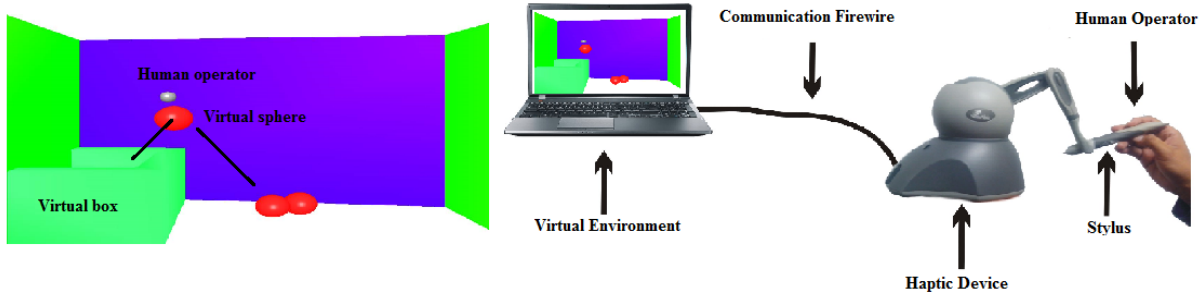
The Figure 6.1 represents the experimental platform based on Omni Phantom haptic device (A), the defined task for haptic guidance (B), and the measurement of environmental parameters (C: temperature, humidity, lighting and noise).

To validate the experimental platform, a procedure is established with three steps:

- i) *Knowledge of the haptic interface (interaction with the kinematic virtual environment)*: for the purpose of training in the use of a haptic interface, the user

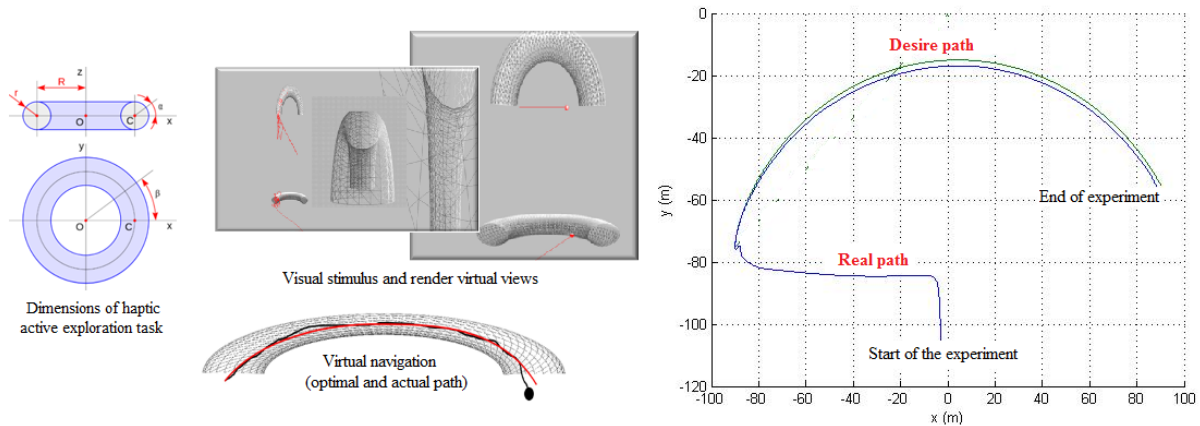
stores virtual spheres with programmable stiffness, sound synthesis and real-time visual stimulus.

Figura. 6.2T raining in the use of a Phantom Omni haptic device.



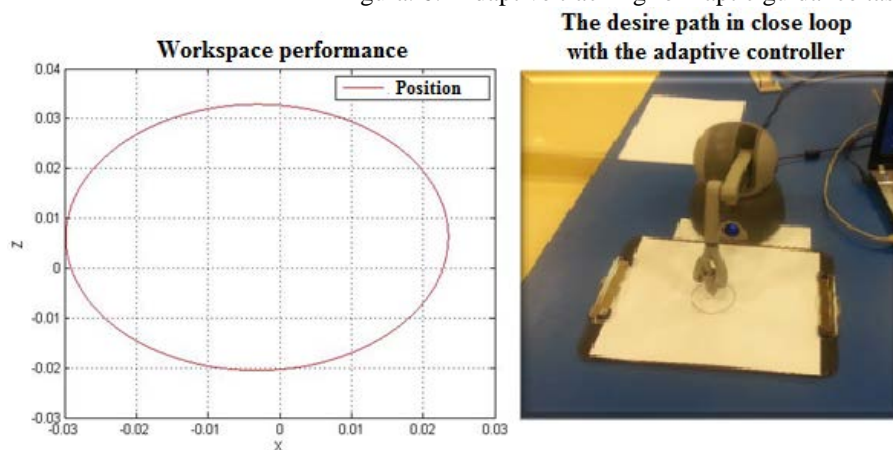
- ii) *Navigation in a virtual pipe with changes in the geometric characteristics (verification of position, velocity, collisions and runtime):* the user attempts to resolve the virtual tube without contact or collision. The tube can be modified dimensions. Position, velocity, collisions and run time are evaluated.

