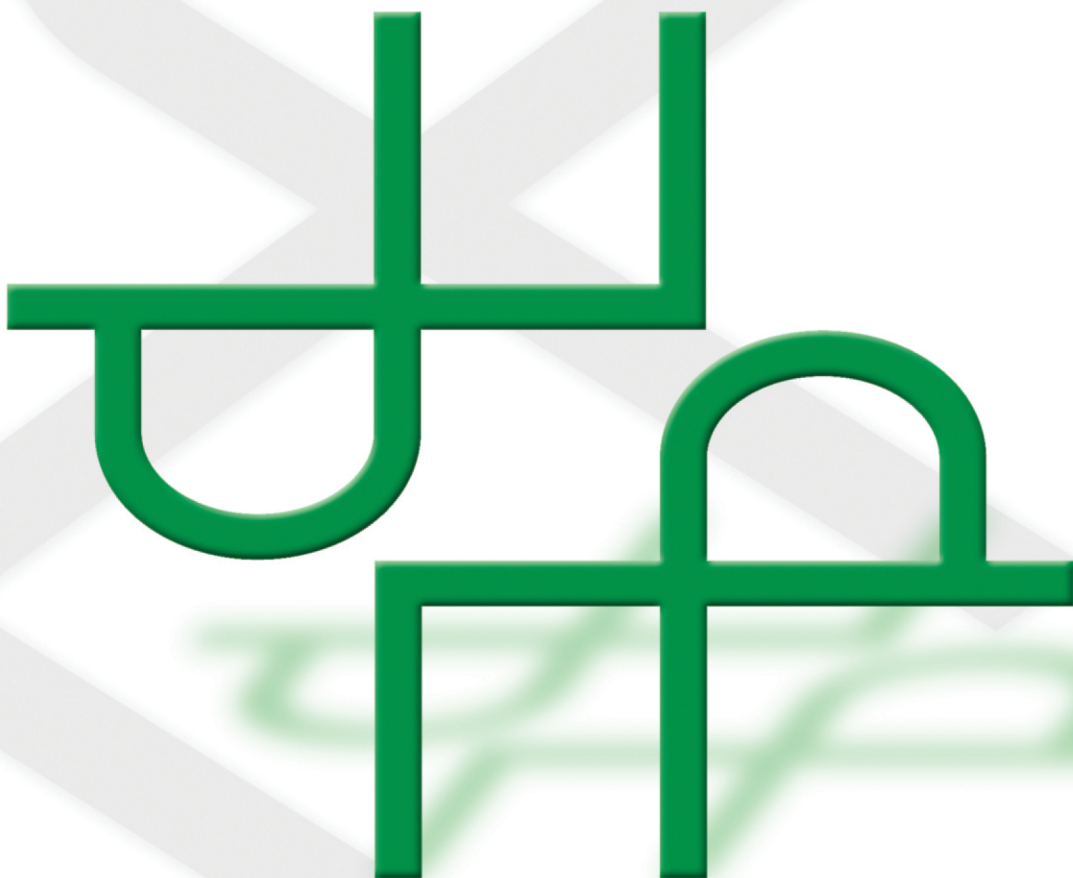


ISSN 0350-137X

UDK: 338 (497,1)

# ЕКОНОМИКА

1



LXII

NIŠ, 2016

МЕЂУНАРОДНИ ЧАСОПИС  
ЗА ЕКОНОМСКУ ТЕОРИЈУ И ПРАКСУ И ДРУШТВЕНА ПИТАЊА



# ЕКОНОМИКА

Часопис излази четири пута годишње

Година LXII, I-III 2016, број 1

ИЗДАВАЧ: Друштво економиста "Економика" Ниш

СУИЗДАВАЧИ: Економски факултет у Приштини, Институт за економику пољопривреде - Београд, Факултет за пословне студије и право - Београд, Факултет за менаџмент - Сремски Карловци, Друштво економиста Ниша.

## ГЛАВНИ И ОДГОВОРНИ УРЕДНИК:

Проф. др Драгољуб Симоновић

## ЗАМЕНИК ГЛАВНОГ И ОДГОВОРНОГ УРЕДНИКА

Др Зоран Симоновић

## ИЗВРШНИ УРЕДНИЦИ:

Проф. др Бојан Крстић, Ниш (Србија)

Проф. др Живота Радосављевић, Београд (Србија)

Проф. др Благоје Пауновић, Београд (Србија)

Проф. др Јонел Субић, Београд (Србија)

Проф. др Славомир Милетић, Приштина (Србија)

Проф. др Бобан Стојановић, Ниш (Србија)

## УРЕДНИЦИ САРАДНИЦИ:

Проф. Др Снежана Ђекић, Ниш (Србија)

Проф. др Драго Цвијановић, Врњачка Бања (Србија)

Проф. др Драган Момировић, Београд (Србија)

Др Александар Ђурић, Београд (Србија)

Др Горан Квргић, Сремски Карловци (Србија)

## РЕДАКЦИЈСКИ КОЛЕГИЈУМ

Академик Зоран Лакић, Подгорица (Црна Гора)

Академик Љубиша Папић, Чачак (Србија)

Др Рајмунд Мирдала, Кошице (Словачка)

Др Грег Рингер, Јуцин (САД)

Др Марија Павлова, Велико Трново (Бугарска)

Др Андреј Жан-Василе, Плоешти (Румунија)

Др Јуриј Књазев, Москва (Русија)

Др Мирко Савић, Суботица (Србија)

Др Андрес Карион Гарциа, Валенсија, (Шпанија)

Др Рената Краковска, Варшава (Пољска)

Др Љубинка Јоксимовић, Београд (Србија)

Др Александру Неделеа, Сучева (Руманија)

Др Набиева У.Н., Махачкала (Русија)

Др Слободан Цветановић, Ниш (Србија)

Др Збигниев Пашек, Краков (Пољска)

Др Боровоје Прокоповић, Ниш (Србија)

Др Тадеуш Грабински, Краков (Пољска)

Др Јанко Радуловић, Подгорица (Црна Гора)

Др Паоло Цесар Чагас Родригес (Бразил)

Др Крис Пател, Сиднеј (Аустралија)

Академик Станислав Сергијович Јанецко, Кијев (Украјина)

Др Андреј Арјамов, Москва (Русија)

Др Ливију Думитраску, Плоешти (Румунија)

Др Срећко Милачић, Косовска Митровица (Србија)

Др Милан Амброж, Ново Место (Словенија)

Др Марко Колаковић, Загреб (Хрватска)

Др Дејан Јакшић, Суботица (Србија)

Др Дино Мартелато, Венеција (Италија)

Др Ајше Умит Гокдениз, Истанбул (Турска)

Др Иван Чарота, Минск (Белорусија)

Др Милица Вујичић, Нови Пазар (Србија)

Др Чи Вей Су, Кингдао, (Кина)

Др Чор Фон Танг, Пенанг (Малезија)

Др Драгутин Шипка, Бања Лука (Р. Српска)

Др Јасмина Старц, Ново Место (Словенија)

Др Марија Станкова, Благоевград, (Бугарска)

Др Андриела Витић-Џетковић, Котор (Црна Гора)

Др Bishwajit Bhattacharjee, Каримгањ (Индија)

## ИЗДАВАЧКИ САВЕТ

Др Гордана Мрдак, Врање (Србија)

Др Душан Здравковић, Ниш (Србија)

Мр Бранислав Јованчић, Ниш (Србија)

Др Живорад Глигоријевић, Ниш (Србија)

Др Софија Лихова, Кијев (Украјина)

Мец Никола Ђурчић, Београд (Србија)

Др Рајко Буквић, Београд (Србија)

Др Александар Грубор, Суботица (Србија)

Др Петар Веселиновић, Крагујевац (Србија)

Др Иван Ђурић, Хале (Немачка)

Мр Наталиа Глаголева, Белгород (Русија)

Др Весна Јанковић-Милић, Ниш (Србија)

Др Бранко Михаиловић, Београд (Србија)

Др Братислав Прокоповић, Лесковац (Србија)

Др Миријана Кнежевић, Крагујевац (Србија)

Др Александар Костић, Косовска Митровица (Србија)

Др Соња Јовановић, Ниш (Србија)

Др Данијела Деспотовић, Крагујевац (Србија)

1. Часопис “Економика” покренут је јула 1954. године и под називом “ Нишки привредни гласник” излазио је до јуна 1957. године, а као “Привредни гласник” до краја 1969. године. Назив “Наука и пракса” носио је закључно са бројем 1/1973. год. када добија назив “Економика” који и данас има.

2. Часопис су покренули Друштво економиста Ниша и Друштво инжењера и техничара Ниша (остало као издавач до краја 1964. године). Удружење књиговођа постаје издавач почев од броја 6-7/1958. године. Економски факултет у Нишу на основу своје одлуке броја 04-2021 од 26.12.1991. године постао је суиздавач “Економике”. Такође и Економски факултет у Приштини постао је суиздавач од 1992. године. Почев од 1992. године суиздавач “Економике” је и Друштво за маркетинг региона Ниш. Као суиздавач “Економике” фигурирали су у току 1990-1996. године и Фонд за научни рад општине Ниш, Завод за просторно и урбанистичко планирање Ниш и Корпорација Винер Брокер Ниш.

3. Републички секретариат за информације СР Србије својим Решењем бр. 651-126/73-02 од 27. новембра 1974. године усвојио је захтев “Економике” за упис у Регистар новина. Скупштина Друштва економиста Ниша на седници од 24. априла 1990. године статутарном одлуком потврдила је да “Економика” има статус правног лица. На седници Скупштине Друштва економиста Ниш од 11. новембра 1999. године донета је одлука да “Економика” отвори посебан жиро-рачун.

4. Према Мишљењу Републичког секретариата за културу СР Србије бр. 413-516/73-02 од 10. јула 1973. године и Министарства за науку и технологију Републике Србије бр. 541-03-363/94-02 од 30. јуна 1994. године “Економика” има статус научног и ранг националног часописа “Економика” је поћев од 1995. добила статус међународног економског часописа.

5. УРЕДНИЦИ: др Јован Петровић (1954-1958), Миодраг Филиповић (1958-1962), Благоје Матић (1962-1964), др Драгољуб Стојиљковић (1964-1967), др Миодраг Николић (1967-1973), др Драгољуб Симоновић (1973-1984), др Миодраг Јовановић (1984-3-4/1988) и др Драгољуб Симоновић (1990-до данас).

**ЧАСОПИС ЈЕ ИНДЕКСИРАН У СЛЕДЕЋИМ БАЗАМА:**

ERIH Plus	RePEc	DOAJ
Index Copernicus	Ulrichs web	SHERPA / ROMEO
EBSCO host	EconPapers	ProQuest
J-Gate	CABI	EZB
SSRN	DRJI	CNKI

Лектор за енглески језик

**ВЛАДИМИР ИВАНОВИЋ**

Компјутерска обрада текста и графике:

**МИЛАН Д. РАНЂЕЛОВИЋ**

Ликовна опрема:

**ПЕТАР ОГЃАНОВИЋ, ДРАГАН МОМЧИЛОВИЋ**

Адреса:

“Економика” Друштво економиста

18000 Ниш, Максима Горког 5/36

Телефон Редакције: +381 (0)18 4245 763; 211 443

е-маил: zoki@medianis.net; ekonomika@sbb.rs WEB: <http://www.ekonomika.org.rs>

Жиро рачун: динарска 160-19452-17

Штампа:

“МЕДИВЕСТ”

18000 Ниш

Тираж: 300 примерака

INTERNATIONAL JOURNAL  
FOR ECONOMIC THEORY AND PRACTICE AND SOCIAL ISSUES



# ЕКОНОМИКА

The Journal is issued four times a year.

Year LXII, I-III 2016, Vol. 1

PUBLISHER: Society of Economists "Ekonomika", Nis

COPUBLISHERS: Faculty of Economics - Pristina, Institute of agricultural economics - Belgrade, Faculty of business studies and righ - Belgrade, Faculty of management - Sremski Karlovci, Economic Association of Nis.

EDITOR-IN-CHIEF:

Prof. Dragoljub Simonovic, Ph.D

ASSISTANT EDITORS-IN-CHIEF:

Zoran Simonovic, Ph.D

EXECUTIVE EDITORS:

Prof. Bojan Krstic, Ph.D, Nis (Serbia)

Prof. Blagoje Paunovic, Ph.D, Belgrade (Serbia)

Prof. Slavomir Miletic, Ph.D, Pristina (Serbia)

Prof. Zivota Radosavljevic, Ph.D, Novi Sad (Serbia)

Prof. Jonel Subic Ph.D, Belgrade (Serbia)

Prof. Boban Stojanović, Ph.D, Nis (Serbia)

ASSOCIATE EDITORS

Prof. Snezana Djekic, Ph.D Nis (Serbia)

Prof. Dragan Momirovic, Ph.D, Beograd (Serbia)

Prof. Goran Kvrjic, Ph.D, Sremski Karlovci (Serbia)

Prof. Drago Cvijanovic, Ph.D, Vrnjačka Banja (Serbia)

Aleksandar Duric, Ph.D, Belgrade (Serbia)

EDITORIAL BOARD

Academician Zoran Lacic, Podgorica (Montenegro)

Academician Ljubisa Papic, Ph.D, Cacak (Serbia)

Greg Ringer, Ph.D, Eugene, OR (USA)

Rajmund Mirdala, Ph.D, Kosice (Slovakia)

Mariya Pavlova, Ph.D, Veliko Trnovo (Bulgaria)

Andrei Jean-Vasile, Ph.D, Ploiesti (Romania)

Jurij Knjazev, Ph.D, Moskva (Russia)

Mirko Savic, Ph.D, Subotica (Serbia)

Andrés Carrión García, Ph.D, Valencia (Spain)

Renata Krakowska Ph.D, Warsaw (Poland)

Ljubinka Joksimovic, Ph.D, Beograd (Srbija)

Alexandru Nedelea, Ph.D, Suceva (Romania)

Nabieva U.N., Ph.D, Mahackala (Russia)

Slobodan Cvetanovic, Ph.D, Nis (Serbia)

Chi Wei Su, Ph.D, Qingdao (China)

Zbigniew Paszek, Ph.D, Krakow (Poland)

Borivoje Prokopovic, Ph.D, Nis (Serbia)

Tadeusz Grabinski, Ph.D, Krakow (Poland)

Janko Radulovic Ph.D, Podgorica (Montenegro)

Paulo Cesar Chagas Rodrigues, Campus Avaré, (Brazil)

Academician Stanislav Sergijovic Jacenko Kijev (Ukraine)

Andrey Aryamov, Ph.D, Moskva (Russia)

Liviu Dumitrascu, Ph.D, Ploiesti (Romania)

Srecko Milacic, Ph.D, K.Mitrovica (Serbia)

Milan Ambrož Ph.D, Novo Mesto (Slovenia)

Marko Kolakovic, Zagreb (Croatia)

Dejan Jaksic, Ph.D, Subotica (Serbia)

Dino Martello, Ph.D, Venice (Italy)

Ayşe Ümit Gökdeniz, Ph.D Istanbul (Turkey)

Ivan Carota, Ph.D, Minsk (Belarus)

Milica Vujicic, Ph.D, Novi Pazar (Serbia),

Chor Foon Tang, Ph.D, Penang, (Malaysia)

Dragutin Sipka, Ph.D, Banja Luka (Republika Srpska)

Jasmina Starc, Ph.D, Novo Mesto (Slovenia)

Mariya Stankova Ph.D, Blagoevgrad, (Bulgaria)

Andriela Vitic-Cetkovic Ph.D, Kotor (Montenegro)

Chris Patel, Ph.D, Sydney (Australia)

Bishwajit Bhattacharjee Ph.D, Karimganj, (India)

PUBLISHING COUNCIL

Dusan Zdravkovic, Ph.D, Nis (Serbia)

Branislav Jovancic, MSc, Nis (Serbia)

Zivorad Gligorijevic, Ph.D, Nis (Serbia)

Sofja Lihova, Ph.D, Kiev (Ukraine)

Nikola Curcic, MSc, Beograd (Serbia)

Rajko Bukvic, Beograd (Serbia)

Sonja Jovanovic, Ph.D, Niš (Serbia)

Aleksandar Grubor, Ph.D, Subotica (Serbia)

Petar Veselinovic, Ph.D, Kragujevac (Serbia)

Ivan Djuric, Ph.D, Halle (Germany)

Gordana Mrdak, Ph.D, Vranje (Serbia)

Natalia Glagoleva, MSc, Belgorod (Russia)

Vesna Jankovic-Milic, Ph.D, Niš (Serbia)

Branko Mihailovic, Ph.D, Beograd (Serbia)

Bratislav Prokopovic, Ph.D, Leskovac (Serbia)

Mirjana Knezevic, Ph.D, Kragujevac (Serbia)

Aleksandar Kostic, Ph.D, K. Mitrovica (Serbia)

Danijela Despotovic, Ph.D, Kragujevac (Serbia)



1. The journal EKONOMIKA was initiated in July 1954. It was published as "Nis Economic Messenger" till June, 1957 and as "The Economic Messenger" till the end of 1969. The title "Science and Practice" it had till the issue 1/1973 when it changed its name into EKONOMIKA as it entitled today.

2. The Journal was initiated by the Society of Economists of Nis and the Society of Engineers and Technicians of Nis (the latter remained as the publisher till the end of 1964). The Society of Accountants became its publisher starting from the issue no. 6-7/1958. The Faculty of Economics, Nis, on the basis of its Resolution No. 04-2021 from December 26, 1991, became the co-publisher of EKONOMIKA. Likewise, the Faculty of Economics of Pristina became the co-publisher since in 1992. Starting from 1992, the co-publisher of EKONOMIKA has been the Society for Marketing of the Region of Nis. Other co-publishers of EKONOMIKA included, in the period 1990-1996, the Foundation for Scientific Work of the Municipality of Nis, the Institute for Spatial and Urban Planning of Nis and the Corporation Winner Broker, Nis.

3. The Republic Secretariat for Information of the Socialist Republic of Serbia, by its Resolution No. 651-126/73-02 from November, 27, 1974, approved of EKONOMIKA's requirement to be introduced into the Press Register. The Assembly of the Society of Economists of Nis, at its session on April 24, 1990, by its statutory resolution, confirmed the legal status of EKONOMIKA. At the session of the Assembly of the Society of Economists, Nis, on November 11, 1999, the resolution was adopted the EKONOMIKA was to open its own bank account.

4. According to the Opinion of the Republic Secretariat for Culture of the Socialist Republic of Serbia No. 413-516/73-02 from July 10, 1973 and the Ministry for Science and Technology of the Republic of Serbia No. 541-03-363/94-02 from June 30, 1994, EKONOMIKA has the status of a scientific and national journal. Starting from 1995, EKONOMIKA has been having the status of international economic journal.

5. EDITORS: dr Jovan Petrovic (1954-1958), Miodrag Filipovic (1958-1962), Blagoje Matic (1962-1964), dr Dragoljub Stojiljkovic (1964-1967), dr Miodrag Nikolic (1967-1973), dr Dragoljub Simonovic (1973-1984), dr Miodrag Jovanovic (1984-3-4/1988) i dr Dragoljub Simonovic (1990-till the present day).

THE JOURNAL IS INDEXED IN THE FOLLOWING BASES:

ERIH Plus	RePEc	DOAJ
Index Copernicus	Ulrichs web	SHERPA / ROMEO
EBSCO host	EconPapers	ProQuest
J-Gate	CABI	EZB
SSRN	DRJI	CNKI

Lector

VLADIMIR IVANOVIĆ

Prepress:

MILAN D. RANDJELOVIĆ

Cover:

PETAR OGNJANOVIĆ, DRAGAN MOMČILOVIĆ

Address:

"EKONOMIKA", Society of Economists  
18000 Nis, Maksima Gorkog 5/36

Phone: +381 (0)18 4245 763; 211 443

e-mail: zoki@medianis.net; ekonomika@sbb.rs    WEB: <http://www.ekonomika.org.rs>

Bank Account: 160-19452-17

Printed by:

"MEDIVEST"

18000 Niš

Copies: 300



ИЗДАТЕЛЬ: Общество экономистов „Экономика” Ниша.

СУИЗДАТЕЛИ: Экономический факультете в Приштине, Институт экономики сельского хозяйства в Белград, Факултет за пословне студије и право - Београд, Факултет управления - Сремски Карловци, Ассоциация экономистов Ниша.

ГЛАВНЫЙ И ОТВЕТСТВЕННЫЙ РЕДАКТОР  
Проф. д.н. Драголюб Симонович

ЗАМЕСТИТЕЛЬ ПОМОЩНИК ГЛАВНОГО И ОТВЕТСТВЕННОГО  
РЕДАКТОРА  
Д.н. Зоран Симонович

### ИСПОЛНИТЕЛЬНЫЕ РЕДАКТОРЫ

Проф. д.н. Бойан Крстич, Ниш (Сербия) Проф. д.н. Живота Радосављевић, Белград (Сербия)  
Проф.д.н. Благойе Паунович, Белград (Сербия) Проф. д.н. Йонел Субич, Белград (Сербия)  
Проф. д.н. Славомир Милетић, Приштина (Сербия) Проф. д.н. Бобан Стојановић, Ниш (Сербия)

### РЕДАКТОРЫ ПЕРСОНАЛ

Проф. д.н. Снежана Джекић, Ниш (Сербия) Проф. д.н. Драго Цвијановић, Врњачка Бања (Сербия)  
Проф. д.н. Драган Момировић, Белград (Сербия) Д.н. Александр Джурић, Белград (Сербия)  
Проф.д.н. Горан Квргић, С. Карловици (Сербия)

### РЕДАКЦИОННАЯ КОЛЛЕГИЯ

Академик Зоран Лакич, Подгорица (Черногория) д.н. Крис Пател, Сидней (Австралия)  
Академик Любиша Папич, Чачак (Сербия) Академик Сташслав Серпйовић Яценко, Киев (Украина)  
д.н. Раймунд Мирдала, Кошице (Словакия) д.н. Андрей Арямов, Москва (Россия)  
д.н. Грег Рингер, Јуџин (США) д.н. Ливиу Думитраску, Плоешти (Романия)  
д.н. Мария Павлова, Велико Тырново (Болгария) д.н. Сречко Милачић, Косовска Митровица (Сербия)  
д.н. Андрей Жан-Васильев, Плоешти (Румыния) д.н. Милан Амброж, Ново Место (Словения)  
д.н. Юрий Князев, Москва (Россия) д.н. Марко Колаковић, Загреб, (Хорватия)  
д.н. Мирко Савић, Суботица (Сербия) д.н. Дейан Јакшић, Суботица (Сербия)  
д.н. Андрес Каррион Гарциа, Валенсия, (Испания) д.н. Дино Мартелато, Венеция (Италия)  
д.н. Рената Краковска, Варшава (Польша) д.н. Ајше Умит Гокдениз, Станбул (Турция)  
д.н. Любинка Йокисимовић, Белград (Сербия) д.н. Иван Чарота, Минск (Беларусь)  
д.н. Александру Неделеа, Сучева (Румыния) д.н. Милица Вуйчич, Нови Пазар (Сербия)  
д.н. Набиева У.Н., Махачкала (Россия) д.н. Чи Вей Су, Кингдао, (Китай)  
д.н. Слободан Цветановић, Ниш (Сербия) д.н. Чор Фон Танг, Пенанг (Малайзия)  
д.н. Збигниев Пашек, Краков (Польша) д.н. Драгутин Шипка, Бања Лука (Р. Сербскај)  
д.н. Боривойе Прокоповић, Ниш (Сербия) д.н. Јасмина Старц, Ново Место (Словения)  
д.н. Тадеуш Грабински, Краков (Польша) д.н. Мария Станкова, Благоевград, (Болгария)  
д.н. Јанко Радуловић, Подгорица (Чернагория) д.н. Андриела Витич-Цеткович, Котор (Чернагория)  
д.н. Паоло Цесар Чагас Родригес (Бразилия) д.н. Bishwajit Bhattacharjee, Каримгань (Индия)

### СОВЕТ ИЗДАТЕЛЕЙ

д.н. Гордана Мрдак, Врање (Сербия) д.н. Иван Джурић, Хале, (Германия)  
д.н. Душан Здравкович, Ниш (Сербия) к.н. Наталиа Глаголева, Белгород (Россия)  
к.н. Бранислав Йованчић Ниш (Сербия) д.н. Весна Јанкович-Милич, Ниш (Сербия)  
д.н. Живорад Глигоријевић, Ниш (Сербия) д.н. Бранко Михаиловић, Белград (Сербия)  
д.н. Софија Лихова, Кијев (Украина) д.н. Братислав Прокоповић, Лесковац (Сербия)  
д.н. Никола Чурчић, Београд (Сербия) д.н. Миријана Кнежевић, Крагујевац (Сербия)  
д.н. Рајко Буквић, Белград (Сербия) д.н. Александар Костић, Косовска Митровица (Сербия)  
д.н. Александар Грубор, Суботица (Сербия) д.н. Соња Јовановић, Ниш (Сербия)  
д.н. Петар Веселиновић, Крагујевац (Сербия) д.н. Данијела Деспотовић, Крагујевац (Сербия)

1. Журнал „Экономика” начал издаваться с июля 1954 года и под названием „Нишский хозяйственный вестник” выходил до июня 1957 года, а как „Хозяйственный вестник” - до конца 1969 года. Название „Наука и практика” носил заключительно с № 1/1973 г., когда и получил название „Экономика”, которое имеет и сейчас.

2. Журнал основали Общество экономистов Ниша и Общество инженеров и техников Ниша (оставались издателями до конца 1964 года). Объединение бухгалтеров становится издателем начиная с № 6 - 7 / 1958 года. Экономический факультет в Нише на основании своего Решения № 04 - 2021 от 26.12.1991 года стал соиздателем „Экономики”. Также и Экономический факультет в Приштине стал соиздателем с 1992 года. Начиная с 1992 года соиздателем „Экономики” становится Общество маркетинга региона г. Ниша. Как соиздатели „Экономики” в течении 1990 - 1996 года фигурировали Фонд по научным работам, опшцины Ниш, Институт урбанистического планирования Ниша и Корпорация Winner Broker Ниш.

3. Республиканский секретариат по информации СР Сербии своим Решением №651-126/73-02 от 27 ноября 1974 года принял заявление „Экономики” о входе в состав Регистра газет. Собрание Общества экономистов г. Ниша на заседании от 24 апреля 1990 г. Уставным решением подтвердил, что „Экономика” имеет статус правового лица. На заседании Собрания Общества экономистов г.Ниша от 11 ноября 1999 г. принято решение об открытии „Экономикой,” отдельного расчетного счета.

4. Согласно мнению Республиканского секретариата по культуре СР Сербии №413-516/73-02 от июля 1973 г. и Министерства науки и технологии Республики Сербии №541-03-363/94-02 от 30 июня 1994 г. „Экономика” имеет статус научного и ранг национального журнала. С начала 1995 года „Экономика” получила статус международного экономического журнала.

5. СОСТАВИТЕЛИ: д.н. Йован Петрович (1954-1956), Миодраг Филиппович (1958-1962), Благое Митич (1962-1964), д.н. Драголюб Стойилькович (1964-67), д.н. Миодраг Николич (1967-1973), д.н. Драголюб Симонович (1973-1984), д.н. Миодраг Йованович (1984 - 3-4/1988) и д.н. Драголюб Симонович (1990 и в настоящее время).

**ЖУРНАЛ ИНДЕКСИРУЕТСЯ В СЛЕДУЮЩИХ ОСНОВАНИЙ:**

ERIH Plus	RePEc	DOAJ
Index Copernicus	Ulrichs web	SHERPA / ROMEO
EBSCO host	EconPapers	ProQuest
J-Gate	CABI	EZB
SSRN	DRJI	CNKI

Английский редактор  
ВЛАДИМИР ИВАНОВИЋ

Компьютерная обработка текста и графика:  
МИЛАН Д. РАНЂЕЛОВИЋ

Худ.оформление:  
ПЕТАР ОГНЯНОВИЧ, ДРАГАН МОМЧИЛОВИЧ

Адрес:  
„Экономика” Друштво економиста  
18000 Ниш, Максима Горког 5/36

Телефон редакции +381 (0)18 4245 763; 211 443  
e-mail: zoki@medianis.net; ekonomika@sbb.rs WEB: <http://www.ekonomika.org.rs>

Расчетный счет: 160-19452-17

Печать:  
„МЕДИВЕСТ”  
18000 Ниш  
Тираж: 300

# САДРЖАЈ / CONTENT

## ОРИГИНАЛНИ НАУЧНИ РАДОВИ / ORIGINAL SCIENTIFIC ARTICLE

**Bojan Krstić, Milos Krstić**

THE APPLICATION OF THE MODEL OF INSTRUMENTAL RATIONALITY AND THE MODEL OF VALUE RATIONALITY IN THE ANALYSIS OF PERSONAL AND SOCIAL GOAL PREFERENCES ..... 1

ПРИМЕНА МОДЕЛА ИНСТРУМЕНТАЛНЕ РАЦИОНАЛНОСТИ И МОДЕЛА ВРЕДНОСНЕ РАЦИОНАЛНОСТИ У АНАЛИЗИ ПРЕФЕРЕНЦИЈА ЛИЧНИХ И ДРУШТВЕНИХ ЦИЉЕВА ..... 2

**Nikola Radivojević, Nikola Ćurčić, Željko Dević**

IMPLEMENTATION OF THE MODEL OF “TRANSFORMATIONAL MANAGERIAL COMPETENCES“ IN THE PROCESS OF RESTRUCTURING OF „ZASTAVA MACHINES A.D.“, KRAGUJEVAC ..... 23

ИМПЛЕМЕНТАЦИЈА МОДЕЛА „ТРАНСФОРМАЦИОНИХ МЕНАѢРСКИХ КОМПЕТЕНЦИЈА“ У ПРОЦЕСУ ПРЕСТРУКТУРИРАЊА „ЗАСТАВА МАШИНА, А.Д.“, КРАГУЈЕВАЦ ..... 23

## ПРЕГЛЕДНИ ЧЛАНЦИ / SCIENTIFIC REVIEW ARTICLE

**Goran Milovanović, Slavoljub Milovanović, Tanja Spasić**

THE ROLE OF CONTEMPORARY WEB TECHNOLOGIES IN SUPPLY CHAIN MANAGEMENT ..... 43

УЛОГА САВРЕМЕНИХ WEB ТЕХНОЛОГИЈА У УПРАВЉАЊУ ЛАНЦИМА СНАБДЕВАЊА ..... 43

**Zoran Simonović**

DEVELOPMENT POLICY ADVISORY PUBLIC SERVICE IN AGRICULTURE IN THE REPUBLIC OF SERBIA ..... 59

ПОЛИТИКА РАЗВОЈА САВЕТОДАВНИХ ЈАВНИХ СЛУЖБИ У ПОЉОПРИВРЕДИ У РЕПУБЛИЦИ СРБИЈИ ..... 59

**Jasmina Bogičević, Violeta Domanović**

CONTROL IN FUNCTION OF FOREIGN SUBSIDIARY PERFORMANCE EVALUATION ..... 69

КОНТРОЛА У ФУНКЦИЈИ ОЦЕНЕ ЕФИКАСНОСТИ ИНОСТРАНИХ ФИЛИЈАЛА ..... 69

<b>Dragan Momirović, Marko Janković, Maja Randelović</b>	
INVENSMENT, WORLD ECONOMY AND POOR COUNTRIES .....	83
ИНВЕСТИЦИЈЕ, СВЕТСКА ПРИВРЕДА И СИРОМАШНЕ ЗЕМЉЕ .....	84
<b>Natalia Victorovna Kuznetsova, Natalia Alexandrovna Vorobeva</b>	
CLUSTERING AS MODERN CONCEPT OF REGIONAL DEVELOPMENT (EXPERIENCE OF JAPAN) .....	97
ФОРМИРАЊЕ КЛАСТЕРА КАО САВРЕМЕНОГ КОНЦЕПТА РЕГИОНАЛНОГ РАЗВОЈА (ИСКУСТВО ЈАПАНА) .....	97
<b>Marijan Stevanovski, Dori Pavloska - Gjorgjieska</b>	
ELECTRONIC COMMERCE AS AN INTEGRAL PART OF THE DIGITAL ECONOMY WITH EMPHASIS ON ITS APPLICATION IN THE REPUBLIC OF MACEDONIA .....	113
ЕЛЕКТРОНСКА ТРГОВИНА КАО САСТАВНИ ДЕО ДИГИТАЛНЕ ЕКОНОМИЈЕ СА НАГЛАСКОМ НА ЊЕНУ ПРИМЕНУ У РЕПУБЛИЦИ МАКЕДОНИЈИ .....	113
<b>Pál Michelberger, Sándor Dombora</b>	
A POSSIBLE TOOL FOR DEVELOPMENT OF INFORMATION SECURITY - SIEM SYSTEM .....	125
МОГУЋИ ИНСТРУМЕНТ РАЗВОЈА ИНФОРМАЦИОНЕ БЕЗБЕДНОСТИ – СИЕМ СИСТЕМ .....	125
<b>Zoran Jerotijević, Milan Palević</b>	
THE BALANCE OF POWER – THE SECURITY CONCEPT OF THE INTERNATIONAL COMMUNITY .....	141
РАВНОТЕЖА СНАГА – БЕЗБЕДНОСНИ КОНЦЕПТ МЕЂУНАРОДНЕ ЗАЈЕДНИЦЕ .....	141
<b>Ivica Terzić, Marko Milojević</b>	
RISK MODEL BACKTESTING .....	151
BACKTESTING MODELA RIZIKA .....	151
<b>Недељко Прдић</b>	
COMPETITIVE ADVENTAGE ON THE BASIS OF THE STRATEGY LOW PRICE .....	163
КОНКУРЕНТСКА ПРЕДНОСТ НА ОСНОВУ СТРАТЕГИЈЕ НИСКИХ ЦЕНА .....	163

<b>Karolina S. Prokopović, Tijana B. Prokopović, Miloje A. Jelić</b>	
INFORMATION TECHNOLOGIES IN INTEGRATED LOGISTICS .....	175
ИНФОРМАЦИОНИ СИСТЕМИ ИНТЕГРАЛНЕ ЛИГИСТИКЕ .....	176
<b>Jelena Jovanović, Biljana Grujić</b>	
HISTORICAL DEVELOPMENT OF CORPORATE GOVERNANCE AS THE BASIS FOR CURRENT CORPORATE TRENDS .....	187
ИСТОРИЈСКИ РАЗВОЈ КОРПОРАТИВНОГ УПРАВЉАЊА КАО ОСНОВА ЗА АКТУЕЛНЕ КОРПОРАТИВНЕ ТРЕНДОВЕ .....	187

### ПРИКАЗ / REVIEWS

<b>Vladimir Kostić</b>	
MANAGEMENT OF SERBIAN AGRICULTURE IN TRANSITION (Zoran D. Simonović, Institute of Agricultural Economics, Belgrade 2014. (Monograph), 2014) .....	199
УПРАВЉАЊЕ АГРАРОМ СРБИЈЕ У ТРАНЗИЦИЈИ (Зоран Д. Симоновић, Институт за економику пољопривреде, Београд 2014.(Монографија), 2014) .....	199





**Bojan Krstić<sup>1</sup>**

*University of Nis, Faculty of Economics*

**Milos Krstić<sup>2</sup>**

*Research Associate at the University of Nis,  
Faculty of Science and Mathematics*

ORIGINAL SCIENTIFIC ARTICLE

doi:10.5937/ekonomika1601001K

Received: February 9, 2016

Accepted: March 1, 2016

## THE APPLICATION OF THE MODEL OF INSTRUMENTAL RATIONALITY AND THE MODEL OF VALUE RATIONALITY IN THE ANALYSIS OF PERSONAL AND SOCIAL GOAL PREFERENCES<sup>3</sup>

### Abstract

*The main aim of the research is to determine whether the model of instrumental rationality or model of value rationality better explains the respondents' behaviour. In the research, we used the following statistical techniques: descriptive analysis, factor analysis and the one-factor analysis of variance with planned comparisons. The results of the descriptive analysis of the sample of students of the Faculty of Economics show that young people gravitate towards egoistic, selfish ends ("material standard", "friends", "social power", "independence", "enjoyment", "popularity", etc.). When it comes to personal and social goals of the respondents in the sample of the high school students from the Vocational School of Economics, the results of the descriptive analysis reveal the pupils' willingness to give up their personal utility for the common good. The factor analysis of personal and social goals of high school students and university students indicates that the model of instrumental rationality better explains the respondents' behaviour than the model of value rationality. In accordance with the results, participants never honestly act for the welfare of others. Finally, the main results of the one-factor analysis of variance with planned comparisons confirmed the second hypothesis of the research according to the subjects that evaluated socioeconomic conditions of their families as "good" and "moderate" have higher levels of instrumental rationality.*

**Keywords:** *model of instrumental rationality, value rationality model, personal goals, social goals, factor analysis.*

**JEL classification:** A10

---

<sup>1</sup> bojan.krstic@eknfak.ni.ac.rs

<sup>2</sup> krsticmilo3@gmail.com

<sup>3</sup> This paper was presented at 24th Cromar Congress on the Marketing Theory and Practice – Building Bridges and Fostering Collaboration, Split, Croatia, 22-24 October 2015. The paper is part of the research project entitled "Improving the Competitiveness of Public and Private Sectors by Networking Competences in the European Integration Process of Serbia" Number 179066, financed by the Ministry of Education, Science and Technological Development of the Republic of Serbia.

# ПРИМЕНА МОДЕЛА ИНСТРУМЕНТАЛНЕ РАЦИОНАЛНОСТИ И МОДЕЛА ВРЕДНОСНЕ РАЦИОНАЛНОСТИ У АНАЛИЗИ ПРЕФЕРЕНЦИЈА ЛИЧНИХ И ДРУШТВЕНИХ ЦИЉЕВА

## Апстракт

Главни циљ истраживања је да се утврди да ли модел инструменталне или модел вредносне рационалности боље објашњава понашање испитаника. У истраживању су коришћене сљедеће статистичке технике: дескриптивна анализа, факторска анализа и једнофакторска анализа варијансе с планираним поређењима. Резултати дескриптивне анализа у узорку студената Економског факултета показују да млади највише теже егоистичким, себичним циљевима (“материјални стандард”, “пријатељи”, “друштвена моћ”, “самосталност”, “уживање”, “популарност итд.). Када је реч о личним и друштвеним циљевима испитаника у узорку ђака Економске школе, резултати дескриптивне анализе откривају спремност ученика да се одрекну личне користи зарад општег добра. Факторска анализа личних и друштвених циљева ђака и студената указује да модел инструменталне рационалности боље објашњава понашање учесника истраживања од модела вредносне рационалности. У складу са резултатима, учесници истраживања никад на искрен начин не делују за добробит других. Коначно, резултати једнофакторске анализе варијансе поткрепљују другу хипотезу истраживања, по којој, субјекти, који социоекономске стање своје породице оцењују као “добро” и “осредње, имају виши степен инструменталне рационалности.

Кључне речи: модел инструменталне рационалности, модел вредносне рационалности, лични циљеви, друштвени циљеви, факторска анализа.

## 1. Introduction

Models allow the available instruments to come to the essence of the object of the research. Models are used for the crystallization of ideas, isolation of the problem, definition of important phenomena, analysis of the environment and the determination of a causal link. Constructing the model is a creative act in which we must take into account the general regularly (investigated) phenomena, as well as their specific properties, because the model should not be too abstract or too detailed (Itzhak Gilboa et al., 2014).

To its widest extent, neoclassical economic theory corresponds with the model of instrumental rationality. The model of instrumental rationality is “inhabited” with economic actors whose activities are targeted and always rational. It is about perfectly rational actors who reason and act reasonably in all situations. As managers, they maximize profit. As consumers, they maximize their utility or, correspondingly, select the highest point on the indifference curve (Menkju, 2007). In the model of instrumental rationality, it is assumed that there is compliance between the internal values of actors. In this way, the problem of heterogeneity of personal objectives which complicates the formalization and implementation of the model is ignored. Moreover, this assumption allows ignoring

the importance of the cultural context, thus avoiding possible contradictions between personal and social goals.

Scientists who do not belong to neoclassical economic theory claim that neoclassical economic theory pays a high “price” for isolation from researches, showing that individuals in the carefully constructed environment often exhibit behaviour that is inconsistent with the model of instrumental rationality. Ignoring the fact that it is not always possible to define the problem correctly in practice, formulating goals precisely and properly interpreting all available information resulted in broadening the gap between theoretical models and economic reality. Because of this, the critics of neoclassical economic theory proposed new approaches in which the model of instrumental rationality is expanded and explained. In one of them, the model in which the individual must choose a goal that is in line with the social values (value model of rationality) is applied. The actor faces the values that he alone does not define and that he passively observes and analyses.

In this paper, we analyse the personal and social goals with the intention to determine whether the model of instrumental or model of value rationality better explains the behaviour of human subjects. In the research of human behaviour (Inglehart, Schwartz, Fromm, Murray, Bilsky) we paid less attention to the possible separation of personal and social goals, and especially the systematic and parallel studies of both groups. In this paper, however, the distinction between personal and social goals was made.

## 2. The Model of Instrumental Rationality

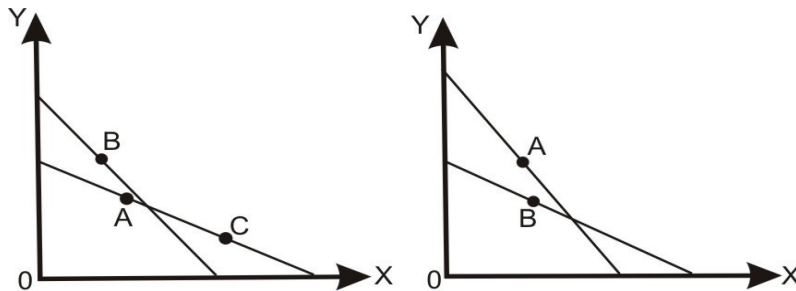
In the model of instrumental rationality, rationality is defined as instrumental, when the actor’s activity is directed towards the choice of means, which is the best way to achieve the goal (Shastiko, 1998). How to form a goal and what kind of context it is based on are the questions within the model of instrumental rationality which cannot be answered. The subject is perceived as a “box”, and the “entrance” represents all data, while the “exit” represents the adopted solutions. What processes occur within the “box”, from the standpoint of the model of instrumental rationality, is not of any importance, until the economic actors use the best means to achieve the set goals (Shastiko, 1998).