Figura. 6.3Active haptic interface for virtual navigation.



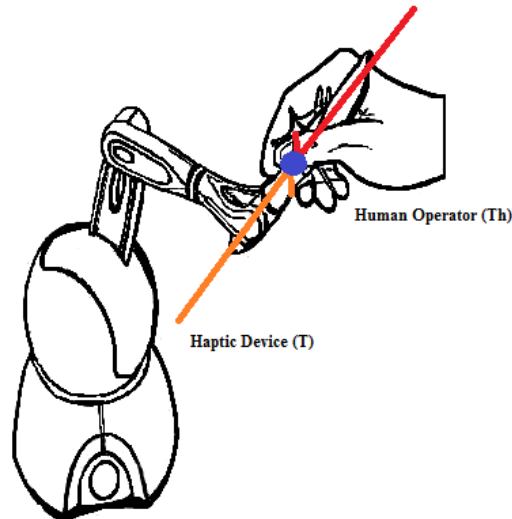
- iii) *Haptic guidance in a structured path based on a clinical protocol (study of convergence and energy):*

Figura. 6.4Adaptive tracking for haptic guidance task.



Environmental conditions such as temperature, humidity, lighting and noise are characterized with purposes to define experimental conditions.

Figura.7.1 Human and haptic forces interaction.



The equations of motion of the Phantom Omni haptic device are

$$\begin{aligned} \tau_1 = & \theta_1 \dot{q}_1 + \theta_2 C_{22} \ddot{q}_1 + \theta_3 C_{23} \dot{q}_1 + \theta_4 C_2 S_3 \ddot{q}_1 + \theta_5 S_2 \dot{q}_2 - \theta_2 S_{22} \dot{q}_1 \dot{q}_2 - \theta_3 S_{23} \dot{q}_1 \dot{q}_3 \\ & - 0.5 \theta_4 S_2 S_3 \dot{q}_1 \dot{q}_2 + 0.5 \theta_4 C_2 C_3 \dot{q}_1 \dot{q}_3 - \theta_2 S_{22} \dot{q}_1 q_2 + \theta_5 C_2 q_2^2 \\ & - 0.5 \theta_4 S_2 S_3 \dot{q}_1 \dot{q}_2 - \theta_3 S_{23} \dot{q}_1 \dot{q}_3 + 0.5 \theta_4 C_2 C_3 \dot{q}_1 \dot{q}_3 \end{aligned} \quad (7.2)$$

$$\begin{aligned} \tau_2 = & \theta_5 S_2 \dot{q}_1 + \theta_6 \dot{q}_2 - 0.5 \theta_4 S_{2-3} \dot{q}_3 + \theta_2 S_{22} q_1^2 + 0.5 \theta_4 S_2 S_3 \dot{q}_1^2 + 0.5 \theta_4 C_{2-3} q_1^2 + \theta_8 C_2 \\ & + \theta_{10} q_2 - \frac{\pi}{2} \end{aligned} \quad (7.3)$$

$$\tau_3 = -0.5 \theta_4 S_{2-3} \dot{q}_2 + \theta_7 \dot{q}_3 + \theta_3 S_{23} \dot{q}_1^2 + 0.5 \theta_4 C_2 C_3 \dot{q}_1^2 - 0.5 \theta_4 C_{2-3} q_2^2 + \theta_9 S_3 \quad (7.4)$$

Where: $\cos q_1 = C_1, \cos q_2 = C_2, \cos q_3 = C_3, \sin q_1 = S_1, \sin q_2 = S_2, \sin q_3 = S_3, \sin 2q_1 = C_{21}, \cos 2q_2 = C_{22}, \cos 2q_3 = C_{23}, \sin 2q_1 = S_{21}, \sin 2q_2 = S_{22}, \sin 2q_3 = S_{23}$.
And the dynamic parameters are :

Table. 7.1 Dynamic parameters of the haptic device.

Parameter	Value
θ_1	1.798×10^{-3}
θ_2	0.864×10^{-3}
θ_3	0.486×10^{-3}
θ_4	2.766×10^{-3}
θ_5	0.308×10^{-3}
θ_6	2.526×10^{-3}
θ_7	0.652×10^{-3}
θ_8	164.158×10^{-3}
θ_9	94.050×10^{-3}
θ_{10}	117.294×10^{-3}

To implement the adaptive control law, the linear parameterization of the dynamic model is required; particularly the regressor matrix of nonlinear elements, as follows

$$H(q)\ddot{q} + C(q, \dot{q})\dot{q} + G(q) = Y\theta \quad (7.5)$$

$$Y\theta = \begin{bmatrix} Y_{11} & Y_{12} & Y_{13} & Y_{14} & Y_{15} & Y_{16} & Y_{17} & Y_{18} & Y_{19} & Y_{110} \\ Y_{21} & Y_{22} & Y_{23} & Y_{24} & Y_{25} & Y_{26} & Y_{27} & Y_{28} & Y_{29} & Y_{210} \\ Y_{31} & Y_{32} & Y_{33} & Y_{34} & Y_{35} & Y_{36} & Y_{37} & Y_{38} & Y_{39} & Y_{310} \end{bmatrix} \begin{bmatrix} \theta_1 \\ \theta_2 \\ \theta_3 \\ \theta_4 \\ \theta_5 \\ \theta_6 \\ \theta_7 \\ \theta_8 \\ \theta_9 \\ \theta_{10} \end{bmatrix} \quad (7.6)$$

Where the regressor matrix parameters are:

$$Y_{11} = \ddot{q}_1$$

$$Y_{12} = C_{22}\ddot{q}_1 - S_{22}\dot{q}_1\dot{q}_2 - S_{22}\dot{q}_1\dot{q}_2$$

$$Y_{13} = C_{23}\dot{q}_1 - S_{23}\dot{q}_1\dot{q}_3 - S_{23}\dot{q}_1\dot{q}_3$$

$$Y_{14} = C_2S_3\dot{q}_1 - 0.5S_2S_3\dot{q}_1\dot{q}_2 + 0.5C_2C_3\dot{q}_1\dot{q}_3 - 0.5S_2S_3\dot{q}_1\dot{q}_2 + 0.5C_2C_3\dot{q}_1\dot{q}_3$$

$$Y_{15} = S_2\ddot{q}_2 + C_2\dot{q}_2^2$$

$$Y_{16} = Y_{17} = Y_{18} = Y_{19} = Y_{110} = Y_{21} = Y_{23} = Y_{27} = Y_{29} = Y_{31} = Y_{32} = Y_{35} = Y_{36} = Y_{38} \\ = Y_{310} = 0$$

$$Y_{22} = S_{22}\dot{q}_1^2$$

$$Y_{24} = -0.5S_{2-3}\ddot{q}_3 + 0.5S_2S_3\dot{q}_1^2 + 0.5C_{23}\dot{q}_1^2$$

$$Y_{25} = S_2\dot{q}_1$$

$$Y_{26} = \dot{q}_2$$

$$Y_{28} = C_2$$

$$Y_{210} = q_2 - \frac{\pi}{2}$$

$$Y_{33} = S_{23}\dot{q}_1^2$$

$$Y_{34} = -0.5S_{23}\ddot{q}_2 + 0.5C_2C_3\dot{q}_1^2 - 0.5C_{23}\dot{q}_2^2$$

$$Y_{37} = \ddot{q}_3$$

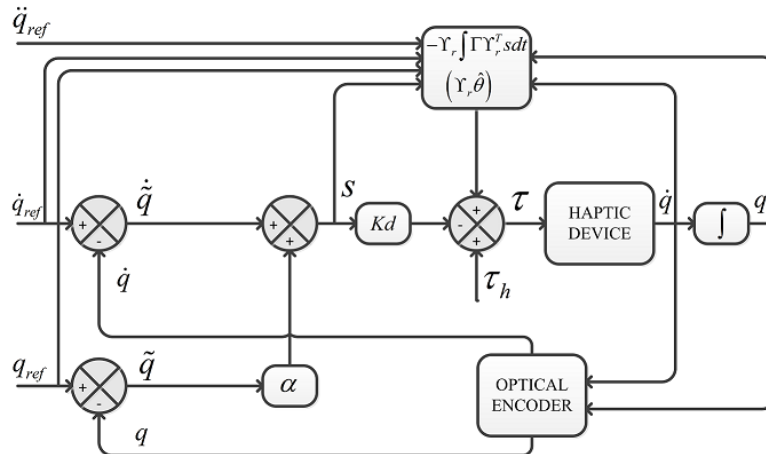
$$Y_{39} = S_3$$

The regressor matrix of nonlinear elements defined from the equations of motion of the haptic device allows the design of adaptive control law, employed in this research. As presented in the following section.