Instrumental rationality and the assumption of the exogenous impact of culture and institutions on the behaviour of individuals are determined by the existing possibilities of formalization of models (decision-making) and its checks. In order to solve the problem of formalization of model, when some of the facts (institutions, culture, etc.) that affect the behaviour of individuals remain invisible, the presumption is introduced, according to which only the observed variables are changed. In the case of the consumer, it is assumed that the budget constraint changes. Therefore changes in demand can be explained by changes in prices and income (Shastiko, 1998).

Suppose that the consumer chooses the quantity of goods corresponding to point A (Figure 1a). The choice of point A indicates rational behaviour, because the consumer (whose behaviour we observe) provides a greater flow of goods than the flow of goods at point B. As the new line budget constraint (Figure 1b) contains a flow of goods in the point B that is less than the flow of goods at point A, the choice the point B is contrary to Schvery’s definition (1997: 37) of rationality, according to which, “the actor never chooses

alternative B if alternative A is available at the same time, which, according to him, is better than alternative B”. On the basis of the observations above, we can see that the analysis of consumer behaviour is more complex when the changes to budgetary constraints are assumed, which will be neutralized only if the stability of goals of consumers and the systems of social values can be assumed (Shastiko, 1998). What is more, the fact that the system of goals of each customer has its own peculiarities should not be ignored.

**Figure 1 a) The rationality of consumer behaviour; b) The irrationality of consumer behaviour**



Source: Shastitko, A. (1998), “Models of Human Rational Economic Behavior”, *Voprosy Economici*, No. 5, p. 58.

As stated above, the model of instrumental rationality does not deal with the examination of the internal factors of rationality. In other words, it is assumed that there is compliance of internal goals of the individual. In this way, the problem of a multitude of “I” within man, which complicates the formalization, and the implementation of model-making is ignored. Moreover, this assumption allows ignoring the importance of the cultural context, thus avoiding possible contradiction between many “I” within man and the system of social values (Schvery, 1997).

### 3. The Model of Value-Expressive Rationality

In the model of value rationality, player chooses the goal aligned with the system of social values. (Simon, 1993). The process of choice depends on both the internal and social values that the actor adopts through the process of learning and socialization. In the process of socialization, actors adopt social values that they alone do not define (reducing corruption and crime, keeping traditions and customs, establishing greater trust between the authorities and the people, etc.) and learns to believe *a priori* in the honesty of others.

Social interactions function only when they are based on partial or complete confidence. Despite the limited knowledge and diminished intellectual capacity, the person expects other people to act in good faith and be consistent in all or some aspects of joint activities. However, a person who gives his trust reduces the level of instrumental rationality, and becomes vulnerable. Therefore, one may decide not to take that risk at all, but that is how one reduces the value or level of expressive rationality.

Besides confidence, the level of expressive rationality or value depends on “cognitive dissonance” (Smelser and Swedbwrg, 1996). Cognitive dissonance is a mental condition in which a person experiences two or more incompatible cognitions (items of knowledge). These cognitions are an obstacle for the creation of psychological balance and comfort, while a man will do anything to escape this awkward situation. There are two basic ways of “liberation”. The first consists from “preconceptions”, i.e. from the purification of the previously processed information in order to create a “unique image” (Shastiko, 1998). Another way is to create one’s own reality (Elster, 2000).

In the model of value rationality, many factors can lead the change of the original rational actors’ goal. The change depends, among other things, on the choice of the means. The problem of the choice of the means is the result of the differences in their effectiveness. What is effective for achieving one goal need not be effective for the achievement of another goal. In the long run, “trust”, “reciprocity” and “cooperation” that create conditions for the establishment of a Pareto optimal equilibrium (Shastiko, 1998).

#### **4. Research on the Structure of Preferences of Personal and Social Goals of High School Students and University Students**

Problems of this paper belong to the field of values and value orientations. If the goals (whether extremely personal or declared as social) are formulated in relatively general terms and involving the idea of stability and permanent orientation, then these are values for individuals or a group. Some well-known researchers of values – for example, Rokeach (Rokeach, 1973), Schwartz and Bilsky (Schwartz and Bilsky, 1990), Inglehart (Inglehart, 1977) – examined the value systems of individuals and groups through the shortest-named and generalized goals, regardless of the fact that they more often use terms of values and “guiding principles” rather than literally – life goals. All values probably do not have and may not be expressed as targets, especially if it is something already achieved, or if the separation of values-goals and values-means (instrumental values) is insisted on.

In previous research, less attention was paid to the disconnections of acceptance of social and personal goals, and especially to the systematic and parallel studying of both groups. Researchers of values were more concerned with the other classifications of values, such as the terminal and instrumental (Rokeach, 1973), materialistic and post-materialist (Inglehart, 1977), and the personal and social aspects were mixed or it remained unclear to which reference frame the subject is directed. In their previous article, among other things, Rohan (Rohan, 2000) theoretically discussed the distinction of personal and social value systems, pointing out that insufficient attention was paid to this problem in previous works. However, although this author treats both of these systems as intrapsychic (inner), he understands social values somewhat differently than is the case in this paper. Rohan believes that social values are, above all, the perception of the value of other people. In other words, social values are what one expects that other people will do. Some other authors who have also made this distinction (Schwartz and Bilsky, 1987) saw social values as the values of the individual that he can achieve in the presence and with the help of others (e.g. personal safety). In this paper, unlike the



previously mentioned ones, social goals pursued by respondents will be considered as objectives whose achievements are not tied exclusively to their benefit, but which also have significance for the whole society in which individuals live.

#### 4.1. Personal and Social Goals That are Covered by This Research

Personal goals are an expression of the needs and desires of individuals. In the research of preferences of high school students and university students, personal goals are divided into the personal objectives of pro-individual orientation (“name”, “friends”, “social power”, “actualization”, “exciting life”, “safety”, “material standards”, “knowledge”, “enjoyment”, “independence”, “popularity” and “healthy life”) and personal objectives of pro-welfare orientation (“altruism”, “achievement”, “subordination”, “diligence”, “love”, “social engagement”). Social objectives are based on the assumption that individuals will, to some extent, take into account the interests of other people and society as a whole. The list of social objectives includes: “a strong economy”, “good interethnic relations”, “the fight against crime and corruption”, “strengthening defense forces”, “humane relations”, “environmental objectives”, “preservation of tradition”, “employment”, “social equality”, “the rule of law”, “privatization of public enterprises”, “democracy”, “living standards”, “development of science and technology”, “social rights”.

In designing and choosing the list of personal and social goals, we were guided by the following researches: “Explorations in Personality” (Murray, 1938), “Motivation and Personality” (Maslow, 1982), “A Healthy Society” (Fromm, 1980), “The Nature of Human Values” (Rokeach, 1973), “The Silent Revolution” (Inglehart, 1977), “Priorities and Behavior: Applying a Theory of Integrated Value Systems” (Schwartz, 1996) “Toward a Psychological Structure of Human Values” (Schwartz and Bilsky, 1987), “Toward a Psychological Structure of Human Values” (Schwartz and Bilsky, 1990), “The values of members of informal groups” (Vasović, 1988), “Preference structure of personal and social goals of the high school students” (Kuzmanović and Petrović, 2007). When it comes to choosing social goals, we have taken into account the numerous public opinion surveys (like: Mihajlović, S., Stojiljković, Z., Vuković Đ., Mojsilović, M. (2007). Survey of Serbian Public Opinion, Fall 2007. year, Beograd CESID) in which current social goals and interests were examined.

#### 4.2. Objectives and Research hypotheses

The objects of the research are relatively generalized personal (life) goals and the individual's relation (level of acceptance and preference) to also relatively general social goals. Specifically, the research had several main research goals:

1. The degree of acceptance, or preferences among the offered personal and social goals.
2. Determining the structure of personal and social goals that individuals accept or do not accept.
3. Determining whether the model of instrumental or value rationality better explains the behaviour of the participants in the research.

We started from the following hypothesis:

1. The model of instrumental rationality explains the behaviour of real actors better than the models of value rationality.

2. Respondents whose families live as good and moderate indicate high levels of instrumental rationality.

We created the hypothesis I on the basis of the research by Bora Kuzmanović and Nebojša Petrović: “Preference Structure of Personal, and Social Goals of the High-Schoolers”, which shows that respondents, on the one hand, mostly tend to friendship and love, and on the other hand, to independence, self-actualization, material and life standard (Kuzmanovic and Petrovic, 2007). In previous studies of the social styles preference, striving for power was at the very bottom by acceptance among the young people while striving for popularity obtained higher marks (Kuzmanovic and Petrovic, 2007).

In designing hypothesis II, we were guided by the research by Kuposov et al.: “Alcohol Abuse in Russian delinquent adolescents”. Kuposov and colleagues noted, examining the influence of some of the families on the consumption of harmful goods (alcohol), that the irrational and socially unacceptable behaviour is associated with dysfunctional family, inadequate parental supervision and their indifference towards children (Kuposov et al, 2005).

### 4.3. The Method

In a survey of the preferences of high school and college students, we used the following instruments: 1) the questionnaire, 2) survey, 3) model of instrumental rationality and 4) model of value rationality.

- 1) With the help of a questionnaire, we explored the socioeconomic situation of the family. In the questionnaire, we asked respondents about: gender, highest educational attainment of parents and the socio-economic situation of the family. The questionnaire was created on the basis of the research by Milana Ljubičić: “Psychopathology of Juvenal Delinquents: a Family and Social Influence” (Ljubičić, 2010).
- 2) With the help of surveys, we examined the presence and intensity of personal and social goals. In the survey, each of the objectives was presented to the respondents (i.e. operationalized) by using relatively short understandable statements, as much as possible. For example, the goal concerning “the fight against corruption and crime” was expressed through the statement “creating general conditions for fighting corruption and crime”, environmental objectives were expressed with the statement of “preventing the pollution of the environment and ensuring a healthy living environment”, “material standard” (as a personal goal) with the statement of “providing me with as much money and other material goods”, “social engagement” with the statement of “actively participating in social life, fighting for the achievement of important social goals.” etc. Respondents were offered five answer modalities (to explore the degree of acceptance of specific objectives): “it matters little,” “moderately important,” “quite important,” “very important” and “extremely important.” Respondents were asked to circle the last answer only if they considered that certain objectives were extremely important. In addition, in order to determine the preference of objectives (priority value), the respondents were asked to single out five objectives that they considered most important, and

then to isolate from these the one which is the most important for them, in their opinion (Kuzmanović and Petrović, 2007).

- 3) The model of instrumental rationality included the personal goals of pro-individual orientation: “reputation”, “friends”, “social power”, “self-actualization”, “exciting life”, “safety”, “material standards”, “knowledge”, “enjoyment”, “independence”, “popularity” and “healthy life”.
- 4) The model of value rationality, on the other hand, included the objectives of pro-social orientation: “a strong economy”, “good international relations”, “the fight against corruption and crime”, “strengthening defense forces”, “humane relations”, “environmental objectives”, “employment”, “social equality”, “The rule of law”, “preservation of tradition”, “the privatization of public enterprises”, “democracy”, “living standards”, “development of science and technology”, “social rights”, “altruism”, “achievement”, “subordination”, “conscientiousness” and “social engagement”.

#### 4.4. The Sample

The study was conducted in May-June of 2014 on samples no. I and II. Sample no. I consisted of 268 first-year students of the Faculty of Economics in Nis. Model II consisted of 133 students of third and fourth grade of the School of Economics in Bujanovac. In the first sample, there was a total of 83 students (30.97%) and 185 female students (69.03%). The second sample consisted of 53 students (39.85%) and 80 female students (60.61%). The majority of respondents in the sample stated that one of their parents had four years of secondary education (45.6%), followed by those who had a university degree (39.7%), then an associate degree (11.8%), while only 2.9% completed only primary school. More than half of the respondents stated that their families lived well (51.47%), slightly more than a quarter (26.47%) stated that they lived moderately, 21.38% of them described the quality of life in their families as “bearable”, and 0.68% of respondents said that they had a hard life. The majority of respondents in sample II answered that one of their parents had four years of secondary education (54.4%), followed by those who had an associate degree (24%) and university degree (21.6 %). In sample II, the highest percentage of respondents stated that their families lived well (42%), 24% of them said they lived moderately, 10 % of them described the quality of life in their families as “bearable”, 12% of respondents said that they had a hard life, and the same percentage stated that they lived intolerable.

#### 4.5. Analysis of The Results

In determining the degree of acceptance of goals and structure of goals that individuals accept or not, the following descriptive measures were used: the average acceptance of each objective (as we respond to the scale of assessment scores in 1 to 5) with the following data on the scattering rate (SD), the frequency of occurrence of (each) of the five priority objectives (expressed by the percentage of respondents who chose the goal) and the percentage of respondents who opted for the goal as the most important.

In the sample of students of the Faculty of Economics in Nis, the highest average score (4.95) was achieved by the goal named “standard material” (Table 1). Seventy-five respondents put the goal (27.9%) among the five prioritized ones and twenty-four of the

respondents (8.95 %) elected this goal as the most important. “Friends” were in the second place, with an average score of 4.59. This option was ranked among the top five priority objectives by sixty three of the respondents (23.51 %), but only sixteen respondents elected it as the most important goal in life (5.97%). The third-ranked goal is the one of “social power” (“undertaking actions which, by their repetitive and systematic character, influence the lives of others”) with an average score of 4.53. “Independence” was found on the fourth place with average score 4.50 and 118 of respondents (44.02%) named this goal as one of 5 most important, and sixteen of the respondents selected this goal as the most important goal in life (5.97%). The fifth ranked goal is “employment” (4.43), 169 (63.05%) of respondents marked this goal as most important and it is the first ranked among the five prioritized. High ratings (above 4) were given to these objectives: “the standard of living” (4.42), “enjoyment” (4.39), “security” (4.38), “popularity” (4.33), “achievement” (4.25), “reputation” (4.25), “the development of science and technology” (4.19), “healthy life” (4.19), “self-actualization” (4.17), “exciting life” (4.01), “knowledge” (4.01), “the fight against corruption and crime” (4), and “a strong economy” (3.94). An intermediate level of acceptance (estimated between 3 and 4) was registered at the objectives: “conscientiousness” (3.92), “social engagement” (3.88), “altruism” (3.86), “love” (3.78), “social equality” (3.58), “human relations” (3.40), and “environmental targets” (3.36). The lowest ratings were given to: “democracy” (3.10), “the preservation of tradition” (2.39), “the state of law” (2.33), “the privatization of public enterprises” (2.02), “subordination” (1.77). None of these objectives were designated as the most important.

**Table 1 Personal and social goals (The Faculty of Economics)**

Goals	AS	SD	Ranking by AS	Σ 1 - 5		Ranking by 5 preferences	The most important		Ranking as the most important
				f	%		f	%	
Strong economy	3.94	0.97433	19	24	8.82	16-19			
Good international relationships	3.14	1.54482	27	0	0	/			
Fight against crime and corruption	4	0.88941	17-18	16	5.88	20	4	1.47	14-16
Strengthening the defence force	3.13	1.18049	28	0	0	/			
More humane relations	3.40	1.19252	25	8	2.94	24-25			
Environmental goals	3.36	1.28154	26	8	2.94	24-25			
Employment	4.43	0.92276	5	169	63.23	1	32	11.76	3
Social equality	3.58	1.13081	24	24	8.82	16-19	8	2.94	8-13
The state of law	2.33	1.53848	31	32	11.76	15			
Preservation of tradition	2.39	1.23954	30	32	11.76	15			
Privatization of public enterprises	2.02	1.40292	32	12	4.41	21-23			
Democracy	3.10	1.40935	29	0	0	/			
Standard of living	4.42	0.7879	6	39	14.70	12-13			
The development of science and tech.	4.19	0.84725	12-13	47	17.65	11	4	1.47	14-16
Social rights	4.00	0.76305	17-18	63	23.53	8	16	5.88	6-7
Reputation	4.25	0.96391	10-11	4	1.47	25-28			
Friends	4.59	0.53848	2	63	23.35	15			

Social power	4.53	1.17754	3	54	20.25	/			
Self-actualization	4.17	0.84523	14	24	8.82	/			
Altruism	3.86	1.10503	22	35	13.23	14	8	2.94	8-13
Achievement	4.25	1.00517	10-11	52	19.11	9-10	8	2.94	8-13
Exciting life	4.01	1.16534	15-16	78	29.41	5	16	5.88	6-7
Subordination	1.77	1.20755	33	4	1.47	25-28			
Security	4.38	0.87536	8	122	45.59	2	47	17.65	1
Conscientiousness	3.92	2.27258	20	52	19.11	9-10	8	2.94	8-13
Love	3.17	1.06904	23	12	4.41	21-23			
Material standard	4.95	1.56534	1	75	27.94	6	24	8.82	4-5
Knowledge	4.01	1.02132	15-16	0	0	/			
Enjoyment	4.39	0.79666	7	91	33.82	4	43	16.17	2
Social engagement	3.88	1.04424	21	4	1.47	25-28			
Independence	4.50	0.82421	4	118	44.12	16-19	16	5.88	14-16
Popularity	4.33	0.83079	9	71	26.47	7			
Healthy life	4.19	0.88296	12-13	39	14.70	12-13			

*Source: Authors' calculation (SPSS statistics)*

The analysis of average grades in a sample of students of the Faculty of Economics indicates that young people gravitate towards primarily egoistic, selfish goals (material standard, enjoyment, security, independence, etc.), and not some sublime ideals (democracy, good international relations, state of altruism). Respondents were most focused on their own desires and needs, without too much respect for the wishes and needs of other people (Table 1). Each individual in the sample behaves according with its own interests, not having at this idea of the consequences of their decisions on society as a whole (Stefanović, 2012).

In the study by Kuzmanovic and Petrovic on the preferences of individual and social goals of high school students, the highest average grade (4.60) was received by the goal “friends”, which cited: “Yes, I have friends who will support me, and that I can rely on in any situation” (Kuzmanović and Petrović, 2007). The greatest number of respondents (70%) ranked this goal in the top five by priority, and the most of respondents also elected the goal as the most important personal goal (23.5%). “Employment” came in second place with an average score of 4.49. This goal was identified as the most important by 15% of the respondents, and the same percentage of respondents ranked it among the top five by priority. The third-ranked was the goal “love” (finding a suitable partner) – 4.46. The two thirds of respondents (66%) incorporated “love” in the top five priority objectives but only a tenth of the respondents elected it as the most important goal in life. It may sound a bit paradoxical, but practically the same average score was given to the goal of “being completely independent and not dependent on anyone”, which was chosen as the most important goal by a larger number of participants than “love” (15%) (Kuzmanović and Petrović, 2007). High scores (above 4) were given to these objectives too: “the material standard” (4.27), “self-actualization”, or “the expression of their own abilities and capabilities” (4.24), “the acquisition of knowledge” (4.19) (Kuzmanović and Petrović, 2007). The least important goals for the respondents are: the acceptance of subordination (2.35) and social engagement (2.98). This sample of youngs, on the one hand, tends to independence, self-actualization and competence, and on the other

hand, the material and living standards. Research on Structure of preference personal and social goals of high school by Kuzmanovic and Petrovic, produced empirical results that show that individuals exhibit behaviour consistent with the model of of instrumental rationality.

When it comes to personal and social goals of respondents in the sample of pupils of the Vocational School of Economics (Table 2), the highest average value was received by “knowledge” (“gaining higher education and achieving higher living standards”), immediately followed by “environmental objectives”. Sixty-eight of the respondents (.51%)arked “employment” as one of 5 most significant. “Environmental objectives” were marked as one of five prioritized by 89 of the respondents (66.9%). According to the average score of the respondents, very important objectives are: “achievement” (4.18), “the fight against corruption and crime” (4.1), “love” (4.1), “material standard”, (4), “healthy life” (4), “employment” (4) and “social rights” (3.97). The least accepted (from offered) goals are: “privatization of public enterprises” (2.22), “state of law” (2.61), “friends” (2.27), “social power” (2.94), “popularity” (3.12), “enjoyment” (3.31), “altruism” (3.31), “a strong economy” (3.39), and “subordination” (3.41). No one included the privatization of public enterprises among the top five priority objectives. Likewise, no one selected it as the most important goal.

**Table 2 Personal and social goals (Vocational School of Economics in Bujanovac)**

Goals	AS	SD	Rank by AS	Σ 1- 5		Ranking by 5 preferences	The most important		Ranking as the most important
				f	%		f	%	
Strong economy	3.39	1.1973	26	1	.75	22-26	4	3.03	10-15
Good international relationships	3.42	1.1233	22-24	2	2	17-21	8	6.06	6-9
Fight against crime and corruption	4.1	0.9541	4-5	16	12.12	10-12	4	3.03	10-15
Strengthening the defense forces	3.42	1.2507	22-24	0	0	/			
More humane Relation.	3.91	0.97995	10	12	9.09	14-16			
Environmental objectives	4.45	0.86931	2	89	66.9	6			
Employment	4	1.0606	6-8	68	51.12	10-12	68	51,12	10-15
Social equality	3.75	1.19324	16	0	0	/			
The state of law	2.61	1.06649	32	8	6.06	18-20			
Keeping the tradition	3.78	1.36509	15	8	6.06	19			
Privatization of public enterprises	2.22	1.14813	33	0	0	/			
Democracy	3.45	1.10869	21	4	3.03	22-26			
Living Standard	3.67	1.43680	17-18	8	6.02	18-20			
The development of science and technol.	3.42	1.04541	22-23	16	12.12	10-12			
Social rights	3.97	1.16616	9	24	18.18	8	4	3.03	10-15
Prestige	3.88	1.44206	11	48	36.36	13			2-5
Friends	2.27	1.32147	31	4	3.03	22-26			
Social power	2.94	1.3444	30	0	0	/			
Self-actualization	3.48	1.33428	19	0	0	/			



Altruism	3.31	1.28585	27-28	28	21.21	7	28	21.21	6-9
Achievement	4.18	1.17586	3	21	15.15	9	12	9.09	6-9
Exciting life	3.84	1.23742	12-14	4	3.03	22-26			
Subordination	3.41	1.12882	25	0	0	/			
Security	3.67	1.32108	17-18	0	0	/			
Conscientiousness	3.47	1.4	25	44	33.33	4			
Love	4.1	1.4	4-5	53	39.39	2	16	12.12	1
Material standard	4	1.2119	6-8	36	27.27	5	8	6.06	6-9
Knowledge	4.48	0.83372	1	68	51.51	1	12	9.09	2-5
Pleasure	3.31	1.51007	27-28	12	9.09	14-16			
Social engagement	3.84	1.09322	12-14	4	3.03	22-26			
Independence	3.84	1.18486	12-14	0	0	/	12	9.09	2-5
Popularity	3.12	1.38648	29	0	0	/	4	3.03	10-15
Healthy life	4	1.42521	6-8	12	9.09	14-16			

Source: Authors' calculation (SPSS statistics)

The analysis of the average marks in sample II reveals the desire of participants to make their peers feel pleasant and satisfied because of their favorable attitude, and pain because of their unfavorable attitude (Smit, 2008). Order and progress of society are something that suits the respondents in sample II and something they think about with pleasure.

Unlike the results of the analysis of the sample of students in the Faculty of Economics, which showed that *homoeconomisus*, in order to satisfy their own desires and needs, dispels its rivals, such as *homoethicus*, *homoempathicus*, the side of a man which tend to cooperation and reciprocity (Cohen, 2014), the results of the sample of pupils of the Vocational School of Economics reveal another side of a man, and that is *homospaticus*. While *homoeconomisus*, continuously calculates in order to increase their own prosperity, to some extent, *homospaticus* takes into account the interests of other people and the society in which he lives (Dekić, 2013).

In the case of the sample of pupils of the Vocational School of Economics, research has shown that economists can not adequately explain the behaviour of people if they are focused only on the observation from the model of instrumental rationality. The research results clearly show that trust, cooperation and reciprocity are important factors of rational behaviour (from the viewpoint of the model value rationality).

#### 4.6. Factor Structure of Personal and Social Goals

From the personal goals of the students of the Faculty of Economics, the six factors that explain 75% of the variance of results (Table 3) were extracted. Five components that explain 71% of the variances (Table 4) were extracted from the social objectives of the same sample. Based on the sample of students of the School of Economics in Bujanovac, two lists of the six factors for exploring the structure of preferences of individual and social goals (Table 5 and Table 6) were created. These factors account for 68% of result variances for personal and 65% of the result variances for social goals. We presented the matrix structure of personal and social goals for both samples. (In the factor analysis, special attention was paid to loads greater than 0.40).

When it comes to the analysis of different targets in sample no. I, “reputation”, “exciting life”, “safety”, “love”, “material standards”, “knowledge”, “independence” and “healthy life” (indicators of instrumental rationality) are dominant in the first factor (Table 3). The second factor involves individualized behaviour including the popularity and orientation towards “enjoyment”, “social power”, “friends” and an “exciting life” to a great extent. At the third factor, indicators of individualized behaviour have the largest factor loading (“social power”, “self-actualization” and “healthy life”). The fourth factor emphasizes moral values in the foreground (“altruism”). The fifth factor indicates the restraint from inappropriate behaviour, acting according to the principle of prudence, justice, and true compassion (“conscientiousness”), as well as active participation in social life (“the social engagement”). The sixth factor potentiates the desire of the individual to be praised and admired (“enjoyment”).

**Table 3 Factor structure of personal goals (The Faculty of Economics in Nis)**

Personal goals	1	2	3	4	5	6
Reputation	.579	-.028	-.444	-.305	.286	-.124
Friends	-.068	.599	.382	-.406	.330	-.032
Social power	-.047	.651	.594	-.137	-.091	.139
Self-actualization	.304	.342	.550	-.091	-.310	-.135
Altruism	.193	-.047	-.284	.663	.297	.219
Achievement	.458	-.265	-.133	-.377	.334	.274
Exciting life	.611	.535	.133	.198	-.233	-.15
Subordination	-.002	-.296	.463	.220	.556	-.301
Safety	.601	-.339	.011	-.268	-.289	-.00
Conscientiousness	.498	-.449	.407	-.177	.403	.215
Love	.591	-.392	.297	.393	-.109	.091
Material standard	.675	.035	-.246	-.557	-.072	-.022
Knowledge	.590	.052	-.307	.388	-.320	-.166
Enjoyment	.333	.608	-.184	.126	-.017	.518
Social engagement	.105	.541	-.116	.373	.438	-.340
Independence	.446	.266	-.119	-.012	.163	-.527
Popularity	.162	.552	-.240	.019	.280	.359
Healthy life	.683	-.201	.517	.286	-.060	.276

*Source: Authors' calculation (SPSS statistics)*

The analysis of the first, the second, the third and the sixth factors shows that respondents in sample no. I exhibit behaviour that is consistent with the model of instrumental rationality, where the individual egotistical interests are crucial (Table 3). As the supporters of the instrumental rationality believe, people have the right to use all the means for accomplishing individual interests in the best way. The analysis of the fourth and fifth factors primarily emphasizes moral behaviour. According to the representatives of instrumental rationality, moral behaviour is the product of egoism (Becker, 1976). For example, when we help others, we actually demonstrate our power and, thus, we pamper ourselves. When we pity or sympathize with others, we actually pity ourselves imagining a future accident that could happen to us. Basically, people never honestly work for the welfare of others. The actions of people are always derived from personal interest, ambition and lust (Sadžakov, 2011).

Judging by the first factor, the young respondents in sample I strive towards modernization, progress of the state, and also stress the desire for preserving national identity, traditions and customs as an important issue (Table 4). Factor two emphases: “strong economy”, “the privatization of public enterprises”, “more humane relations”, “environmental goals”. Factor three combines “environmental goals”, “tradition” and “standard of living”. The participants of this study apparently believe that the increase of the living standard and preservation of tradition will ensure a higher level of social welfare. In addition, the analysis of the third factor clearly and unambiguously shows that respondents are aware of the fact that instrumental rationality can show itself to be harmful from the point of view of society and its valuable objectives. That is why respondents prefer value and expressive rationality and control egotistical interests.<sup>1</sup> Factors four and five point out “privatization of public firms” as a goal of the highest importance.

**Table 4. Factor structure of social goals (Faculty of Economics in Nis)**

Social goals	1	2	3	4	5
Strong economy	<b>.502</b>	<b>.653</b>	-.290	-.131	.092
Good (Humane) intentional relationships	<b>.563</b>	.368	-.127	.262	<b>-.424</b>
Fight against crime and corruption	<b>.659</b>	-.176	.137	-.219	-.395
Strengthening the defense forces	<b>.643</b>	-.027	.244	.088	.286
More humane relations	<b>.550</b>	<b>-.434</b>	<b>-.485</b>	.209	.073
Environmental goals	.342	<b>-.695</b>	<b>.409</b>	.216	.196
Employment	<b>.435</b>	.015	-.165	<b>-.587</b>	.392
Social equality	<b>.704</b>	.053	.109	.139	.1333
The state of law	<b>.617</b>	.155	<b>-.406</b>	-.133	.026
Tradition	<b>.451</b>	.141	<b>.462</b>	<b>-.475</b>	.136
Privatization of public enterprises	.011	<b>.482</b>	.289	<b>.510</b>	<b>.507</b>
Democracy	<b>.724</b>	.030	.026	.372	-.253
Standard of living	<b>.607</b>	.095	<b>.611</b>	-.177	-.296
The development of science and technology	<b>.720</b>	.075	-.022	.210	.121
Social rights	<b>.683</b>	-.389	-.355	-.071	.131

*Source: Authors' calculation (SPSS statistics)*

As suggested by the first factor, generosity, social security (parents, relatives and friends), acting according to the principle of justice and genuine compassion are essential virtues and are very useful for people (Table 5). A high correlation of “altruism”, “achievement”, “subordination”, “conscientiousness” and “love” with factor 1 means that a part of the respondents believe that man is also governed by some motives that are different from personal interest. Philanthropy, justice, generosity and the need for social happiness are essential virtues and, as such, they are very useful for people (Smith, 1985). The second factor figures only personal objectives of pro-individual orientation. The fourth factor emphasizes the opportunistic behaviour or the exploitation of opportunities for the realization of one’s own needs. In accordance with the fifth factor, for the respondents of sample I, enjoying their own and others’ achievements is important. The focus of the last factor is solely egoism, or the care for personal interest. Moreover, the factor analysis of preference personal goals in sample II confirms the hypothesis of the

experiment that the model of instrumental rationality explains human behaviour better than the model of value rationality.

**Table 5 Factor Structure of Personal Goals (of the School of Economics in Bujanovac)**

Personal goals	1	2	3	4	5	6
Prestige	-.151	<b>.590</b>	-.285	.289	-.237	.028
Friends	<b>-.536</b>	.277	.013	<b>-.414</b>	-.307	.145
Social power	-.309	.353	-.257	<b>.407</b>	<b>-.622</b>	-.058
Self-actualization	<b>.478</b>	<b>.500</b>	.212	.040	-.263	.261
Altruism	<b>.661</b>	.017	-.220	.230	.135	.113
Achievement	<b>.780</b>	.215	.003	-.072	-.008	.162
Exciting life	.235	<b>.473</b>	<b>-.406</b>	-.179	-.011	-.081
Subordination	<b>.597</b>	.332	.262	-.120	-.056	-.325
Security	-.054	<b>.596</b>	<b>.448</b>	-.381	.022	-.028
Conscientiousness	<b>.699</b>	.160	-.168	.192	.174	-.278
Love	<b>.764</b>	.158	.141	.078	-.071	-.066
Material standard	<b>-.530</b>	<b>.529</b>	.178	-.200	.212	-.075
Knowledge	-.217	.229	<b>.670</b>	.374	.171	.206
Enjoyment	-.215	<b>.684</b>	-.128	-.003	<b>.432</b>	-.186
Social engagement	-.292	.182	-.293	.399	.371	<b>.487</b>
Independence	-.129	<b>.413</b>	<b>.506</b>	<b>.469</b>	-.039	-.140
Popularity	-.275	<b>.540</b>	<b>-.500</b>	-.022	.132	-.243
Healthy life	.382	<b>.414</b>	-.121	-.321	.004	<b>.567</b>

*Source: Authors' calculation (SPSS statistics)*

The first factor includes: “a strong economy”, “the fight against corruption and crime”, “more human relations”, “social equality”, “preserving tradition” and “democracy” (Table 6). From the analysis of the second factor, it follows that the creation of general conditions for fighting corruption and crime (under the second factor, the fight against corruption and crime has the highest arithmetic value) will contribute to the preservation of moral values. The second factor summarizes fight against corruption and crime (.477), strengthening defense forces (.462) and preservation of tradition (.492). The realization of these goals is in the function of the preservation of territorial integrity and achieving better standard. As the third factor suggests, for the future, it is important to increase employment and develop good international relationships, which should accelerate the process of Serbia's accession to the EU. The privatization of public enterprises and the standard of living prevail within the fourth factor. The achievement of these goals is in the function of strengthening the market economy and material standard (material standard as a personal goal and standard of living as a social goal have contextually similar) As no one included the privatization of public enterprises as one of the top five priority objectives in sample II, and as no one marked it as the most important goal, we concluded that an efficient management of public enterprises would create the conditions necessary for the growth of living standards. Careful examination of the fifth factor shows the role of science and technology in increasing the efficiency and results in transactions and communications of economic actors. The sixth factor

clearly points out the importance of preserving and improving the environment for the development of society.

**Table 6 Factor structure of social goals (of the School of Economics in Bujanovac)**

Social goals	1	2	3	4	5	6
Strong economy	<b>.477</b>	-.103	-.023	.069	<b>.609</b>	-.283
Good international relationships	.288	-.448	<b>.470</b>	.112	-.101	.204
Fight against corruption and crime	<b>.453</b>	<b>.477</b>	-.088	-.036	-.497	-.220
Strengthening defense forces	.167	<b>.462</b>	.295	.301	.063	.259
More humane relations	<b>.506</b>	-.372	.106	-.426	-.184	.011
Environmental goals	.264	-.020	.189	-.380	.212	<b>.670</b>
Employment	.377	-.253	<b>.485</b>	-.163	-.359	-.310
Social equality	<b>.653</b>	.159	.035	.0095	-.110	-.036
The state of law	.360	-.346	-.528	.166	-.026	-.173
Preservation of tradition	<b>.572</b>	<b>.492</b>	-.238	-.071	-.108	.195
Privatization of public enterprises	.039	-.005	.572	<b>.587</b>	.091	-.178
Democracy	<b>.626</b>	-.437	.000	.217	.129	.084
Living standard	.388	-.217	-.401	<b>.500</b>	-.034	.249
Development of science and technology	.382	.279	.090	-.371	<b>.508</b>	-.316
Social rights	.211	<b>.777</b>	.129	.147	.051	-.002

*Source: Authors' calculation (SPSS statistics)*

When it comes to the factor analysis of personal preferences and social goals of high school students, Kuzmanović and Petrović have isolated up to seven factors from both lists of goals (Table 7 and Table 8). In the factor analysis, they paid special attention to loads greater than 0.30.

The first factor was named “selfless fulfillment of duty”, because it involves “altruism”, “subordination” or “the enforcement of decisions”, “conscientious life”, and “social engagement” (Table 7). The third factor is related to competence and independence. The fourth factor gathers “friendly support”, “love”, “altruism” and “security”. The sixth factor is hedonistic orientation. The factor analysis in Kuzmanović and Petrović’s research supports the hypothesis that rational actors exist in the sample (Kuzmanović and Petrović, 2007). The respondents in the sample are obvious examples of discrete purposeful actors who are able to consider a number of courses of action and to judiciously choose and implement one or more of them exist in the sample (Krstić, 2015). The largest number of goals arises from egoistical nature of human beings. Results of Kuzmanovic and Petrovic’s factor analyzes also show that individuals in the sample are pruned towards the market way of thinking and rational judgment.

**Table 7 Factor structure of personal goals**

Personal goals	1	2	3	4	5	6	7
Prestige		<b>.55</b>	<b>-.44</b>		<b>-.31</b>		
Friends				<b>-.80</b>			
Social power		<b>.74</b>					
Self-actualization			<b>-.61</b>			<b>.32</b>	<b>.32</b>

Altruism	.72			-.41			
Achievement		.51	-.37		-.52		
Exciting life						.80	
Subordination	.76						
Security	.41			-.38			.63
Conscientiousness	.56						.60
Love				-.66			
Material standard					-.78		
Knowledge			-.81				
Hedonism						.81	
Social engagement	.55		-.40				
Independence			-.72				
Popularity		.71					
Healthy life							.83

Source: Kuzmanović, B., Petrović, N. (2007), “Preferences Structure of Personal and Social Goals of the High-Schoolers”, *Psychology*, Vol. 40, No. 4, p. 577.

The factor analysis of social goals (Table 8) from the research of Kuzmanović and Petrović indicates the division between traditionalism (showed by factor 2), on the one hand, and modernity, market economy and social security (reflected by factor 4), on the other hand. “Preservation of tradition”, “territorial integrity” and “state integrity”, are dominant in factor two, followed by strengthening “defense forces”, to a significantly lesser extent. “Entering the EU” and “good inter-ethnic relations” are at the other end. Factor 4 includes “social rights”, “development of science” and “culture”, “a strong market economy” and “employment” (Kuzmanović and Petrović, 2007).

Factor 4 corresponds to the social-democratic (ideological) framework, which implies accepting of market economy norms, strong and efficient state that will focus on strengthening and development of rules within which the individuals will be able to work on the achievement of their own, strictly private and personal goals. Factor 4 strongly correlates with the market economy (0.52) in which basis is the idea that only those who are rational (market capable, competing) should survive. Factor 2 corresponds to etatistic (state communist) ideological framework which is characterized by the state involvement in all spheres of economic and social life.

**Table 8 Factor structure of social goals**

Social goals	1	2	3	4	5	6	7
Strong economy			.42	-.52			-.32
Good international relationships	.31	-.37	.36		.44	.36	
Fight against corruption and crime	.79						
Strengthening defense forces		.38				-.58	
More humane relations	.59				.39	.37	
Environmental goals	.61						.42
Employment				-.32	.75	-.37	
Social equality					.77	.33	
The state of law	.63		.31				
Preservation of tradition		.82					



Entering the EU		-.39	.67				
Privatization			.82				
Territorial and state integrity		.817					
Democracy	.32		.35			.67	
Living standard				-.77			
Development of science and culture	.46			-.64			
Social rights		.71		-.64			.44
The one-party system							.75

Source: Kuzmanović, B., Petrović, N. (2007), “Preferences Structure of Personal and Social Goals of the High-Schoolers”, *Psychology*, Vol. 40, No. 4, p. 577.

#### 4.7. One-factor Analysis of Variance

In order to test the second hypothesis of the research, we applied the one-factor analysis of variance with planned comparisons. In the one-factor analysis of variance with planned comparisons, we examined whether a particular group is significantly different from another one in terms of instrumental and value rationality. (Pallant, 2009). In the one factor analysis of variance, there is only one independent variable (factor), divided into several levels or groups, or conditions (Pallant, 2009). In our research, the independent variable is the socioeconomic status of the family that is divided into five categories: “good”, “fair”, “tolerable”, “difficult” and “unbearable”.

Subjects were divided into three groups. The first group consists of subjects who assessed the socioeconomic of families as “good” and “mediocre”. The second group consists of subjects who assessed the state of their families as “tolerable” and “difficult”. The third group consists of the most vulnerable subjects (who assessed the socioeconomic situation of their families as “unbearable”).

In the analysis of personal and social goals preferences of high school students and university students, the dependent variables are the objectives of pro-individual and pro-social orientation. In the sample Faculty of Economics in Nis, we chose the objective “material standard” as a dependent variable that was expressed through the statement “providing me with as much money and other material goods”, while in the sample of pupils of the Vocational School of Economics, we chose the objective “subordination”.<sup>2</sup>

The research of structure of personal and social goals preferences of students of Faculty of Economics in Nis, one-factor analysis of variance reveals is there a significant difference between the average value of the dependent variable “material standard” in group 1 and the average value of the dependent variable “material standard” in groups 2 and 3.

The main results of the one-factor analysis of variance with planned comparisons are shown in table 9. Since Levene’s test (Pallant, 2009) showed that the difference of variance between groups was statistically insignificant (greater than 0.05), we applied the first row of the table “Assume Equal Variances” (Table 9). The significance of a given comparison, shown in column Sig. is 0.0042. It is less than 0.05, so we concluded that there was statistically significant difference in terms of respondents’ instrumental rationality between group 1 and other groups. In other words, a statistically significant difference was identified, at  $p < 0.05$  LOT results of groups:  $F(2, 482) = 4.15$ ,  $p = 0.01$ . Furthermore, the results of the research of personal and social goals preference of the Faculty of Economics’ students confirm the second hypothesis of the experiment.

**Table 9 Contrast Tests**

		Contrast	Value of Contrast	Std. Error	t	df	Sig
ms.	Assume equal variances	1	.21	.333	.632	67	.0042
	Does not assume equal variances	1	.21	.295	.714	24,009	.842

*Source: Authors' calculation (SPSS statistics)*

In the sample of pupils of the Vocational School of Economics we chose as a dependent variable the objective “subordination” (“Do not acting out her inner feelings which everywhere and always provoke disgust and embarrassment”). All subjects in the sample II were divided into three groups. Starting from these settings, we asked: “Do the subjects from group 3 exhibit a higher degree of rationality value in relation to other subjects or not?”.

The first column of Table 10 shows that the significance comparison of a given group is 0.0031 which is less than 0.05. In line with this, there is a statistically significant difference between groups ( $F(2, 432) = 4.6$ ). Furthermore, this means that the results of the analysis of the structure of students' preferences confirm second research hypothesis.

**Table 10 Contrast Test**

		Contrast	Value of Contrast	Std. Error	t	Df	Sig
Subord.	Assume equal variances	1	-.42	1.452	-.286	30	.0031
	Does not assume equal variances	1	-.42	2.100	-.196	3.634	.854

*Source: Authors' calculation (SPSS statistics)*

## 5. Limitations and Further Research

The list of personal and social goals included relevant goals, but may lead to questions, such as whether we can formulate some other goals, whether some of the goals should be designed and called different etc. For instance, the goal “social rights” includes requirements for free education, health and social protection for all citizens, and these elements can be separated, on principle. However, citizens often perceived these elements as the sum of all social rights (Kuzmanović and Petrović, 2007). Is it better to talk about social justice instead of social rights? However, it is an even more general concept because, for many citizens, social justice includes the right to work, a fair wage, civil equality, solidarity, and material egalitarianism. Systematic research on this topic will show which and how many goals are the most economical and most adequately cover the entire field of personal and social goals. Factor analysis will indicate the possibility of a meaningful further generalization, while the analysis of the responses of different parts of the population, the reactions of the respondents and experts in this area will be the guideline for a possible reformulation of particular goals and for adding new goals to the list.

## 6. Conclusion

The study had several objectives. The main objective of this study was to determine whether the model of instrumental rationality or value rationality explains the behaviour of participants of the research better. In this research, we examine the structure of acceptance of 18 personal and 15 social goals of high school students and university students. The results of analysis show that students tend towards primarily egoistic goals (“material standard”, “friends”, “social power”, “independence”, “enjoyment”, “popularity” etc.). When it comes to personal and social goals of respondents in the sample of pupils of the Vocational School of Economics, the results (of analysis) reveal the pupils’ willingness to give up their personal utility for the common interest. Finally, the results of one-factor analysis confirm the second hypothesis of research according to which subjects whose assessed the socioeconomic situation of their families as “good” and “average”, have higher levels of instrumental rationality.

Future researches should show how much are the goals stable and similar in various parts of the population, and whether we should include some new goals and elements. But, on the other hand, we should study more certain goals (their factors and impact on attitudes and behaviour) because they are relatively autonomous. Research on the preferences of personal and social goals of high school students and university students has certain disadvantages. First, the results of research can be unreliable due to disadvantages of data sources and methodological limitations, and “bounded rationality” of human cognition. There is no perfect methodology, and for this reason it is of great importance to combine methods and data sources (triangulation) in the social sciences. It should be pointed that there is no fully rational man, and that people are never value-neutral.

## References

- Becker, G. (1976). *The Economic Approach to Human Behaviour*. Chicago, University of Chicago Press.
- Cohen, D. (2014). *Homo Economicus: The (Lost) Prophet of Modern Times*. New York, Wiley.
- Dekić, M., (2013). Metodološki individualizam i objašnjenje društvenih normi. *Godišnjak Fakulteta političkih nauka*, 7 (9), 51-64.
- From, E. (1980). *Zdravo društvo*. Beograd, Rad.
- Elster, J. (2000). *Uvod u društvene znanosti – matice i vijci za objašnjenje složenih društvenih pojava*. Zagreb. Hrvatsko sociološko društvo.
- Inglehart, R. (1977). *The Silent Revolution*. Princeton, Princeton University Press.
- Gilboa I., Postlewaite A., Samuelson L., Schmeidler, D. (2014). Economic models as analogies. *The Economic Journal*, 17 (3), 513-533.
- Koposov, A.R., Ruchkin, V.V., Eisemann, M., Sidorov I.P. (2005). Alcohol Abuse in Russian delinquent adolescent. *European Child Adolescent Psychiatry*, 14, 254-261.

- Kuzmanović, B., Petrović, N. (2007). Struktura preferencija ličnih i društvenih ciljeva srednjoškolaца. *Psihologija*, 40 (4), 567-585.
- Krstić, M. (2015). Teorija racionalnog izbora i objašnjenje društvenih fenomena. *Godišnjak političkih nauka*, 9 (13), 165-186.
- Ljubičić, M. (2010). Psihopatologija maloletnih prestupnika. *Sociološki pregled*, 44 (2), 205-229.
- Maslov A. (1982). *Motivacija i ličnost*. Nolit, Beograd.
- Menkju G. (2007). *Principi ekonomije*. Beograd, Centar za izdavačku delatnost.
- Murray, M. A. (1938). *Explorations in Personality*. New York, Oxford University Press.
- Pallant, J. (2009). *SPSS Priručnik za preživljavanje*. Beograd, Mikro knjiga.
- Rohan, M. J. (2000). A Rose by Any Name? The Values Construct. *Personality and Social Psychology Review*, 4 (3), 255-277.
- Rokeach, M. (1973). *The Nature of Human Values*. New York, Free Press.
- Schwartz, S. (1996). Value Priorities and Behavior: Applying a Theory of Integrated Value Systems. In J. M. Seligman (Ed.), *The Ontario Symposium: The Psychology of Values Mahwah* (pp.1-24). New Jersey, Lawrence Erlbaum Associates Inc.
- Schwartz, S. H., Bilsky, W. (1987). Toward a Psychological Structure of Human Values. *Journal of Personality and Social Psychology*. 53 (3), 550-562.
- Schwartz, S. H., Bilsky, W. (1990). Toward a Psychological Structure of Human Values: Extensions and Cross-Cultural Replications. *Journal of Personality and Social Psychology*, 58 (5), 878-891.
- Simon, H. (1993). Rationality as **Process** and as **Product** of Thought. *THESIS*, 3, 16-38.
- Smelser, N., Swedberg, R. (1996). *The Handbook of Economic Sociology*, Princeton: Princeton University Press.
- Shastitko, A. (1998). Models of Human Rational Economic Behaviour. *Voprosy Economici*, 5, 53-67.
- Schwery, R. (1997). Rational Choice Theory: Universal Application or Economic Imperialism? *Voprosy Economici*. 7, 37-46 .
- Sadžakov, S. (2012). Hobbes i problem egoizma. *Filozofska istraživanja*. 32 (1), 63-77.
- Smit, A. (2008). *Teorija moralnih osećanja*, Podgorica: CID.
- Smith, A. (1985). The theory of moral sentiments. In D. D. Raphael (Ed.), *Adam Smith* (pp. 36-51). Clarendon Press, Oxford.
- Sen, A. (2010) Adam Smith and the contemporary world. *Erasmus Journal for Philosophy and Economics*, 3 (1), 50-67.
- Stefanović, Z. (2012). Politička ekonomija globalizacije – modeli kapitalizma i institucionalna ekonomija. Niš, Ekonomski fakultet.
- Vasović, M. (1988), “Vrednosti pripadnika neformalnih grupa”. u Joksomović, S. (Urd.), *Mladi i neformalne grupe*, IIC SSO Srbije, Beograd, pp.174-216.

Endnotes:

1. The last economic crisis has clearly shown that, for the progress of normal social order, it is necessary to waive the unregulated and unrestricted self-interest. John McCain, the Republican Party candidate for president of the United States 2008 pointed out the greed of Wall Street in his election campaign (Sen, 2010).
2. The objective “subordination” was expressed through the statement “Do not know to express inner feelings which everywhere and always provoke disgust and discomfort”. We selected the goal “subordination” as indicator of value rationality, because its content reflects, in the best way, the willingness of subjects to acknowledge and accept the wishes and needs of other people.

**Nikola Radivojević<sup>1</sup>**  
*High Technical School of Professional Studies,  
Kragujevac*

**Nikola Ćurčić<sup>2</sup>**  
*University Union -Nikola Tesla, Faculty of Management,  
Sremski Karlovci*

**Željko Dević<sup>3</sup>**  
*High Economic school of professional studies Peć in Leposavić*

ORIGINAL SCIENTIFIC ARTICLE  
doi:10.5937/ekonomika1601023R  
Received: December 15, 2015  
Accepted: February 9, 2016

## IMPLEMENTATION OF THE MODEL OF “TRANSFORMATIONAL MANAGERIAL COMPETENCES” IN THE PROCESS OF RESTRUCTURING OF „ZASTAVA MACHINES A.D.“, KRAGUJEVAC

### Abstract

*Management of changes in the process of transformation of the company is one of the most important challenges faced by the entrepreneurial management. In the contemporary theory of organization and management, the model of “Transformational managerial competencies” is singled out and established as an effective instrument in the process of transformation of the organization. The aim of this paper is to illustrate in detail the theoretical basis of the model, as well as to present its implementation on a specific case. Implementation of the model is illustrated at the example of the company „Zastava Machines A.D.“ Kragujevac, as to present to local public the organisational and managerial competencies which are necessary if the organisation strives to effectively undertake the process of transformation, as well as to emphasize the relationship between the ability of management to understand the necessary competencies and to master them on the one hand, and the successful restructuring of the company, on the other hand.*

**Key words:** Changes, transformational competencies, leadership, restructuring

**JEL Classification:** M2, M310

## ИМПЛЕМЕНТАЦИЈА МОДЕЛА „ТРАНСФОРМАЦИОНИХ МЕНАѢРСКИХ КОМПЕТЕНЦИЈА“ У ПРОЦЕСУ ПРЕСТРУКТУРИРАЊА „ЗАСТАВА МАШИНА, А.Д.“, КРАГУЈЕВАЦ

### Апстракт

*Управљање променама у процесу трансформације предузећа је један од најзначајнијих изазова са којим се суочава менаџмент предузећа. У*

<sup>1</sup> radivojevic034@gmail.com

<sup>2</sup> nikolavcurcic@yahoo.com

<sup>3</sup> zeljko.dv@open.telekom.rs

*савременој теорији организације и менаџменту се издвојио и у пракси афирмисао модел «Трансформационе менаџерске компетенције», као ефикасан инструмент у процесу трансформације организације. Циљ овог рада јесте да се детаљно прикажу теоријске основе модела, као и да се представи његова имплементација на конкретном примеру. Примена модела је приказана на примеру предузећа «Застава Машина А.Д.», Крагујевац, како би се домаћој јавности указало које су то организационе и менаџерске компетенције потребне ако организација настоји ефикасно да прође процес трансформације, као и да се укаже на везу између способности менаџмента да разуме неопходне компетенције и да овлада са њима, са једне и успешног реструктурирања предузећа, са друге стране.*

**Кључне речи:** *Промене, трансформационе компетенције, лидерство, реструктурирање.*

## Introduction

Gaining competitive advantages and adequate strategic leverage is the imperative of any organization. As to achieve this multiple objective, organizations are trying to develop their “winning formula” for success. As of the moment it occurs, it becomes firmly embedded ownership of the company, forming the basic organizational values and cultural imperatives. It requires the presence of capability in every element of a value chain. Unfortunately, it is almost always timely limited and becomes obsolete under the influence of various factors. It is precisely these factors that impose transformational imperative. The one that is most present is the factor of technological change, because many organizations, but not all, form value in a manner that is primarily defined through the exploitation of technology. That’s why business transformation has become a central challenge of modern enterprise management.

Various transformational processes through which the company adjusts to the dynamic environment are becoming the backbone of change management. However, certain “transformational competences” are essential in order to successfully implement these processes. In the contemporary theory of organization and management, the model of “transformational managerial competence” is singled out and affirmed in practice as a reliable instrument in the process of transformation of the organization. This model represents an analytical framework that identifies five organizational and managerial competencies which are necessary to make the organization successfully implement the restructuring process.

Under the influence of internal and external factors, in economies with developed capital, i.e. market and market institutions, restructuring of enterprises is the process that takes place continually. It is an expression of the aspirations for harmonization of conditions of their own economic activity with the changing market conditions and requirements of the environment, with the aim to achieve economic goals more efficiently and effectively. Unfortunately, the undertakings of such activities in our companies are not reflections of such tendencies, but the only remaining way to respond to the pressure of acute crisis in



which the enterprises found themselves. Good example of the fact that our companies recognize the necessity of continuous transformations in order to improve and maintain their competitive position is the company “Zastava machines” - Kragujevac.

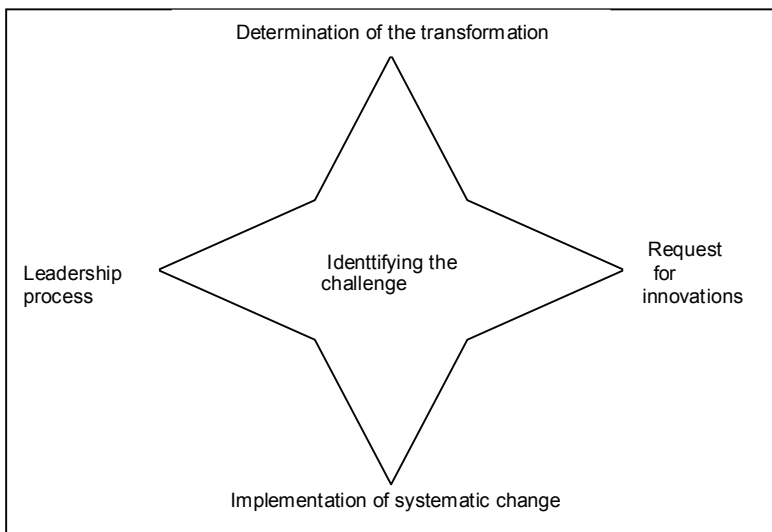
Therefore, the aim of this paper is to show the model of “Transformation managerial competence” in the specific case in order to show the local public which organizational and managerial competencies are needed if the organization strives to successfully undergo a process of transformation, as well as to show the relationship between the ability of management to understand these necessary competencies and master them and the successful restructuring of the company.

## The Model of “Transformational managerial competences”

Many models for the implementation of the organizational change process have been developed in literature. Among them, so-called model of “transformational managerial competences” stands out with its popularity, due to its efficiency as well as simplicity of implementation. A model represents an analytical framework that identifies five key organizational and managerial competences to be taken into consideration, as well as their joint action in order to effectively carry out the process of transformation.

The model is presented in the form of stars with four arms, where each arm represents one ability, and there is an essential ability in the centre – identifying areas, scope and demands of challenges.

Figure 1: The Model of „Transformational managerial competences“



Resource: Francis, D., Bessant, J., Hodbay, M., (2005), *Managing radical organisational transformation*, Academic Press, New York, pp.18-29

Competences are described in detail in the continuation of the paper.

## Identifying the challenge

When organizations are faced with a strategic dilemma, “we are in the wrong place,” the essential difficulties that arise from the very start of the process of transformation are (Francis, D., Bessant, J., Hodbay, M., 2005, pp. 18-29):

- Avoiding: People in organizations (especially in teams in the top position) cannot accept the fact that their tried and tested ways of doing business have become incorrect. They avoid, “the world has changed, and we have not”;
- Hesitancy: even if the need for a change is understandable, no one knows the best strategic direction to follow. Consequently, organizations can be divided into warring camps, fighting for leadership position;
- Poverty: Companies usually realize that they need radical reform just when their finances are in poor condition, but it’s too late then, because there is less possibility for reinvestment, which leads to the effect known in our literature as the “domino effect”. Consequently, the company is brought in the area of disability, and such companies are being taken over or liquidated;
- Insularity: individuals into power in the organization are those whose life experience consists in what is now to be destroyed. It often happens that those who should be leaders of the transformation process are the least trained for it;
- Incapacity: managers who have spent years managing organizations in stable conditions often do not have the right skills for transformational change.

The authors of this model have defined these challenges as “barriers before action”. Overcoming these “barriers before action” can be very difficult. Research of Francis et. al (2005), Basol (2004) and Andriopoulus et. al (2002) have shown that “traumatic events”, such as the arrival of a new Director General with different perspectives, lead to re-conceptualization of threats and opportunities. When it comes to the realization that the current business does not provide capital and development potential, the company enters into a collective state of uncertainty (Francis, D., Bessant, J., Hodbay, M., 2005, p. 30). It knows that the change is needed, but does not know what kind of change? Some change their core business; others exercise rejuvenation, the third increase interest in innovation, etc. The proposal for the implementation of the transformation process can be also a result of exploitation of business opportunities, not only a threat (the example is ICI-Zeneca, see Francis et. al (2005)). This is a good example that visions and radical strategies can occur in response to events that cannot be planned in advance with the predictions and in detail. What is important for success is that there is a high level of awareness regarding the necessity of changes and in the manner of their implementation, among the actors whose decisions create the future of the organization.

The process of gathering strength for change is basically a political process. The imperative is to create a powerful coalition that will accept the need for a “new order”. It is necessary to choose the key agents of changes that will actively support the process of finding a new identity of the organization. There must be a “driving force” that will guide changes.

## The process of leadership

Research shows that the key to management of successful changes of the transition process lies in capability of leaders to overcome resistance. Namely, the organizational changes dramatically increase the degree of uncertainty and may generate in anxiety and fear among the majority of members of the organization, which in the context of organizational changes means the resistance to their implementation. The most important thing for leaders in change management is to turn the factors “against” into factors “for”. Therefore, the successful implementation of changes requires the action of leaders in both planes, therefore, in the level of those forces which are oriented to the changes, which can be achieved by creating awareness of their necessity and urgency, as well as in the level of forces that resist change, which is achieved by striving to maximally reduce their resistance (Stojanović-Aleksić, V., 2006).

The ways of manifesting the resistance are numerous: from those whose form is the direct attempt to prevent the change by undertaking the obstructive activities to those passive forms which negate the need of changes’ implementation. But regardless of the form and the manner of manifestation, it is primarily important to note that the resistance is a usual phenomenon that monitors all aspects of changes, so they should be seen as a natural and inevitable phenomenon. The resistance of members of organizations represent a strong challenge and a significant barrier to initiating changes and their successful implementation; however, they should not be seen solely as a threat, but also as a source of significant energy that can be transformed and redirected towards support for changes. Therefore, a successful leader is expected to recognize them, identify their causes and consequently adapt the behaviour and choose an adequate strategy of amortization the resistance to change. According to Stojanovic-Aleksic (2006) strategies available to the leader are: participation, support and assistance strategy, negotiations and agreements strategy, manipulation and co-optation strategy and strategy of direct coercion. Of course, these approaches must be adapted to the nature and causes of resistance to changes and incorporated (explicit/implicit) into the plan of transformational process

This requires strength and subtlety of leadership which is thought to be rare. This suggests that the process of leadership should be contextually flexible and able to cope with the paradox (there is a time when one should be open to the advice of others, but also the time to stop to listen to them and make a decision by his/her own).

The conclusion that emerges is that leaders must be both soft and hard, and that they need to know when to take a certain attitude. In other words, the successful discontinuity and transformation management requires effective leadership. We have learned from the literature that strong leadership can lead to spectacular behaviour and spectacular success. Research of Radivojevic (2006), William (2005), Rouse and Boff (2003) and Zenger (2002) have shown that the main risk in the implementation of the transformation is the selection of “wrong people” for the position of a leader. Managers need to develop themselves and adopt values which promote a courageous and radical change.

## The implementation of systematic change

Organizations may take the initiative in relation to the discontinuity - that means they can actively try to create those changes, thus “rewrite the rules of the competitive match”.

Studies have shown that smallest companies have a need to develop a strategic orientation and routines that will help them to cope not only with the “steady-state” of innovation, but also with a discontinuous innovation at the same time (Moutinho1, R., et. al., 2015). This often requires changes in many parts of the organization, i.e. systemic changes.

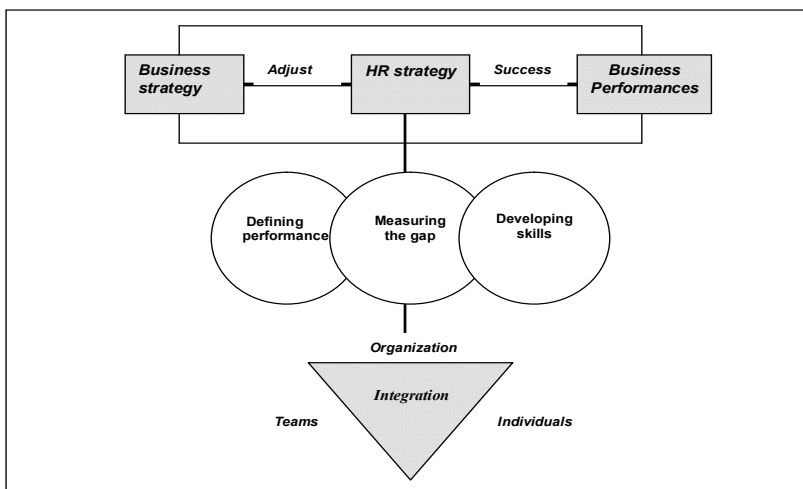
One of the key demands is a significant improvement of organizational capacities, which will be opened to signals from the outside and ready to learn “outside the box”. Studies of radical changes (Radivojevic (2006), William (2005) and Zenger (2002)) show that multiple new ways of working are required and that their application is incompatible with the operations carried out in a company from day to day.

As a consequence, there is often a tension between the groups that are in the process of radical changes. The solution may lie in separation of a radical and stable group. New divisions must happen; otherwise the frustrated staff with entrepreneurial skills will leave the company in order to establish their own in which they will implement their radical visions. Key features are necessary for activities such as monitoring the environment in order to detect signals that will encourage innovation, implementation of application projects, coordination of different knowledge, skills, etc (Radivojević, N., et. al., 2007).

In an effort to implement changes in a systematic and planned manner, numerous models that provide recommendations on how to successfully implement organizational transformation have been developed. One of the popular models for transformation of the organization, which follows the trend of development of enterprises business on the basis of Information Technology and relies on certain principles is called business model (Radivojević, N., et. al., 2007). It arises from the necessity to find an answer how to generate the values for a company, customers and partners, and represents a mixture of three flows (value for partners and customers flow, revenue flow and logistic flow) that are crucial to successful business.

Another model that attracts attention with its comprehensiveness and thoroughness is the model “Determining the gap & development of capabilities” (Figure 2).

Figure 2: Model „ Determining the gap & development of capabilities “



Source: Keen, P., Qureshi, S., (2006), Organizational transformation through Business Model, *Proceeding of 39th Hawaii International Conference of System Sciences*.

## Selection of transformational strategy

Studies of Francis et. al. (2005), William (2005) and Barnes and Bessant (2001) show that there are generic transformational strategies, four of which has been identified so far: value flow reconfiguration, redefinition of the driving forces of business, reconstruction of business competencies and redefining the proposal in relation to the existing and/or a new consumer:

1. The reconfiguration of the value flow - means the creation of major changes in the positioning of the company within the network of suppliers, partners and/or distribution. For example, companies can develop their suppliers or distribution in a way that they will find new ways of supplying or repositioning within the value flow. This strategy may offer three key advantages. Firstly, it provides the activities to be carried out at the lowest prices because there is the selection of the cheapest suppliers (until their prices are the lowest). Second, the value flow can be created in a way that it is inherently agile - sources can be activated, reconfigured or deactivated in a relatively easy way, so that customers are always offered with what is worth for them. Finally, the possibility of perceiving the system as a whole makes it possible to decipher and fix the inefficient connections.
2. Redefinition of the driving forces of business - strategic organizational driving force is selected formulas for value creation. This may be changed, even though the risk of adopting new strategic driving force is high if the organization has to leave even a part of what it is already familiar with and to enter into the sphere of the unknown and uncertain. In stable conditions organization routine puts accumulated knowledge in a capsule and eliminates the need for new learning in situations that are repeated. Reviewing its strategic driving force, organizations need to make innovations within its mission, political power, social, technological or market opportunities and to adopt new business models. In the search for new forces, previous beneficial routines can become rigid and a kind of barrier and are often very resistant to changes.
3. Reconstruction of business competences - already developed business competencies are a good support for the efficient and effective resolution of existing problems. From the strategic perspective, they are significant because they provide opportunities for learning and acquiring new skills in dealing with new situations. By acquiring new competencies, a company is able to do things that it has not been dealing with earlier.
4. Redefining the value of the proposal in relation to existing and/or a new customer - companies that are familiar with the requirements of their customers have the advantage, because knowledge of the needs of consumers provides a form of learning that can be applied to offers making, so that the desires and needs of consumers affect the work of organizations.

However, focusing only on existing customers can blind decision-makers in companies, because they do not have to be the leading consumers. Hence, it is necessary to develop a study of potential and/or leading consumers. Such approach creates

opportunities for the development of products/services, taking into consideration the whole potential market, not only the current one in which the company operates. For this reason the research of business space becomes a key strategy and demands the ability of retention the existing and attracting new customers, while the creating and maintaining the organization in a condition to be able to recognize signals (threats and opportunities) that cause relevant innovations and the appropriately respond, represents the biggest challenge for strategic management.

## Request for innovations

Most innovations are introduced in the field of established pattern of capabilities that is usually accompanied by a sort of “technological trajectories” (Keeney, B., 1983, p. 213, Miletic, et al. 2012, p. 60). When it comes to that, the change is possible in a greater or lesser extent, but the overall narrowness of the conditions remains relatively stable (e.g. bicycle frame suffered countless innovations, but it still remained unchanged). In contrast, study of Francis et. al (2005) shows that innovations in the field of glass production have led to the transformation of the whole industry. This is a good example showing that innovation of “different kind” set a new dominant design - the new path for the development and the new model on which the innovation can be carried out.

The road travelled on a company’s success in innovation it is not easy to cross, especially in companies that face significant problems. Studies have shown that companies are often faced with the following difficulties (Salami, R., Soltanzadeh, J., 2012, pp. 211-226):

1. Failure to observe: failure to recognize the need for innovation. This can happen either due to isolation of the key signals from the environment or due to the fact that basic skills have become what Leonard Barto calls “axis of stiffness”;
2. Inadequate innovation: recognizing the need for innovation, but answering it in a way that strategically weakly corresponds to business. Companies are introducing changes, but they cannot support them due to the lack of experience or ability. Another usual problem is the adoption of innovation as a result of fashion, and not due to a clear strategic need;
3. Episodic innovations: recognizing needs, but only occasionally, so that after a strong effort to introduction of innovations there is a period of inactivity;
4. Emphasizing a moderate state of innovations: There is a need for continuous development of innovations but the objective of the innovation is not the process of transformation, but the improvement of existing processes.

Discontinuous innovation process is qualitatively different from the approach described above, and is oriented towards the improvement. These forms of innovation have a high probability to provide the opportunity for transformational changes. However, a comprehensive approach to continuous innovations can have a radical effect. Key differences between continuous and discontinuous innovation, according to Francis et. al. and Michelson (2008) are the following:

1. positive/negative impact of discontinuous innovations is higher;
2. discontinuous innovations require the destruction of attitudes that are cocooned;

3. discontinuous innovation requires entry into the psychological space of unknown and uncertain;
4. the element of risk is greater;
5. there is the probability to be a plenty of tests and difficulties,
6. specific skills are needed

From this assessment it is evident that a tendency for discontinuous innovation somehow represents a strategy by itself. Several factors can cause the opportunity for creation of discontinuity. They can, in extreme cases, lead to restructuring of the industry or to the great deterioration in the ability for value creation of the company itself. A great opportunity as well as a threat requires the company to consider some form of reconfiguration (one of the 4 strategies).

## **Implementation of the model of “transformational managerial competences” in the process of restructuring the company “Zastava machines, AD”, Kragujevac**

### **Identifying the challenge**

Today’s Social Enterprise “Zastava Machines, AD”, Kragujevac is a direct descendant of the former company the Institute “Crvena Zastava” Kragujevac. Namely, it all started back in 1853 with the establishment of the first industrial company in Serbia, called “Topolivnica”. After a series of organizational transformations of the Institute “Crvena Zastava”, fostering its own development and a tradition of 150 years, the company “Zastava machines” has grown into one of the leaders in our region for the production and repair of machine tools, mining equipment, equipment and parts for resistance welding and steel mills, confectionery industry and the rubber and non-metal industry.

Due to significant reduction in capacity use within metal-processing industry as well as to the majority of companies from the Zastava Group for which purposes the company mainly worked, nowadays a special attention is paid to the program diversification and to productive engagement of available resources in development and implementation of new programs and products.

Due to the need to respond to developments in the business environment, in terms of strengthening pressures to achieve and “surpass” business standards imposed by reinforcing competition, increased fussiness of customers and legal regulations, the company became aware of the necessity of implementation of rapid, systematic and comprehensive changes. Therefore it defined its strategy of restructuring in response to the identified challenge of the environment manifested in the form of threat. Defined strategy meant redefining business philosophy, mission, mental map, organizational structure and rearrangement of market and technological portfolio.

The main challenge that the company “Zastava machines” is facing is growing competition in the field of production of machinery for the confectionery industry. Despite the fact that this is an attractive market, with relatively stable demand, especially after



the ownership and organizational transformations of our companies in the confectionery industry, the company has decided to withdraw from that market. The reason for this lies in the fact that competitors offer higher quality products at lower cost, and the lack of financial resources for the innovation of its products and a commitment to develop those products for which the company has a competitive advantage, caused the company to eliminate this group of products from its production program.

### **Application of leadership process**

The agent of changes was a strategic peak of the company. The effectiveness of enterprise transformation conditioned by many factors but primarily the working collective, or its mental map and a readiness to maximally engage themselves in the implementation of changes.

The degree of their engagement in that process depends on a number of factors that are manifested both in the form of barriers, as well as in the form of stimulus. In amortization of resistance, the management started from the fact that the resistances are inevitable and that it would be wrong to deny their existence. Closing the eyes and escape from the problems are not a strategy that will contribute to their solution. One of the common mistakes made by the leaders relates to the expectation that the resistance will be shown only by those who are directly threatened by changes and are afraid of losing something (status, work, power, etc.). It is true that the fear of personal loss is the most significant and the most common cause of resistance, but one should not overlook the fact that the human psyche and motivation mechanisms are very complex and influenced by many factors. An interesting observation is that the resistance may come from those who could make profit after the changes. In this case it is avoided by careful treatment of all individuals in the company.

In conversation with employees it was found that the main reason for not accepting the changes was emotional in nature - fear of job loss. Realizing the importance of understanding the necessity and urgency for changes, by its employees, in providing support for the restructuring of the enterprise, the management tried to persuade employees in correctness of their actions through persuasion and explanation of its decision. In addition, the process involved all individuals, in accordance with their experience and skills, while the surplus of workforce was solved by mutual termination of the employment contract. Thus was solved the dilemma the company faced on that occasion - how to perform the reduction of the number of workers in the most fair way to workers who lose their jobs. This automatically had the positive effect on those who remained - they returned a sense of security. This created the work environment that stimulatory acted on individuals, and the management received support for changes implementation. A significant contribution for this was certainly given by the changed leadership style that was now primarily focused on individuals.

### **The implementation of systematic change**

By analyzing their business environment through the prism of their own strengths and weaknesses, as well as opportunities and threats that appear on the market, the

company has recognized the necessity of rapid and comprehensive changes. In order to use the identified opportunities and amortize the threats, the company has defined the strategy of restructuring, which means redefining business philosophy, mission, mental map, organizational structure and rearrangement of market and technology portfolio.

Firstly it carried out the definition of vision and mission - meeting the needs of clients by offering more quality products at lower cost and faster than others, while preserving the traditions, increasing the inherited reputation and transferring of gained experience to future generations of employees. Then they defined the objectives of the company and ways of achieving them. The main objective is the increase of retention rate and retention of existing market participation in markets where the company remains.

Starting from Porter's generic strategies it can be concluded that the company "Zastava machines" follows the strategy of differentiation, whereby the differentiation is the ability of a company to deliver products whose quality is at the level of excellence. Specificity of quality differentiation strategy implemented by the company "Zastava machines" in relation to the competitive strategies of differentiation lies in the following:

1. Differentiation in terms of properties - the result of a unique technical and mechanical treatment of the materials from which the product is made;
2. The attributes of durability and reliability in extreme operating conditions – the result of a distinctive way of designing products and work technology.

The first step in preparing the organization for the realization of the vision and implementation of the set strategy was the elimination of anomalies of the previous organizational structure. This has been achieved by its redesigning:

1. According to previous organization, marketing and sales were at the level of directorate and under the direction of sales manager. The consequence of this situation was the predominance of short-term sales results over the long-term orientation of marketing in the context of developing creative solutions to meet future needs. Marketing is now at the level of the directorate, while the sale is at the sector level within the marketing directorate.
2. Reducing complexity which was achieved by eliminating the middle managerial level. Given that it is a single production in which the products are produced according to specific customer requirements, experience and ideas of the first line of workers are essential for the outcome of the work process. By such subordination (drive leadership is under the direct control of the production manager) the transfer of ideas and information among the workers is easier and faster.

This organizational design has enabled:

1. the transfer of ideas, information is faster and in all directions;
2. the establishment of intimate and informal relationships between members of the organization;
3. creation of a climate in which employees compete who will present more ideas in terms of innovation

Structuring the work collective was based on the principle of optimal completing of current and planned future tasks with minimal strain of the staff. Quantitatively, qualitatively and timing harmonization structure of employees with the requirements

of tasks was achieved on these premises. The problem of working force surplus was successfully solved by mutual termination of the employment contract. The dilemma the company faced on that occasion was how to reduce the number of workers in the best possible way for workers who lose their jobs, but also how to retain the loyalty of those who remain and provide them with a sense of security.

Market restructuring in the case of “Zastava machines” company is based on maintaining the existing markets and preserving the acquired market share within them. This attitude is based on the fact that existing markets have rather stable demand and that competitive relationships between them have already been established. Compared to the competition the company has a defensive stance, aimed at preserving its strong power, which in combination with the previously mentioned leads to the consolidation strategy.

Many companies are facing a problem to integrate technology into the process of strategic management. The reason for this is the lack of understanding of the strategic potential of the technology factor. In addition, a large number of conceptual frameworks for the development of business strategy is still based on the marketing, production or organizational factors. Bearing in mind the importance of technologies for achieving the competitive advantage with one hand, and the scope and the growing importance of technological progress and changes on the other hand, technological restructuring is becoming one of the most important ways to adapt the company to changes in the environment. Within the company “Zastava machines” technological restructuring is aimed at the modernization of existing technology and increasing the participation of computer guided machines.

### **The selection of transformational strategy - Redefining the value of the proposal**

Analyzing the ruling market structure in which the company operates (identifying the model described with notions) it has realized the necessity of redefining the value of the proposal in relation to beneficiaries. Based on the analysis of competitive environment it can be concluded with certainty that the company operates in monopolistic competition conditions. For success on such a market it is essential to properly manage the price. Namely, price interval occurs at the market. The reason for this lies in the fact that manufacturers differentiate their offerings to customers. Customers notice these differences and they are willing to pay different prices for them. Therefore, in redefinition of the marketing mix a special attention is paid to the manner of price formation.

Production program consists of six product lines, namely: 1) machine tools; 2) mining equipment; 3) equipment for resistance welding; 4) special purpose machines; 5) machines for confectionery industry and 6) machinery for rubber industry and non-metals. Each line includes a larger number of products types and their number is theoretically unlimited, as almost all of them are built according to the customer’s specification. Such a system of production for known buyer automatically means that there is no stock of finished products. The company offers two types of services as well: 1) Overhaul and revitalization of machine tools and mining equipment and 2) gearing services.

The analysis of products in the context of the life cycle concludes the following:

1. The most important products for the company are in the stage of maturity; mining equipment (A) and machine tools (B) (participate in the total income

with over 80%). Given that these two groups of products are at this stage, and bearing in mind their importance to businesses, scenario that predicts the transition from a phase of maturity into a phase of new growth has been developed. The scenario is based on a change in conception in the production and exploitation of effects of experience curve, resulting in a lower cost/price and better quality. Therefore, for these products is determined the strategy of *leadership in costs*. Also, at this stage there are products from the product groups: machinery for the confectionery industry (C), machinery for rubber and non-metal industry (D) and the overhaul, rehabilitation and gearing services (E).

2. In the growth phase there is the gravel transporter (F).
3. In the introduction phase there is innovated reducer (G)

The company will continue to implement a strategy of differentiation for these two products. Given that the company is equipped with machines whose maximum technical characteristics allow the processing of large dimensions, the possibility of introducing services of grinding of large dimensions, grinding of slide surfaces and services of keyways broaching are actively taken into consideration.

In order to lead a balanced policy of cash flows, it is necessary to make a portfolio analysis. The first step is to determine the percentage participation of certain groups of products and services in the revenue (Table 1).

*Table 1. Percentage share of products/services income*

Product-services	Market participation
<b>A Mining equipment</b>	<b>57,8%</b>
<b>B Machine tools</b>	<b>23,7%</b>
<b>C Machines for the confectionery industry</b>	<b>1,5%</b>
<b>D Machines for rubber and non-metal industry</b>	<b>0,5%</b>
<b>E Services</b>	<b>8,4%</b>
<b>F Gravel transporter</b>	<b>5,2%</b>
<b>H Reducer</b>	<b>2,9%</b>

*Source:* Internal report of the „Zastava Mašina, A.D.“ - Kagujevac, 2011

On the basis of these data it is possible to position products in the BCG matrix. Note that the size of the circle represents the percentage of participation in the income of a particular product. Assessment of the relative market share is left to subjective assessment of analysts and management in “Zastava machines”. Also, the rate of market growth is evaluated on the same principles.

The analysis of portfolio matrix clearly shows that mining equipment and machine tools have a very good position, considering that they are in the “cash cow” field which means that they are good generators of cash. Candidates for the elimination of the product range are the groups of products labelled as: machinery for the tire industry and non-metal (C) and machines for the confectionery industry (D). The reasons for their

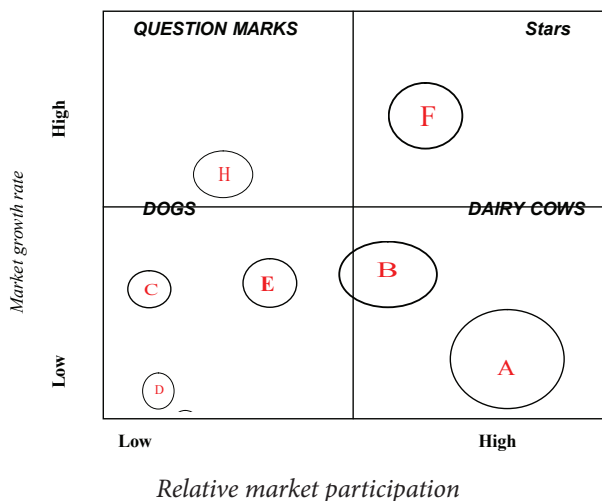
elimination are in the fact that they have a small profit contribution to the company; they are not exported, and require large investments in order to remain competitive. Even though the services that the company offers are located in this quadrant, their elimination is not taken into consideration for two reasons:

1. *Strategic* - revitalization and overhaul services are the basis for product differentiation, as they are an integral part of the product;
2. It is considered that modification of gearing services (in addition to the services of keyways broaching) will improve market position.

When reducing the product range it would be necessary to conceive the dynamics of elimination of labelled products, so to take into account certain requirements that go in the direction of not disrupting the business of its customers and maintaining good relationship with them. It was achieved by the timely information of former and current clients about the products elimination, so that they could adapt to the new situation timely and by and giving a specific deadline within which they could make their order of products which would be eliminated.

The result of the measures proposed in the restructuring of the production program is reflected in the reallocation of funds from the products (C) and (D) into the development of a reducer, in order to increase its market share and moving to quadrant “star”. Also, a part of the funds will be directed at strengthening the marketing efforts of gravel transporter, in order to investigate and find new buyers as to maintain the high level of participation and achieve a transition to “dairy cows”. At the same time, it enables greater management commitment to products that remain, but also the changes in the structure of total revenues in the direction of increasing exports, with the expectation that the surplus capacity arising from the reduction will be used in the increase of income level.

Figure 3: Portfolio analysis of the production program of “Zastava Machines”



Source: The Authors

A matrix which is based on two variables was used as an analytical tool for review of the validity of decision to reduce a manufacturing program. The first variable relates to the work force and it is determined by parameters: marketing, production, market share, brand image, quality and the like. The second relates to the attractiveness of the industry and is determined by: market size, growth rate, the structure of competition, barriers to entry, etc.

Figure 4: Review of a decision on reduction of production program

<i>Work strength</i>	<b>high</b>	Selectivity <b>A</b>	Selective growth	Investment and growth <b>F</b>
	<b>medium</b>	Disinvestment	<b>B</b> Selectivity <b>E</b>	Selective growth
	<b>low</b>	Disinvestment <b>D</b>	<b>C</b> Disinvestment	<b>H</b> Selectivity
		<b>low</b>	<b>medium</b>	<b>high</b>
<b>Attractiveness of the industry</b>				

Source: The Authors

Based on the matrix shown, it can be concluded that the decision on the reduction of the production program is justified. Proposal of measures for the reduction of the production program is consistent with the strategies suggested in the framework of individual fields in the matrix above.

Bearing in mind the governing structure of the market, one can easily realize the importance of proper management of pricing strategies. The market consists of many buyers and sellers engaged in transactions in the interval price. The reason for the occurrence of interval price lies in the fact that vendors differentiate their offer to customers who recognize the differences and are willing to pay different prices for them. Company “Zastava Machines” consistently implements the strategy of differentiation, which is reflected in the confidence, perseverance and product properties. Hence, the company forms the price based on the customer’s perceived value, while the price is at the level of perceived value. Observed from the aspect of these two factors, cost – effective, the company implements the strategy of premium and high-value strategy.

For products that are located at the stage of maturity, it was decided the price to be below the customer’s perceived value, but without compromising quality. This provides customers with a very good value, and in order to preserve/strengthen the competitive

position. At the same time, this will initiate new purchases of these products. The strategy “removing cream” is used for the formation of prices for gravel transporter, considering that it is a really new product. This method of price forming has enabled the company to relatively quickly cover the IR costs and create the image of a superior product. However, as competition develops and the market is becoming saturated (product has passed the stage of introduction), reduction of prices is recommended as to appeal to a wider market.

The company uses two methods to distribute their products. In domestic market, the sale is made directly to a known buyer. At the international, basic forms of export marketing are applied:

1. Direct export – independent appearance on foreign markets;
2. Indirect export - export is done through specialized companies from Belgrade or via foreign intermediaries.

The intensity of distribution is low, which means that the number of intermediaries for one territory is small (usually one). This gives exclusivity to intermediaries, which is reflected in their negotiating power in relation to the users, but also in relation to the company. Given that the company carries out the most of the export through intermediaries, redesign of distribution channels is aimed at eliminating intermediaries and establishing direct sales on the route enterprise - users. Such redesign of distribution channels will allow direct access to the largest companies, enhance the rating of the company in relation to its competitors, obtain the status of a major supplier and increase the profit, as bypassing of intermediaries in the distribution channel will avoid payment of their commission.

Participation in the events of market considerations that gather customers, vendors and competitors at one place, is the most important element of the current promotion strategy. For many years the company is a regular participant in the most important fairs in the country and abroad in the fields relating to the manufacture of machine, confectionery machines and mining equipment, or are directly linked to these fields. Another elements of the promotional mix are petty propaganda materials that include a variety of brochures, agendas and calendars with the company logo, folders, etc. which are usually given to guests, visitors and partners of the company. Considerable attention is paid to word of mouth advertising as the strongest, but to a free form of advertising at the same time.