Adaptive control oh haptic device with the human in the loop

The problem of designing adaptive control laws for haptic interface in haptic guidance task with the human in the loop, that ensure asymptotic trajectory tracking has interested as a topic in training and rehabilitation. The development of effective adaptive controllers represents an important step toward high-speed/precision robotics and haptics applications. The control strategy used in this research is defined in the following scheme

Figura.8.1 Adaptive control squeme



Based on the motion equation defined in (7.1) , the control law is

$$\tau = Y_r^T \hat{\theta} - K_d S \tag{8.1}$$

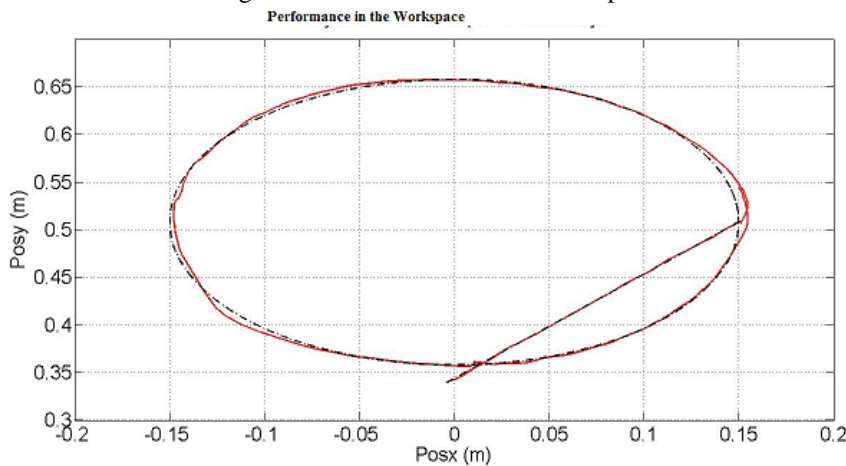
Subject to the law of adaptation

$$\dot{\theta} = -\Gamma Y_r^T S \tag{8.2}$$

where $Y_r = Y_r(q, q_r, \dot{q}_r)$ is theno linear regressor as a function of the nominal reference; $\hat{\theta}$ is the vector for parameter estimation; $\dot{q}_r = \dot{q}_d - \alpha \tilde{q}$, $\tilde{q} = q - q_d$ y $\alpha = \alpha^T > 0$ as a nominal reference; $K_d = K_d^T > 0$ y $\Gamma = \Gamma^T > 0$ are the control gains; and $S = \dot{q} - \dot{q}_r$ is the extended error.

The experimental result with the human in the loop and the trajectory tracking is

Figura.8.2 Performance in the workspace



NASA TLX Method

The NASA TLX evaluation is subjective and weighted method, a tool for the evaluation of a Human Robot Physical Interaction System. This is a multidimensional assessment procedure gives an overall workload score, based on a weighted average of scores in six subscales, whose content is the result of research to empirically isolate and identify factors that are of relevance in the subjective experience of workload.

The NASA TLX (Task Load Index) is a multidimensional assessment procedure gives an overall workload score, based on a weighted average of scores in six subscales, of these, three relate to the demands imposed on the person (mental demands, physical and temporal) and the other three relate to the interaction of the person with the task (effort, frustration and performance); with a scale of 20 intervals of each 5 ranging from Low / High.

The assumption that the subjective experience of loading summarizes the influences of various factors, besides the objective demands imposed by the task. Loading is not an inherent characteristic of the task but is the result of interaction between the requirements of the task; the circumstances under which develops and skills, behaviors and perceptions of the operator.

Experimental results

Physical interaction studies, medical measurement and evaluation protocol variables of NASA TLX, during haptic task are described in the following images

Figura. 8.2 Human Robot Interaction Experiments



Conclusion

The purpose is: to provide a platform for virtual navigation and guidance prospects kinesthetic training, entertainment, simulation, physical therapy and more. For this it is essential to check the performance of the interface, from the point of view of the robot (inherent in the device status variables: Hamiltonian, convergence of position error and operational velocity, kinematic and dynamic manipulability, robustness and practical stability); and also verify the performance from the point of view of the user (NASA TLX Protocol: effort, stress, fatigue, frustration, physical and mental demands).