In order to 1) increase market share; 2) strengthen company image and 3) strengthen goodwill in relations with the community, it is planned to take certain activities which will improve the promotion and advertising of the company:

1. Modification and modernization of the identity of the company - many years of economic decline and collapse of the reputation of the Institute “Crvena Zvezda” reflected on all companies of Zastava group. Hence, modification and modernization of existing identity is necessary, but without losing the essential recognition. The first step in this is the creation of a logo with the original preliminary design.
2. Creation of conditions and training marketing people to be engaged in propaganda - the solution is institutionalization of propaganda function within the Directorate of marketing or its separation outside of the company through contracts signing with specialized agencies in this area.



3. The usage of interactive media - after making a logo comes the development of web site of the company that will be dynamic (Flash version) with the possibility of online sales and promotional CD.
4. Development of corporative propaganda and sponsorship - sponsorship of certain social events or associations will strengthen the goodwill in relations with the community, while informing the public on these activities will promote the image of the company.
5. Determination of annual budget for promotional activities - the amount of the annual budget for promotional activities will be determined as a percentage of the total annual income.

### Request for innovations

Company “Zastava machines” is aware of the fact that it cannot live neither only on existing products, since the processes of technological obsolescence and market saturation are constant, nor only of innovation, because they require significant financial resources in the initial phase that can be delivered by the sales of existing product. Hence, the company nurture products that are in various stages of the life cycle. The assumption of such type of business is located in a permanent and systematic development of new products. For this reason, the company has engaged experts in the field of mechanical engineering and product design.

Figure 5: Categories of new products

<b>High</b>	Grinding services		Gravel transporter
Novelty for company	Improvement of products	Services	
<b>Low</b>			
	<b>Low</b>	Novelty for market	<b>High</b>

Source: The Authors

From the perspective of management, and identifying concepts of novelties to the company or novelties to the market, grinding services would represent the novelty for company, the services of keyways broaching complement the existing lines as the company already provides gearing services, while innovated reducer falls into the category of improving existing products. Gravel transporter is the novelty for the world, because it is a unique product which is the result of scientific and research study of the company’s experts. The company has significant innovations in the field of design and production technology as well.

## Conclusion

We are witnessing the fact that changes become regular and commonplace thing which is the management of the company faced with every day. In Western economics, restructuring of enterprises is the basic instrument in hands of managers for successful adaption to the demands of a turbulent environment. Such management a priori means the possession of the ability to effectively manage organizational change in the process of organizational transition and adaptation to the newly created business environment. The development and survival of these companies depend on the ability to recognize conditions and factors of the situation and timely response to them. Unfortunately, our companies which have been developed under the auspices of the state, based on ownership monism, were burdened by the voluntary control of management, and never had a chance of being competitive to enterprises emerged in market economies. The role of management was reduced to protection of the interests of higher instances and transferring their orders. In such circumstances, management did not require any special skills.

However, transfer of our economic system into the market-type system requires the restructuring of economic entities in all segments of their business. The starting point of these changes are the principles and methods of market way of doing business, which points out the need to master the necessary skills and abilities as the basis of the effective exercise of managerial and executive functions. A good example of ownership of such management skills is the company “Zastava Machines, AD” Kragujevac. In order to strengthen its distinctive benefits, which will transform into an increased preference for its products on market, the company has implemented a restructuring process, using the model of “transformational managerial competences”. It is important to emphasise the continuity of this process, which is unfortunately rare case in our business practices, because the restructuring process in our country is applied only in cases of deep acute crisis, as the only way to react to the crisis. Management of the company represents a good example of the necessity to understand the importance of continuous implementation of changes in the organization, as well as the importance of mastering competencies that are essential for successful implementation of this process.

## References

- Andriopoulos, C., Gotsi, M., (2002). Lessons from a Creative Culture, *DMI Review*, Vol. 13, No. 2, pp. 1-25.
- Barnes, J., Bessant, J., (2001). Developing manufacturing competitiveness in South Africa, *Technovation*, Vol. 21 No. 5, pp. 293-309.
- Basole, R., (2004). The value and impact of mobile information and communication technologies. *Proceedings of IFAC Symposium on Analysis, Modeling & Evaluation of Human-Machine Systems*, September.
- Francis, D., Bessant, J., Hodbay, M., (2005). *Managing radical organisational transformation*, Academic Press, New York, pp.18-29.

- Interni izveštaj preduzeća „Zastava Mašina, A.D.“ - Kagujevac, 2011.
- Keen, P., Qureshi, S., (2006). Organizational transformation through Business Model, *Proceeding of 39th Hawaii International Conference of System Sciences*.
- Keeney, B., (1983). *Aesthetic of Change*, Guilford Press, New York.
- Michelson, S., (2008). Globalization at the nano frontier: The future of nanotechnology policy in the United States, China, and India, *Technology in Society*, Vol. 30, No.(3-4), pp. 405-410.
- Miletić, S., et. al. (2012). Perspektive razvoja inovativne firme u svetlu odnosa između tehnologije i organizacije, *Ekonomika*, vol. 58, br. 4, str. 55-63.
- Moutinho1, R., et. al (2015). The Role of Regional Innovation Systems (RIS) in Translating R&D Investments into Economic and Employment Growth, *Journal of Technology Management & Innovation*, Vol. 10, No. 1, pp. 9-23.
- Радивојевић, Н., (2006). Улога лидера у процесу пословне трансформације предузећа, рад саопштен на *II међународном научном скупу - Лидерство у теорији и пракси*, Економски факултет, Бања Лука, септембар
- Radivojević, N., et. al. (2007). Mogućnosti i ograničenja e-biznisa, *Industrija*, br. 1. str. 55-77.
- Ratchford, J. T., Blanpied, W. A. (2008). Paths to the future for science and technology in China, India and the United States, *Technology in Society*, Vol, No. 30 (3-4), pp. 211-233.
- Rouse, W.B., Boff, K.R., (2003). Value streams in science & technology: A case study of value creation and Intelligent Tutoring Systems, *Systems Engineering*, Vol. 6, No. 2, pp. 76-91.
- Salami, R., Soltanzadeh, J., (2012). Comparative Analysis for Science, Technology and Innovation Policy; Lessons Learned from Some Selected Countries (Brazil, India, China, South Korea and South Africa) for Other LdCs Like Iran, *Journal of Technology Management & Innovation*, Vol. 7, No. 12, pp. 211-226.
- Stojanović-Aleksić, V., (2006), Uloga lidera u prevazilaženju otpora organizacionim promenama, Monografija “*Razvoj korporativnog upravljanja u ekonomijama u zemaljama u tranziciji*”, Ekonomski fakultet u Kragujevcu, Kragujevac.
- Zenger, J. H., (2002), *The extraordinary leader: Turning good managers into great leaders*, u Adžić, S, Lazić, J., Cvijanović, J., (2005), Leadership in the high performance organization, *Industrija*, br. 4, str.45-77.
- William B. R., (2005), Enterprises as Systems: Essential Challenges and Approaches to Transformation”, *Systems Engineering*, Vol. 8, No. 2, pp. 138-150.



**Goran Milovanović<sup>1</sup>**  
*University of Niš, Faculty of Economics*  
**Slavoljub Milovanović<sup>2</sup>**  
*University of Niš, Faculty of Economics*  
**Tanja Spasić<sup>3</sup>**  
*Higher Business School of Applied Studies, Leskovac*

SCIENTIFIC REVIEW ARTICLE  
doi:10.5937/ekonomika1601043M  
Received: December 7, 2015  
Accepted: February 11, 2016

## THE ROLE OF CONTEMPORARY WEB TECHNOLOGIES IN SUPPLY CHAIN MANAGEMENT

### *Abstract*

*Ever changing market circumstances and globalization have caused electronic business (e-business) and supply chain management to integrate and virtual supply chains to emerge. E-business comprises all forms of business transactions and information sharing which is performed using information and communication technologies between companies, companies and their consumers, or companies and public administration. Supply chain is thus considered a unique and continuous business process, supported with goods and information flows throughout the entire distribution channel, where each company is part of the chain and boundaries between companies are non-existent. In times of economic uncertainty, cost reduction through rationalization and automatization of business processes, and improvement of productivity and quality of goods and services, become necessary for company's survival. In this context, the role of information and communication technologies in supply chain management is discussed, with particular attention to the contemporary web technologies such as extranet and Web 2.0.*

*Key words: Supply chain management, virtual supply chain, e-business, extranet, Web 2.0*

**JEL classification: L86**

## УЛОГА САВРЕМЕНИХ WEB ТЕХНОЛОГИЈА У УПРАВЉАЊУ ЛАНЦИМА СНАБДЕВАЊА

### *Анстракт*

*Променљиве тржишне околности и глобализација утицали су на интегрисање електронског пословања (е-пословање) и управљања ланцима снабдевања као и на настанак виртуелних ланаца снабдевања. Е-пословање обухвата све облике пословних трансакција или размене информација које се изводе коришћењем информационаих и комуникационих технологија*

<sup>1</sup> goran.milovanovic@eknfak.ni.ac.rs

<sup>2</sup> smilovan@eknfak.ni.ac.rs

<sup>3</sup> tanja-spasic@hotmail.com

*између предузећа, предузећа и његових купаца или између предузећа и јавне администрације. Ланац снабдевања се ставља у контекст јединственог пословног процеса, робног и информационог тока који га прати дуж целог канала дистрибуције, а свака појединачна компанија је само једна карика у ланцу снабдевања у коме више не постоје границе између компанија. У времену економских изазова, смањење трошкова кроз рационализацију пословања и аутоматизацију процеса, повећање продуктивности и квалитета производа и услуга, услови су опстанка компанија на тржишту. У том контексту се разматра улога информационих и комуникационих технологија, а пре свега савремених веб технологија, као што су екстранет и Веб 2.0, у управљању ланцима снабдевања.*

**Кључне речи:** *Управљање ланцем снабдевања, виртуелни ланац снабдевања, е-пословање, екстранет, Веб 2.0*

## Introduction

The supply chain consists of a series of processes and activities that allow for, direct or indirect, satisfaction of customer needs. All flows of information, products, or cash generate costs in the supply chain while its only source of income is the customer. Due to the increased market transparency and accessibility of information, physical borders of cooperation are wider and more open. In such conditions, the concept of global business networking is becoming increasingly accepted.

The development of information technology has contributed to, among other things, the emergence of virtual businesses. Virtual company is characterized by a virtual organizational structure. Its members take advantage of the joint expertise and market performance. Furthermore, they enjoy the benefits in terms of sharing costs and risks. The virtual supply chain is based on the information technology and electronic communication among all of its participants.

E-commerce and e-procurement significantly transform supply chains. Although these forms of e-business applications have been the subject of a number of studies in previous years, the possibility of e-collaboration can be far more important for the transformation of modern supply chains.

Effective supply chain management is essential for a successful company. It needs to go beyond the boundaries of a single company, in order to effectively exchange information between it and all other participants in the supply chain. In this regard, the Internet, electronic data interchange, and extranet technology can play an important role.

Corporate portals offer a single point of access to critical business information within the organization, via Internet browsers. In addition, Web 2.0 should be adopted throughout the supply chain. Companies that were among the first to adopt this network technology achieved significant competitive advantage. Such technology redirects users from passive reading information on the Internet to active network participation and the creation of different information content.

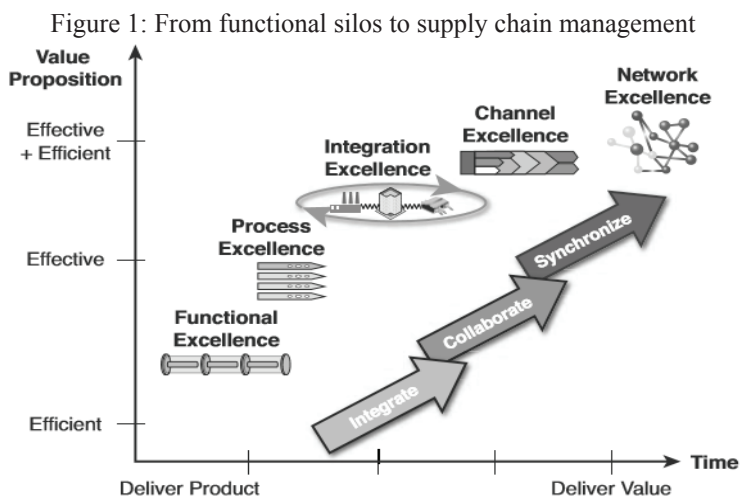
## Supply chains as business networks

The supply chain is more than a mere sum of connections that are manifested in the process starting from the extraction of raw materials to the use of finished products by end users (Mentzer, DeWitt, Keebler, Min, Nix, Smith, Zacharia, 2001, pp. 1-25). Highly integrated supply chains connect resources of several organizations in order to meet customer requirements in a timely and efficient manner.

Supply chain managers should find opportunities to use technology that will, at an acceptable cost level, create value for end users. They should also enable the efficient flow of information, cash, services, materials, and finished goods from the supplier's supplier to the customer's customer. The extent to which these objectives can be realized directly points to the success of supply chain management.

The concept of supply chain management has a relatively short history. It was defined at the beginning of the 21<sup>st</sup> century, but is based on concepts that are decades old (Brian, Joe Clifford, Haozhe, 2013).

This concept appeared in literature in early 1980s. It was first discussed by Keith Oliver and Michael Webber – Booz Allen & Hamilton company consultants. In 1982, their views were first published in German in the magazine “Wirtschaftswoche”, and then in English, in the journal “Outlook”, published by the company Booz Allen & Hamilton (Franklin, Meissner, 2014, p. 11). At that time, the concept of supply chain management was associated with collaborative specialization and reduction of inventory within and outside the company. Company activities, such as procurement, inventory management, warehousing, order processing, and transport, were executed independently. Each activity had its own budget, priorities, processes, and key performance indicators. Such defragmentation led to sub-optimum and prevented companies to operate at the lowest total cost (Frankel, Keller, Keller, Gibson, Hanna, Defee, Chen, Tate, Sanders, Goldsby, Iyengar, Rao, Fawcett, Fawcett, Moon, 2014).



Source: Brian, Joe, Clifford, & Haozhe (2014). *The Definitive Guide to Integrated Supply Chain Management*, New Jersey: Pearson Education, p. 16.



After identifying the problem of defragmentation, company managers integrate related activities, such as inbound transportation, procurement, and production, to support production. Furthermore, inventory management, order processing, outbound transportation, and related activities become an integral part of the function of physical distribution. These two areas (inbound and outbound flows in the company) were later integrated in the logistics function.

The real supply chain occurs when companies synchronize their related processes and adopt a holistic philosophy of managing its interdependent strategic areas, such as finance, marketing, planning, and technology.

Although the concept of supply chain management has evolved rapidly in the last three decades, many companies are just beginning to implement it. In contrast, in many companies, the implementation of this concept is in the maturity stage (See Figure 1). Companies that adopt the concept of supply chain management later must replace the management of their independent functions (functional silos) with the management of integrated internal business processes, as well as adopt a single target performance of costs and services. This is often the most challenging step the companies must take from the management of functions to supply chain management. This is followed by the establishment of external relations and implementation of the concept of the enlarged company. Cooperation with key suppliers and customers, as well as application of modern technology, allow companies to combine different channels in order to create value. The final step in the evolution of the concept of supply chain management is the development of complex, dynamic, resilient, and organizationally responsive network (business related participants) for the flow of raw materials, materials, information, finished goods, and cash. Modern supply chains are based on networking partners. Traditional ways of collaboration among companies in the supply chain are no longer sustainable. The concept of global business networking allows business networks to take a dominant market role from individual companies. In relation to individual companies, business networks can quickly respond to unpredictable demand for products or services whose life expectancy is constantly shortened.

Today, supply chain management involves the management of continuous processes that create added value, starting from the procurement of materials, services, and information to the delivery of finished products to the end users, to meet their real needs. The functioning of the modern supply chains is nearly impossible without the use of modern technology. Of special importance is the application of various forms of electronic business and electronic interchange of data on demand, inventory, and/or production among supply chain members. The aim of its application is not to eliminate participants in the supply chain, or disintermediation (Janssen & Sol, 2000, pp. 407-417), but improving efficiency and/or effectiveness of its processes, activities, and flows. What is more, modern technology generates new structures in the supply chain and enables companies to electronically choose their business partners on the global market.

The implementation of different programs for inventory management can improve collaboration of members in the supply chain. One such program is *Vendor Managed Inventory* (VMI), implemented by companies in other fields of business.

By implementing VMI program, Walmart, for example, successfully transfers responsibility for product inventory management in their retail outlets to manufacturers or dealers from which it procures the product (Yuliang, Yan, Martin, 2012, pp. 979-

1001). In addition to increasing access to the real demand of customers and inventory levels, VMI program allows manufacturers and dealers to adequately distribute goods to individual customers, to increase the level of service to customers, and reduce costs of transportation, inventory, and sales. Furthermore, by relying on VMI program, manufacturer and dealer are able to fully support the objectives of other members in the supply chain. Due to the implementation of VMI, suppliers can: develop better decision support systems, achieve a higher level of automation and control of logistics processes, shorten the lead-time, and reduce total costs. Besides Walmart, VMI program is successfully implemented in the following companies: GlaxoSmithKline, Electrolux Italia, Nestle, Tesco, Boeing, and Alcoa (Tarikere & Stephan, 2012, p. 940).

## Virtual supply chains

Unlike conventional logistics systems, virtual supply chain is based more on sharing information than on identifying the optimal amount of inventory and its location. It allows for the flexible (Christiaanse & Kumar, 2000, pp. 268-285) choice of partners in production and distribution.

Virtual companies reduce the need for physical resources to the necessary minimum, thus significantly reducing the costs of its outputs. Virtual company is a sort of an open-type company. It is not just one company but a whole range of networked companies that together form a virtual supply chain.

The main reasons for the formation of virtual supply chains are economic interests of each member in the supply chain, i.e. their desire to be better prepared, in relation to the competitors, to face the growing business risk and uncertainty and achieve significant savings in transaction costs. Companies in the virtual supply chain need to opt for those business activities that they can perform better than their competitors. Key benefits of virtual supply chains are: flexibility, reduced paper documents, decentralization, faster access to selected markets, high adaptability to customer requirements, development of partnerships and alliances, increased competitiveness. To increase competitiveness on the virtual market, companies must procure goods or services from other members on the virtual market that offer these products at lower cost and higher quality.

Virtual supply chains have certain disadvantages as well. Some of the most significant are: loss of knowledge due to the exchange of experience and knowledge among chain members may in the future create new competitors, reduction in profits due to the use of external sources, lack of control over a part of the business, lack of reliability of the Internet, and others.

Unlike virtual organizations, virtual supply chains are production and distribution systems using a physical network structure. They hire production and distribution specialists, members of different supply chains. They are oriented to specific tasks and rapid response. They have no permanent members, but include new for the purposes of specific projects. New members do not need to be known to other members in the virtual chain.

## E-business and supply chain management

The rapid growth of e-business creates huge challenges in supply chain management in the public and private sectors. This issue is a constant subject of interest of executives and directors, as companies strive to “keep up” with rapid changes and improve logistics processes, to ensure permanent, first-class product delivery to customers. The integration of many elements of the supply chain is the biggest business challenge for many companies, because it implies transforming their fragmented business processes into electronically controlled and integrated processes (Croom, 2001).

Supply chains are complex economic systems, which extend from raw materials to consumption of final goods and services. There is also the growing competition among supply chains themselves, and then among individual organizations.

Experience of organizations in the implementation of e-business shows how much they are dependent on their suppliers and distribution channels. The ability of the organization to successfully manage its supply chain is a key strategic challenge. At the core of supply chain management is the recognition that the organization is able to utilize the skills, capacities, and resources of its suppliers and distributors, as well as its own resources, in order to achieve success on the selected markets.

Electronic business transforms supply chains. A special role in this process belongs to the following forms of e-business application: *e-commerce*, *e-procurement*, and *e-collaboration* (Johnson & Whang, 2002, pp. 413-423).

*E-commerce* helps network partners within the supply chain to identify and give a rapid response to changing customer requirements, researched on the Internet. The basic idea of e-commerce is that information exchange interconnects customers and dealers, without any physical contact with the product. E-commerce has had a significant impact on the supply chains of many products. Of course, information supply chain has undergone major changes. Manufacturers of physical products have also turned to the Internet, as a direct distribution channel. Direct channel includes a different set of decisions and challenges than those in the existing physical retail distribution channels. These two types of channels differ in the types of customers, operations related to the execution of orders, cost structure, realized profits, logistics requirements, the expected quality of the services provided, the level of market sharing, access to information, and return of goods. For example, by using differentiated prices, e-dealer can motivate clients to wait with their order, and in this way gain significant information in relation to market demands.

The advantages of e-commerce in relation to traditional sales channels are reflected in the flexibility of delivery time or the configuration of logistics. In creating a distribution system in e-commerce, the flow of materials and information can be separated, and the delivery process can have a different way from the order flow. For example, someone can order the book from the website *amazon.com*, but the actual delivery can be made from the warehouse of this website’s distributor – Ingram Books. In this way, the online company may, in addition to its own, construct the virtual logistics network, consisting of logistic assets of its suppliers and dealers.

*E-procurement* allows companies to use the Internet in order to procure direct or indirect material, as well as to manage the services that generate additional costs, such as transportation, storage, customs services, payment, and quality assurance.

Due to fierce competition, changable customer requirements, shortened product lifecycle, and expanded variety of products, modern production requires flexibility. In addition to the dynamic capacity distribution, efficient procurement of materials is the basis of flexible production. Internet is a “natural” platform for realizing effective procurement, as many customers and dealers find each other easily and work together in harmony on the basis of pre-defined protocols.

While e-procurement is a “mirror” of e-commerce, they differ significantly. While, for example, e-commerce mainly involves a large number of individual customers, e-procurement mainly cooperates only with other companies.

There are three different procurement strategies for manufacturers. The first strategy is known as a strategic partnership, and focuses on developing and maintaining long-term supply relationship with a certain supplier. The second strategy is the purchase over the Internet at a lower price. The third strategy combines the previous two and is implemented by signing long-term sales and purchase agreement with the supplier, but to a certain level and if necessary, additional quantities can be purchased over the Internet from other suppliers.

E-procurement raises the possibility of a combined strategy and creates optimal solutions in it. Lower costs of searching for suppliers, materials, prices, etc. significantly affect the procurement strategy.

Some software solutions take real-time data (inventory level, data on sales and market prices on the electronic stock exchange) and provide a good insight into the operational status and the possibility to optimize operations.

*E-collaboration* includes coordination of various decisions and activities in addition to transactions among partners in the supply chain, including suppliers and customers, carried out via the Internet. For example, this includes coordination of changes in the specification of materials, made by engineers, in conjunction with the product manufactured by an external partner.

E-collaboration is an interaction between two or more companies via the Internet. Interaction goes beyond simple sales and purchase transactions and may be better described with the word “connectedness”. This includes activities such as exchange of information and integration, exchange and coordination related to some decisions, as well as exchange of processes and resources. The execution of these activities carries with it a number of dilemmas and issues that supply chain and logistics managers may face: Where to place the goods? Where to open facilities (production, warehouse, retail)? Which facility capacity to plan? How many products to manufacture, store, place, and from which facilities?

## **The role of the Internet, electronic data interchange and extranet technology in supply chain management**

Supply chain management requires the use of, above all, a system for the exchange of information among its members. In addition to the application of internal IT systems, such as enterprise resource planning, the use of identification technology should also be considered, such as RFID and other wireless technology. In addition, supply chain

management would not be possible if its participants did not have access to a wide range of external technology services.

Nothing so deeply transforms the process of supply chain management as the Internet. It has a big influence on how companies communicate with each other and with their customers. Former factors limiting the integration of the supply chain, such as high transaction costs between partners, poor access to information, and difficult management of complex interfaces among companies, simply disappear on the Internet (Christopher, 2005, p. 5).

Information flow management has always been critical for supply chain management. In the era of the Internet, because of the rapid flow of information based on computer networks, information management gets a primary role in creating successful supply chain.

The Internet is the most cost-efficient means for the integration of the supply chain. It transforms many processes within the supply chain, from raw material procurement through product design to customer management. It also provides an opportunity to all suppliers in the supply chain to coordinate data transfer.

Supply chain management systems are essential for the successful operation of many companies. They rely on various forms of information technology, the most important being: *electronic data interchange* and *extranet*.

*The technology of electronic data interchange* (EDI) enables business partners to electronically routinely share documents in accordance with pre-agreed standards. This technology offers numerous advantages compared to manual document delivery. First of all, it minimizes data entry errors, because each entry is checked by the computer. The length of messages can be shorter and the messages are safer. It also shortens the product delivery time and the execution of other activities in the logistics process, increases productivity, and improves customer service levels. Finally, it reduces the costs of storage and use of paper documents.

The technology of electronic data interchange also manifests certain disadvantages that need to be considered before its implementation. It is sometimes necessary to restructure business processes to fit the requirements of this technology. What is more, there are numerous standards of electronic data interchange in use today. Therefore, an enterprise must use several standards to be able to communicate with multiple business partners. The possibility of the company's quick access to the Internet is also important, and that the files on the product design, product photos, and catalogs are routinely sent by electronic mail. Therefore, the value of the shortened and structured e-commerce message, from several thousand XML bytes to a few hundred EDI bytes, is negligible. Due to the higher Internet speed, EDI technology is increasingly replaced by XML network services.

*Extranet technology*. The influence of the Internet on the process of supply chain management has been studied, among others, by Walters and Reinbird (Walters & Rainbird, 2007, p. 601). They have come to realize that only by integrating information management strategy and supply chain management can companies successfully compete on the global market.

Graham and Hardaker have proven that, through the use of extranet, companies can target new markets, by offering low initial costs and greater flexibility (Graham & Hardaker, 2000, p. 290). By outsourcing and the formation of strategic alliances,

companies encourage sharing of business information among suppliers and customers, which was once the property of the competitors and participants from other industries. Graham and Hardaker also argue that business is conducted in an environment where sharing information among all the participants in the supply chain leads to fundamental changes in their interaction, but also in the entire business practice. For example, the three largest car manufacturers in the United States have launched an exchange of information in the car industry in order to maximize the use of the effects of computer networks and electronic business communities. The results were lower costs in the entire automotive industry. At the same time, these benefits have significantly altered the competitive strategy and interaction among all participants in this industry.

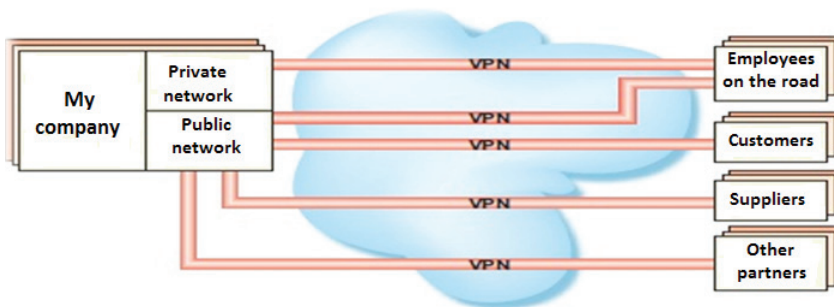
Research of supply chains and value chains has shown that, by implementing extranet, companies manage to significantly reduce operating costs and increase profits (Cohen & Roussel, 2005, p. 124; Steinfield, Markus & Wigand, 2011, pp. 75-108). It also suggests that companies should review the entire supply chain and identify areas in which they can carry out revolutionary or evolutionary change by using the Internet technology.

The company can use the Internet networking standards and web technology to create private (internal) network, called the intranet. To develop a web-based supply chain management system, companies must link different business partners' intranets, in order to create extranet. Extranet connects business partners via the Internet, giving them access to certain areas of their own intranet. The main objective of extranet is to encourage collaboration among business partners in the supply chain (Guah & Currie, 2006, p. 45).

The company can provide extranet access to certain suppliers, customers, and other partners. Extranet allows people outside the company to cooperate and communicate across the network with its staff. It also allows external business partners to access the corporate intranet via the Internet, not only to track the status of their orders and inventory levels but also to intensify collaboration.

The main advantages of extranet include: faster information and process flows, more efficient ordering and customer support, lower costs (communication costs, travel costs, and unnecessary administration), and more profitable business. The company chooses the type of extranet depending on the business partner and the purpose of the supply chain. Extranet uses the virtual private network technology (VPN) to make the communication via the Internet safer (Figure 2).

Figure 2: Information flows in extranet through secure virtual private connections





Extranet can be classified according to various criteria. From the viewpoint of the participants in the extranet development and its main users, there are *industrial extranet* and *extranet for the support to joint ventures and other business partnerships*.

*Industrial extranet*. Just like one company can develop extranet, several large companies in one industry may join to create extranet, thus bringing benefit to all. Such a network can allow companies to cooperate successfully and is safe global medium for B2B information exchange. In addition, it can be used for business transactions essential for a particular job among the leading companies in the aviation, automotive, chemical, and electronic industries, as well as financial and health institutions, logistics, manufacturing, transportation, and related industries. Industrial extranet provides customers with reliable extranet connections, as well as services in the field of virtual private connections.

Extranet can be used in many different ways in the supply chain management. Table 1 provides a brief overview of extranet possibilities in this field of management.

**Table 1: Possibilities of using extranet in supply chain management**

<i>Number</i>	<i>Usability</i>
1.	- For finding, selecting, and ordering items by customers via online distributors' catalog and directly from the supplier, without any human contact
2.	- For tracking shipments and equipment using road, rail, and air traffic
3.	- For contacting suppliers or customers in relation to delayed deliveries, no product in stock, and changing the agreed delivery date
4.	- For reserving space in public warehouses for the expected delivery in certain locations and markets
5.	- For scheduling outgoing delivery from private and public distribution centers, 24 hours a day
6.	- For receiving orders from international customers
7.	- For checking the status of orders with suppliers
8.	- For notifying suppliers on modifications to the product configuration
9.	- For electronic payment of invoices and financial balance checks
10.	- For direct communication via electronic mail with suppliers, customers, etc. about potential problems in supply, 24 hours a day
11.	- For a faster response to customer complaints
12.	- For arranging shipments and delivery
13.	- For reducing costs and response time

As regards *extranet for the support to joint ventures and other business partnerships*, partners in the joint venture use its possibilities and tools for communication and



collaboration. For example, a company that provides insight into the mortgage quotas for owners of real estate and which sells mortgages via the Internet can use the extranet to connect its business partners.

## **The use of portals and Web 2.0 technology in supply chain management**

Information technology has been applied in supply chain management for more than three decades. However, its implementation is still associated with high costs and uneven level of acceptance by different members of the same supply chain. The intensive development of web technology has increased the possibilities for the application of Web 2.0 in the supply chain management (Keng, Alain, Boon, 2011, pp. 394-399).

Corporate portals allow companies and their suppliers to work closely together. There are two basic types of corporate portals: *procurement portals* (for the company's suppliers – “*upstream*” segment of the supply chain) and *distribution portals* (for customers – “*downstream*” segment of the supply chain). *Procurement portals* automate business processes related to the purchase and supply of products between one customer and several suppliers. *Distribution portals* automate business processes in connection with the sale or distribution of products between one supplier and multiple customers (Yoo, Choudhary & Tridas, pp. 145-170).

In order to find a competitive advantage, companies must look at the value chains of suppliers, distributors, and customers. Using extranet and web portals, the company sends the order when inventory falls below a specified level. In the system of quick response, like this, the products are pulled through the channel by demand (“*pull*” model), instead of being “pushed” through the channel from inventory (“*push*” model). In this way, the need for inventory is reduced.

In terms of the number of processes, activities, and participants, as well as the nature of the relationships among the participants, supply chains significantly differ from each other. It is very tempting to copy the success of other companies in the supply chain management. However, this can often be a mistake, because the circumstances are not the same in all supply chains. Therefore, there is no universal way of managing supply chains. Companies, especially those operating in traditional sectors of the economy, generally do not want to change their logistics activities into primarily electronic formats. Such changes require large and very expensive procedures, even if they can lead to long-term profit and savings. Supply chain management should change the culture, not only at the level of the company and its national supply chain, but also at the level of international supply chains.

Web 2.0 (also known as “social networks”, “social revolution”, or “user-generated content”) has been developed in the last ten years, to cover the rapid development of the Internet and its related technology and applications. Web 2.0 has been inspired by business revolution in the computer industry, caused by increased “relocation” of business to the Internet platform, but also by trying to understand the rules of success on that new platform (Barlow, 2011, p. 466).

The essence of Web 2.0 lies in the sharing of information through the interconnectedness of people. It is focused on openness and relationship-building.

The driving force of Web 2.0 lies in the creation of applications and services within the unique Internet environment, which can be used for creating and sharing information among the users. A large number of services, technology, and applications that connect to Web 2.0 are blogs, Internet encyclopedias (the so-called “Wikis”), social networks, forums, services for sharing multimedia content (for example, YouTube), text and multimedia messaging (SMS and MMS), and instant messaging (MSN, Skype, WhatsApp, Viber, and other applications).

**Table 2: Examples of use of modern web applications in the supply chain**

<i>Web 2.0 tool</i>	<i>Examples of applications in the supply chain</i>
Blog	Blogs can be used for internal and external communication. For example, they can be used for publishing the news about business development. What is more, blogs are a good place for presenting products and services, sharing experts' advice, opinions, and frequently asked questions. Finally, blogs can be used to create a database of loyal customers.
Internet encyclopedias (Wikis)	Internet encyclopedias allow companies to exchange documents and intensify mutual cooperation. They can also encourage communication and transfer of knowledge between people involved in the supply chain.
Forums	Forums may serve the company to build business connections, exchange information and opinions. The company can also use forums to seek advice on issues related to business, and thus improve its expertise.
RSS (Really Simple Syndication) “feeds”	RSS allows companies/individuals to check for new content on the Internet. When new content appears on the relevant external website, the user gets notified and the information is delivered. This can be useful for market research and for the transfer of information, i.e. knowledge.
Social networks	Social networks are especially useful to companies when they advertise products and collect feedback from customers about the advertised products in order to create a base of loyal customers.
Sharing multimedia content	Companies can use tools and technology for sharing multimedia content, both to present their products and services and to display photos and videos of best practices within the supply chain.
Tagging	“Tagging” on social networks can serve companies as a means of categorization, classification, and labeling of content and valuable information on the Internet. It could eventually contribute to the collection of business data and market research.

*Source:* Barlow 2011, p. 467.

Numerous fields and network tools can be used for improving communication in the supply chain. Web 2.0 activities that can be particularly helpful include: marketing and advertising, cooperation and strengthening ties with customers and suppliers, transfer of information and knowledge, creating added value as regards products and services, research and development. Examples of specific Web 2.0 applications and tools in supply chains are given in Table 2.

Only a few studies focus on the application of Web 2.0 in supply chain management. For example, Goh, Lee, and He and Tan analyzed the impact of this technology on the

creation of potential benefits through dynamic B2B integration, but did not show in detail how this technology can support the overall practice of supply chain management (Goh, Lee, He & Tan, 2007). Furthermore, Ooi, Alain and Tan proved that this technology can be applied in the process of supply chain management, but did not provide explanation of how it can support this entire process (Ooi, Alain & Tan, 2011, pp. 394-399). Limited results of these and numerous other studies point to the fact that, regardless of the expansion of the implementation of Web 2.0, it is still not entirely clear how it can be used to support the operation of supply chains. These restrictions will be a serious challenge for researchers and managers in the future.

## Conclusion

Competition among companies is increasingly replaced by competition among supply chains. Due to global development and application of information technology, supply chains become increasingly complex business networks with a virtual organizational structure. Unlike others, companies that belong to business networks are more flexible and more successful in coordinating business transactions with other members of these networks.

E-business and supply chain management are in modern companies increasingly integrated into a single system that is based on the latest web technology. The structure of supply chains is constantly changing. Their increased effectiveness and efficiency depends not only on technological innovation but also on information and communication technology that supports electronic business. Today's successful supply chain management systems, which rely on modern web technology, allow manufacturers, their suppliers, and customers to achieve a competitive advantage on the market. Companies that adopt this technology on time will have a dynamic and sophisticated supply chain, in line with their electronic business strategies.

The creation of a specific supply chain is influenced by numerous factors. For that reason, nowadays, there are no two identical supply chains.

The introduction of modern web technology greatly reduces the resources required to track the flow of materials and products in the supply chain. This creates conditions for the improvement of their reactivity, competitiveness, and profitability.

Using information and communication technology is considered to be a prerequisite of effective control of complex supply chains. Therefore, the availability of different, adaptable, and price-competitive services with the use of modern technology becomes the foundation of modern supply chain management.

## References

- Barlow, A. (2011). *Web Technologies and Supply Chains*. Glasgow: Caledonian University.
- Brian, J.G., Joe, B.H., C. Clifford D., & Haozhe, C. (2014). *Definitive Guide to Integrated Supply Chain Management: Optimize the Interaction between Supply Chain Processes, Tools, and Technologies*, New Jersey: Pearson Education.

- Christiaanse, E., & Kumar, K. (2000). ICT-enabled coordination of dynamic supply webs, *International Journal of Physical Distribution and Logistics Management*, Vol. 30, No. 4, 268-285.
- Christopher, M. (2005). *Logistics and Supply Chain Management*. Edinburgh: Pearson Education Limited.
- Cohen, S., & Roussel, J. (2005). *Strategic Supply Chain Management: The Five Disciplines for Top Performance*. New York: McGraw-Hill Companies, Inc.
- Croom, S. (2001). *Supply Chain Management in the E-Business Era*. Coventry: Warwick Business School, SC Associates
- Frankel, R., Keller, B.S., Keller, C.B., Gibson, J.B., Hanna, B.J., Defee, C.C., Chen, H., Tate, W., Sanders, R.N., Goldsby, J.T., Iyengar, D., Rao, S., Fawcett, E.S., Fawcett, M.A., Moon, A.M. (2014). *Definitive Guides for Supply Chain Management Professionals*, Pearson Education.
- Franklin, J.R., & Meissner, J. (2014). Network Orchestration: A modern response to international supply chain complexity, *BVL International: The Global Supply Chain Network*, Issue 2.
- Goh, C.M., Lee, S.P., He, W. & TAN, P.S. (2007) *Web 2.0 Concepts and Technologies for Dynamic B2B Integration*. Singapore: Singapore Insitute of Manufacturing Technology.
- Graham, G., & Hardaker, G. (2000). Supply chain management across the Internet. *International Journal of Physical Distribution & Logistics Management*, Vol. 30 Issue 3-4, 286-295.
- Guah, M.W., & Currie, W.L. (2006). *Internet Strategy: The Road to Web Services Solutions*. Hershey: Idea Group Inc.
- Janssen, M., & Sol, H.G. (2000). Evaluating the role of intermediaries in the electronic value chain. *Internet Research: Electronic Networking Applications and Policy*, 10/5, 407-417.
- Johnson, M.E., & Whang, S. (2002). e-Business and Supply Chain Management: An Overview and Framework. *Production and Operations Management*, Volume 11, Issue 4, 413-423.
- Keng, B.O., Alain, Y.L.C., & Boon, I.T, (2011). Application of Web 2.0 in Supply Chain Management: A Brief Overview, *Trends in Applied Sciences Research*, 6, 394-399.
- Mentzer, T.J., DeWitt, W., Keebler, S.J., Min, S., Nix, W.N., Smith, D.C., Zacharia, G.Z. (2001). Defining Supply Chain Management, *Journal of Business Logistics*, Vol. 22, No. 2, 1-25.
- Ooi, K. B., Alain, Y.L. & Tan, B.I. (2011). Application of Web 2.0 in Supply Chain Management: A Brief Overview. *Trends in Applied Sciences Research*, 6, 394-399.
- Steinfeld, C.W., Markus, M.L., & Wigand, R.T. (2011). Through a glass clearly: standards, architecture, and process transparency in global supply chains. *Journal of Management Information Systems*, Vol. 28, No. 2, 75-108.

- Tarikere, T.N., & Stephan M.W. (2012). Prerequisites to vendor-managed inventory. *International Journal of Production Research*, Vol. 50, No. 4, 939-951.
- Walters, D., & Rainbird, M. (2007). Cooperative innovation: a value chain approach. *Journal of Enterprise Information Management*, Vol. 20, Issue 5, 595-607.
- Yoo, B., Choudhary, V., & Tridas, M. (2011). A study of sourcing channels for electronic business transactions. *Journal of Management Information Systems*, Vol. 28, No. 2, 145-170.
- Yuliang, Y., Yan, D., & Martin, D. (2012). Supply Chain Learning and Spillovers in Vendor Managed Inventory, *Decision Sciences*, Vol. 43, Issue 6, 979-1001.



**Zoran Simonović<sup>1</sup>**  
*Institute of Agricultural Economics, Belgrade*

SCIENTIFIC REVIEW ARTICLE  
doi:10.5937/ekonomika1601059S  
Received: January 25, 2016  
Accepted: February 28, 2016

## DEVELOPMENT POLICY ADVISORY PUBLIC SERVICE IN AGRICULTURE IN THE REPUBLIC OF SERBIA<sup>2</sup>

### Abstract

*Under the advisory public services in agriculture mean all institutions that publicly declare that they are in the service of agriculture. The main objective of the establishment of these services is to facilitate agricultural production. These services include: various institutes such as the Institute of Agriculture seed, protection from disease and dr., Agricultural services, veterinary, anti-hail service, Department of Pomology, National Institute of Viticulture.*

*In the countries of Southeast Europe, among which is Serbia and such services are still underdeveloped and are in the phase of constitution. It is necessary to support the development of these services because it is a regulated market is part of an integrated rural development.*

*Drawing on the positive experience of developed countries in the EU and beyond, and in connection with the establishment and operation of agricultural advisory services, all the countries of South East Europe during the last decade of the 20th century established this service. The fact that in the formation of agricultural extension has not implemented a unique organizational model, and that in the current functioning of these services are not everywhere achieved satisfactory results, indicating, among other things, that there are no universal solutions for all situations.*

**Key words:** public services, agricultural extension, Serbia.

**JEL classification:** Q1, Q10, Q16.

## ПОЛИТИКА РАЗВОЈА САВЕТОДАВНИХ ЈАВНИХ СЛУЖБИ У ПОЉОПРИВРЕДИ У РЕПУБЛИЦИ СРБИЈИ

### Апстракт

*Под саветодавним јавним службама у пољопривреди подразумевамо све оне институције које се јавно декларишу да су у служби аграра. Главни циљ оснивања ових служби је олакшавање аграрне производње. У ове службе спадају: разни институти за пољопривреду попут института за семе, заштиту од болести и др., пољопривредне службе, ветеринарске станице,*

<sup>1</sup> zoki@medianis.net

<sup>2</sup> This paper work is result of the project No. 46006 – III „Sustainable agriculture and rural development in function realizing strategic goals of the Republic of Serbia in framework of Danube region“, financing by the Ministry of Education and Science of the Republic of Serbia.



*противградна служба, заводи за воћарство, завод за виноградарство.*

*Код земаља југоисточне Европе, међу којима се налази и Србија овакве службе су још увек недовољно развијене и налазе се у фази конституисања. Неопходно је подржати развој ових служби јер управо уређено тржиште представља део интегралног руралног развоја.*

*Ослањајући се на позитивно искуство развијених земаља ЕУ и шире, а у вези са оснивањем и радом пољопривредних саветодавних служби, све државе Југоисточне Европе су током последње деценије 20. века основале ове службе. Чињеница да у формирању пољопривредног саветодавства није примењен јединствен организациони модел, као и да у досадашњем функционисању ових служби нису свугде остварени задовољавајући резултати, указује, поред осталог, и на то да не постоје универзална решења за све ситуације.*

**Кључне речи:** *јавне службе, пољопривредно саветодавство, Србија.*

## Introduction

Progress in agriculture and rural development can not be imagined without consulting the public service, which is organized in a modern way. The primary function of such an organized public service in agriculture is to enable easier transfer of knowledge. In conditions when Serbia became a candidate country for membership in the European Union should create the conditions for our agriculture in a smooth way to adapt to the new conditions. In this sense, the state has to make a large number of laws and development documents, as well as to establish institutions that will ensure the harmonization with the European Common Agricultural Policy. It all means that the field of agricultural extension in Serbia exposed to the challenges of reform. An important step in this direction was made with the entry into force of the “Law on the provision of advisory and professional activities in the field of agriculture.” This law indicates that it is busy right direction in modernizing and increasing the efficiency of public advisory services in agriculture in Serbia.

## The development of public services in the CEE countries

Training and consulting services for the development of agriculture is in constant progress. There is a great motivation for these services to transfer knowledge to farmers. Training provided by counselors and information support services themselves is focused primarily on technology and production aspects of agriculture. Many advisors in the CEE countries specialize in certain areas of technical assistance.

In the case of Bulgaria, we see how public services are organized to support agriculture. In the first place there is the National Centre for Agricultural Sciences, National Service then selection and reproduction, and the Ministry of Agriculture and Forestry. And the National Agricultural Advisory Service began operations in 1995. This service provides free information, advice, consultation and training for farmers in 28 regional offices. (Millns, 2006, p. 30).

A novelty in some countries in transition represents the emergence of private advisory services for agriculture. The first country that started with the development of private services, Estonia. In this country the government from its funds enable the financing of knowledge transfer by agents of various private services to various associations of farmers. Advisory work is related to the transfer of technology. Farmers use this opportunity to enter into contracts with various private advisory services. State advisory services continued to remain operational. Their primary task is to provide a variety of benefits advice to poorer farmers. (Norton, 2004, p. 409). State-owned all the other laboratories of the Ministry of Agriculture, the State Veterinary Service and the Agricultural Faculty. (Csaki, Lekman, 2000, p. 240).

Private agricultural departments were formed in Hungary, Slovakia and the Czech Republic.

The experiences of different countries in the CEE on the question of public services for agriculture are quite different.. All of these countries the vast majority of cases, have public services for agriculture under state ownership. These services are oriented on providing basic advice by agents or authorized representatives of these services, and related agrotechnical issues. Poor organization of these services at the state level affects their efficiency and ability to provide adequate advice to farmers. Limitations in the civil service in state ownership can best be seen in the case of Polish. In this country there is a large public service system that provides limited support to farmers due to poor pay, because of inadequate transfer fees and the high administrative burden. (Sutton, 2008, p. 21).

## **The development of public services for agriculture in Serbia**

According to the Law on Agriculture and Rural Development, which was adopted 29.05.2009. year and entered into force on 03.06.2009. was governed by the existence of public services for agriculture. In the part which refers to the shape of structural incentives to be more precise, under Article 12 of this Law points out that: “Mere institutional support to the type of incentives that encourage research programs in agriculture, programs of advisory services, promotion of agriculture, Agricultural Market Information System of the Republic of Serbia, and other programs. “(Official Gazette of RS, no. 41/09, p. 73). In early May 2010, adopted the Law on the provision of advisory and professional activities in the field of agriculture. This law regulates the conditions and methods for advisory and professional activities in the field of agriculture, the Register of agricultural advisors, training of agricultural advisors and agricultural producers, development planning advisory services in agriculture, as well as other issues of importance for advisory work in agriculture. (Official Gazette of RS, no. 30/10).

## **Agricultural - Advisory Service**

The development of agriculture in modern conditions requires a well organized service dealing with the study and improvement of production technology, transfer of scientific achievements in practice and scientific institutions dealing with education of agricultural professionals.

The main role of agricultural extension, as well as measures of agricultural policy, is focused on providing advice and information to farmers in the acceptance and application of new knowledge. The work of these services can be performed directly by certain specialized institutions, but also through various media resources such as brochures, newspapers, radio, television, internet. So, the agricultural department has an obligation to connecting farmers with educational and scientific institutions. (Vujicic, Ristić, 2006, p. 69).

Agricultural extension in Serbia is realized on two levels. These are the Agricultural Advisory Service of AP Vojvodina and Agricultural Extension Service Central Serbia. The adoption of the Ordinance on the organization and operation of the Provincial Agricultural Extension Service in 2006, virtually created the conditions for the start of the Provincial Agricultural Services. The main objective of the adoption of this Regulation was to increase the presence of advisors in the field of agricultural producers. Of a total of thirty-five agricultural extension services in the Republic of Serbia, in the area of AP Vojvodina is actively thirteen. Holders of advisory activities in agriculture Serbia are agricultural extension services, institutes, veterinary, private companies and consultants, as well as local NGOs. Two institutions that largely coordinated development of agricultural advisory services, including the creation of legislation and funding, the Ministry of Agriculture, Forestry and Water Management of the Republic of Serbia and the Provincial Secretariat for Agriculture, Forestry and Water Management of AP Vojvodina. (Markovic, & Thomas, 2010, p. 62).

*Table 1. Agricultural Advisory Service in the Republic of Serbia*

Number	City	Nam
1.	Niš	Poljoprivredna savetodavna i stručna služba /Agricultural advisory and professional service Niš, d.o.o.
2.	Valjevo	Poljoprivredna savetodavna i stručna služba / Agricultural advisory and professional service Valjevo, d.o.o.
3.	Vranje	Poljoprivredna savetodavna i stručna služba/ Agricultural advisory and professional service Vranje, d.o.o.
4.	Kraljevo	Poljoprivredna savetodavna i stručna služba/ Agricultural advisory and professional service Kraljevo, d.o.o.
5.	Jagodina	Poljoprivredna savetodavna i stručna služba/ Agricultural advisory and professional service Jagodine, d.o.o.
6.	Mladenovac	Poljoprivredna savetodavna i stručna služba/ Agricultural advisory and professional service Mladenovac, d.o.o.
7.	Kosovska Mitrovica	Poljoprivredna stručana služba/ Agricultural Extension Service Kosovska Mitrovica d.o.o.
8.	Kragujevac	Poljoprivredna savetodavna i stručna služba Agricultural advisory and professional service Kragujevac, d.o.o.
9.	Kruševac	Poljoprivredna savetodavna i stručna služba/ Agricultural advisory and professional service Kruševac, d.o.o.
10.	Leskovac	Poljoprivredna savetodavna i stručna služba Agricultural advisory and professional service Leskovac, d.o.o.
11.	Užice	Poljoprivredna savetodavna i stručna služba/ Agricultural advisory and professional service Užice, d.o.o.

12.	Negotin	Poljoprivredna savetodavna i stručna služba/ Agricultural advisory and professional service Negotin, d.o.o.
13.	Novi Pazar	Poljoprivredna savetodavna i stručna služba/ Agricultural advisory and professional service Novi Pazar, d.o.o.
14.	Čačak	Poljoprivredna savetodavna i stručna služba / Agricultural advisory and professional service Čačak, d.o.o.
15.	Pirot	Poljoprivredna savetodavna i stručna služba / Agricultural advisory and professional service Pirot, d.o.o.
16.	Smederevo	Poljoprivredna savetodavna i stručna služba/ Agricultural advisory and professional service Smederevo, d.o.o.
17.	Požarevac	Poljoprivredna savetodavna i stručna služba/ Agricultural advisory and professional service Požarevac, d.o.o.
18.	Šabac	Poljoprivredna savetodavna i stručna služba Šabac, d.o.o.
19.	Zaječar	Poljoprivredna stručana služba/ Agricultural Extension Service Zaječar - Agroznanje d.o.o. Zaječar
20.	Prokuplje	Poljoprivredna savetodavna i stručna služba/ Agricultural advisory and professional service Šabac, d.o.o.
21.	Loznica	Poljoprivredna stručana služba/ Agricultural Extension Service Poljosavet d.o.o. Loznica
22.	Padinska Skela	SSPP Padinska Skela
24.	Subotica	Poljoprivredna stručana služba / Agricultural Extension Service Subotica
25.	Bačka Topola	Poljoprivredna savetodavna i stručna služba/ Agricultural advisory and professional service Bačka Topola, d.o.o.
26.	Vršac	Enološka stanica /Enological stations Vršac
27.	Kikinda	Poljoprivredna stručna služba/ Agricultural Extension Service Kikinda, d.o.o.
28.	Novi Sad	Poljoprivredna stručana služba/ Agricultural Extension Service Novi Sad
29.	Pančevo	
30.	Ruma	Poljoprivredna stručana služba/ Agricultural Extension Service Ruma
31.	Senta	Poljoprivredna stručana služba/ Agricultural Extension Service Senta
32.	Sremska Mitrovica	Poljoprivredna stručana služba/ Agricultural Extension Service Sremska Mitrovica
33.	Sombor	Poljoprivredna stručana služba/ Agricultural Extension Service Sombor
34.	Vrbas	Poljoprivredna stručana služba/ Agricultural Extension Service Vrbas
35.	Zrenjanin	Poljoprivredna stručana služba/ Agricultural Extension Service Zrenjanin

Source: <http://psss.rs/>

According to a new law on the provision of advisory and professional activities in the field of agriculture under Article 5 is determined to advisory work in agriculture can be performed by companies founded by the Republic of Serbia, which are registered in the Register of Business Entities to perform other services in agriculture, technical tests and

analysis and consulting and management and which have employed agricultural adviser. Advisory jobs in agriculture can be practiced by other legal entities and entrepreneurs if they are in the register of business entities registered for performing other services in agriculture, technical testing and analysis and consulting and management if their employee agricultural adviser. (Official Gazette of RS, no. 30/10, p. 136-137).

Giving opportunities to entrepreneurs and other legal entities and private companies to provide advisory services is new to the organization of extension and advisory services working in the field of agriculture. This feature is already present in the countries that are in the European Union as we have already pointed out. Persons engaging extension aims to help the farmer to overcome negative practices. On the other hand it is understood that the farmer accepts their advice. Throughout this business clients have control over the work of his advisers. In the event that the work is not a high-quality advisors farmer may lose trust in the advisor and the more it does not engage.

### **Professional paper - forms, objectives, organization**

Under the new law on the provision of advisory and professional activities in the field of agriculture under Article 7 are precisely regulated professional activities in agriculture. That implies that legal persons and entrepreneurs engaged in advisory work in agriculture can perform professional tasks in agriculture in accordance with this Law and other regulations.

As professional jobs in agriculture to jobs that are determined as such by the law and other regulations in the field of farming, plant health, animal husbandry and other areas of agriculture. Professional work in agriculture of interest to the Republic of Serbia shall be done in accordance with the annual program adopted by the Government.

Funds for professional work in agriculture are provided by the law governing the annual budget of the Republic of Serbia. Professional work in agriculture from the autonomous province, in the autonomous province shall be conducted in accordance with the programs adopted by the autonomous region. Professional work in agriculture for the unit of local government shall be performed in accordance with the programs for the territory of the local unit makes local governments. (Official Gazette of RS, no. 30/10).

Advisory jobs in agriculture carried out in order to raise the general level of knowledge of farmers and their awareness, increasing the competitiveness and modernization of agricultural production, increase the profitability of production and product quality, the introduction of organic food production, encouraging interest association of farmers, preservation of natural resources, environmental protection and improving the living conditions and culture of life in the countryside, and therefore rural development.

Advisory jobs in agriculture according to the above mentioned Act are precisely defined and they include:

- providing technical assistance in the implementation of scientific achievements and new technologies;
- providing expert advice and services, transfer of practical knowledge and skills for technological improvement of production technology;

- familiarizing farmers with good agricultural practice;
- perform demonstration experiments in various fields of agriculture;
- Training of agricultural producers to manage farms and keeping accounting records of the holding;
- • assist in the affirmation of rural development;
- providing advice on plant protection on the basis of data forecasting and reporting services;
- stimulating interest association and entrepreneurship in agriculture;
- providing advice and making proposals for the expansion of economic activities as a supplementary activity on the farm;
- making recommendations in livestock;
- providing advice and recommendations on the rational use of land;
- providing advisory assistance in other areas for which farmers express interest.

In Serbia, the professional agricultural service organized at the national, provincial and regional levels. On the territory of central Serbia operates twenty-one agricultural expert service (<http://www.psss.rs/news.php>) on the territory of thirteen. (<http://www.polj.savetodavstvo.vojvodina.sr.gov.yu/index.php?module=subjects&func=listpages&subid=1>) The role of central government advisory service has and the Institute for Science Application in Agriculture.

The current situation in professional services shows that it is necessary to reform these services due to certain problems that are present in them. Let us mention just a few of the problems: regular contact with farmers is still weak, budget financing service is also not regular, and eventually material equipment in service is inadequate to actual needs. In addition, unfavorable age and qualification structure of the employees of this ministry. Also, insufficient activity of educational and research institutions as well as the cooperation itself service to them. The information system is still not sufficiently efficient and developed. Achieved is poor communication with suppliers of agriculture, processing industry, financial institutions, trade and agricultural policy subjects.

Be sure that the results achieved in the agricultural production of our country have been better with a better functioning of the relationship between science, agricultural extension services and agricultural producers, especially farmers. The aim of agricultural extension services should be to connect the agricultural farm with educational and scientific research institutions.

Transfer of agricultural innovation are engaged in agricultural station, agricultural institutes, research institutes, development services, research and development centers in agricultural combines. In Serbia there are 10 veterinary and specialized institutes, more than 350 veterinary clinic, about 290 veterinary stations and 5 centers for artificial insemination. (Đekić, 2010, p. 194-195).

According to all presented, should, priority is given to scientific research and education based on their agricultural producers, as well as the development of agricultural advisory services, which represents support in initiating and developing specific production.

In Serbia, unfortunately ever-present problems of funding, both for scientific research and agricultural production, while the education and association in the background. In the agribusiness sector extension is one of the important factors of

modernization business. In support of this statement must be given a confirmed fact that investment in the extension (and agricultural research) yields about 40% of the average wage rate, which is “much more than other investments in agricultural development.” (Van den Ban, Hawkins, 1996, p. 13). The modern agricultural means of modern technology. In this regard, in order to meet the standards of organic production, it is necessary that new consultants have highly specialized knowledge.

Ideal advisors (ie. SMS - Subject Matter Specialist) implies the knowledge of specific areas such as socio-economic consulting, environmental extension, as well as the introduction of new regulations and standards in the EU. Consequently, the assumption of a successful agricultural extension is continuous training of advisors and exchange business experience and innovation through associations. In this regard, the existence of strategic planning development and connectivity AKIS-a (Sistema knowledge and information in agriculture) and various training centers advisers. (Mihailovic, Simonovic, 2008, p. 262)

These can be special centers for this purpose, but the most common are the universities, research institutes, schools and various institutions, depending on the needs of advisors, provide additional training. (Janković, 2006, p. 584). In this way, consultants enrich their knowledge and enriching business experience.

In the end we want to stay that is closer to the needs of agriculture extension services necessary to decentralization and networking consulting work. Support for this process should be decentralization of the advisory bodies of individual ministries, which would create conditions for adequate answers to the needs of individual farms and agricultural enterprises, and the possibility of a partnership approach to solving business problems. Also for the effective allocation of resources needed is a regional exchange of consultants, including interconnection advisory work in Serbia. Agricultural enterprises and manufacturers are still not well informed about the role and importance of advisory services have. For example, more than 40% of rural households have never heard of a counseling service, 24% of households do not know how to obtain them, while only 8% of them regularly consults with this service. (Bogdanov, 2007, p. 143-144). These facts clearly indicate what should be the primary focus and advisory services and agricultural sectors, as well as the state, and to the improvement of education and awareness in this area because of it would benefit everyone. This means that the advisory organization received more business and thus more funds, and to intensify its development. Farmers and companies would, using the services of advisory organization, it accelerated its development. And finally, the state would, if nothing else, get richer sources of financing Budget.

## Conclusion

Public advisory services in agriculture, representing a rate of agrarian policy. Their importance is posebon oželeda in that they represent a kind of link between science and practice. For all these reasons, the work of these agencies must be taken more seriously than it is with us to this day the practice. The adoption of laws and documents is a positive development, but not sufficient progress in the development of this issue. Namely, that the quality of legislation and / or strategies came to the fore, it is necessary to provide conditions for their practical application.



Just a modern extension service is one of the key drivers of agricultural development and rural confirm the experience of most developed countries of the world, whose advisory services have a long tradition and an important place in the structure of the agricultural policy. We should not forget the fact that the rate of return on funds invested in agricultural extension between 40 and 50% and that the period of economic return of these funds is less than the production cycle. On the other hand, CEE countries in the vast majority of cases the public authorities for agriculture which are owned by the state. These services are oriented on providing basic advice by agents or authorized representatives of these services that are related to agrotechnical issues. Poor organization of these services at the state level affects their efficiency and ability to provide adequate advice to farmers.

From the world of states, we can conclude that the investment performance of the agricultural extension, from the national to the local level, should not be seen as a cost but as an investment in the future. The elements that are essential to laying the foundations of modern savatodavne services are: application of legislation, institution building, investment in the formation of high-quality advisory personnel. Only in this way organized advisory service would enable the agricultural population in our country to infomiše, utilize and improve their potential, knowledge and skills, and improve the quality of production to a higher level.

## References

- Bogdanov N. (2007): „Mala ruralna domaćinstva u Srbiji i ruralna nepoljovredna ekonomija“, UNDP, Beograd, 143-144.
- Vujičić M., Ristić L. (2006): „Ekonomika poljoprivrede“, Kragujevac, 69.
- Van den Ban, A.W., Hawkins, H., S. (1996): “Agricultural Extension“, Blackwell Science, UK, 13.
- Đekić S. (2010): „Agrarni menadžment“, Ekonomski fakultet, Nis, 194-195.
- Janković D., (2006): Organizacioni modeli poljoprivrednog savetodavstva u Nemačkoj, Ekonomika poljoprivrede, Tematski broj, Beograd, 584.
- Markovic, K., & Tomas, M. Zakonodavno-pravni okvir kao jedan od uslova za razvoj poljoprivrednog savetodavstva. *Agroekonomika Agrieconomica*, 62.
- Михаилович Б., Симонович З., (2008): „Некоторые виды сельскохозяйственных кооперативов Франции“ Вестник Елецкого Государственного Университета, выпуск 19, Елец, Россия, 262.
- Mihailović, B., Savić, M., & Katić, B. (2007). Konsalting, održivi razvoj i organska proizvodnja-perspektiva Srbije. *Industrija*, 35(4), 81-94.
- Millns J., (2006): „Promoting Farmer entrepreneurship through producer organization in Central and Eastern Europe“, Food and Agricultural Organization of the United Nations, Rome, 30.
- Novkovic, N., Vasiljevic, Z., & Matkovic, M. (2013). E-Concept of an agricultural extension service. *Poljoprivreda i Sumarstvo*, 59(2), 187.

- Norton R.D., (2004): „Agricultural Development Policy: concepts and experiences“, Food and Agricultural Organization of the United Nations, John Wiley&Sons Ltd, West Sussex, 409.
- Simonovic Z. (2014): Upravljanje agrarom Srbije u tranziciji, IEP, Beograd,
- Sutton W. R. (2008): „Integrating Environment into Agriculture and Forestry: Progress and Prospects in Eastern Europe and Central Asia“, The World Bank, Washington D.C., 21.
- Csaki C., Lekman Z.(2000): „Structural Change in the Farming Sectors in Central and Eastern Europe“, World Bank Technical Paper no 465, Washington, 239-240.
- Службени гласник РС, бр. 41/09, 73.
- Службени гласник РС, бр. 30/10 .
- <http://www.psss.rs/news.php> (05.02.2016.)
- <http://www.polj.savetodavstvo.vojvodina.sr.gov.yu/index.php?module=subjects&func=listpages&subid=1> (05.02.2016)

**Jasmina Bogičević<sup>1</sup>**  
*University of Kragujevac, Faculty of Economics*  
**Violeta Domanović<sup>2</sup>**  
*University of Kragujevac, Faculty of Economics*

SCIENTIFIC REVIEW ARTICLE  
doi:10.5937/ekonomika1601069B  
Received: January 12, 2015  
Accepted: February 23, 2016

## CONTROL IN FUNCTION OF FOREIGN SUBSIDIARY PERFORMANCE EVALUATION

### Abstract

*The dominant role of the multinational companies (MNCs) in international trade in the late 20<sup>th</sup> and early 21<sup>st</sup> century indicates the importance of their management control systems consideration. Management control instruments enable monitoring efficiency not only of MNC as a whole, but also of its subsidiaries. The accounting plays primary roles in the process of management control such as budgeting and creating performance evaluation system. The budget allows determination of foreign subsidiaries and their managers responsible for the identified deviations. The budgeting at MNCs is based on the translation of accounting data denominated in foreign currencies into the parent company currency. In that context, important issue that MNCs address is the choice of appropriate currency. MNCs need to answer the following question: whether budgeting and evaluation of foreign subsidiary's actual result should be done in parent currency or local one.*

**Key words:** control, foreign currency translation, exchange rate, budget, performance.

**JEL classification:** M41, M21.

## КОНТРОЛА У ФУНКЦИЈИ ОЦЕНЕ ЕФИКАСНОСТИ ИНОСТРАНИХ ФИЛИЈАЛА<sup>3</sup>

### Апстракт

*Доминантна улога мултинационалних компанија (МНК) у међународној трговини крајем 20. и почетком 21. века указује на значај разматрања њихових система управљања контролом. Инструментариј контроле управљања омогућава мониторинг не само ефикасности МНК као целине, већ и њених филијала. Примарне улоге рачуноводства у процесу контроле управљања су припрема буџета и креирање система оцене перформанси. Израда буџета у МНК се заснива на превођењу рачуноводствених података исказаних у страниј валути у валуту матичне компаније. У том контексту,*

<sup>1</sup> jasminab@kg.ac.rs

<sup>2</sup> violeta.domanovic@gmail.com

<sup>3</sup> The paper is the result of the research done as part of the project no. 41010 "Management and Marketing Research as a Support to Interdisciplinary Projects Realization", financed by the Ministry of Education, Science and Technological Development of the Republic of Serbia.

*избор одговарајуће валуте представља значајно питање којим се баве МНК. МНК треба да пружи одговор на следеће питање: да ли припрему буџета и оцену остварених резултата треба извршити у матичној или локалној валути.*

***Кључне речи:** страна филијала, контрола, превођење стране валуте, курс размене, буџет, перформансе.*

## Introduction

The use of management accounting and control systems could be analysed from the framework of performance measurement and performance management. Since the basic premise of the diagnostic control is that the process outputs are measurable, performance measurement might be classified in the category of diagnostic control process. Performance measurement systems are the collection of financial and nonfinancial performance indicators that managers use so they could evaluate their own performance or their units or subordinates. There is a question whether the performance measurement systems are diagnostic or interactive ones. Today, it is widely accepted understanding that performance measurement systems are either diagnostic or interactive. In other words, it is possible to apply the performance measurement systems as a support to control through beliefs systems and boundary systems along with diagnostic and interactive application. The performance measures are the efficient means for the communications about dimensions that are requested, as well as for underlining the acceptable behaviour. If the strategic change is introduced, the accounting control is acceptable in order to supply the requested changes in attitudes and behaviours.

The accounting plays primary roles in the process of management control such as preparing budget and creating performance evaluation system. Numbers in operating budgeting reflect short time frames of company's strategy and allow monitoring of strategy implementation. Budgeting is relevant and frequently applied managerial accounting instrument both at national and international level. This complex issue in national boundaries becomes much more complex in global business arena. Therefore, one of the most important aspects in the preparing budget at the level of MNC is translation of foreign subsidiaries' budgets. In other word, budgeting at MNCs is based on the translation of accounting data denominated in foreign currencies. In that context, important issue that MNCs address is the choice of appropriate currency. MNCs need to answer the following question: whether budgeting and evaluation of the actual result should be done in parent currency or in local currency.

Management control of MNC is primarily concerned with the differences between actual performances and their values in the budget. If the comparison of budget and actual profit is done in local currency, the identified quantitative deviation would result from variations in sales volume and/or price variations in local currency. If the actual profit of foreign subsidiary is compared with its budget value in parent currency, both indicators should be translated into the presentation currency of the parent company. In doing so the appropriate exchange rates are used. If, therefore, the exchange rate

at the beginning of year is used for translation of budget result and the exchange rate at the end of year is used to translate the actual result, the deviation from the budget value could be caused by variations in the sales volume, variations in local currency prices, as well as changes in exchange rates during the period. In other words, if different exchange rates are used for translation of foreign subsidiary's budget and actual results, deviation of actual profit from budget one may be caused by exchange rate fluctuations. The budget allows determination of foreign subsidiaries and their managers responsible for the identified deviations.

Therefore, the subject of this research paper will be focused on the role of budgeting in foreign subsidiary performance evaluation. More specifically, the study focuses on the concept and types of control and the role of foreign currency translation in operating budgeting at the level of MNC. The main goal of the paper is to point out the key roles of budgeting in the process of performance evaluation. The significant research objective is to show that the deviation due to changes in exchange rates, identified by comparing the budget and actual result, could be avoided by using the same exchange rate to translate both the budget and actual results. Thus, the paper is structured in two parts. The first part deals with concept and types of control, and the second one is devoted to the significance of foreign currency translation in the budgeting process.

In the paper, it is applied the qualitative methodology, established on studying and descriptive analysis of the research problem in the area of accounting and business economics. By the methods of synthesis and deduction, there will be synthesizing of the different attitudes, on the basis of which there would be general conclusions derived related to the role of control in foreign subsidiary performance evaluation.

## The concept and types of control

Control is the process of making sure that the business activities are to fit in the plan and that defined aims and objectives are to be realized. Peter Drucker (1964) made a distinction between the words ‘controls’ and ‘control’. The word ‘controls’ means measurement and information, while the word ‘control’ means the direction. ‘Controls’ encompass all methods and procedures which direct the employees toward the organizational aims achievement (for example, the job description, operating instructions, procedures and budgets for the employees training). Such a control is called administrative and it could be said formal one. There are also and social and informal control, which the individuals mutual perform – for example, procedures that small groups use in order to regulate the performance of their members and in order to redirect the individuals’ behaviour if there are deviations of their performance from group standards. In addition to administrative (formal) and social (informal) control, there are also other types of control: *ex ante*, cybernetic, binary, *ex post*, strategic, management control and operating control, control based on accounting reports, control by performance measures, budgetary control (Krstić, 2012; Domanović, 2014). Krstić (2012) accentuate different approaches and these are: market approach to control, which accentuates external, market mechanisms – competition, in order to define measurable standard for performance control, that is for quantitative and qualitative comparison and deviations identification; bureaucratic control, which is directed toward strict hierarchy,

rules, prescriptions, procedures, policies, standardization of activities, good established budgets in order to ensure that the employees behave in an adequate manner in order to fulfil standards/defined target levels of financial and nonfinancial performances; and clan control, which is regulated on basis of common formed and established values, norms, beliefs and other key aspects of organizational culture.

Otley (1999) distinguished “management control” from “strategic planning” and “operational control”. Anthony et al. (1989) introduced the management control system. The processes of the management control are: strategic planning and control, management control and task control. Strategic planning and control deal with long term aims and objectives in terms of their defining and finding the way of their realization. These are directed toward external issues. The task control is more routine process, which make possible that everyday activities would be performed effectively and efficiently (Anthony et al., 1989, 11). Management control connects these two elements. This is the process, which ensures that the strategy is expressed in the tasks that are performed. Management control process is the process in which the managers at all levels supervise the employees in order to implement the defined strategy. This is also the process of detecting and correcting the unintentionally mistakes of the performances and intentionally irregularities. Hence, the control model is the cybernetic one although there is very little cybernetics included.

Simons (2000) defined the management control systems as formal, information based routines and procedures that managers apply in order to maintain or change the organizational activities pattern. Despite its confidentiality and widespread acceptance, Simon’s model of management control has numerous serious limitations (Berry et al., 2005). In its essence, Anthony’s model stresses the financial aims and, through the budgetary control, has been usually concentrated on forthcoming 12 months. Thus, this model pays a little attention to long term aims and objectives. Since this model ignores the issues like business environment and positioning the company in relation to other entities, it did not succeed to adjust the ideas that are of fundamental significance for the concepts of the strategy and control.

Traditionally, the strategic control supplies that employees’ behaviour is consistent with the defined strategy (Merchant, 1985). This could be considered as the control of the strategy implementation. Besides, the strategic control implies and systematic check whether the present strategy is relevant in terms of the changeable circumstances. The role of the strategic control system is to enable the top management to reply on unpredictable external and internal challenges by strategy redefining. This could be considered as the control of relevance. The strategies that managers define in advance deliberately as well as unintentionally, incremental strategies should be the subject of the control.

There are differences between the strategic control and budgetary control (Domanović, 2010; Domanović, 2014). Strategic control demands more data from different sources, especially external ones and might deal with the competitive benchmarks for comparison and nonfinancial measures, as well as with long term outcomes. Strategic control could be less precise and formal then the budgetary control and deals more with the accuracy of premises on the basis of which the management control is based than with the quantitative deviations from the standards. Operating control implies the employees’ performance evaluation at the operating level by the middle managers.

Simon’s (2000) model of strategic control is based on four control levers: beliefs systems, boundary systems, diagnostic control systems and interactive control systems.

The belief systems are used in order to increase the core values connected with the business strategy and inspire the research for new opportunities in accordance with these values. The boundary systems reduce the risks of setting the limits to the strategic undesirable behaviours. Through the diagnostic control system, the critical success factors are communicated and supervised. Finally, the interactive control systems are used in order to discuss about strategic uncertainty and get new strategic replies on changeable environment. While the beliefs systems and interactive control are used in order to encourage innovative behaviour, the boundary systems and diagnostic control are used in order to determine that the employees behave as it is defined by established rules and plans.

Tessier & Otley (2012) examined Simon's Levers of Control (LOC) framework taking a holistic approach which consists of analyzing the internal consistency of the framework's components and also comparing them with other similar concepts in the literature. They introduced two groups of actors, managers (intention) and employees (perception) and focused mainly on the former. Managerial intentions are comprised of three levels of choice: (1) types of control (social and technical), (2) objectives of controls (performance or compliance) which are regrouped into four control systems operating at two organizational levels (operational and strategic performance control systems and business conduct and strategic boundaries) and (3) other choices regarding use of controls (interactive/diagnostic), role of controls (enabling/constraining) and consequences linked to controls (rewards/punishments).

Otley (1999) points out that attempting to design control systems without having a detailed knowledge of how the business works is likely to prove a recipe for disaster. Design of the management control system with the aim of the corporate efficiency evaluation includes a clear identification of *whom*, *what* and *when*. The reply on the question *who* indicates who is interested in the process of corporate efficiency evaluation. There are four recipients of the performance reports: (1) owners and managers, (2) creditors, (3) local government, and (4) employees. Everyone has a different understanding of desired performances (Domanović, 2014). The second aspect of the management control is *what* the subject of the evaluation is. It is usual to evaluate an individual manager, so the effectiveness and efficiency of his performances could be evaluated. Alternatively, the subject of the evaluation might be the strategic business unit, which is under control of the manager in terms whether it is necessary or not to expand or divest the strategic business unit. The subject of the evaluation might also be the team of the managers. The managers' performances might be compared with the performances of other managers or with own performances in previous years. The third aspect of the management control is *when* the performance evaluation should be performed. Firstly, the evaluation might be performed on basis of whether the resources that managers use or on basis of their results. The first approach use master budget and the second one use the flexible budget. The first approach is *ex ante* and other *ex post*.

The use of management accounting and control systems could be analysed from the framework of performance measurement and performance management. Since the basic premise of the diagnostic control is that the process outputs are measurable, performance measurement might be classified in the category of diagnostic control process. Performance measurement systems are the collection of financial and nonfinancial performance indicators that managers use so they could evaluate their own



performance or their units or subordinates. Jordan & Messner (2012) examined to which extent managers care about the design characteristics of performance indicators and other control systems with the help of the framework of enabling and coercive control. They discussed about enabling and coercive control. Management control will be regarded as coercive (rather than enabling) at least at some point in time. The introduction of a new control system can easily create feelings of coercion among middle managers and employees, but it does not mean that it has to remain being seen as coercive.

There is a question whether the performance measurement systems are diagnostic or interactive ones. Today, it is widely accepted understanding that performance measurement systems are either diagnostic or interactive. In other words, it is possible to apply the performance measurement systems as a support to control through beliefs systems and boundary systems along with diagnostic and interactive application. The performance measures are the efficient means for the communications about dimensions that are requested, as well as for underlining the acceptable behaviour. If the strategic change is introduced, the accounting control is acceptable in order to supply the requested changes in attitudes and behaviours.

The concept of control is a very fascinating topic since it could be viewed from economic, social, behavioural, cross-national and cultural aspects. It is interesting to consider control in multinational companies. Bedford & Malmi (2015) examined how control mechanisms combine depending on the contexts in which they operate. They examined how accounting combined with a wide variety of control arrangements and contexts and found that in contexts characterized by uncertainty, accounting is activated in an interactive fashion and combines with organic and flexible-bureaucratic configurations. They also stress that the design and use of accounting mechanisms depend on knowledge of contextual conditions as well as on the wider control structure in which those mechanisms reside.

## **The role of foreign currency translation in budgeting**

The contribution of accountants in the management control process is realized in two ways. First of all, accountants prepare budget as a tool which reflects short term horizons of company's strategy and makes possible monitoring of implemented strategy. They also participate in creating the performance evaluation system.

Numerous studies show that budgeting, as relevant and frequently applied managerial accounting instrument in international business, is based on the translation of accounting data denominated in foreign currencies. In an accounting context, foreign currency translation is the restatement of accounting data expressed in one currency into another (Bogicevic, 2013, 138). Appropriate formulated standards for assessing performance can stimulate managers to take actions that will contribute to increase efficiency and achieve company's objectives. Standards used in the control process of company performance as a whole, its segments or areas of responsibility, as well as their managers are adopted by opting of objectives in the budget. As budget allows determination of responsibility for company's units and managers, it represents a standfast for the performance assessment.

As a rule MNCs simultaneously use multiple financial measures, non-financial measures or some creative mixture of the two to assess performance. Relevant financial

measures of performance involve: sales growth, net profit, cost reduction, return on sales, and return on investment (Doupnik & Perera, 2007). Non-financial measures of foreign subsidiary that are not based on financial statement's algebra include: market share increasing, quality control, productivity improvement, relation with the government of the host country and parent company, employee development and safety (Choi & Czechowich, 1983, 17). Several research studies conducted in the USA and United Kingdom over the period 1980 to 1990 highlighted the importance of financial measures in foreign subsidiary performance evaluation. Surveyed managers of MNCs pointed out that the most commonly used financial measures for subsidiary performance evaluation were profit, return on investment and budget compared to actual profit with a slightly modifications in rank order. In this regard Doupnik & Perera (2007) pointed out that profit is the top financial measure used by MNCs with headquarters in the USA. By contrast, the results of a 1988 survey of UK MNCs indicated that top financial measure is not absolute amounts of profit, but budget compared to actual profit (Doupnik & Perera, 2007). The significance of profit in accounting literature as performance criteria arises from the fact that it is treated not only as a single measure, but as a basis for identifying other performance measures (Bogicevic et. al, 2013). Management control of a company is primarily concerned with the differences between actual performances and their values in the budget. In that way budget allows determination of subsidiaries and their managers responsible for the identified deviations.

The key issue in the assessing foreign subsidiary performance relates to the choice of currency. Analogously previously highlighted the importance of currency choice in assessing foreign subsidiary performance, MNCs must make a currency choice for the purpose of preparing the budget. In other words, MNCs must solve the next dilemma: whether budgeting and evaluation of the actual (realized) result should be done in parent currency or in local one. If the comparison of budget and actual profit is done in local currency, the identified quantitative deviation would result from variations in sales volume and/or price variations in local currency. If the actual profit of foreign subsidiary is compared with its budget value in parent currency, both indicators should be denominated into the presentation currency of the parent company. The appropriate exchange rates are used for the purpose of that translation. Different exchange rates could be used in that process, such as the exchange rate at the beginning of the year, the exchange rate at the end of the year, and/or average exchange rate. If, therefore, the exchange rate at the beginning of the year is used for translation of budget result and the exchange rate at the end of the year is used to translate the actual result, the deviation from the budget value could be caused by variations in the sales volume, variations in local currency prices, as well as changes in exchange rates during the period. In other words, if different exchange rates are used for translation of budget and actual results, deviation of actual profit from budget one may be caused by exchange rate fluctuations. These relations can be summarized in Table 1.

**Table 1.** Translation of profit in local currency into profit in parent currency

Budget profit in local currency	x	Beginning exchange rate	= Budget profit in parent currency
<i>versus</i>			
Actual profit in local currency	x	Ending exchange rate	= Actual profit in parent currency
Variance = f (sales volume variance and local currency price variances) Variance = f (sales volume variance, local currency prices and exchange rate variance)			

Source: Adapted from Douplik, T. & Perera, H., (2007). *International Accounting, International Edition, New York, McGraw-Hill.*

It is obvious that currency volatility poses a great challenge to foreign subsidiary performance assessing and budgeting. In that case the question arises as to whether the manager of foreign subsidiary should be considered accountable or not for exposure to currency risk. In a situation when a comparison of budget and actual aggregates is done in parent currency, the question arises as to whether deviation from plan due to changes in exchange rates should be included in performance evaluation of foreign subsidiary and its managers. The answer to the above question should be linked to the responsibility of local managers to currency hedging. If foreign managers have control over the currency hedging, they would be considered responsible for part of the deviations arising due to changes in currency volatility. In that case, it is recommended to translate both budget and actual result in parent currency, and the responsibility for deviations due to changes in exchange rates should be located to foreign subsidiary manager(s). Conversely, if foreign subsidiary managers do not have control over exposure to foreign exchange risk, it is recommended to use result denominated in local currency for assessing foreign subsidiary performance.

As MNCs usually centralize the activities of currency risk management, individual foreign subsidiary is not responsible for currency hedging. Although foreign subsidiaries as a rule don't manage their currency risk exposure, MNC headquarters is interested in their financial position and profitability. However, the headquarters is interested in assessing the performance of its subsidiaries in various parts of the world on the uniform basis that is the currency of the parent company. Although foreign exchange risk could not be attributed to an individual subsidiary, both types of its result, budget and actual, denominated in local currency should be translated in parent currency. In doing so, preparing the budget and translation process should be based on a single exchange rate, which can be (Douplik & Perera, 2007):

1. The real exchange rate in the period of budget preparation;
2. The projected future exchange rate during the preparation of the budget;
3. The real exchange rate at the end of the budget period.

On the basis of these exchange rates it is possible to make a nine combination for translation of budget and actual results of which only five could be used in performance assessment. Combinations of exchange rates are as follows (Lessard & Lorange, 1977, 628):

**Exhibit 1. Combinations for translation of budget and actual results**

Rate used for determining budget	Rate used to track actual performance to budget		
	Actual at time of budget	Projected at time of budget	Actual at end of period
Actual at time of budget	1	/	4
Projected at time of budget	/	3	5
Actual at end of period	/	/	2

*Source: Lessard, D. & Lorange, P. (1977) Currency Changes and Management Control: Resolving the Centralization/Decentralization Dilemma, Accounting Review, 628.*

The meaningful, numbered combinations of exchange rates vary according to the exchange rate effects on performance evaluation and responsibility of foreign subsidiary managers for currency risk. Blake & Hossain (1996, 279) pointed out that different exchange rate combinations to set budgets and track performance give rise to differing managerial responses. These five combinations that differ in scope of management responsibility for the exchange rate component of the budget deviation can be explained as follows (Doupnik & Perera, 2007):

1. The first combination means the translation of budget and actual results at the effective spot exchange rate in the period of budget preparation. In that case a total deviation from the planned results is a function of sales volume variance and/or changes in local currency prices in local. Although exchange rate changes, management doesn't bear responsibility for currency volatility. However, there are minor incentives to take account of projected exchange rate changes in making operation decisions. This alternative does not differ from the assessment of results in local currency.
2. The second combination relates to translation of budget and actual results at the effective spot exchange rate at the end of the budget period - this combination is interpreted in the same manner as explained previously one.
3. The third combination is based on translation of budget and actual results at a projected exchange rate at the time the budget is prepared. This alternative, as the previous two, implies that a total deviation from the planned results is a function of sales volume variations and price changes in local currency. Although managers are not responsible for the exchange rate component of budget variance, this alternative motivates them to consider anticipated changes in exchange rates and take them into consideration in the drafting of their operational plans; that is why this combination is the most propagated in accounting literature.
4. The fourth combination means that budget and actual result are translated using different exchange rates. In particular, budget is translated at the beginning of period exchange rate and actual result at the end of period exchange rate. Hence, the deviation from budget can be decomposed into sales volume variance,

local currency prices changes, and exchange rate fluctuations. Unlike previous combinations, managers can be held accountable for the effects of currency volatility. If there is a natural hedging at the level of MNC as a whole (one foreign subsidiary has the receivables and the other one has liability, both will be due simultaneously, denominated in the same foreign currency, and at the same amount), local managers will be encouraged to protect themselves from various types of foreign exchange risks (transaction, translation and economic exposure).