In the various systems of human-computer interaction, usability and utility are used when the interaction is not physical; it is possible to verify the performance through the protocol NASA TLX (exclusive or established for that specific purpose). This is not enough when the interaction is physical. It is the case of this study, many of the results allow to verify the crossing or correspondence between physical robot signals and indicators protocol NASA TLX, so that the latter wins objective evaluation system of Human-Robot Physical

Interaction. The measurement of environmental parameters and vital signs aims to discriminate false readings users whose underperforming this given by a motivated by extreme or uncomfortable environment and disease conditions in the user effort.

Variable	Frequency	Percentage	Variable	Frequency	Percentage
Gender			Educational Program		
Masculine	81	39.7	Medicine	42	20.6
Feminine	123	60.3	Odontology	121	59.3
Total	204	100.0	Nursing	41	20.1
Age			Total	204	100.0
18	24	11.8	Marital Status		
19	40	19.6	Stag	186	91.2
20	20	9.8	Free union	12	5.9
21	36	17.6	Married	6	2.9
22	36	17.6	Total	204	100.0
23	25	12.3			
24	14	6.9			
25	4	2.0			
26	1	.5			
27	2	1.0			
35	1	.5			
37	1	.5			
Total	204	100.0			

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THE EFFECTS OF TAPING NEUROMUSCULAR COMPARE TO PHYSICAL THERAPIES MODALITIES IN PATIENTS WITH ADHESIVE CAPSULITIS OF THE SHOULDER

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Abstract

Adhesive capsulitis is a common painful condition characterized by severe loss of mobility and shoulder pain. Patients with this disease have a painful restriction of both active and passive mobility and an overall loss of shoulder movement in all planes. This experimental design study investigated the effect of combination of taping neuromuscular and stretching exercises program compared to ultrasounds and stretching exercises program. A total of 40 patients aged between 40 and 60 years were involved in the study. Patients were divided in two groups: first group subjected of neuromuscular taping +stretching exercises program for 4 weeks (experimental group 20 patients) and a second group subjected of a daily program of physical therapy + stretching exercises (control group 20 patients). They were evaluated using visual analogue scales for pain, goniometric measure for passive and active range of motion, SPADI index for shoulder function and patient satisfaction. Analysis showed statistically significant improvement in both the experimental and control groups. In addition, the mean improvement in VAS was significantly greater after first week in the experimental group than in the control group. The study showed that the combination of taping with stretching exercises program leads to better outcomes in rehabilitation of patients with frozen shoulder especially when an immediate effect is needed.

Keywords: Adhesive exercises, taping neuromuscular, ultrasound, laser, stretching exercises.

Introduction:

Adhesive capsulitis is a condition that affects the shoulder joint and is characterized by an important pain and significant loss of active and passive mobility of the shoulder. Adhesive capsulitis has an incidence of 3–5% in the general population and up to 20% in those with diabetes (Miller et al., 1996). This condition occurs mainly in people aged between 40-60 years, with a higher incidence in women. (Urwin M, Symmons 1998). It is due to an inflammatory process resulting in the formation of adhesions between the capsule, anatomical neck of the humerus and the inferior capsular recess(Codman et al., 1934;Neviaser et al., 1945). Although the exact pathophysiologic cause of this pathology remains elusive, there are two types identified in the literature, idiopathic and secondary adhesive capsulitis. Idiopathic or “primary” adhesive capsulitis occurs spontaneously without a specific precipitating event. Primary adhesive capsulitis results from a chronic inflammatory response to fibroblastic proliferation, which may actually be an abnormal

response from the immune system. Secondary adhesive capsulitis occurs after a shoulder injury or surgery, or may be associated with another condition such as diabetes, rotator cuff injury, cerebrovascular accident or cardiovascular disease, which may prolong recovery and limit outcomes. The onset of this condition is usually gradual and idiopathic, patients experience the following stages of the condition; a freezing or painful stage, followed by stiffness, frozen or transitional phase, and finally a thawing phase, characterized by increased ROM (Leung MS et al., 2008; Manske RC et al., 2008). Treatments advocated for adhesive capsulitis include rehabilitation as the initial conservative measure, anti-inflammatory drugs, intra-articular corticosteroids, capsular distension injections, and surgical interventions in refractory cases (Oglivie-Harris & Myerthall, 1997). Various treatments (Carette et al., 2003; Philadelphia Panel, 2001; Harris JD, et al., 2011), including stretching, mobilization and manipulation techniques, have been advocated for restoration of a pain-free state and normal use of the upper extremity. The rehabilitative interventions performed depend on the institution. There is as yet no definitive agreement on the most effective form of treatment. The optimal use of physical therapies and the frequency and timing of session criteria have not yet been established (Green S, et al., 2003). Neuromuscular taping is a relatively new technique used in rehabilitation programs of adhesive capsulitis. Although it has been commonly used in orthopedic and sports settings, it is increasingly becoming an adjunct treatment option for the other musculoskeletal impairments.

Materials and methods

Purpose

This experimental design study investigates the effect of combination of taping neuromuscular and stretching exercises program (SEP) compared with physical therapies and SEP in patients with adhesive capsulitis.

Method and samples

This is a comparative study. Adults with a diagnosis of adhesive capsulitis were referred from a rheumatologist shoulder clinic. A total of 40 patients aged 40-60 years were involved in the study. The patients were treated between March and September 2014 in "Fisiomed" centre of rehabilitation for outpatients. They were randomly allocated into two groups: the first group received neuromuscular taping + SEP (NMT group) and the second group received physical therapies + SEP (PHT group). The randomization was done in blind using sealed envelopes in which were written the names of the patients. They were screened for the clinical presentation of adhesive capsulitis by trained physiotherapists with the following eligibility criteria:

Inclusion criteria:

1. Age between 40 and 60 years
2. Significant pain and loss of active and passive mobility of the shoulder
3. An absence of radiological evidence of glenohumeral joint arthritis;
4. Symptoms present for at least 3 months
5. Men and woman who were willing of to participate in the study (Cyriax, 1993; Griggs et al., 2000).

Exclusion criteria:

1. Secondary adhesive capsulitis
2. Local corticosteroid injection to the affected shoulder within the last 3 months
3. Pregnancy

4. History of metastatic cancer or diagnosis of cancer within 12 months
5. Unstable angina
6. Prior shoulder surgery

Ethical approval was granted by the relevant ethics committee, and written informed consent was obtained from each participant after they were fully informed of the plan and goals of treatment. An explicit explanation was given about each individual's freedom to refuse to participate in the study or to withdraw it at any point, without suffering any ill effects whatsoever.

Study protocol

Neuromuscular taping group received a standardized application of a double cross fun taping 3 times a week at the end of SEP suggested by (Blow et al. 2012). A daily program of physical therapy modalities (intermittent ultrasound of 1 MHz and 1 W/cm² for 5 min and high power laser for 10 min) were used in PHT group for 4 weeks. Both groups received a daily stretching exercises program included abduction in the scapular plane, flexion with the patient in the supine position, and rotations during abduction (the degree of abduction was increased according to the patient's progress and tolerance level). Each stretch was maintained for 30 s, with 15 s rest between stretches. Treatment was provided by experienced and trained physiotherapists with an international qualification for neuro muscular taping, physical and manual therapy.

Outcome measure

Primary outcome measures were Visual Analogue Scale for pain (VAS) (Costant et al., 1987;Clarck P, et al., 2003), standard goniometric ROM examination, Shoulder Pain and Disability Index (SPADI) (MacDermid J et al 2006). An improvement of 2 points or more on Visual Analogue Scale (VAS) was defined as a clinically important difference. A minimum change of 30% in range of motion was considered as a clinically important improvement, an improvement of 11 points in the total SPADI score (Williams JW, et al 1995) were considered as minimum clinically important changes. As secondary outcome measures we used the Patients' Satisfaction with Treatment (PST). A minimum change of 30% was considered as a clinically important improvement (Farrar JT et al 2001). The patients were assessed before the treatment (initial evaluation) and after first and fourth weeks for the VAS, ROM, SPADI score. The PST was assessed only before and after the four week of treatment.

Statistical analysis

The two-tailed paired T-test was used to find the treatment effect (increase in ROM and reduction in the pain and SPADI scores) and to compare the outcomes between the two groups. The Pearson χ^2 -test was used to find the significance of study parameters on a categorical scale between the two groups. A value of $P < 0,5$ was considered significant. SPSS 15 software was used for statistical calculation (Bailey, 1997).

Results

A total of 40 patients ((20 in NMT group and 20 in the PHT group) completed the treatment period of 4 weeks. The average age of the NMT group patients was 52 years \pm 8 (range 44-60) and the average age of the PHT group was 51 \pm 6 years (range 43-60) Table 1.