5. Under this combination the budget and actual result are translated using the projected ending exchange rate and the actual ending rate, respectively. The total deviation from budget result is a function of sales volume, price variations in local currency and the unanticipated changes in exchange rate. It is noteworthy that managers of subsidiary include projected exchange rate changes in operating plan and are held responsible for their attitudes to unexpected exchange rate changes.

In order to empirically illustrate previously explained combinations of exchange rates for remeasurement the budget and actual results, we slightly adapted Douppnik & Perera (2007) simplified example and started from MNC headquartered in Italy with its subsidiary abroad (outside the Eurozone). The amounts of relevant aggregates denominated in foreign currency (FC) are as follows:

Budget Sales ----- 200 FC  
Budget Expenses ----- 180 FC  
 Budget result /profit ----- 20 FC

Fluctuations in exchange rates of parent currency (euro) against foreign currency during the budget period can be summarized as follows:

- actual exchange rate at time of budget preparation-----1, 00 FC=2 PC
- projected ending exchange rate----- 1.00 FC=1.80 PC
- actual exchange rate at end of period -----1, 00 FC=1.40 PC

Assuming that the actual result of a foreign subsidiary in foreign currency is the same as budgeted, the effects of translation of budget and actual results of foreign subsidiaries from local currency (FC) into parent currency (PC) can be presented in numerical example. Since the budget and actual amounts can be translated using the same or different exchange rates, combinations with and without exchange rate variance are separately presented in Exhibit 2 and Exhibit 3, respectively.

**Exhibit 2.** Translation of budget and actual results of foreign subsidiaries into parent currency without exchange rate variance

	Combinations without exchange rates variance					
	1		2		3	
	Budget	Actual	Budget	Actual	Budget	Actual
Exchange rates	2,0 PC	2,0 PC	1,4 PC	1,4 PC	1,8 PC	1,8 PC
Sales	400	400	280	280	360	360
Expenses	360	360	252	252	324	324
Result/Profit	40	40	28	28	36	36
Deviation	0		0		0	

Source: Adapted from Douppnik, T. & Perera, H., (2007). *International Accounting, International Edition*, New York, McGraw-Hill.

As shown in Exhibit 2 these three combinations are based on using the same exchange rate for translation of the budget and actual results. In these combinations there is no exchange rate deviation. In other words budget deviation cannot be a function of exchange rate changes. Hence, managers of foreign subsidiary are not held accountable for exchange rate changes. Exchange rates have no effect on assessing foreign subsidiary performance. Possible deviations from the budget (if foreign subsidiary did not meet its sales volume and expense target in terms of foreign currency) occur due to changes in sales volume, sales price, purchase price and other factors that determine the level of expenses.

Douplik & Perera (2007) cited the results of only one conducted study (The 1989 Business International Study „Evaluating the performance“) according to which only 14 percent of U.S. companies indicated using the same exchange rate to translate both the budget and actual results. The majority of MNCs included in this study pointed to the use of different exchange rates to translate the budget and actual results. The Exhibit 3 shows the combinations in which the different exchange rate are used for translating the budget and actual figures

**Exhibit 3.** Translation of budget and actual results of foreign subsidiaries into parent currency with exchange rate variance

	Combinations with exchange rates variance			
	4		5	
	Budget	Actual	Budget	Actual
Exchange rates	2,0 PC	1,4 PC	1,8 PC	1,4 PC
Sales	400	280	360	2 80
Expenses	360	252	324	252
Result/Profit	40	28	36	28
Deviation	-12		-8	

Source: Adapted from Douplik, T. & Perera, H., (2007). *International Accounting, International Edition, New York, McGraw-Hill.*

Unlike combinations 1, 2 and 3, there is an exchange rate deviation in both combinations shown in Exhibit 3. Since the observed foreign subsidiary made entirely planned amount of sales and expenses, the deviation that occurs in the parent currency arises solely from exchange rate fluctuations. The exchange rate deviation of PC12 is obtained by multiplying the actual profit in foreign currency (FC20) and change in the ending compared to the beginning exchange rate (PC0, 60). The exchange rate deviation in combination 5 is PC8. It is equal to the actual amount of profit denominated in foreign currency (FC20) multiplied by the unexpected change in the exchange rate in the amount of PC0, 40 (PC1, 40-PC1, 80).

Finally, it can be concluded that the deviation due to changes in exchange rates, identified by comparing the budget and actual result, can be avoided by using the same exchange rate to translate both the budget and actual results. The consideration of the effects of changes in exchange rates on the budget process has confirmed the undeniable importance of foreign currency translation in the implementation of this relevant managerial accounting instrument.

There are a number of other macro-economic variables affecting the foreign subsidiary budgeting and the performance evaluation system (Domanović & Bogičević, 2009). The most important among them are different rates of inflation, and interest rates. Rivera & Milani (2011) accentuated that foreign exchange rates, interest rates, and inflation make so-called “Bermud Triangle “ which affects multinationals’ budgets. Therefore, our next research will be devoted to understanding the simultaneous impact of these external factors on multinationals’ budget.

## Conclusion

The concept of control is a very fascinating topic since it could be viewed from economic, social, behavioural, cross-national and cultural aspects. It is interesting to consider control in multinational companies. Bedford & Malmi (2015) examined how control mechanisms combine depending on the contexts in which they operate. They examined how accounting combined with a wide variety of control arrangements and contexts and found that in contexts characterized by uncertainty, accounting is activated in an interactive fashion and combines with organic and flexible-bureaucratic configurations. They also stress that the design and use of accounting mechanisms depend on knowledge of contextual conditions as well as on the wider control structure in which those mechanisms reside. Budgeting represents relevant and frequently applied managerial accounting mechanism in international business.

MNCs use multiple financial and non-financial measures in performance evaluation. The most commonly used financial measures for subsidiary performance evaluation are profit, return on investment and budget compared to actual profit. Management control of the company is primarily concerned with the differences between actual performances and their values in the budget. In that way budget allows delegation of subsidiaries and their managers responsible for the identified deviations. Therefore, it is not surprising that the budget is qualified as a point of reference for assessing the performance.

MNC headquarters is interested in assessing the performance of its subsidiaries in various parts of the world on the uniform basis that is the currency of the parent company. Therefore, both types of foreign subsidiary results, budget and actual, denominated in local currency should be translated into parent currency. For that purpose, it should be used a single exchange rate, such as: the real exchange rate in the period of budget preparation, the projected future exchange rate during the preparation of the budget, and the real exchange rate at the end of the budget period.

On the basis of these exchange rates it is possible to make a five meaningful combination for translation of the budget and actual results that could be used in the foreign subsidiary performance assessment. If combination is based on using the same exchange rate for translation of the budget and actual results, there is no exchange rate deviation. Hence, managers of foreign subsidiary are not held accountable for exchange rate changes. Exchange rates have no effect on assessing foreign subsidiary performance. If budget and actual results are translated using different exchange rates, the deviation from the budget can be decomposed into sales volume variance, local currency prices changes, and exchange rate fluctuations. Managers can be held responsible for the effects of currency volatility.



## References

- Anthony, R. N., Dearden, J., & Bedford, N., (1989). *Management Control Systems*, 6th edition. Irwin: Homewood, III.
- Bedford, S. D. (2015). Configurations of control: an exploratory analysis. *Management Accounting Research*, 27, 2-26.
- Berry, J., Broadbent, A., & Otley, D. (2005). Approaches to control in the organizational literature. In J. Berry, A.
- Blake, J. & Hossain, M., (1996). *Readings in International Accounting*, International Thompson Business Press, London.
- Bogićević, J., Domanović, V. & Manić, S., (2013). The impact of foreign currency translation on foreign subsidiary performance, (2013). 513-525, Conference proceedings 2nd International Scientific Conference Contemporary Issues in Economic, Business, and Management, 513-525.
- Bogićević, J., (2013). Accounting implications of foreign currency transactions translation and hedging, *Economic horizons*, Vol. 13, No 2, 137-15.
- Choi, F. & Czechovicz, I. (1983). Assessing Foreign Subsidiary Performance: A Multinational Comparison, *Management International Review*, 23, 12-20.
- Domanović, V. (2010). *Balanced Scorecard – mogućnosti i efekti primene*. Kragujevac: Ekonomski fakultet Kragujevac.
- Domanović, V. (2014). Uloga kontrole u procesu upravljanja efikasnošću preduzeća. *Revizor*, 17(65), 23-39.
- Domanović, V., & Bogićević, J. (2009). The Role of Accounting in Foreign Subsidiary Performance Evaluation, *Economic Themes*, 4, 113-126.
- Domanović, V., & Bogićević, J. (2010). Izbalansirana karta rezultata u funkciji merenja efikasnosti inostranih filijala. *Revizor*, 13(50), 23-35.
- Doupnik, T. & Perera, H., (2007). *International Accounting*, International Edition, New York, McGraw-Hill.
- Drucker, P. (1964). Control, controls and management. In C. P. Bonini, R. K. Jaedicke, R. K., & H. M. Wagner (Eds.), *Management Control: New Directions in Basic Research* (pp. 289-296). New York: John Wiley.
- Jordan, S., & Messner, M. (2012). Enabling control and the problem of incomplete performance indicators. *Accounting, Organizations and Society*, 37, 544-564.
- Krstić, B. (2012). Uloga strategijske kontrole u unapređenju poslovnih performansi. Niš: Ekonomski fakultet Niš.
- Lessard, D. & Lorange, P. (1977) Currency Changes and Management Control: Resolving the Centralization/Decentralization Dilemma, *Accounting Review*, 628-637.
- Merchant, K. A. (1985). *Control in Business Organizations*. Pitman.
- Otley, D. (1999). Performance management: a framework for management control systems research. *Management Accounting Research*, 10, 363-382.
- Rivera, J., & Milani, K., (2011). Budgeting for International Operations: Impact on and Integration with Strategic Planning, *Management Accounting Quarterly*, 12, (4), 1-13



Simons, R. (2000). *Performance Measurement and Control Systems for Implementing Strategy: Text and Cases*. NJ: Prentice Hall, Englewood Cliffs.

Tessier, S., & Otley, D. (2012). A conceptual development of Simon’s level of control framework. *Management Accounting Research*, 23, 171-185.

**Dragan Momirović<sup>1</sup>**  
*Faculty of Business Economics  
and Entrepreneurship, Belgrade*

**Marko Janković<sup>2</sup>**  
*Faculty of Business Economics  
and Entrepreneurship, Belgrade*

**Maja Randelović<sup>3</sup>**  
*JKP. „Niš parking” Niš*

SCIENTIFIC REVIEW ARTICLE

doi:10.5937/ekonomika1601083M

Received: January 16, 2016

Accepted: February 14, 2016

## INVENSMENT, WORLD ECONOMY AND POOR COUNTRIES

### Abstract

*World income is unevenly distributed among developed and rich countries on the one side and the poor and less developed countries on the other side. Poor countries in an attempt to develop its economy faces multiple barriers, the most important population growth, deficiency of resources and capital, shortage of investment in human capital traditions, investment in infrastructure, a low productivity in agriculture and conflicts. Poor countries are trying to develop their economies exporting primary goods order to achieve the benefit of export revenue for the procurement of capital goods. However, fluctuations in the real prices of primary export goods on the world market that can range up from to 40%, disabling poor countries to fully substitute the export of primary goods import capital equipment, especially when exports focused on one primary good. To avoid decreasing a trend in real prices and large price fluctuations around this trend, the poor countries, (primary producers) can only strengthen their economies and increase economic growth of the within global economy, pooling, in order to ensure the stabilization mechanism for certain primary good. Less developed countries consider that achieve greater developments before focusing on industry than on primary production. That is why those due to a shortage of capital, unfavorable resorting to borrowing. Many poor countries cannot require repayment of debt and the rescheduling. Therefore, it is economically justified to those its economic development based on unused comparative advantages, structural adjustment through increased investment, productivity and efficiency. Poor countries require help through international transfers, because they consider that many countries have enriched the colonial exploitation of their resources.*

**Key words:** poor countries, capital, economic growth, debt reprogramming, aid

**JEL Clasificitation:** F43,O12,E24

<sup>1</sup> draganmomirovic@gmail.com

<sup>2</sup> markojankovic@outlook.com

<sup>3</sup> maja.randjelovic3.5@gmail.com

## ИНВЕСТИЦИЈЕ, СВЕТСКА ПРИВРЕДА И СИРОМАШНЕ ЗЕМЉЕ

### Апстракт

*Светски доходак се неједнако распоређује између развијених и богатих земаља с једне стране и сиромашних и мање развијених земаља с друге стране. Сиромашне земље у покушају развоја своје привреде наилазе на многобројне препреке од којих су најважније раст становништва, дефицитарност ресурса, недостатак капитала, недостатак инвестирања у људски капитал, отиције у инфраструктуру, ниско продуктивна пољопривреда и конфликти. Сиромашне земље покушавају да развију своје економије извозом примарних добара како би оствариле корист од извозних прихода за набавку капиталних добара. Међутим, колебљивост реалних цена примарних извозних добара на светском тржишту, које се крећу и до 40%, онемогућавају сиромашне земље да у потпуности супституишу извоз примарних добара увозом капиталне опреме, посебно када је извоз усредсређен на једно примарно добро. Да би избегле опадајући тренд реалних цена и велике флукутације цена око тог тренда, сиромашне земље, (примарни произвођачи) једино могу да ојачају своје економије и повећају привредни раст, у оквиру светске привреде, удруживањем, ради обезбеђења стабилизационог механизма за одређено примарно добро. Мање развијене земље сматрају да ће већи развој остварити усредсређивањем пре на индустрију него на примарну производњу. Због тога оне, услед недостатка капитала, прибегавају неповољном задуживању. Многе сиромашне земље, не могу да отплате дуг и траже репрограмирање. Због тога, економски је оправдано да оне свој привредни развој базирају на неискоришћене компаративне предности, структуралним прилагођавањем кроз повећање инвестиција, продуктивности и ефикасности. Сиромашне земље захтевају помоћ путем међународних трансфера, јер сматрају да су се многе земље обогатиле колонијалном експлоатацијом њихових ресурса.*

**Кључне речи:** сиромашне земље, капитал, привредни развој, репрограмирање дуга, помоћ.

### Introduction

The current world economy, placed through world trade and finance, adjusted to the needs of rich countries and international financial and corporate capital. In the function of these interest groups is the leading international institutions World Bank, International Monetary Fund and the World Trade Organization. These institutions apply economic policy on the world, adopted by the Washington consensus. This policy is exclusively focused on achieving the highest possible efficiency. Social and environmental consequences of this policy are ignored. Issues of social justice, unemployment, poverty and threats to the environment are left to the states and their organizations.

The implementation of global policies on the principles of the Washington Consensus endangered the many countries and leads them in a difficult economic

and social situation. The focus on this policy to prevent inflation and savings has not brought the expected results. Advice poor and some transition countries have influenced the drastic decline in their production and living standards. This led to the lagging behind of economic development. Less developed countries is recommending the purpose of restrictive monetary and budgetary policies instead of anti-cyclical policy to encourage economic growth. Insisting on the budget balance and the decreases of public expenditure, even in a period of stagnation or recession, has had devastating consequences of economic development and social situation. The policy of high interest rates has exacerbated, already sensitive situation and affected the excessive growth of foreign debt of poor countries.

The consequences of such policies are even greater stratification of world society into rich and poor. World income is unevenly distributed among the developed and rich countries on the one side and the poor and less developed countries on the other. The new world economic consensus is deepened and widened the gap between rich and poor. From 1990 to 2011, the number of extremely poor has expanded on 217 million to 415 million people. Average life expectancy, the population on these environments, it is 56 years, illiteracy 41% and the daily wage is less than \$ 1.25.

The causes of poverty is the consequence of the rest of the inherited colonial of bondage, fragmentation of space on a small number of states, with arbitrary boundaries, which are chronic sources of tribal conflict, mostly around its rich natural resources, population growth, insufficient of natural resources, the deficiency of physical and human capital, low productivity, customs and lack of investment in infrastructure. Then, the exploitation of natural resources by foreign companies that did not interested to accumulate and finance economic development already achieved profits reinvested and guides to other parts of the world. Not unusual collaboration, foreign multinationals company, with corrupt political elites on common interests and against the interests of their own countries and population.

The poor and less developed countries are trying to develop their own patterns of economic growth, using natural comparative advantages and benefits from the world environment. Many of them have attempted, through international trade, exports to primary goods; provide enough financial resources for the procurement of capital goods. Fluctuations in prices of primary products, downward, to the world market are major obstacles to development through substitution of imports with exports. The problems of price fluctuations, less developed countries are trying to solve, by association, through building stabilization mechanism for certain primary good. But trying association for other primary goods failed. A number of manufacturers, their indebtedness, and circumvention of the agreement and the time constraints on the agreement are the major reasons for the failure.

Less developed countries are considered to be greater development to achieve the transition to industrialization using a comparative advantage than the substitution of imports by exports of primary goods and products. Countries that have implemented the advice of leading world institutions and strictly applied their rules have not achieved economic development and industrialization. Countries that are acted precisely contrary to, such as China, Hong Kong, Singapore and others, opening their economies and the leading role of the state have achieved an enviable economic growth and exit from poverty.

Less developed countries, deficiency of capital, they resort to borrowing on the financial markets. Credit conditions were unfavorable. The increase in interest rates over 20%, after the postings does not pay a debt of Argentina, eighties, foreign debts of less developed countries have increased enormous. Service the debt is difficult. It has drawn world attention to a serious approach to resolving debt problems.

Many less developed countries, they cannot pay off a debt. They are forced to seek debt rescheduling or write-off. Creditors under pressure on of their governments and international institutions, in part, often are written off the debts of heavily over indebted countries.

Less developed countries often receive help. But they make remarks that such aid be insufficient. They considered that the rich countries have enriched colonization, exploitation of their natural resources, inexpensive labor force and reinvested in their own country. Rich countries now need to give them that part from their compensation. They want their rich countries open their markets decrease or eliminate high protection measures and do not intentionally cause price fluctuations of their products.

### The distribution of income and welfare

The world has a population of 7 billion people. Of this population, 80% live in developing countries, 15% in developed economies, and about 5% in countries in transition. Contrary to the territorial distribution of the population, distribution of product of the world is completely different. The richest 20% of the world population receives more than 60% of income in the world; the poorest 20% receive less than 2% and the poorest 60% receive less than 6% of world income. ( McConnell, 2012, p. 39W-2)

Table 3. Peer capita 2013 (GNI PPP per capita \$US)

Group of countries	Word	Developed country	Middle-income country	Least developed country
Per capita <sup>1</sup>	14.432	40.779	9.558	1.960
Life expectancy <sup>1</sup>	71	79	70	62
Illiteracy (2005-2014) <sup>2</sup>	15	<0,5	17	39

Source1. *The Little Data Book, World Bank Group, 2015*

Source 2. *Calculated on the basis of data from Education for All 2000-2015, (2015) Achievements and Challenges, EFA Global Monitoring Report, UNESCO Publishing*

GDP per capita, shows the unequal distribution of income in the world. In poor countries in 2014 lived 40% of the population which has achieved a \$ 1,960 per capita income. In rich countries, the average incomes per capita were \$ 40,779. The highest per capita were achieved in developed economies and the lowest in extremely poor countries. The difference is drastic which indicates level of welfare of the world.

### Economic growth

In low-income countries, it is noticeable improvement in the situation since 1965. Gross domestic product recorded a higher growth rate than the growth rate of

developed countries. Despite the evident increase in the GDP the gap between rich and poor countries is expanded even further.

*Table 4. The growth gross domestic product*

Group of countries	1965-2000	2007-2010	2011	2012	2013	2014
High-income countries		0,6	1,7	1,5	1,2	2,1
Upper-middle-income countries	2,6	5,9	5,9	5,1	4,6	5,3
Lower-middle-income countries	1,6	6,1	5,8	4,4	4,7	5,0
Low-income countries	2,2	6,1	6,2	6,0	5,7	6,1

*Source: The Little Data Book, Word Bank Group, 2015*

Increasing growth of less developed countries is the result of improving global and regional environment of relatively high commodity prices, reduced infrastructure limitations and increasing investment and trade cooperation with the emerging economies. (Word Economic Situation and Prospects 2014, p. 8) In 2013, there has been some of this slowing economic growth of a tendency towards improvement. Some improvement depends on changes in global demand, easing monetary policy and stabilization of international capital flows. The increase in private consumption, increase exports and structural adjustment in many economies middle of the poor and poorest countries influenced to an increase in growth rates.

## **The development of the export of primary goods**

Many less developed countries through trade with primary products trying to get out of poverty. Trade brings benefits. It leads to specialization based on comparative advantages. Many less developed countries dispose the most land. Some have minerals and other goods. In less developed countries, it is best to take advantage of the global economy for their own development if exported primary goods that require relatively intensive land use.

Less developed countries, mostly imported non-durable (soft goods) to consumer goods, agricultural products, such as cocoa, coffee, cotton and sugar, and minerals (hard goods) such as copper, aluminum, etc. Underdeveloped countries are constantly trying to exploit its comparative advantages in soil and minerals and achieve economic growth. Through trade, they tend to export primary products on the world market, achieved enough income how can we to import the necessary fixed capital and other resources.

Low income countries have dramatically increased their participation in world trade of the last two decades, with its share in total world exports from 21% to 43% and export growth exceeded the growth of output in these economies in the period 1992-2008. (Hanson, 2012, p. 41-46).

*Table 6. Export goods and services (% GDP)*

Group of countries	1990	2000	2013
High-income countries	19	25	30
Middle-income countries	19	27	30
Low-income countries	12	18	22

*Source: The Little Data Book, (2015) Word Bank Group,*

## Prices of primary products

Market of primary goods is unstable with large price oscillations. Fluctuations in price by 30% or more for a period of one year or more are not uncommon. These markets are unstable and dangerous for all exporters of primary goods. Especially uncertain expected export revenue. Export revenue depends on the export prices on the world market. Unstable export prices make it impossible the government to obtain the expected stable revenues for the execution of development programs in the areas of education, health and imports.

*Table 7 World price primary goods 2008-2014*

Good name	Word prices of primary goods2008-2014				2012-2014 versus 2003-2008
	2008	2010	2012	2014	
Cocoa	32,2	8,5	-19,7	23,7	38,8
Sugar	26,9	17,3	-17,1	-1,8	86,1
Rubber	16,9	90,3	-30,5	-21,8	62,4
Aluminum	-2,5	30,5	-15,8	-5,0	-11,3
Gold	25,1	26,1	6,4	-8,5	163,7

*Source: Trade and Development Report, 2014, untcad*

Prices of primary products, the less developed countries for decades have shown a decreasing trend except for crude oils and gold. The cartel OPEC holding crude oil supply under control and the price of gold is artificially controlled. The decrease in commodity prices indicates that a higher supply than demand in the world market. Less developed the countries that export to the developed countries depending on economic trends in these countries. The recession in developed countries leaves visible squares in the exporting country. The demand for primary and other export products is declining. The fall of demand for primary goods has as a consequence decrease of their prices. During the recession 2007-2009 world zinc prices decreased from \$ 2.02 to \$ 0.49 per kilogram and the price of copper from \$ 4.05 to \$ 1.40 per kilogram. The decrease of prices and the decrease of demand for zinc and copper have been severely affected the decrease in of export revenue in exporting countries. Technical and technological advances in the production of new materials, like rubber and plastics, have contributed to the decrease in prices of many traditional raw materials in industrial countries. The largest exporters of primary goods are less developed countries.

Trade performances of the less developed countries are closely related to the dynamics of prices on the world market. Therefore, the fluctuation of prices of primary



goods the key issue for them. High fluctuations in prices of primary goods in the world market are a long-term phenomenon. In some primary, soft and hard goods, due to the perfect concentration of exports, prices are high fluctuations ranging between 30-50% on a monthly basis. Less developed countries have never been to clean when it comes to world prices of primary goods. Their export earnings depend on the price fluctuations. They are not always as safe as will achieve export earnings. This uncertainty hinders them in realistic planning of capital goods imports.

The protectionist agricultural policies imposed by developed countries are one of the causes of the decrease in prices of agricultural products. The World Trade Organization and the General Agreement on Tariffs and Trade excluded decrease in customs duties in agriculture. Whenever the less developed countries succeeded in increasing the supply of agricultural products of the world market, the surplus had to be exported and sold in countries with less developed markets. Additional services at considerably decrease market led to a decrease in prices of agricultural products. Greater access to agricultural products on the markets of rich countries would certainly have a different impact on prices. Therefore, less developed countries, with the right to complain when it comes to strict control and protection of exports to the developed and rich countries.

### Concentration of exports

Concentration of exports expresses the degree to which the exporting country concentrated on a few products or small number of trading partners. (Export Dependence and Export Concentration, Towards Human Resilience: Sustaining MDG Progress in an Age of Economic Uncertainty, 2012, p. 24). Some less developed countries in the world market, exporting a small number or only one primary product. Developing countries and less developed; had, because of the narrow range of primary products, the tendency to increase the concentration of exports. Despite an increase in the share of GDP, less developed countries in world trade, their exports are increasingly concentrated on a narrow range as compared to developed countries. (Export Dependence and Export Concentration, Towards Human Resilience: Sustaining MDG Progress in an Age of Economic Uncertainty, 2012, p. 25)

*Table 8. Concentration of exports and fluctuations in export earnings 2002-2008*

Level of development	Export concentration		% concentration	Relative deviation export earnings
	2002	2008		
Developed countries	0,07	0,06	-11,6	26,4
Developing countries	0,11	0,14	26,7	38,6
Underdeveloped contrived	0,31	0,54	71,2	52,6

*Source: Export Dependence and Export Concentration, Towards Human Resilience: Sustaining MDG Progress in an Age OF Economic Uncertainty, 2012*

The data onto the table show the volatility of the relationship between the concentration of exports and export revenues. The concentration of exports is strongly associated with an increase in volatility in export earnings. A higher degree of export

concentration leads to relatively large deviations from exports. Underdeveloped countries have the highest ratio of the concentration of exports (row 3) and the largest relative variation in exports. Research by UNCTAD, with a sample of 133 countries for the period 1996-2008 shows that increasing the concentration of exports by 1% leads to an increase of 0.5% in exports. Less developed countries that export a primary good had great development problems.

### **Schemes stabilization mechanism in prices of primary goods**

Primary producers may, in the framework of world trade achieved to benefit. The best example is members of OPEC countries. They were organized through joint action and determine the agreement's oil supply. In this way, they maintained a stable level of oil prices on the world market, and do not allow larger fluctuations. Form of organization OPEC should set an example, other countries producers of primary products, in order to organize and undertake jointaction. However they have no political power and are often faced with large purchases of monopoly. Association for producers of primary products would certainly lead to a stabilization of the prices of their goods and the stability of sources of export revenue.

Fluctuating export revenues, according to the permanent income hypothesis, can encourage savings. Unstable export may not be harmful. When the world markets are saturated primary products, the excess can be redeemed in commodity reserves and thus decreases the bids price and maintain the desired level. When demand increases, supplies with reserves can be exported and fill in the missing quantities of the market. The cost of storage, a large number of small producers and the administrative difficulties are limiting factors agreement on joint action on the global market of primary products. There are times, in some poor countries, where export-oriented industries do not spill over to the domestic economy. This is the case of enclaves in poor countries.

They dispose of agricultural plantations, mines and minerals are owned by foreign companies. Foreign companies use latest capital goods in intensive exploitation. These industries employ little labor and achieved profits accumulate abroad. These enclaves are isolated from the domestic economy, especially in sub-Saharan Africa and those countries have no use for revenue. The governments of these economies could achieve fiscal links to these industries and that tax money to finance their economic development.

Less developed countries have tried to organize mechanisms for stabilization of prices of primary goods. Countries in Africa, in the interwar zone, with primary products such as tin, rubber and tea are organized stabilization mechanisms for these products. Producers these primary products of each country were relatively few in number and produced goods are almost all gone to exports. Export is determined quotas that have changed from time. The manufacturers of these primary products are able to keep prices at the same level.

Many international agreements on during the nineties have become unsustainable, and many have collapsed. Agreement on cocoa production, which began in 1972, disbanded in 1988, they are no longer able to finance inventories. It is similar with other international agreements, for example, sugar, wool, coffee, tin, etc. Besides, effort, less

developed countries, in general, failed to organize the pattern of OPEC. The governments of these countries do not have several large oil fields, but they are forced to engage a large number of small producers of primary products. They are very difficult to organize. For example, why wheat producers cannot be organized in the United States?

## Industrialization

Development through specialization of production of primary products based on the comparative advantages not achieved the expectations of the less developed countries. Therefore, they have focused on industrialization. The arguments about industrialization are that it will facilitate a faster technological progress, decrease unemployment, increase income, to ensure stable export prices and income, encourage greater and acceleration-multiplier effects and contribute to the balance of payments.

*Table 9. The added value in the process of industrialization, the degree of industrialization and income groups*

Group of countries	Add production value (base 2005, \$ billions)			The share of the value produced%		
	1992	2002	2012	1992	2002	2012
World	4,960	6,590	8,900	100	100	100
High income industrializing	175	273	495	19	18	16
Upper middle income industrializing	57	91	163	6	6	5
Lower middle income industrializing	657	1,140	2,410	73	75	78
Low income industrializing	15	21	41	2	1	1

Source: Industrial Development Reports, Sustaining Employment Growth: The Role of Manufacturing and Structural Change, 2013, United Nations

The process of industrialization, less developed countries has been able to implement in two ways: industrialization through import substitution and industrialization which is oriented on exports.

Selection of industrialization through import substitution suppresses the principle of comparative advantage and decreases world trade. Import substitution is a replacement of imported goods to their domestic production of protection for the form of higher customs tariffs or import quotas. (Beg et. 2005, p. 617) Less developed countries have used very high rates of effective protection. Customs rates in some countries, such as India, Pakistan, Argentina and Nigeria ranged between 100 and 200 percent. High customs tariffs and quotas aimed to divert domestic resources, of primary products, which have had such a comparative advantage in industrial production for which they have a comparative disadvantage. High protection and subsidies have contributed to the excessive volume of capital-intensive technology in the industry.

Capital intensity is quickly exhausted the lack of investment funds, with which they are disposed of under-developed countries, and opened a small number of new jobs. Due to a small number of new jobs, the annual population increase and employment rates in the agriculture and service sectors. The unemployment problem is only exacerbated.

Expectations of higher salaries in industrialized societies have encouraged migration from rural to urban, which led to explosive situations. The priority was to build new plants and buying new plants. Lack of funds of the purchase of necessary reproductive material and energy from abroad has led to the emergence of excess capacity.

## **Borrowing to growth**

The traditional source of funds of financing higher exports than imports is borrowing on the world market. Terms of borrowing were always unfavorable. Less developed countries did not have sufficient sources of domestic financial capital for investment. Therefore, they were forced to borrow under unfavorable conditions. Borrowing, they are supplemented lack of domestic investment capital due to low savings.

Repayment of debts, under-developed countries, has reached large proportions. More funds go to developed countries, in the name of debt repayment, but what is the inflow of capital in the form of loans and aid to less developed countries. What a paradox. Instead of the rich to the poor, financial capital, because of the large external debt goes from the poor to the rich.

The reason for the appearance of long interest rates is low, in the seventies of the last century. As long as real interest rates negative debt does not cause major damage. Less developed countries have easily borrowed and in some ways were subsidized by their creditors. To the pays the debts enough to sacrificed real resources.

Underdeveloped countries are mainly borrowed in the hope of foreign loans to accelerate the economic development and export. Increasing economic growth and exports will enable repayment of foreign debts. However, in many cases, this scenario did not play. Many less developed countries after years of borrowing became even poorer. They have got into economic difficulties from which they can hardly go out without international assistance.

## **Reprogramming or write off the debt**

Less developed countries that have fallen into economic difficulties repayment of foreign debts have three options; you do not pay the debt, to seek rescheduling and cancellation of debts.

Do not pay the debt, it means a refusal to creditors generally pays off the debt. This is perhaps the easiest way but not comprehensively. What is the price of it? Governments of creditor may militarily intervene but it is a rare case. In the past and it happened. The United States sent troops in 1904 to the Dominican Republic government to force the payment of debt, French and British troops were forced Egypt in 1876 to pay the debt. Today the foreign debt collects no military force. There repressive methods of collection for the same or similar effects, which lead to a greater or lesser loss of real sovereignty of debtor countries. Usually, debt collection measures are implemented pressures on international negotiations, embargo, confiscation of assets abroad, limiting capital flows and the like.

Debt reprogramming is commonly applied method of the relaxation of repayment of foreign debts. The creditors accept debt reprogramming. Reprogram changing debt

repayment plans but does not change the current amount of debt that must be paid. If the economy is growing debt reprogramming is a good strategy to get out of debt bondage.

Write-off of debt is a measure that applies of certain specific cases. Most economists believe that debt cancelation should not be made conditional on specific pressure or blackmail. Iraq's Paris Club wrote off 30% of debt in 2004 in the amount of 40 billion US \$ with the conditions to pursue the full privatization and liberalization of the economy. A similar requirement is laid, Serbia and Nigeria.

## **The development of the structural adjustment**

The economic crisis of the year 2008, after decades of silence, launched a much public debate on development. How to maintain growth? How to create permanent jobs? How to generate revenues and achieve accumulation? How to eradicate poverty and prevent social polarization?

Economic growth, less developed countries can achieve the structural adjustment of its economy. In principle, structural adjustment is governed by the terms of the supply and demand for products that respond to each other. (Industrial Development Reports, Sustaining Employment Growth: The Role of Manufacturing and Structural Change, United Nations, 2013, p. 3)

Less developed countries do not make full use of its built large capacities. They are not poor because of this. They are poor because of their potential product of a very low level. To maximize the potential for the product they need investments in human and physical capital. But sometimes that is not enough. They were in control of spending in order to increase investment. But it did not produce the expected results. Investments were eventually dropped to zero the economy stagnated.

Increasing productivity, less developed countries, do not have to increase from an increase in human and physical capital. One can increase productivity through better utilization of existing capacity and more efficient use of available resources. Countries that have opened their economies, and involved in global processes, achieved greater success than countries that have implemented protectionist measures.

Countries that have adopted structural adjustment, particularly in transition economies, have achieved greater economic success than before. Countries that have committed to reforms and believe in own prospects easier to accept structural adjustment and have a vision improve his welfare.

## **Help from advanced economies**

Some argue that the simplest and most efficient way to help developed economies, less developed countries, so as to reduce trade barriers. Even, and less developed countries consider that the contribution that rich countries can provide poor countries is just free access to their markets. Trades and not mercy. This would allow less developed countries to sell their products of trade barriers, achieve higher revenues. The requirements of these countries, for the elimination or mitigation of barriers to trade in primary goods and labor-intensive industrial products, such as clothing, footwear, and food industry are

justified. For example, customs tariffs are higher for imports of chocolate than for cocoa. This is a group of products for which some countries have a comparative advantage.

Some economists recommend that advanced economies, provide assistance to the less developed countries accepting the seasonal or temporary workers in their countries to work. Temporary or permanent migration allows the departure of redundant workers from less developed countries. Through emigration, they raise capital and land per worker staying. Money transfers to their families in their home country, they would improve their incomes. Discourage the sale of military equipment and weapons to underdeveloped countries. By purchasing military means, the already low consumption is diverted from infrastructure and education and increase tensions.

Public aid and grants, and technical assistance can play a major role in ensuring miss savings and investments. Many less developed countries lack the infrastructure needed to attract domestic and foreign capital. Financing infrastructure, foreign aid, can motivate a better flow of private capital.

## **Flows of private capital**

Private capitals advanced economies have significantly gone in less developed countries. The structure of investment and lending has changed. We no longer provide loans to governments but in the form of foreign direct investment. The main private investors and lenders are private companies and individuals. Direct investments contribute to development through the construction of new factories or the purchase of multinational companies or firms of the least developed countries. Many countries are seeking foreign direct investment. They see their chance to hire its workforce, to improve workers' wages and increase physical capital. The benefit of direct investment is new technologies, new knowledge and management skills. Unfortunately, the flow of private capital in the world is quite selective. The flow of private capital, after the economic crisis of 2007 has dropped significantly in the world. For example, in 2014, total external flows to Africa were estimated at USD 181 billion, 6% lower in nominal terms than in 2013. (African Economic Outlook, 2015, p. iii)

## **Conclusion**

Less developed countries that have not changed advice the world's leading institutions, have opened economy and harmonize with globalization, have achieved obvious results of fighting against poverty.

Their economies have achieved a certain degree of improvement in the quality of life and welfare. The especially, countries, Southeast Asia, China, India, Vietnam, Singapore, etc. countries, Southeast Asia, China, India, Vietnam, Singapore, etc.

Other less developed countries, in particular, the countries of South Asia and the countries south of the Sahara have become even poorer. Even extremely are poor's countries. Part of the population is not involved in world civilization. The situation is extremely alarming.

However, development opportunities, other less developed countries, except for areas south of the Sahara and East Asia, in terms of neo-liberal globalization are

not hopeless. Some Southeast Asian countries, especially China took advantage of globalization to their advantage. These countries have opened certain areas to the free operation of markets. They have approved the free flow of goods, capital, labor and free enterprise. The state has directed regulated and controlled economic development. Country's national development strategy and the control of natural resources and protect the long-term potential for national and social interests. The aim at the growth was the increase DDP already increasing education, health care, living standards and improving the social situation. This is the path and experiential model of development of less developed countries to exit the poverty zone.

Viewpoint neoliberals that international trade benefits everyone seem a myth. Fluctuation of prices of primary export goods less developed countries, up to 40% annually in some cases, down, is the most obvious proof. On the other hand, highly subsidized agricultural products in developed countries, on the world market are cheaper and more competitive and stifle export of agricultural products of less developed countries. High import customs tariffs rich countries and other measures make it difficult to import agricultural products of less developed countries. Prices of agricultural products are falling, revenues are reduced, and the vicious cycle of poverty becomes a labyrinth. Decreased revenue from preventing imports is greater than the total aid to less develop countries receive.

The liberalization of foreign trade opened the gates, the export of cheap manufactured products of less developed countries. This led to a slowdown and the blockade of the process of industrialization.

Borrowing to growth is not much helping, regardless of some initial successes. Debts are due to market disruptions and rising interest rates reached high proportions. Their annual repayment is larger than the total inflow of foreign capital in the form of grants and loans. There was a contradictory situation. Instead of capital going from the rich to the poor, he goes in the opposite direction. Therefore, less developed countries increasingly emphasize insufficient assistance.

The rescheduling and cancelation of debts have not yielded the expected results. Less poor countries see their way out of poverty by opening the rich countries' markets for their products. The decrease of customs tariffs, fewer subsidies, and stable price mechanism is the demands of rich countries.

Economically justified to less developed countries open up their economies and economic development based on the unexploited comparative advantages, structural adjustment through increasing investments, productivity, efficiency and integration into global trade flows.

## Reference

*Annual Report 2014*, World Trade Organization,

Begg, D., (2005) Fischer, S., Dornbusch R., *Economical Data status*, Beograd

Colander, K., (2011) *Economics, Microeconomics, and Macroeconomics*, Mc Graw Hill Irwin

Education for All 2000-2015, (2015) *Achievements and Challenges*, EFA Global Monitoring Report, UNESCO Publishing



- Export Dependence and Export Concentration, *Towards Human Resilience: Sustaining MDG Progress in an Age of Economic Uncertainty* (2012), United Nations Development Programme
- Global Monitoring Report 2014/15 (2015) *Ending Poverty and Sharing Prosperity*, World Bank Group and International Monetary Fund
- Hanson, G., (2012) *The risk of Middle Kingdoms: Emerging economics in global trade*, Journal of Economic Perspectives, vol. 26, No.2, pp.41-64
- Industrial Development Reports, *Sustaining Employment Growth: The Role of Manufacturing and Structural Change*, (2013), United Nations Industrial Development Organization
- Maddison A., (2011) *Historical Statistics for world economy: 1-2008 AD*
- McConnell, R.C., (2012) International Economics, Chapter 39W2, *The Economic of Developing Countries*, University of Nebraska
- Mesarić, M., (2007) *Kako promjeniti model globalizacije da ona služi dobrobit čovječanstva*, Ekonomski pregled, 58 (5-6), str. 347-385
- Momirovic, D. Cogoljevic, D. (2015) *Макроекономија*, Visoka škola za poslovnu ekonomiju i preduzetništvo, Beograd
- OECD (2014a), *Global Outlook on Aid: Results of the 2014 DAC Survey on Donors' Forward Spending Plans and Prospects for Improving Aid Predictability*, unclassified document OECD, Paris,
- The Little Data Book*, (2015) World Bank Group,
- Todaro, M.P. (1994) *Economic Development* (5th Ed... New York, London)
- Trade and Development Report* (2014), UNCTD
- World Economic Situation and Prospects 2014*, (2014) United Nations publication, Sales No 14. II. C.
- African Economic Outlook*, 2015

#### Further reading

- Ravvallon, M. Chen, S., (2012) *Monitoring Inequality*, Let,s Talk Development Blog, World Bank <http://blogs.worldbank.org/>
- <https://www.imf.org/external/pubs/.../>(2011) *International Capital Flows: Reliable or Fickle?* April 2011, Chapter 4

**Natalia Victorovna Kuznetsova<sup>1</sup>**  
*Department of World Economy,  
School of Economics and Management,  
Far Eastern Federal University*

**Natalia Alexandrovna Vorobeva<sup>2</sup>**  
*Department of World Economy,  
School of Economics and Management,  
Far Eastern Federal University*

SCIENTIFIC REVIEW ARTICLE  
doi:10.5937/ekonomika1601097V  
Received: January 15, 2015  
Accepted: February 27, 2016

## CLUSTERING AS MODERN CONCEPT OF REGIONAL DEVELOPMENT (EXPERIENCE OF JAPAN)<sup>3</sup>

### Abstract

*In the modern conditions clustering concept became one of the most popular modern trends, especially in the Asia-Pacific region. Japan has one of the most successful experience of cluster policy. It has a great variety of different forms of clusters in its regions: technology parks, industrial parks, science parks and others. Nowadays, Japanese government provided a number of Business Startup Support Programs for supporting innovation sectors in Japanese regions. This measure became one of the most successful in regional development. Japan is actively implementing a number of programs for development of scientific and technological cooperation with private enterprise and science centers. Nowadays, clustering also became one of the main sphere of New Economic Growth Strategy of Japan.*

**Key words:** regional development, clustering, clusters, innovation policy, industrial park, Japan

**JEL classification:** O3, O2, F5

## ФОРМИРАЊЕ КЛАСТЕРА КАО САВРЕМЕНОГ КОНЦЕПТА РЕГИОНАЛНОГ РАЗВОЈА (ИСКУСТВО ЈАПАНА)

### Апстракт

*У савременим условима концепт кластера је постао један од најпопуларнијих трендова, посебно у азијско-пацифичком региону. Јапан по искуству има једну од најуспешнијих политика кластера. Она је заснована на великом*

<sup>1</sup> ipatovanat@mail.ru

<sup>2</sup> natavladiv@yandex.ru

<sup>3</sup> The results of this research were achieved within the frameworks of the governmental assignment of Russian Ministry of Education and Science in the sphere of scientific research during the researching assignment # 26.1478.2014/K “The structural transformation of Russian Economy through the integration installation in the industrial markets of Asia-Pacific Region”

*избору различитих облика кластера у свим подручјима: технолошки паркови, индустријски паркови, научни паркови итд. Сада, је Јапанска влада обезбедила низ почетних пословних програма за пружање подршке иновационом сектору у јапанским регијама. Ова мера је постала једна од најуспешнијих у регионалном развоју. Јапан активно спроводи низ програма за развој научне и технолошке сарадње са приватним предузећима и научним центрима. Данас, су кластери постали један од главних области нове стратегије економског раста Јапана.*

**Кључне речи:** регионални развој, груписање, кластери, иновациона политика, индустријски парк, Јапан.

## Introduction

Nowadays, the economic activity of the most part of industrialized countries has the growing impact of globalization and internationalization - processes which are fundamental basement in the formation and development of the world economy. The liberalization of international economic relations and the development of information and communication technologies (ICTs) are the main engines of the global economy and economic integration of the countries. Besides, one of the most important concept of regional economic development is clustering.