13 were women (65%), 7 were men (35%) in the NMT group, 8 were men (40%) and 12 were women (60%) in the PHT group Table 2

In the NMT group 7 patients had the left shoulder affected and 13 had the right. The PT group had 8 patients with left shoulder affected and 12 with the right. In both groups the

majority of the patients had affected the right shoulder Table 3. The two groups were similar in terms of age, sex, involved shoulder.

Table 1. Age distribution of subjects studied

Age in years	NMT Group		PT Group	
	N	%	N	%
40-45	5	25	4	20
46-50	4	20	6	30
51-55	7	35	5	25
56-60	4	20	5	25
Total	20	100	20	100
Mean±SD	52±8		51±6	

Table 2. The gender distribution of subjects studied

Gender	NMT Group		PT Group	
	N	%	N	%
Male	7	35	8	40
Female	13	65	12	60
Total	20	100	20	100

Table 3. Affected Shoulder of subjects studied

Affected Shoulder	NMT Group		PT Group	
	N	%	N	%
Left	7	35	8	40
Right	13	65	12	60
Total	20	100	20	100

Pain VAS score

VAS scores decreased significantly in both treatment groups as compared with the baseline levels. The pain scores of the neuromuscular taping group were significantly lower (p values=0.001) at the first week examination as compared with the physical therapy group. However, there was no significant difference in the same parameters between two groups at the second week (p value=0,21) (Table 4).

Table 4. Comparison of VAS (pain) between two groups

VAS (pain)	NMT	PT	P value
	Group mean±SD	Group mean±SD	
Baseline	6,1±1,4	6,5±1,5	0.42
After 1W	3.4±1,8	4,9±1,3	0.001
After 4W	2.9±1,5	3±1,2	0.21

SD -standard deviation, 1W-first week, 4W-fourth week

Range of motion

In both groups, ROM in flexion, abduction, and external rotation improved significantly after treatment (p = 0.001). Patients in NMT group had significantly higher forward elevation and abduction after treatment after first week of treatment (p < 0.01). There was not much difference between the NMT group and PT group after four week of treatment (p=0,15, p=108, p=0.178) and there was not much difference between the NMT

group and PT group after first and four week of treatment for the external rotation ($p=0.109$ $p=0,22$) (Table 5).

Table 5. Comparison of ROM between two groups

ROM	NMT	PT	P value
	Group mean \pm SD	Group mean \pm SD	
Abduction			
Baseline	79 \pm 13	78 \pm 15	0,173
After 1W	92 \pm 13,4	84 \pm 12	< 0.01
After 4W	129 \pm 16	128,7 \pm 15	0.15
Forward elevation			
Baseline	97 \pm 14	98 \pm 13	0,67
After 1W	106 \pm 13	101 \pm 12	< 0.01
After 4W	138 \pm 13	137,9 \pm 13	0.108
External rotation			
Baseline	25 \pm 18	26 \pm 16	0.178
After 1W	29 \pm 14,1	28 \pm 15,2	0.09
After 4W	31,6 \pm 17	31 \pm 14	0.22

SD -standard deviation, 1W-first week, 4W-forth week

SPADI disability score

Both groups improved significantly after 4 weeks in total SPADI score and its sub-score. Patients in NMT group had lower disability scores after first week of treatment ($p<0.01$) there was not much difference between the NMT group and PT group after four week of treatment ($p=0.16$, $p=0.58$, $p=0.71$) (Table 6).

Table 6. Comparison of SPADI scores between two groups

SPADI	NMT	PT	P value
	Group mean \pm SD	Group mean \pm SD	
SPADI sub-score for pain			
Baseline	36 \pm 17,2	35,67 \pm 18,1	0,69
After 1W	29,5 \pm 13,3	32,4 \pm 17,3	<0.01
After 4W	24,38 \pm 18,1	24,92 \pm 17,8	0.16
SPADI sub-score for function			
Baseline	57,68 \pm 11,4	56,84 \pm 16,2	0,23
After 1W	46,1 \pm 14,8	51 \pm 12,3	<0.01
After 4W	31,67 \pm 13,5	32,32 \pm 17,3	0.058
SPADI total score			
Baseline	94 \pm 17.6	92.51 \pm 17,3	0,17
After 1W	75,6 \pm 13,5	83,52 \pm 12,7	<0.01
After 4W	52,95 \pm 16,7	53,14 \pm 18,1	0,071

SD -standard deviation, 1W-first week, 4W-forth week

Patients satisfaction after treatment

In both groups patients reported better results after treatment ($p=0.001$) (Table 7).