Cluster is the economic agglomeration of related companies, and it is a point of growth and an important factor for sustainable socio-economic development of the region. Thus, cluster policy, firstly, creates the conditions for innovation activity in the economy and its modernization for the formation of the technological leaders. Secondly, clustering provides the possibility to solve actual social problems of the regions in the conditions of the shortage of natural resources.

According to the current global economic trends of social development the strategic perspective of the sustainability and competitiveness of the territory became the social development. Thus, the role of socially-oriented clustering became important in the regional development strategy. The aim of this strategy is to solve problems of increasing quality of life.

Clustering is not a new concept. It has a long period of historical development. The theoretical basis of this concept, which gives opportunity to explain the patterns of the world policy of economic clustering, is the theory of “industrial districts” of G. Becattini (Becattini, 1992).

The research of clusters is closely connected with the research field - the location theory. The direct impact on the development of the theory of clusters had: the theory of regional development (J. Thunen, V. Launhardt, A. Weber, A. Losch), the theory of regional specialization (A. Smith, D. Ricardo, E. Heckscher, B. Ohlin, P. Samuelson), the doctrine of autarchy (F. List), the concept of polycentric process (geopolitical regions) and the geo-strategic balance of forces (S. Cohen), the theory of zoning (W. Isard) etc.

A lot of researchers have attempted to structure the basic theoretical assumptions of the theory of the clustering creation, but based on the terminological and substantial views the phenomena of cluster is incompletely investigated.

According to the transition of competition in the innovation sphere the innovation activities of the company became one of the most important factor for future financing. The competitive position of modern companies is completely dependent on how effectively they organize the innovation activities, including research and development (R&D), knowledge management, as well as a system for collecting and processing information which necessary for innovation process. Thus, the development of the most effective system of innovation activities is a priority form for the private sector and public authorities in the country. This problem is actual for Japan, which faced with strong competition from fast-growing Asian neighbor-countries.

## **Modern concepts and forms of regional development**

It can be identified that one of the most common type of innovation infrastructure is an incubator. Large-scale programs to create incubators began in the middle of XX century in the developed countries, in the 1980-1990th in the developing countries.

Based on the definition of the European Business Innovation Centre Network, a business incubator is a specialized tool in the policy of regional economic development and regeneration policy by providing the multi-disciplinary professional support to small innovative business in an international context (IASP, 2012).

The fundamental difference of an incubator from other objects of innovation infrastructure is that it aims to support small companies with high growth potential that are at the beginning stage of the development.

The increasing risk of an incubator functioning is that in common business practice only one of ten innovative projects is successful, but, on the other hand, it is impossible to identify the successful project on the first stage of development, because it is determined during the incubation process (OECD-WB, 2011).

One of the largest facilities to support the innovation process is a technology park, which is considered in the world as the most effective form of integration for education, science and production spheres. In addition, it is common to use some other terms such as “scientific park”, “research park”, “industrial park”. Originally, all these objects of innovation infrastructure had its own specifics, but nowadays the borders between all these concepts were destroyed.

The first scientific parks appeared in the USA and in Europe in the 1960th, and in Asia - in the 1970th. According to research, nowadays, there are more than 1.5 thousand of scientific parks in the world (Albahari, 2010).

Nowadays, the scientific parks are more common in Europe (in the UK of more than 100) and Asia (Japan, Korea, Taiwan, Singapore).

A lot of researchers consider that on the basis of industrial park it was begun the process of development of clustering. For example, recently in China there are some major projects for construction of the industrial parks as the clustering type.

The different types of scientific parks can be identified based on the level of the research and production activities (Figure 1).

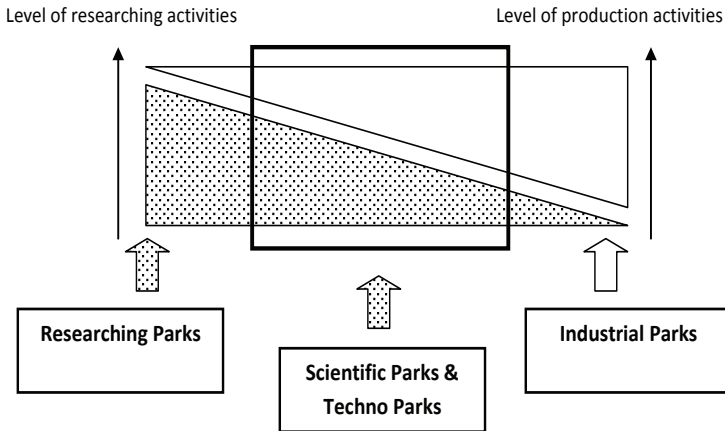


Figure 1: Characteristics of scientific, researching and industrial parks

Source: (Saitakis, 2011; Akira Goto, 2009; Toffler, 1990)

The scientific park has different main features - it is not only commercialized the research results, but it also manages and develops innovation products and services. Nowadays, the successful scientific parks increased and they turned into the scientific cities (“science cities”), and on their territory it is concentrated the several research clusters, universities, government agencies to support innovation (France, Sweden, Spain).

Occasionally, there is a concept of “technological zone” in the world practice (in the USA), the territory where it can be located several industrial parks, and these zones provide the same benefits and services that are normally available to residents of technology parks.

Clustering can be identified as a key instrument for increasing the competitiveness of industries and regions, improving the innovative capacity and economic development in the medium and long-term perspective in the countries of the European Union.

According to the world practice, in recent decades the process of cluster formation is quite active. However, each country has its own specific national features relating to public policy in the area of support and development of clusters. Clusters have been actively created in the late 1990th in Germany and Finland, and then in other European and Asian countries.

The researchers identified mainly three stages in the development of scientific concepts of clustering. The first stage of the beginning of clustering is the craftsmanship (the beginning of the XVIII century). This stage is characterized by the formation of a theoretical core of the clustering of economy, which makes it possible to explain the relationship between the co-location of firms and their economic efficiency (theory of “industrial districts” A. Marshall and G. Bekattini). The second stage (the beginning of the XX century) - the development of the theory of territorial distribution of enterprises and economic zoning (A. Weber, U. Izard and others), and the researches of the causes of formation of inter-industry complexes generated by the entering to innovation economy (R. Kouz, J. Schumpeter, F. Perry). The third stage (the last quarter of the XX century

- the modern period) - the formation of cluster theory (M. Porter) and the development of the basic theoretical concepts that support the cluster theory. It was determined that the cluster theory is developed within the framework of economic geography, regional economic theory, the theory of technological development, institutional theory.

In 2000, in Europe it was created the international project about clustering (European Research Area), the main idea was that the single European cluster can be insufficient to rely on its own forces of agglomeration to attract resources. The creators of this project based on the fact that lack of resources can be compensated by the establishment of close international relations.

The experts from different countries highlight the fact that it is focusing on the territory of a cluster of small, medium and large businesses can achieve the synergies in innovation development.

Clusters were widespread in a great number of countries and in some countries they have become an integral part of the national innovation strategy. In France, in 2005 it was created a special program of the clustering “The competitiveness clusters policy”, which has the purpose to integrate the companies with training centers, public and private research institutions for implementing the innovation projects (European Commission, 2011).

The analysis of development of different theories identified the importance of government agencies and research institutions in the formation of the clustering and it was formed the main directions of clustering in the economic development worldwide (Table 1).

*Table 1: Characteristics of clustering in the economic development*

<b>Industries</b>	<b>Countries</b>
Electronic and communication technologies	Japan, Switzerland, Finland, USA
Construction and development	Finland, Belgium, Netherlands, Denmark, Germany, China
Agro-industry and food manufacture	Finland, Belgium, France, Italy, Netherlands, Germany, Bulgaria, Hungary
Oil & gas industries and chemical industries	Switzerland, Germany, Belgium, USA
Timber industry and paper industry	Finland, Norway
Textile Industry	Switzerland, Austria, Italy, Sweden, Finland, China
Healthcare	Sweden, Denmark, Switzerland, Netherlands, Israel
Transport	Netherlands, Norway, Ireland, Belgium, Finland, Germany, Japan
Power Industry	Norway, Finland, Sweden
Machine engineering	Italy, Germany, Norway, Ireland, Switzerland
Pharmaceutical industries	Denmark, India, Sweden, France, Italy, Germany
Bio-technologies and bio-resource industries	Netherlands, Austria, Great Britain, Norway

(Source: OECD-WB, 2011; European Commission, 2011)

The experts from different countries agree that there is no one unique model for creating innovation infrastructure, especially for clustering. Based on the scientific researches, it can be identified the following models: North-American model (the minimum level of government guidance and a high level of interaction between the scientific and industrial activity, Silicon Valley); French-Japanese model (creating a huge

industrial park, which is concentrated in the territory of several other objects of innovation infrastructure); Scandinavian model (creation of small parks and implementation of national development programs); South-European model (modernization and creation of new jobs, which involves the active participation of inter-governmental European funds for developing the infrastructure).

Industrial park is a unique territorial area of high technology. The core of its formation basically was universities, which should be identified as infrastructure component of the industrial park. There is typically some industrial, research and development corporation around such basement component. It forms a common industrial and social infrastructure.

Based on the world experience of industrial parks it can be identified some specific features and factors of its effective functioning.

1. It has sufficient scientific, technical and educational potential (for example, in “Silicon Valley” there are 17 universities, 23 qualified educational institutions, about 6000 PhD professors).
2. The basis of industrial parks is specialized enterprises, including plants, equipment maintenance facilities before and after production; it forms a comprehensive system of research and production. For example, in “Silicon Valley” there is a supporting industrial system in addition to a variety of electronic enterprises.
3. There is a high level of concentration of leading enterprises and large capital equipment in the industrial park. It is especially actual for “science city” (Technopolis), which has a great necessity of investment spending over a long period of time.
4. One of the most important factors for success is the location of the industrial park. As a rule, it is situated in the suburbs of large cities, which are near the equipped and accessible information channels and advanced communications network. It should be considered the location of the transport network for effective logistic operations. There is also one factor for attraction of foreign scientific researchers in the region, it is a favorable environment and good conditions for living and education.
5. The industrial parks should have a flexible policy of providing benefits which promote the renewal of production and creation of new businesses. It is usually encourage to support the development of small businesses, provide incentives for risk capital investments, as well as for investments in venture businesses.

According to the IASP (International Association of Science Parks) and Institution for the Future there is a global change in the trend of technological development. There is a change not only in the formats of industrial and technology parks, but also some changes in its role in the development of society and economy (Table 2). The competitiveness and profitability of industrial parks of old generation is rapidly decreased.



*Table 2: The main periods of world development of industrial parks*

Characteristics of the period	The first period (1947-1970)	The second period (1971-1985)	The third period (1986-2013)
The widespread type of the industrial park	University parks, regional industrial parks, scientific cities	Technological incubators, specializing industrial parks, centers of technologies transformation	Networking industrial parks, community of industrial parks
The main process	Research and development programs (R&D programs)	Commercialization of research and development (R&D)	Creation of the space of information exchange, creation of joint projects
The basement	Laboratories in the universities, complex researching bureaus of transnational companies	Complex of technological business incubators	Internet community, networking complex of industrial parks
The owners of industrial park	Universities, transnational companies	Governments, regional and administration authorities	Innovation brokers and agents, venture companies, investment funds
The product	Innovation products	Technological decisions and technologies	Researching potential
The service	Access to the source of knowledge and the source of practical experience	Competitive rental conditions (realtor business), expansion of accompanying services	Access to the professional community
The leading countries	USA, Great Britain	Europe, Asia	USA, Asia

(Source: Albahari, 2013; International Association of Science Parks and Areas of Innovation, 2012; The Global Competitiveness Report, 2015; Competitive Industrial Performance Report, 2013; World Investment Report, 2014)

There is a change of formats of industrial parks every 15-20 years, that due to the changing market trends, the economy and the transformation of the whole society.

The number of industrial parks in the world is rapidly grows. Nowadays, there are more than 700, and 43% of them are in the USA, 34% - in the EU and 11% - in China and 13% - in other countries. Silicon Valley is a the most successful standard of venture capital business area. Firstly, it means the most successful technological base - a set of the most advanced knowledge-based industries, based on a highly developed industrial infrastructure, the most modern forms of communication between science and production. As a result of the evolution of industrial parks and technological parks and clusters it was developed the basic models - American, European and Japanese.

## **Japanese Clustering in regional development**

Japan is an example of how the deficiency of natural recourses may eventually lead to a competitive advantage, because this deficit has forced the country to develop an innovation model with the basis of the energy-saving technologies.

In Japan, the formation of industrial clusters began in the late 1970th. But the active phase of cluster creation started since 2001. Until last decade, clustering was carried out only with the support of the central government, but nowadays it moved to the regional authorities. Since 2001, it was carried two projects of development of industrial and

intellectual clusters, which were developed based on international experience, especially the experience of the USA, but they have distinctive features.

As in the USA, the clusters in Japan are created for promoting the most advanced scientific and technical researchers. In Japan, these areas are nanotechnology; robotics; the “mixed sector”: biological production, ecological, and bio-informatics.

In the USA, the main influence in the creation of clusters has the leading companies, research centers and universities, which initiate and organize the whole process, but in Japan, a crucial role has local governments (prefectural and municipal authorities) and companies.

The weak point of Japanese innovation system is a disconnection between the participants of the innovation process - private companies, scientific research, education, government agencies, thus, the first key objective is the establishment of co-operation between these actors.

Another key objective of the development is recognized the venture capital business, which has the most active support from the government.

There is one of successful example demonstrating the features of Japanese policy for development of clustering - “Sapporo Valley”, it is one of Japanese first large research and production association, which was created in Hokkaido, in 1976.

In 2001, Sapporo administration established the Sapporo City Center of digital R&D, designed to facilitate software developers, web designers and other professionals in creation of venture projects. At the same time it developed a program “e-Silk Road Program”, which aim is the development of cooperation with foreign partners.

There are also some foreign Asian partners in this project - Seoul (South Korea), Daejeon (North Korea), Shanghai, Shenyang, Shenzhen, Hong Kong (China), Hsinchu (Taiwan), Bangalore (India), Singapore. As a result, “Sapporo Valley” became a cluster with a steadily growing gross income that can enter the number of the largest software development centers in Asia.

The City Council and Chamber of Commerce Sapporo prepared a joint proposal to attract some companies from South Korean and Britain which produced software, and they came with this proposal to the Ministry of Economy, Trade and Industry (METI), and the proposal was selected in 2004. Bureau of Economy, Trade and Industry of Hokkaido began in 2004 the realization of the second project of super-cluster in Hokkaido. It was the comprehensive support for communication and cooperation with the countries of North-East Asia, and the program “e-Silk Road Program”, according to this Sapporo is connected with other centers of information technology of Asia. It is developed and implemented programs to attract foreign firms to the Valley of Sapporo.

Nowadays, Japan has a program «Knowledge cluster initiative», stimulating the development of clusters in the 18 regions of the country in which regional universities are the basement of clusters formed by a network of small innovation firms and large industrial companies.

The process of clustering, which is typical for industrialized countries, begins to emerge with the active participation of the government and in developing countries, such as India, which is actively involved in global competition, mainly with the development in the sphere of offshore programming. The center of scientific and technical progress in India is Bangalore, which is developing as a center of intensive technologies, and its enterprises are actively working with local research centers and institutes.

The main factors for the transformation of Bangalore center in the center of intensive technologies are the following: active participation of the government and large enterprises in the public sector for more than 30 years; the allocation of central government public investment enterprises and institutions; cancellation of burdensome state licensing regime; creation of scientific training centers; orders of American firms provide the flow of foreign investments; determining at the legislative level of national priorities and the priorities of the export product.

There are also great Japanese experience of the development of industrial parks abroad under bilateral cooperation: Neemran Industrial Park (India). This industrial park, specially prepared for the Japanese producers. Investor, developer and operator is Rajasthan State Industrial Development & Investment Corporation RIICO. The total area of project is 472 hectares. The number of residents is 30 Japanese companies.

In 2001, the Ministry of Economy, Trade and Industry (METI) elaborated Plan for creation of industrial clusters. According to this plan it is necessary to promote the close cooperation of small and medium-sized businesses with research institutions in order to achieve a high level of technological development and creation of new business. With the support of the regional departments of METI and private organizations it was created 19 projects in all regions of Japan.

Plan for creation of industrial clusters has 3 stages of its implementation: the first stage (2001-2005) the initial period, the period of formation of industrial clusters; the second stage (2006-2010) a period of growth of industrial cluster; the third stage (2011-2020) a period of self-sustaining development of the industrial cluster.

According to this plan the production structure of a particular region should develop in such direction in which the product of the cluster becomes necessary for other industries of the region. Thus, there are strong relations among all the sectors in the region, which can provide future stability of the economic developments of the country.

The phenomenon of clustering is unique, it is economic agglomeration of related enterprises on the territory which has a long history of development from the period of handicraft production.

Industrial cluster is a community of economically closely related industrial companies mutually contribute to the overall development and growth of competitiveness. Mostly, it is an informal association of large leading companies with a lot of small and medium enterprises, the creators of technology, communication market institutions and consumers which are in the same value chain.

Based on New Economic Growth Strategy, which aimed at achieving sustainable economic development in the long-term period, it have been developed in 2006 some government programs - New National Energy Strategy and Global Economic Strategy by Ministry of Economy, Trade and Industry of Japan (METI). It was the basis of the current economic and industrial policy of the government and at the same time it became part of a comprehensive national long-term reform program. New strategy of economic growth determines the direction of Japanese development for the future, the main objectives and priorities of economic development.

Nowadays, innovation became the “national idea” in Japan, the terms like “innovation activity”, “innovation development”, “innovation cycle” are used in every modern government programs.

It was identified that Japanese were the first researchers who investigated the model of innovation process, which include integration of research and development (R&D) with production and manufacturing, and the close cooperation of consumers with providers. Firstly, this model used by Nissan company and it enables to develop products that exactly correspond to the necessity of the market, and simultaneously it helps to reduce the costs.

In 1990th it was developed the new model of innovation process. Its principal difference is that the innovative enterprise should not only integrate all stages of the innovation process, but also to cooperate with other sources of knowledge - universities, research centers and enterprises. This scheme provides the access to the necessary knowledge, which greatly increases its potential for innovation, and as a result, the level of international competitiveness. It was especially actual for Japan, because it faced with strong competition from some industrialized Asian countries from 1990th. The most famous Japanese specialists in this area are researchers from School of International Corporate Strategy, Hitotsubashi University, Ikujiro Nonaka and Hirotaka Takeuchi (Nonaka, I. & Takeuchi, H., 1995).

In our research we had the analysis of financial stimulation support of innovation activities of the private sector from Japanese government. There are so specific features of the Japanese concept of financial stimulation of innovation activities. Firstly, it should be mentioned such instrument as the tax benefits. The experience of Japan proved the idea that for private sector it is more efficient to provide tax benefits than direct grants and subsidies from the government. It is actual because of the fact that the company receives the relevant benefits only after the making some requirements of a particular government program, while the subsidies are a kind of so called “advance” and unknown outcome. Secondly, the tax benefits do not require additional costs for the establishment and functioning of the administrative mechanism of the allocated funds.

The main objective of tax benefits to enterprises is to stimulate the growth of R&D, which are the main indicator of innovation activity in the private sector. In addition, the government can set a tax credit to other expense items related to the innovation activity of the enterprise to meet the requirements of the state innovation program. Thus, nowadays there are tax credits for Small and Medium Enterprises (SME), conducting R&D, and enterprises engaged in innovation activities in collaboration with the research, educational institutions and government agencies, as well as companies conducting research in the fields of science.

Nowadays, Japan is actively implementing a number of programs for the development of scientific and technological cooperation with private enterprise and science. And there is a difference of the scheme of realization of such cooperation in Japan from European countries. Thus, in the developed countries of Europe, the scientific and technical cooperation between business and science is generally taken place on the basis of creation of venture companies by the researchers from universities and research organizations. In Japan, due to the factor of national mentality unwillingness of risk such scheme is not widespread. In this regard, there are special intermediary organizations - the so-called “organizations of licensing technology” (OLT), it is a kind of a link between companies and research and educational institutions.

These organizations support researchers in patenting technologies and products, which they developed and then transfer the technology to private companies, in other

words these organizations are negotiators between scientists and entrepreneurs. The new industries in Japan were created mainly with the help of OLT. The part of the revenues from these businesses is for the scientists, who conduct appropriate investigations in this sphere, and it helps to enable future research activities in the universities. The advantage of this system is that scientists can completely devote to their research without being distracted by patenting their inventions, searching of client-companies and other activities. The entrepreneurs have also their benefits by saving time and finance in searching process of scientific and technological inventions.

The characteristic feature of a new model of innovation process in the companies is the implementation of innovations in the inter-organizational level. The most effective way, which successfully organize the innovation process by involving other companies as well as various kinds of research and educational institutions, is the researching activities in the cluster.

The companies operating in the clusters have several advantages of other companies. Firstly, they have more qualified access to information of the markets, progress in technology, inventions of new concepts in service and marketing. Secondly, active cooperation with local research institutions greatly facilitates access to the latest scientific and technological achievements. Thirdly, close contact with the local educational institutions provides a unique opportunity to recruit and train new highly qualified staff. According to these advantages of the clusters, the clustering became one of the most popular governmental policy as the set of measures for supporting the existing and new clusters.

The implementation of the program of cluster development in Japan began later than in other countries, and it has its own specific features of clustering. This is due to the fact that, firstly, one of the main direction of the governmental policy was regional development, while creating a system of interaction between the private sector, science and government was not completely developed. Secondly, there is a number of institutional barriers such as the lack of legal framework basis. The active process of cluster policy in Japan began in 2001 on the basis of Plan for development of science and technology.

Cluster policy in Japan has the following objectives: development of cooperation between business and science; active support of the development of business venture; development of priority industries of science and manufacturing; strength of international contacts, attraction highly qualified foreign personnel to Japanese companies; attraction to cooperation of local administration authorities.

In 2013 Japan accepted Strategy of the development of Science, Technology and Innovation, it is a long-term perspective for ideal economic society. It was elaborated a number of support programs for development of innovation by Japanese government. Japan is known as a country which widely support venture companies. There are some Venture Support Programs in Japan, which bring necessary support for the future development of new business. The overview of specific governmental support programs is presented below (Table 3).

Table 3: Support Programs for Business Startup in Japan

I. Subsidy Programs	II. Preferential Investment and Tax Treatment	III. Loan Programs	IV. Management Consulting
1. <i>Start-up Grants</i> (this program subsidizes part of funds needed by young entrepreneurs to start local businesses based on existing family businesses)	1. <i>Business Startup Support Fund</i> (Under this program, private venture capital funds and other funds in which SME Support Japan invests provide support to venture businesses which are 5 years old or younger.	1. <i>Funds to Enhance SME Business Capabilities Enhancement Support</i> (this program provides low-interest loans to SME companies receiving support from certified support organizations)	1. <i>Professional Support for New Business Creation Program</i> (under this program, professionals, including top venture capitalists, lawyers and accountant provide support to venture businesses with strong growth potential)
2. <i>Subsidy Program to Revitalize Small Business</i> (this program supports development of new products and services and expansion of sales channels by small businesses)	2. <i>Business Startup Support Tax Incentives (Angel Tax Incentives)</i> (this program provides preferential tax treatment to investors investing in young companies)	2. <i>New Business Startup Loan Program</i> (this program provides unsecured, non-guaranteed loans of up to 15 million yen to persons planning to start a business which are second-phase old )	2. <i>Business Creation Support</i> (under this program, a portal site for matching of SME and people receiving support will be established)
	3. <i>Investment by innovation Network Corporation of Japan</i> (Under this program, Innovation Network Corporation of Japan invests in venture businesses and projects to commercialize cutting-edge technologies)	3. <i>Guarantee related to Business Startup</i> (this program guarantees loans up to 25 million yen borrowed by persons planning to start a business and companies which are 5 years old from private financial institutions)	3. <i>Certifies Support Organizations</i> (certified support organizations provide consulting service as easily accessible consultation windows based on The SME Business Capabilities Enhancement Support Act)
		4. <i>Quasi-capital Funds</i> (this program provides long-term, lump-sum redemption funds necessary for operating new businesses)	

(Source: METI Journal Venture Businesses, 2012; Japanese Science and Technology Indicators, 2013; OECD, 2014; Kim Young Gak, Ito Keiko, 2013)

Nowadays, Japanese regions promote the formation of “industrial clusters” and “intellectual clusters”. Its aim is to create new industries by cooperation of industries and universities. It is a long-term perspective, and it takes long period of commercialization.

However, industrial cluster cannot be completely formed only by affiliation between industries and universities. M. Porter examined the sources of such competitiveness after analyzing cases of industrial integration that have resulted in high international competitiveness (Porter, 1990). He concluded that such sources should be found where companies, suppliers, connected organisations are geographically concentrated (Figure 2).

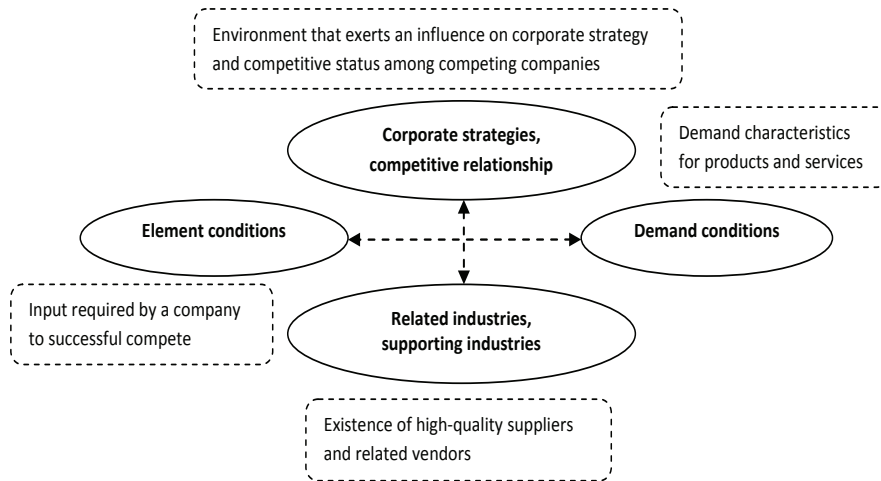


Figure 2: Diamond Framework for formation of Industrial Cluster  
(Source: Porter, 1990)

The example of highly successful cluster in Japan is the combined automobile and machine industries in three prefectures (Aichi, Mie and Gifu) located in Tokai region of Japan. Tokai region of Japan is a basis for well-known in worldwide automobile plants (Toyota Motor Corporation, Aichi prefecture; Honda Motor Co., Ltd., Mie prefecture). The development of automobile industry in this region provides the positive environment and stability in the regional economy of Japan (Table 4).

Table 4: Japanese government activities for creation of New Industries

Organization	Industrial Policies	Activities
Chubu Prefecture Bureau of Economy, Trade and Industry	Industrial cluster plan	1. establishing human networks among universities and companies 2. providing support for the development of new businesses, the creation of venture start-ups
Ministry of Education, Culture, Sports, Science and Technology	Intellectual clusters	Providing support for the creation of businesses from university-originated technological seeds
Aichi prefecture	New industry creation plans	1. creating new industries (ventures) 2. establishing appealing business environments 3. supporting the development of existing industries (global networks) 4. setting up a systems and structures to promote industrial vitalization
Nagoya prefecture	Nagoya Science Park	Soliciting company participation
Mie prefecture	Forming industrial clusters	1. Crystal Valley (liquid crystals) 2. Medical Valley (drugs) 3. Silicon Valley (semiconductors) 4. Pearl Valley (call centers)
Gifu prefecture	“Sweet Valley”	Forming a large cluster for IT-related companies, contents business and robotics industry

(Source: Iwaware Yoshihiko, 2004; Japanese Science and Technology Indicators, 2013; Saitakis, 2011; OECD, 2014)



This region became one of the most industrialized prefecture in Japan as a result of the governmental support in the process of modern industrial policy. Tokai region has also the highest level of innovation development in Japan. The innovations of this region include not only technical improvements, but also process innovations and new business models of management.

## Conclusion

Clustering is a logical step in the development of modern economy. Japan has the most developed structure of clusters, and it also has some specific forms of cluster.

Industrial clusters in Japan mostly deal with innovation activities, such as research and development and new business in new spheres of industries. There are some plans for creating the industrial clusters until 2020.

Nowadays, Japan has specific concept of regional policy. Japanese experience shows that the government support of regions remains the required form of regional policy in the market economy. Japan found mechanisms of direct and indirect methods' combination to develop and support the regions, and in future attract the private sector for participation in different government programs.

Clustering was developed in Japan in the framework of regional and industrial policy of the country by the Ministry of Economy, Trade and Industry (METI). Historically, Japanese economic system is based on planning, which is one of the most important element of the economic policy in Japan.

With the beginning of the crisis period in the global economy, Japanese government actively involved in the economic development to implement anti-crisis programs and Business Startup Support Programs for businesses. It began to change the priorities of the government policy. It was identified some specific areas of government support in Japan - social sphere, regional policy and support for small and medium enterprises (SME), especially venture businesses. Regional policy based on clustering was selected as one of the priority element of support by the government in the crisis years, this support is provided with the help of additional budget program.

## References

- Akira Goto (2009). Innovation and Competition Policy. *The Japanese Economic Review*, 60(1), 55-62.
- Albahari, A. Catalano, G. & Landoni, P. (2013). Evaluation of National Science Park Systems. *Technology Analysis and Strategic Management*; 25 (5), 599-614.
- Becattini G. (1992), “The Marshallian industrial district as a socio-economic notion”, in Pyke, F. / Becattini, G. / Sengenberger, W. (1990) (eds.), *Industrial districts and inter-firm co-operation in Italy*, International Institute for Labour Studies, Geneva, pp. 37-51.
- Competitive Industrial Performance Report (2013). *The Industrial Competitiveness of Nations. Looking back, forging ahead*. Retrieved from <http://www.unido.org/news/press/industrialized-t.html>

- European Commission “Future innovation policy development actions” (2011). Final Report, 125.
- IASP (2012). International Association of Science Parks and Areas of Innovation. Retrieved from [http:// www.iasp.ws/publico/index.jsp?enl=1/](http://www.iasp.ws/publico/index.jsp?enl=1/).
- Iwadare Yoshihiko (2004). Strengthening the Competitiveness of Local Industries: The Case of an Industrial Cluster Formed by Three Tokai Prefectures, Nomura Research Institute Papers, 75, 10-26.
- Kim Young Gak, Ito Keiko (2013). R&D Investment and Productivity: A comparative study of Japanese and Korean firms / Senshu University, Research Institute of Economy, Trade and Industry / RIETI Discussion Paper Series. Retrieved from <http://13e043>
- METI Journal Venture Businesses (2012). Source of Japan’s Vitality. Retrieved from <http://www.meti.go.jp/english/publications/>
- Nonaka, I. & Takeuchi, H. (1995). The knowledge-creating company. New York: Oxford University Press
- OECD-WB (2011). Conference on Challenges and policies for promoting inclusive growth “Sequencing Public Interventions to Support Private Sector-led Innovation Infrastructure”, Paris, 320-335.
- OECD (2012). Competitive Regional Clusters: National Policy Approaches. Retrieved from [www.oecd.org/publications/Policybriefs](http://www.oecd.org/publications/Policybriefs)
- OECD (2014), Science, Technology and Industry Outlook, OECD Publishing, Paris. Retrieved from [http://dx.doi.org/10.1787/sti\\_outlook-2014-en](http://dx.doi.org/10.1787/sti_outlook-2014-en)
- Porter, M.E. (1990). The Competitive Advantage of Nations. New York. Free Press, 380.
- Saitakis, A. (2011). Science & Technology Parks & Technology Incubators: Tools for supporting Entrepreneurship and Regional Development. Science & Technology Park of Crete, European Day of the Entrepreneur, Sofia, 75-78.
- Toffler, A. (1990). Powershift: Knowledge, Wealth, and Violence at the Edge of the 21st Century / A. Toffler — N.Y.: Bantam.
- The Global Competitiveness Report (2015). The World Economic Forum. Retrieved from [http://www3.weforum.org/docs/WEF\\_GlobalCompetitivenessReport\\_2014-15.pdf](http://www3.weforum.org/docs/WEF_GlobalCompetitivenessReport_2014-15.pdf)
- The Economic Impact of ICT (2004). Measurement, Evidence and Implications. OECD, Paris, 2004. Retrieved from <http://browse.oecdbookshop.org/oecd/pdfs/free/9204051e.pdf>
- Japanese Science and Technology Indicators (2013). National Institute of Science and Technology policy (NISTEP). Retrieved from [http://www.nistep.go.jp/HP\\_E/researchworks/02\\_foresight/index.html/](http://www.nistep.go.jp/HP_E/researchworks/02_foresight/index.html/)
- World Investment Report (2014). UNCTAD. Retrieved from [http://unctad.org/en/PublicationsLibrary/wir2014\\_en.pdf](http://unctad.org/en/PublicationsLibrary/wir2014_en.pdf)



**Marijan Stevanovski<sup>1</sup>**  
*MIT University Skopje, Faculty of Management*  
**Dori Pavloska - Gjorgjieska<sup>2</sup>**  
*MIT University Skopje, Faculty of Management*

SCIENTIFIC REVIEW ARTICLE  
doi:10.5937/ekonomika1601113S  
Received: October 13, 2015  
Accepted: December 14, 2015

## **ELECTRONIC COMMERCE AS AN INTEGRAL PART OF THE DIGITAL ECONOMY WITH EMPHASIS ON ITS APPLICATION IN THE REPUBLIC OF MACEDONIA**

### **Abstract**

*The modern world is faced with the application of means provided by modern information and digital technology. They impact processes through which elements of the business change, as well as the forms of management. This results in an eminent process of fast creation of appropriate solutions. The electronic system of operation has a significant potential in achieving the goals of a business - retaining existing and winning new market positions. Electronic commerce is buying and selling products and services electronically. It covers a wide area because in itself it includes all forms of trade and services that create and circulate material values. This paper is devoted to the electronic commerce as an integral part of the digital economy. It contributes to the growth of not only the company's sphere but also the wider society. Digitalisation enables expansion of activity, creating new directions in the development of the company.*

**Key words:** digital economy, trade, social, company, technology

**JEL classification:** O33

## **ЕЛЕКТРОНСКА ТРГОВИНА КАО САСТАВНИ ДЕО ДИГИТАЛНЕ ЕКОНОМИЈЕ СА НАГЛАСКОМ НА ЊЕНУ ПРИМЕНУ У РЕПУБЛИЦИ МАКЕДОНИЈИ**

### **Апстракт**

*Савремени свет се суочава са применом средстава која су предвиђена за савремене информационе и дигиталне технологије. Ова средства утичу на елементе процеса пословне промене, као и облике управљања. То доводи до еминентних стварања одговарајућих решења у процесу брзог пословања. Електронски систем рада има значајан потенцијал у остваривању циљева бизнис - задржавање постојећих и освајање нових тржишних позиција. Електронском трговином се купују и продају производи и услуге електронским путем. Она покрива широко подручје, јер у себи обухвата све облике трговине и услуга које стварају материјалну вредност. Овај рад је посвећен електрон-*

<sup>1</sup> marijan.stevanovski@mit.edu.mk.

<sup>2</sup> dori.pavloska@mit.edu.mk.

*ској трговини која је саставни део дигиталне економије, која доприноси расту не само у области компаније, већ и ширем друштву. Дигитализација омогућава проширење активности, стварање нових праваца у развоју компаније.*

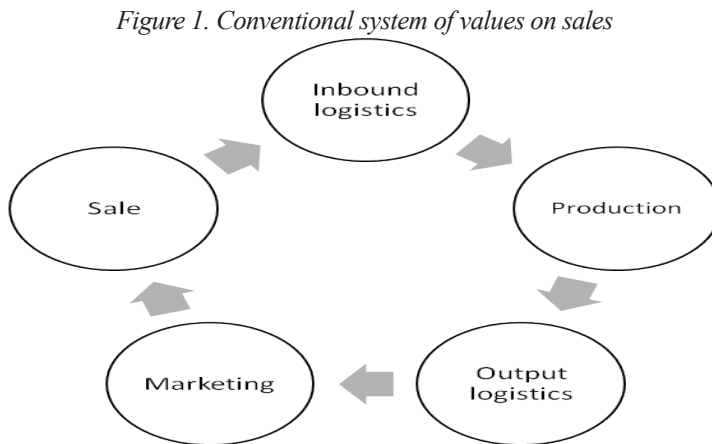
*Кључне речи: дигитална економија, трговина, друштвена, компанија, технологија.*

## Introduction

Electronic commerce is defined as the buying or selling of goods and services through electronic media and electronically. The development of digital technology is causing profound changes in society (Kuznetsova, Vorobeva, 2015). Prospects of digital technology are large and they cause positive changes that reflect on all segments of the human life (Wright, Dyer, 2000). Very often e-commerce is defined as a process of management of online transactions by individuals or companies. This process includes both, retail and wholesale. Electronic commerce essentially refers to the system and procedures through which exchange of various financial documents and information happen.

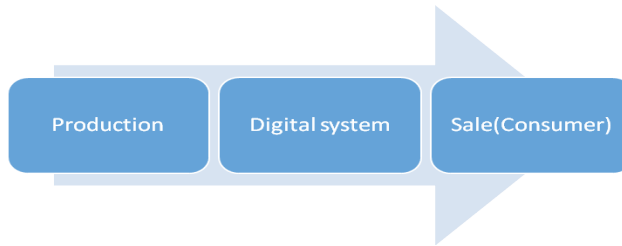
Often the digital process operation is identified with the term virtual value chain (Stevanovski, 2012). The value chain includes the processes that companies have to perform in order for products and services to be available on the market. Thereby, the system can be conventional or digital.

The conventional system consists of components that are shown in Figure 1.



Source: T. Vassos, Strategic marketing on Internet, CET Computer Equipment and Trade, 2001

The virtual value chain is different and incorporates other values actually simplifying the whole process of trade, shown in figure 2.

*Figure 2. Algorithm of e-commerce*

Source: T. Vassos, *Strategical marketing on Internet, CET Computer Equipment and Trade*, 2001

Electronic commerce in itself includes several activities such as distribution, purchasing, sales, marketing, servicing of products and services by using electronic systems. In itself, it includes a complete subsystem for use: electronic money, electronic marketing, electronic exchange of information and automated systems for data collection. This process allows the creation of a virtual value chain. Thus, “all business ventures today compete in a complex environment, comprised of: real world of tangible resources and virtual world of information” (Stevanovski, 2012).

Electronic commerce consists of two segments: (Tapscott, 1998):

- Telecommunication - sharing business information, maintaining business relationships and conducting business transactions which take place by means of a telecommunication network
- Network processes - the exchange of products, goods, services and information are going through computer networks.

In observation of the electronic commerce logical question is the electronic market. The electronic market is different from the traditional. Despite upholding primarily on its core function - meeting of buyers and sellers (in electronic commerce this process is virtual) – the electronic market reduces the entry barriers for access to the necessary information related to products and demand (Gray, 2015).

Besides the basic components of trade, the electronic commerce in itself includes all the processes that are directly related to the sales and post sales that are incorporated in the value chain (Wagner, Sweeney, 2010). The essence of e-commerce is actually a digital work which in itself incorporates the basic components such as: product, process and participants. The three elements themselves have two main dimensions: physical and digital (Tapscott, 1998).

Electronic information is the basic component of the electronic commerce. Electronic data interchange (EDI-Electronic Data Interchange) is a standardized and integrated system for the exchange of business documents using computer systems and networks.

In order to operate the system without any problems, it is regulated by appropriate standards. EDIFACT is an international standard applied since 1986. It is coupled with an interagency agreement on cooperation in the area of EDI, ISO and IEC. This agreement provides for mutual collaboration among all segments, including the International Telecommunication Union (ITU).