Table 7. *Patients satisfaction after treatment*

<i>ROM</i>	<i>NMT</i>	<i>PT</i>	<i>P value</i>
	<i>Group</i>	<i>Group</i>	
Worse	0	0	<0.001
Same	0	0	-
Slightly better	4	5	-
Better	16	15	-

Discussion

The purpose of this study was to compare the short-term efficacy of NMT+ SEP compared with PT and SEP. In our rehabilitation protocol of experimental group we preferred taping neuromuscular, which is indicated in the inflammatory response of soft tissue around the shoulder. Most of the patients with frozen shoulder had night pain, and some manual therapy techniques could be painful. The taping neuromuscular was aimed to decrease the pain and inflammatory response.

It was demonstrated that both strategies are effective in reducing pain and restoring ROM and shoulder function in patients with adhesive capsulitis. We identified a significant improvement of the outcomes after first week of treatment in the NMT group. There was no significant difference after fourth week of the treatment.

The pain scores of the NMT group were significantly lower (p values=0.001) at the first week examination as compared with the PH group (Table4). We think that the sudden effects may have been potentially due to NMT, which reduces mechanical irritation of the involved soft tissue structures and reorients the shoulder movements through an arc of improved glenohumeral motion. Taping provides immediate sensorimotor feedback, and patients often report symptom relief, improved comfort level, or stability of the involved joint. These results are consistent with those found by a study among 42 subjects with rotator cuff tendonitis/impingemen, where was observed that NMT provides an immediate effect on pain and the active ROM, however, without any improvements in disability scores (Thelen et al., 2008). Also, another study claimed that the effects of taping may be due to the sensorimotor and proprioceptive feedback mechanisms (Simoneau G et al., 1997).

The range of motion (Table 5) in flexion, abduction, and external rotation improved significantly after treatment in both groups ($p = 0.001$). Patients in NMT group had significantly higher forward elevation and abduction after treatment after first week of treatment($p < 0.01$). There was not much difference between the NMT group and PT group after four weeks of treatment. We think that these findings are also emphasizing the role of muscle imbalance which should be implemented to the NMT as well as the exercises stretching program

NMT can improve the following musculoskeletal conditions: strengthen weakened muscles, control joint instability, assist the postural alignment, and relax the over- used muscles.

In our study we combined NMT and PT with stretching exercise programe. A study conducted by Griggs et al., (2000) has demonstrated that the vast majority of patients who have idiopathic adhesive capsulitis can improve successfully ROM with a specific 4-direction shoulder stretching programme. Also, various authors have previously reported improvements in range of motion by using NMT (Frazier S et al., 2006; Jaraczewska E, et al., 2006; Murray H, et al., 2001; Osterhues DJ et al., 2004; Yoshida A et al., 2007(Selkowitz DM,et al 2007,.;Smith M, et al., 2009).

SPADI index score (Table 6) improved significantly after 4 weeks in both groups. Patients in NMT group had lower disability scores after first week of treatment in total

SPADI score and its sub-score ($p < 0.01$).

Increase of ROM and pain reduction after implementation of our protocols for NMT and PT groups improved the Disability scores. Results consistent with the results of a study in patients with various shoulder problems by NMT and PT at the same time (Frazier et al., 2006).

Patients satisfaction (Table 7): all the patients were satisfied after treatment because we did not include multiple techniques and NMT provides immediate sensorimotor feedback, and patients often reported symptom relief, improved comfort level, and stability of the involved joint. We think that the immediate effect of NMT may be considered as a very important advantage as compared with the local physical therapy modalities. This is also a favorable result which may increase the performance during exercise that is an indispensable step of the treatment process.

Another important practical difference of two treatment options is the duration and frequency of the application. Local modalities are usually performed daily for 2–4 weeks as we preferred in our study. However, NMT is performed three times within the same period and showed similar effectiveness (Smith M, et al., 2009).

Therefore, we may conclude that NMT may be preferred as an alternative treatment option when an immediate effect by shorter application durations is needed.

Conclusion

Adhesive capsulitis is a common disorder in which definitive treatment is still uncertain. The study shows that the patients with frozen shoulder can be treated successfully with physiotherapy but the combination of neuromuscular taping with stretching exercises program leads to better outcomes in rehabilitation of patients with frozen shoulder. Despite the small sample that was used study provides an efficient protocol to help the physiotherapists for rehabilitation of patients with frozen shoulder. Future studies also need to involve large numbers of patients, and measure both short-term and long-term outcomes. More research is also needed to establish a standard protocol of treatment for frozen shoulder, and to develop valid and reliable outcome measures for these conditions.

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