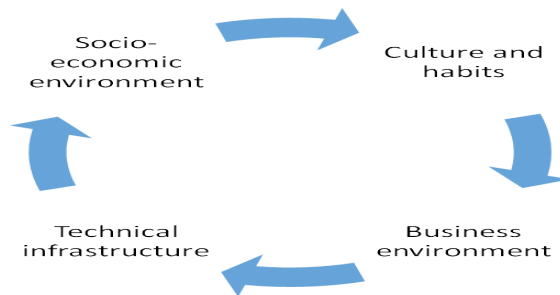
## Materials and Methods

The methodological approach in this paper covers the latest achievements of the modern digital economy, e-commerce, Internet and e-banking. The paper uses different methods of scientific research, such as methods of analysis, methods of comparison, a historical overview of the situation as well as data and views used by the experiences of employees in various institutions primarily in the commercial sector.

### Conditions for development of electronic commerce

While it is difficult to formulate all the conditions required for the development of electronic commerce, we can distinguish four basic prerequisites, as shown in Figure 3 (Stevanovski, 2012).

Figure 3. Prerequisites for the development of electronic commerce



Source: M. Stevanovski, Management information system, Virtual-M, 2012

Socio-economic environment needs to be stable especially in terms of inflation and prices. If this condition is not met, then the electronic commerce is faced with direct problems. It may be difficult to carry out operations through the electronic system if a rise in prices in the period of execution of cash transactions happens. This requires a proper, thorough legal regulation in the area of operation of the electronic trading system (Zhang, Khan, Shih, 2015).

Culture and habits are gradually changing (Vida et al, 2015). Buyers develop habits to buy products and services from the comfort of their homes and that contributes to the development of the electronic commerce.

Business environment should enable a continuous process of construction and development (Alrough, Al-Debei, Ghinea, 2010). These include not only the electronic system of trade, but also systems that are directly involved in the finalization of the exchange, such as the banking system through the system of payment cards, which indirectly stimulates the process of electronic commerce.

Technical infrastructure is important because stable technical conditions are the basis of a functional system of electronic commerce. Given the great importance of the Internet, ISPs are key factors for the development of electronic trade. Stable internet service is necessary for the proper existence of electronic commerce (Yoo, 2010).



The concept of electronic commerce can take several forms, including (Stevanovski, 2009):

- Web stores
- Internet banking,
- Internet exchanges
- Internet auctions
- Internet intelligence.

Web stores provide Internet access 24 hours a day without any limitations. The web store includes the following elements:

- Online store
- Payment processing
- Shipping / order fulfilment
- Customer service
- Promotion

Online store - For smooth functioning it is necessary to use appropriate software that assists in the implementation of electronic commerce. Making an online shop with HTML language will not meet the necessary requirements and will have direct implications on all promotional and sales systems.

Providing the recovery - system recovery may be direct or indirect. In a direct system, the seller creates a Merchant Account in a bank that has a system for electronic collection. The seller concludes a direct contract with the bank, which provides all the technical requirements for the implementation starting from an SSL server to a device that checks the validity of the cards. The system is considered to be serious and it is used by companies who prefer an electronic operating system. The indirect collection system is implemented through appropriate web services. The system is suitable for sale for which there is no adequate continuity.

Providing delivery - products and services, if allowed by their technical features, can be delivered and completed electronically. Otherwise, they use various forms of fast delivery to the buyer.

Customer service - Customer service needs to be available and functional to the buyers.

Promotion - quality and applicability of the product are the best promotional asset. Therefore the word of mouth from the customers and the advantages of the product are key market advantages. The buyer appreciates any kind of extra value to the product offered.

Online banking - Main features of electronic banking are: (Selty, 2003):

- Individuality;
- Mobility;
- Time and spatial independence;
- Flexibility and interaction.

Electronic banking offers tremendous advantages such as (Dave, 2002):

- Reduces the number of employees and permanently improves the quality of banking services;
- Reduces the number of organizational units and covers more territory;
- Increases the number of users to whom services can be delivered;
- Reduces the fees;

- Services are not time limited, but available 24 hours, 365 days a year;
- The processing of transactions and their control is carried out at a given moment;
- Interactivity of banking provides great innovation;
- Increases the competitiveness of the banks.

Customers of the banks are unlimited and do not depend on the extent of their operations, as well as the size of the business. The services most commonly used are:

- Transfer of funds;
- Reporting on the state of the accounts;
- Manage ready cash;
- Using domestic banking;
- Using telephone banking.

The internet is used in order to carry out activities of electronic banking. Security is a priority factor in the process of operation (Herrmann, Tavakolifard, 2010, p. 3). Therefore, a lot of funds, knowledge and skills are used to improve Internet security in banking institutions.

The Internet is emerging as a major medium through which the process is implemented (Mladenovic, Cuzovic, 2014) in a much faster and cheaper mode.

Internet banking is used in many areas such as:

- Support business processes in banking,
- Implementation of banking transactions with online communication,
- Electronic checks,
- Electronic money,
- Payment cards.

Although at the beginning the payment via internet had no extensive application, the software development enabled the application of new instruments in the process of conducting bank transactions, with this payment method becoming extremely promising for the future.

The first Internet markets are dated from 1996. Two small companies offered their securities online. But because there was no secondary market, transactions were considered too risky. Spring Street Brewing Company (SSBC) offered its securities with the tendency to create a secondary market for securities. This led to the creation of Wit Trade, an Internet-based bulletin board containing two components: one for sale and one for purchase.

The online transactions in securities do not exclude the services of brokers. The correct choice of broker is the basis for success. The online markets are opening an account through which the transactions occur. Investing begins with providing the necessary funds to the bank account or deposit with a broker. The Internet offers many benefits, but also risks. Investors easily put their money there and there are realistic conditions for abuse.

Internet auctions, through this kind of e-commerce, achieve the largest turnover of money and goods.

## Internet Security

Internet as a public network is available to all. Thus, the opportunity for abuse is great and outstanding (Kim, Ferrin, Rao, 2008). Therefore, it is necessary to provide:

- Confidentiality of information

- Prevention of unauthorized use
- Authentication of information.

Cryptography deals with methods and techniques used in order to solve this problem. Through encryption, decrypting and using keys, the system security increases. The information that is not encrypted and travels over the internet is a subject of opportunities for misuse. Therefore, methods that increase the level of security are developed (Powell, Conca, 2015).

Security can be categorized as:

- Using offline mode of communicating all security elements that can degrade the message
- Using backup servers through protocols used to transmit data between the web server and reader.
- Development of secure online system transactions: First Virtual, Caber Cash.

## **Development of Electronic Commerce in Republic Of Macedonia**

There are favourable conditions for electronic commerce in the Republic of Macedonia, which is contributing to its steady growth. In 2010 there were only 10 electronic stores, but their number drastically increased to more than 250 electronic stores at the end of 2013. In 2014 50% of the businesses had their own web pages and 10% processed online orders ([www.stat.gov.mk](http://www.stat.gov.mk)).

The growth of electronic commerce is primarily due to the growing need of customers to shop 24 hours a day, the need for convenience, and the existing legal regulations in the area of electronic operations.

Research shows that customers in the Republic of Macedonia expressed a desire to shop online, but if the necessary level of safety and variety of products is ensured. Most Internet users expressed a desire to purchase: electronic and computer equipment, clothing, shoes and gifts. The least bought products via the Internet are food products and beverages. Macedonian customers prefer lower prices and free home delivery of products purchased.

There are processing centers in Macedonia, such as: Currant, First data and the processing center of Halk Bank. The tables below present information related to the electronic operations, including electronic commerce in the country.

Table 1. Information and communication technologies in the enterprises according to the number of employees, 2014

in %	Total	Enterprises according to the number of employees			
		(10+)	(10-49)	(50-249)	(250+)
1	2	3	4	5	
Enterprises, total	100,0	100,0	100,0	100,0	
Enterprises with computers	94,6	93,9	98,3	99,0	
Enterprises with Internet access	93,1	92,1	98,3	99,0	
- via fixed broadband connection (DSL, cable, fiber optics or other technology)	92,1	90,9	98,1	99,0	
- via mobile telephone network (broadband or other mobile connection)	59,3	57,1	68,2	80,2	
Broadband connection (fixed or mobile)	93,1	92,0	98,3	99,0	
Provided to the persons employed portable devices that allow a mobile connection to the Internet for business use	60,7	58,5	69,3	81,8	
Have a web site or a homepage	53,2	49,8	66,2	88,5	
- enterprise's website providing online ordering, reservation	12,4	12,2	13,7	11,8	
Used social media (but not only for paid advertise)	36,8	37,0	34,5	44,6	
Have bought a Cloud computing service used over the Internet	11,9	11,8	11,7	15,4	
Have ERP software package to share information	21,6	18,6	30,9	61,1	
Have CRM software for managing information about its clients	20,0	18,3	25,3	43,2	
Have CRM to analyse information about clients for marketing purposes	16,4	14,9	21,8	34,9	
Electronic Data Interchange in a format that allowed its automatic processing (EDI-type messages)	40,9	37,9	53,5	66,7	
- EDI-type messages for payment instructions to financial institutions	29,4	27,3	39,6	40,4	
- send / receive EDI-type messages for data to/from public authorities	37,4	34,4	50,6	58,6	
Share supply chain management information electronically with suppliers or customers	13,6	13,0	14,6	26,2	
- via websites or web portals	10,3	10,2	10,0	13,1	
- via electronic transmission suitable for automated processing (e.g. EDI-type systems, XML, EDIFACT, etc.)	5,7	5,0	7,5	18,6	
Sent e-Invoices, 2013	26,3	25,3	30,9	31,4	
- sent e-Invoices in a standard structure suitable for automatic processing (e.g. EDI, UBL, XML)	6,2	5,8	8,5	7,7	
- sent e-Invoices, not suitable for automatic processing (e.g. PDF)	25,7	24,9	29,6	28,8	
Received e-Invoices in a standard structure suitable for automatic processing, 2013	12,6	12,0	15,8	11,3	
Sent or received e-Invoices in a standard structure suitable for automated processing, 2013	13,9	13,4	16,8	14,7	
RFID for person identification or access control	12,7	9,5	24,5	47,0	
RFID for monitoring and control of industrial production and service delivery process	5,5	4,5	9,1	17,9	
RFID for product identification after the production process (theft control, counterfeiting, etc.)	4,6	3,9	6,7	13,3	
Enterprise employed ICT specialists	13,7	9,9	26,3	63,3	
Have provided training to develop ICT skills of personnel, 2013	13,7	11,2	21,5	48,2	
- for ICT specialists	5,4	4,1	8,2	31,0	

- for other persons employed	12,1	9,8	19,8	41,8
Have recruited or tried to recruit ICT specialists, 2013	5,1	4,1	8,1	20,1
Had hard-to-fill vacancies for ICT specialists, 2013	1,9	1,7	3,1	2,3

Source: www.stat.gov.mk

Table 2. E-commerce in the enterprises, according to the number of employees, 2013

in %	Total	Enterprises according to the number of employees		
		(10+)	(10-49)	(50-249)
Enterprises that have e-commerce (e-sales or e-purchases)	9,7	9,2	10,1	21,6
E-sales: have received orders via computer networks (web or EDI)	7,0	6,8	7,3	10,7
Web sales: received orders for products or services that were placed via a website	6,4	6,4	6,2	7,5
Percentage of the total turnover resulting from orders received via website				
= /> 1%	4,9	5,2	3,7	3,4
< 1%	1,0	0,8	1,8	1,8
unknown	0,5	0,4	0,7	2,3
Sales placed via a website by type of customer				
B2C (Sales to private consumers)	4,8	5,0	3,8	5,2
B2B (Sales to other enterprises) and B2G (Sales to public authorities)	3,2	3,4	2,7	0,0
Means of payment for sales via a website				
Online payment, i.e. payment integrated in the ordering transaction	2,9	3,0	2,1	3,9
Offline payment, i.e. payment process is not included in the ordering transaction	5,7	5,9	4,8	6,0
EDI-type sales: received orders via EDI-type messages in an agreed format, e.g. EDIFACT, UBL, XML	1,1	0,9	1,5	3,9
Percentage of the total turnover resulting from EDI-type sales				
= /> 1%	0,7	0,6	1,1	0,8
< 1%	0,2	0,2	0,2	1,6
unknown	0,2	0,1	0,2	1,6
ePurchases: placed orders for products/services via computer networks - via a website or EDI-type systems	5,0	4,7	4,7	15,0
Placed orders via website	4,4	4,1	4,7	12,4
Placed orders via EDI-type messages	2,2	2,2	0,9	7,7
Percentage of the total purchases that resulted from orders placed electronically				
= /> 1%	3,6	3,7	2,4	6,4
< 1%	1,4	1,0	2,3	8,6

Source: www.stat.gov.mk

## Usage of information and communication technologies in enterprises, 2014

According to the data of the State Statistical Office of the Republic of Macedonia ([www.stat.gov.mk](http://www.stat.gov.mk)), in January 2014, 93.1% of the enterprises with 10 or more employees had a broadband connection to the Internet (via fixed or mobile broadband connection). Access to the Internet via a mobile connection (broadband or other mobile connection) was used by 59.3% of the enterprises. 60.7% of the enterprises provided to their employees portable devices that allow a mobile connection to the Internet for business use, but only 10% of the persons employed were using these devices (e.g. notebook, laptop, smartphone, PDA phone). Social Media (e.g. Facebook, LinkedIn, Twitter, Present.ly, YouTube, Flickr, Picassa, Wiki-tools, etc.) were used (but not only for paid advertising) by 36.8% of the enterprises. Cloud computing services used over the Internet were bought by 11.9% of the enterprises. 40.9% of enterprises were sending or receiving EDI-type messages in a format that allowed their automatic processing (e.g. EDI Electronic Data Interchange, UBL, XML), 21.6% had ERP-software package to share information within the enterprise, and 20% used CRM software for managing information about the clients. During 2013, 9.7% of enterprises with 10 or more employees had e-commerce, i.e. buying or selling goods or services over computer networks (via websites or EDI-type systems), 6.4% of enterprises had web-sales, and 4.4% of enterprises made web-purchases.

### Conclusion

The development of modern means of communication, especially electronics, is playing a significant role in the process of globalization. That leads to a thorough ongoing process of changing existing relations. Today electronic commerce and the general electronic way of working is used in areas where it was difficult or impossible to implement in the past.

The modern approach is characterized by the transformation from mechanical into electronic, leading to a rapid penetration of technical progress. The development of e-commerce leads to a series of advantages over the conventional method of functioning. However, in addition to the positive there are negative sides of this process, expressed through the security issues and the risk of abuse of the entire electronic system.

Electronic commerce has an impact on three factors:

- Economic,
- Technological and
- Social.

It is important to note that the progress of the electronic commerce continues and it is necessary to provide the required conditions for its smooth functioning having in mind that it benefits both sides of the market: buyers and sellers.

### References

- Alrouh, B., Al-Debei, M. M., Ghinea, G. (2010) *Developing a Decision-Making Framework for Web Service Security Profiles: A Design-Science Paradigm*. Available at: [http://works.bepress.com/mutaz\\_al-debei/12](http://works.bepress.com/mutaz_al-debei/12)

- Dave, C. (2002) *E-Business and E-Commerce Management*, Pearson Education Limited, Essex, UK.
- Gray, J. (2015) *Information Technology Valuation: A Strategy and Risk Based Approach*. University of Redlands. Retrieved from [http://inspire.redlands.edu/cas\\_honors/85](http://inspire.redlands.edu/cas_honors/85)
- Herrmann, P., Tavakolifard, M. (2010) Special issue on trust and privacy in electronic commerce. *Electronic Commerce Research*, open access at Springerlink.com
- Kim, D., Ferrin, D., Rao, H. R. (2008) A Trust-Based Consumer Decision Model in Electronic Commerce: The Role of Trust, Risk, and Their Antecedents, *Decision Support Systems*. Research Collection Lee Kong Chian School Of Business.
- Kuznetsova, N. V., Vorobeva, N. A. (2015) Analysis of the aspects of changing the economic paradigms in the world economy, *Ekonomika*, 61(2), 55-68.
- Mladenovic, S. S., Cuzovic, Dj. (2014) Development of the Concept of Corporate Social Responsibility in Trade under Conditions of Market Globalisation, *Ekonomika*. 60(4), 117 – 129.
- Powell, C., M., Conca, C. (2015) Perceived Risk Reduction In E-commerce Environments, *Atlantic Marketing Association Proceeding*, Savannah, Georgia.
- Selty, J. (2003) Internet banking-an Overview, *Journal of internet banking and commerce*.
- Stevanovski, M. (2009) *Marketing information system, market research and pricing*, MSI.
- Stevanovski, M. (2012) *Management information system*, Virtual-M
- Tapscott, D. (2015) *The Digital Economy*, McGraw-Hill Education
- Tapscott, D., Lowy, A., Ticoll, D. (1998) *Blueprint To The Digital Economy*, McGraw-Hill
- Vassos, T. (2001) *Strategic Marketing on Internet*, CET Computer Equipment and Trade
- Vida, I. et al (2015). *National Culture Dimensions and Consumer Digital Piracy: A European Perspective*. Atlantic Marketing Association Proceeding, Savannah, Georgia
- Wagner, C, Sweeney, E. (2010) *E-Business in Supply Chain Management*, IGI Global, Hershey PA 17033
- Wright, P. M., Dyer, L. (2000) *People in the E-Business: New Challenges, New Solutions*. Cornell University, School of Industrial and Labor Relations, Center for Advanced Human Resource Studies. Ithaca, NY
- Yoo, C. S. (2010) *Innovations in the Internet's Architecture that Challenge the Status Quo*, Legal Scholarship Repository, University of Pennsylvania Law School
- Zang, J., Khan, M. R., Shih, D. (2015) *Rating Determinants Factored in E-Commerce Decision Making*. International Journal of Applied Management and Technology 2015, Volume 14, Issue 1, Pages 1–20. Walden University, LLC, Minneapolis, MN
- <http://www.stat.gov.mk/>





**Pál Michelberger**<sup>1</sup>  
Óbuda University,  
Keleti Faculty of Business and Management  
**Sándor Dombora**<sup>2</sup>  
PhD Student, Óbuda University,  
Doctoral School on Safety and Security Sciences

SCIENTIFIC REVIEW ARTICLE  
doi:10.5937/ekonomika1601125M  
Received: November 15, 2015  
Accepted: February 20, 2016

## A POSSIBLE TOOL FOR DEVELOPMENT OF INFORMATION SECURITY - SIEM SYSTEM

### Abstract

*The implementation of information security for governmental institutions is regulated by laws, which specify the development of complex regulation environment and implementation of information security solutions. The implementing regulation emphasizes the minimal user access rights principle, which means employees should be provided with necessary and sufficient rights to do their jobs, prescribes the implementation of a control system which limits user activities to the execution of their tasks, requires security analysis of information systems' log files of organizations handling large volume of personal data. Considering that the weakest point is the user, the most important aspect of log file processing is user activity analysis, building user profiles, identifying unusual events based on these and analyse them based on the data available about users for the organization. The paper discusses the goal, role, possibility, the importance and limitations of building user profiles instantly by analysing log files, considering efficiency, and all-inclusiveness with minimization of false alarms and administration tasks based on information available electronically about employees. By the end of the paper a cost-effective model is presented for automated user activity and profile analysis.*

**Key words:** SIEM, user activity analysis, user's profile, security awareness

**JEL classification:** M15, M59

## МОГУЋИ ИНСТРУМЕНТ РАЗВОЈА ИНФОРМАЦИОНЕ БЕЗБЕДНОСТИ – СИЕМ СИСТЕМ

### Апстракт

*Обезбеђење информационе безбедности државних институција регулисано је законом, којим се утврђује развој комплексног законодавног оквира и имплементација безбедносних решења. Регулатива посебан акценат ставља на принцип минималног приступа корисника, којим се запосленима пружају само неопходна овлашћења како би обављали свој посао. Са друге стране, регулатива прописује употребу система контроле који лимитира активности корисника*

<sup>1</sup> michelberger.pal@kgk.uni-obuda.hu

<sup>2</sup> dombora.sandor@kvk.uni-obuda.hu

*у обављању њихових задатака и захтева анализу безбедности датотека информационог система које садрже велике количине личних података. Имајући у виду да је најслабија карика корисник, најзначајнији аспект обраде датотека је анализа активности корисника, израда профила корисника, идентификовање необичних појава и на основу тога анализа доступних података о корисницима организације. У раду се сагледава циљ, улога, могућности, значај и ограничења за израду корисничких профила путем анализе датотека, имајући у виду њихову ефикасност и свеобухватност са минимумом лажних узбуна и административних задатака на основу електронски доступних података о запосленима. На крају рада је дат модел исплативости за аутоматске активности корисника и анализу профила.*

**Кључне речи:** СИЕМ, корисник анализа активности, профил корисника, безбедност свести.

## 1. Introduction

Several international research studies conducted by consulting companies confirm that users and administrators, employees and managers represent the biggest information security risk (Ernst & Young, 2014), (PwC, 2015), (A Frost & Sullivan Market Study in Partnership with ISC2, 2013), etc. Furthermore the risk is boosted by the evolution of information technology. We should also consider the impact of social media sites and the use of private mobile assets for business purpose.

One way of handling the risk of the human factor is the traditional identity, user rights and role management regulation and enhancement of it with the new type of information security assets. The access of confidential data stored on file servers of organizations (companies) can be queried regularly (File Audit). Naturally the prerequisite for this is the classification of files in protected security classes.

By building user profiles during the operation and administration of information systems we can perform continuous “monitoring”, investigate the user’s motivation, information security knowledge, attitude and awareness in cases of unusual behaviour. This means a preventive information security activity, which cannot be considered paranoia by the chief information security officer. It is easy to filter out the unusual user behaviour events from the standard and routine working activity using the log-entries database.

By using a modern SIEM (Security Information and Event Management) system, we can get an overall view of the information security activity of the organization (Miller et al., 2014). Such a special IT system gathers and stores the events related to information security regarding users, data flow, network, and security assets (e.g. firewalls, antivirus, intrusion detectors, etc.). The security analysis of events means comparison to the “usual” operation. By gathering, aggregating and analysing the log data from different sources, the intentional and unintentional damages caused by security events can easily be localized.

## 2. Paradigm shifts regarding information and IT security risk analysis

By now organizations employ user restrictions, strictly regulating and control based business processes supporting an information security systems approach. This all-inclusive “protection” (event monitoring 24 hours a day, management of different overlapping security technologies, log analysis, operations) can be regarded as less efficient because of changing threats.

Nowadays, the information security services provide several effective possibilities (Kim & Solomon, 2013):

- Internal firewall management;
- Automated journal and log analysis (data access monitoring);
- Vulnerability assessment (discovery, classification, analysis, risk assessment of assets in internal network, fixing and verifying vulnerabilities);
- Automatic security assessment of Internet application;
- Verification of Wi-Fi security;
- Controlling network access (user authentication, handling, inadequate users, exclusion of unauthorized network end points);
- Intrusion signalling;
- Emphasized handling of sensitive data after classification;
- Event management (infrastructure, log analysis of assets and applications).

This means continuous monitoring of the users’ behaviour and filtering as well as dedicated investigation of the unusual activities using mathematical methods (distribution analysis, pattern matching, and text analysis). Alerting the staff happens after ranking the log entries by risk, so they can focus on the most important and risky events. The efficiency of security measures can be increased by reasonable restriction of the scope of risk assessment territory.

During logging in it is recorded: what and when changed, who executed and from which access point was started the transaction as well as whether or not the change was allowed/approved.

The information systems security as well as the information security of organizations should be assessed from several points of view. The efficiency of SIEM systems requires alignment of the information security measures (policy) of the company, IT assets and company processes.

In information protection, we can distinguish security levels (Park et al., 2008):

- Information technology infrastructure security (configuration management, hardware, software and network protection);
- Information handling (record, change, delete, and inquire respectively);
- Business processes (process control, workflow, IT support of products and services, customer service activities);
- Organization (information security strategy, risk management, organization structure, management style, company culture, support of management activities);

This “holistic” access control system approach is a good example. We can find activities related to this on all four levels:

- IT level – user authentication;
- Information handling – providing minimal user access rights to data necessary for execution of work activities;
- Process level – splitting critical processes, entitlements attached to persons and locations;
- Organization level – risk avoidance, development of access groups and regulation of access control system and continuous monitoring.

Maria Karyda et al. (2005) developed a general operational security model for information systems in which besides the security level plays a role:

- The change management (in organization structure, organizational behaviour, processes and information technology) – as *information-content*.
- The external and internal contacts, *relationships* (economic, legal, political and social factors, industrial competition, supplier circumstances, internal elements of organizational culture).
- The cultural and power viewpoint approach of the business processes (presence of security needs in organizational culture, and enforcement of power in information security policy).

### 3. Entitlement, role and identity management

The transaction management and management information systems (e.g. ERP, CRM, EAM) support, model and several times optimize the value generation and support process execution of the company. The employees (the users) in their scope of activities execute “basic” tasks by using information technology resources. They record, edit, query, maybe delete data, to ensure information – as a resource - availability for the different levels of decision makers.

In the case of many users and several heterogeneous information technology based information systems, the identification and system access monitoring may become completely chaotic. Gaps and/or overlapping may arise in authorization and authentication. User rights are not always established based on actual tasks or scope of activities. Rather established customs or organization traditions are taken into account. Overlapping user access management may evolve for the independent information systems of the organization. Several times the user access management administration is done after change completion (employee transfer, exit, new process implementation, outsourcing, etc.).

The solution could be the development of a role based organizational structure and process analysis, which can be combined with identity management of users with role association.

The employee who executes the company processes uses the information technology assets of the company. Naturally the user does not need all IT assets and all the stored data of the company. The *access rights* limit the user’s interaction, optimally to the information management tasks needed by his/her scope of activities. The basis for access rights should be the business processes, their scope, organizational structure and IT infrastructure. The information security risks (loss or unnecessary access of valuable

company information) are related. The organization and individual knowledge, the company culture, and the responsibility accompanying the scope of activity affect the development of the concrete authorization system.

The access rights (deliverable, implementable, adjustable, controllable, rejectable, interruptible and removable) are registrable and should be registered. It is very important to obtain the approval of the workplace manager and the responsible information security officer. In simple cases the employee is provided with a username (login) and a password. In the case of higher security levels, needs can be complemented or replaced with biometric “identifiers” (e.g. fingerprint, iris, earlobe, etc.) or complemented with hardware assets. These are associated with information systems, business application modules, menus, screens, input fields, and database query possibilities regarding business processes and company goals. The access rights can be bounded to operational place and time.

Regarding their scope of activities, sometimes the users should have access to several information systems. This means that they should “prove” their access right several times. This can happen by using owned assets (You have ...) suitable for identification (chip and magnetic cards, hardware keys).

In the case of a large number of systems, the knowledge base (You know...) identification is hard to implement, just think of a private person and how many passwords they have. Furthermore, these should be changed from time to time because of security reasons.

Simplicity might be achieved through the use of biometric elements (fingerprint, handprint, iris, vein, DNS) for identification (You are ...). Their usage raises a human rights issue. In every case, employers cannot require their use by employees.

Security becomes complete with the development of adequate roles and the connected role entitled systems.

In case of medium and large enterprise companies with multiple premises, executing “standardized” processes with role implementation is worth considering. Users in the same role get the same access rights. The role might be connected to several applications. In this way the setup of user access rights may be automated and mass changes can be performed easily once. The necessary access rights may be filtered and the number of individual access rights can be reduced to a minimum. Thus, the number of roles will be smaller than the number of users.

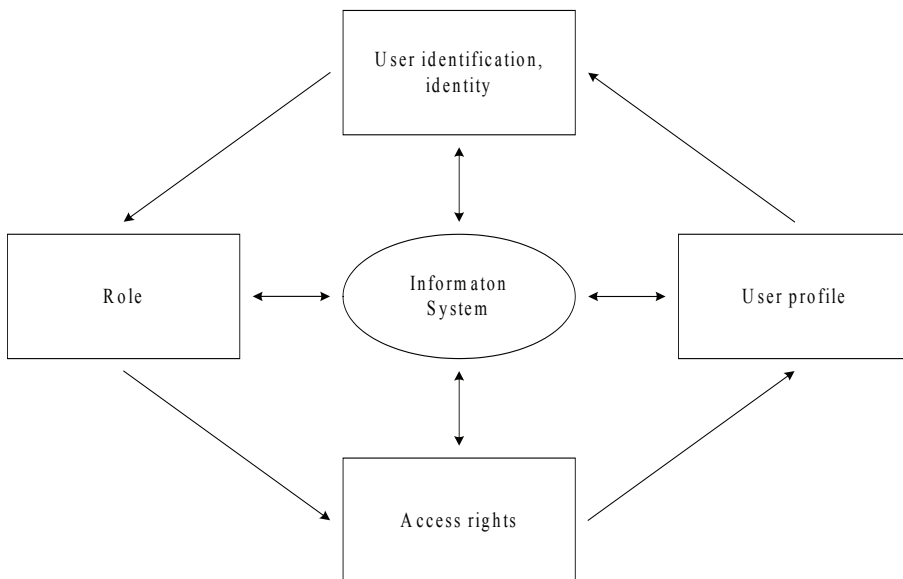
Roles might be connected to business processes (process activities) and organization units. The first enables the functional service of business activity of the company. The later enables the organizational operations and supports decision making. The roles are “invariant”, where only the evolution of information technology or new business processes may affect and change them. Thus the fluctuation of users does not affect the operation of company information systems. Most commercially available, transaction management based IT solutions already use the so-called Role Based Access Control. At the beginning of the role development of the company business process the organization based business role expectations do not match the information management functionality provided by the information systems. One of the most important goals of development of roles is the adjustment of information technology with business requirements (Klarl et al., 2009).

By using *identity* management, we might identify employees and business partners in one or more company information system. In this way we can regulate their access to

different information technology resources. IT links user access rights and denials to the information management functions available in information systems. This becomes very important when the company has several interconnected information technology based information and communication systems. The user access verification (authentication) and allocation of the new access rights (authorization) of new users does not count among its tasks. It tracks the users' individual life cycle (e.g. join the organization, expansion of scope of activity, change of position caused by reorganization, longer unpaid leave or exit).

The organizations operating the information systems by developing, continuous maintenance of *user profiles* and filtering unusual user behaviour may attract the employee attention to involuntary damage too.

Figure 1. User analysis subsections



Source: Prepared by the authors

During user profile development, we may use the log files which contain all data and business transactions started by the users (information request, record new data, data modification or deletion).

By quick analysis of the log data resulting from user behaviour and filtering unusual user behaviour, we may handle information security issues. Unusual behaviour is always a security risk factor (see: „User Activity Analysis” subsection).

#### 4. The grouping of users

It is worth sorting users into user groups before user behaviour analysis. J.M. Stanton et al. (2005) sorts users based on two factors:



- IT and IT security expertise (low or high ...);
- User intention or approach (malicious, neutral and beneficial).

The employee may be dissatisfied (conscious saboteur), naive or hired by a foreign organization and from an analytical point of view the motivation may be important.

This may be completed with habits affecting information security originating from generational differences. According to sociologists the employees may be sorted into five groups regarding their birth date (Lancaster, Stillman, 2005):

- Veterans (born before 1946; they are not relevant as employee);
- „Baby boom” generation (born between 1946 and 1965);
- X generation (born between 1965 and 1980);
- Y generation (born between 1980 and 1995);
- Z generation (born after 1995).

The five generations represent different information security awareness levels where each one has a different information security risk characteristic (Michelberger et al., 2013).

The role in the organization may be a grouping factor too. IT may be worthwhile to distinguish users from middle and senior management as well as professionals responsible for the operation of information systems.

## 5. Security awareness

The users have access to protected information because their scope of activity requires that they have access rights. In case of malicious attacks, it is obvious to the offender to take advantage of security weaknesses.

Analysing user profiles may uncover unusual behaviour and determine negligence and malicious intentions.

Using this information we may inform users about damages implied by their activities, ask them to comply with regulations and improve the working environment.

The implementation, introduction and production of new software assets without adequate security knowledge in the company may affect security awareness as well as weaken information security (e.g. file sharing tool, removable devices, social media sites, etc.).

Users often feel that the information security regulations are ambiguous, hard to comply with, and do not fit together with the company business processes (Albrechtsen, 2007). The roles are not synchronized with the responsibilities. In these cases the users “invent” how to use the information systems. In security surveys and during examinations they declare themselves as conscious users, but their behaviour in case of individual and unusual events shows that they consider more important the practical and quick business results. Situation awareness (Webb, Ahmad, Maynard, Shanks, 2014) greatly influences information security. It would be important for users to understand the importance of the meaning of information for them, what it means now and what it would mean in the future and for what goal achievement it is (will be) needed.

Through event management becomes controllable the so-called “social engineering” audit too. During this activity an independent external expert team tries to

map the weaknesses (security gaps) of the organization regarding information security and test the implemented defence measures. This means testing intrusion (physical too), unauthorized access of information, stealing of assets, installation of spyware, phishing, and sending infected files.

## 6. User analysis

The assessment of user characteristics, habits and behaviour, by analysing the activities and modes of execution of the activities performed with its user profile during execution of its tasks uses the data available in the employee registry of the company, the log entries regarding user activities of the transaction processing systems available in their log files. The information synthesized this way may be used as master data during log file analysis for information security in order to filter unusual user behaviour events and identify information security events. The log analysis may provide new information about users, which can be used to improve the already available user profile.

## 7. User activity analysis

The user activity analysis regarding the amount of information available per user, the resources needed to gather and process it is a huge task in the case of larger organizations, but it is not unimportant in the case of small organizations too.

The manual processing of the security information it is possible in small organizations, but the accessibility for manual processing of the personal and the activity log raw data without automated pre-processing may lead to misuse or abuse.

For the execution of an automated user profile analysis, information about users available for the company should be available in the SIEM system, which processes the user activity information. The information available about users can be categorized into groups of data storable and not storable in information systems. The storage of personal information or information related to persons may violate privacy and other rights relating to personality. During definition, recording and processing of the set of data, privacy and local rights related to personality should be considered in order to comply with legal requirements. Furthermore the security of data - confidentiality, integrity and availability – should be warranted, so only the entitled persons may have access to them, and only when needed.

We may consider master data, the rarely changed personal data and user characteristics description data, needed to build user profiles, which are usually available for the organization in the following databases:

- Registry of employees, which includes:
  - o The employee roles and tasks;
  - o The age group – which generation belongs to;
  - o The position held in the organization;
- Access Control System, which regulates the physical access of the employees, to which buildings and territories has access rights;

- Time and Attendance System, which regulates when the employee has user access to the information systems and from where;
- Directory services which contains:
  - o User identifier of the employee;
  - o The workplace and the contact information;
  - o Group membership, which usually covers and ensures access rights;
- Identity Management System, in case of lack of it, user access control registry, which support the registration, change and removal of access rights for the users;
- Configuration Management Database (CMDB), which records all the assets used, accessed, administered by employees.

To successfully execute user activity analysis further data are needed, which may change continually and are not available in information systems of the organization, but can be synthesized from the entries regarding user activities stored in the log files of the information systems. These may be user behaviour, personality characteristics, helpfulness, typing speed, user aptitude, security awareness, usual login end point, login path and duration, the system commands and their order used in information systems. The small deviations from the user profile perceived during log analysis should be analysed and added to the user profile, while keeping the historical data too. In this way the user profile can be maintained continuously, the bigger deviations might be considered as unusual events and may be subject of further investigation or alert.

From the information security point of view the most important data is the user activity log entries in the log files of information systems. We might consider these monitoring of the user, but their real goal is the identification of unusual events and their use for the improvement of organizational information security. The information systems continually log the activity of the users to allow the identification of user or technical errors and facilitate their remediation and elimination. This information can be analysed and interpreted system by system individually, but in this case conclusions may be deduced for the individual systems only. Because the attacks against information security usually affect more than one information system, their identification is more effective if the analysis is done on all merged log files. The security analysis of user activities plays an important role in the investigation of log file entries originating from security assets and the analysis of network traffic. The analysis is performed in SIEM systems, which gather the log entries from the information systems of the organization, identify activities using complex mathematical algorithms and put together the coherent information of these.

Despite contemporary logging standards, the different information system log events in different formats. Despite formal differences of log entries they contain the most important data in most cases. On the basis of which the following information can be produced:

- Who generated the event;
- What is the subject of the event – what happened;
- When did the event happen;
- Where did the event happen – on which asset;
- Which object happened the event on (file, database, etc.);

- The source of the event – from where was fired the event;
- What was the event aim at.

This makes possible the standardized storage of different kind of event records (SECUROSIS, 2010), which is called normalization and enables the uniform storage (United States Patent, 2014) and processing of the events originating from different system log files. There are information systems which record events repeatedly until the root cause is identified. This makes the filtering of duplicated log entries an important task. In large organizations this means gathering, processing and storage of the huge amount of event records data. The next phase of log entry processing is the correlation of events originating from different information systems. During event correlation the SIEM systems apply complex mathematical models to identify relationships. With the appearance of the APT (Advanced Persistent Threat) attacks event correlation became more and more important, as these types of attacks are prepared and executed during a longer period of time, while, the attacker is waiting for the best moment to execute the intended malicious action and gathers information about the organization, employees and assets.

The realization of user activity analysis is a complex task, implementing it in SIEM systems in most of the cases requires long preparation and usually implies high cost because their operation requires continuous support activities (Shenk, 2012). The SIEM solutions available on the information security market provide different functionality, data processing and reporting speed and they are able to process different amounts of log entries during a given period of time (Butler, 2009). Some of the solutions skip log entries without processing in order to keep the ability of real time analysis. Others aim to do all-inclusive processing and lose the ability of real time reaction to the security events. In most cases the duration of information security attacks is less than one hour, but often it takes only minutes, so the ability to respond to these requires real time alerting mechanisms. In the case of large organisations scalability plays an important role, because their activity generates huge amount of information security data, the processing of which requires significant computing, processing, storage and reporting capacity. Moreover the storage of security data requires well designed data storage structures which support information security, processing of large amount of data and supports the report generation (Shackleford, 2013).

## 8. User activity analysis automation

The size and scope of activities of organizations determine their need of information processing, storage and security. The implemented information processing infrastructure and storage capacities usually fit the needs because the business depends on them. The information security is invisible – in some cases the abuse of it too -, so the implementation of support systems usually does not reach the needed level. For example: there is a log file consolidation solution, but it is only used for security incident analysis.

The processing of available log file entries for user activity analysis can be executed with SIEM systems enhanced with an intelligence layer customized to organizational needs

(Shackelford, 2014). As we have seen, to execute an automated user activity analysis, the setup of several master data files is needed, which are available in information systems depending on the information technology maturity of the organization. The modern SIEM systems are able to import these data automatically. If the master data import cannot be automated, particular attention is needed for refreshing it in time, especially in the case of user account and access rights at creation, change and removal.

The implementation, operation and support of the first generation of SIEM systems was difficult, resource intensive and costly regarding their added value. The minimization of costs and tasks might be achieved by automation of master data administration by importing them regularly through interfaces from other systems or data files and refreshing them using the results of log file analysis. Scientific research is in progress to build a SIEM system which requires minimal configuration and can identify unusual events and information security incidents with high accuracy.

## 9. The role of configuration and change management in user activity analysis

Configuration management might be considered in the strict ITIL based sense, which covers the maintenance of the configuration items register (information technology assets - hardware, software and network- and users) and their relations in the configuration management database (CMDB), supports answering questions like: “What would be if ...?” based on analysis of asset data available in the database and supports change management; in the broadest sense it covers the configuration item settings maintenance too. The configuration management is in close relationship with IT asset management (ITAM) because it registers the owner, location, responsible maintainers, administrators and users of the IT assets.

Configuration management relies substantially on *change management*, which plays an important role in keeping up to date the configuration item data in the CMDB. The most important role of the change management is to register the IT change requests, track their design and implementation, provides adequate controls to support the successful execution of changes and to register the changes implied in configuration items.

After the approval of the change requests and design of changes it is worth registering the implied changes of IT asset in the IT infrastructure to the configuration database and marking them final, after the successful implementation of the change.

The solutions supporting configuration management may be divided in two groups:

- Solution supporting automated update of configuration items, which monitor continually the information technology infrastructure elements, detects the changes emerging in configuration items and their configuration, in case these are registered among the approved changes in the change management registry, acknowledges them, otherwise alerts the configuration manager about the unapproved change;
- Solutions not supporting automated refresh of configuration items, in this case the update of configuration item parameters, are done manually after implementation if changes.

From the point of view of information security both solutions support the log analysis and the analysis of user activity by providing information to SIEM systems about assets, users, their parameters and relationships by data import through interfaces and historical data query. The configuration management solutions supporting automatic update of configuration item data detect the changes of configuration items and their relations in the information infrastructure of the organization and may analyse these regarding the approved changes in progress and report unapproved changes to the configuration manager while logging the event. The SIEM systems processing the log files, detect the unapproved changes in the IT infrastructure and may report information security events to the administrators.

A well designed and implemented IT operating model and CMDB based IT service management solution may play an important role in user activity analysis, unusual event detection and information security incident identification.

## 10. A possible model for automated user activity analysis

In the case of SIEM systems transmitting unusual event detection and alert messages to administrator in real time, the minimization of administration is a key factor in order to facilitate operations. This can be achieved by building an appropriate operation model and gathering master data needed to build user profiles automatically from partner systems through interfaces when these data changes happen.

Regarding modern SIEM systems, it is a requirement to provide interface mechanisms to system management and information security solutions (Tarala, 2011), such as directory services, CMDB (Configuration Management Database), incident and change management solutions, IDS (Intrusion Detection System), IPS (Intrusion Prevention System), antivirus systems, proxy servers by querying which may improve the performance of log file analysis and help to improve the detection rate of unusual events and security incidents.

If there are adequately detailed log files available, a new possibility arises for identification of new and changed user role and access right tasks performed by administrators. By querying and using master data available in partner systems the legitimacy of these changes can be verified. If no adequate master data is available the user, role and access right changes might be interpreted as unusual events and administrators should be alerted, who may analyse and acknowledge the changes as new or changed user or may detect an information security event. The maturity of the information technology of the organization and the availability of master data needed for user activity analysis in information systems significantly influences the amount of tasks needed to execute the setup and maintenance of the SIEM system and detection of information security events. During log file analysis new data may be synthesized about users which should be stored historically in the user profile, continually improving them.

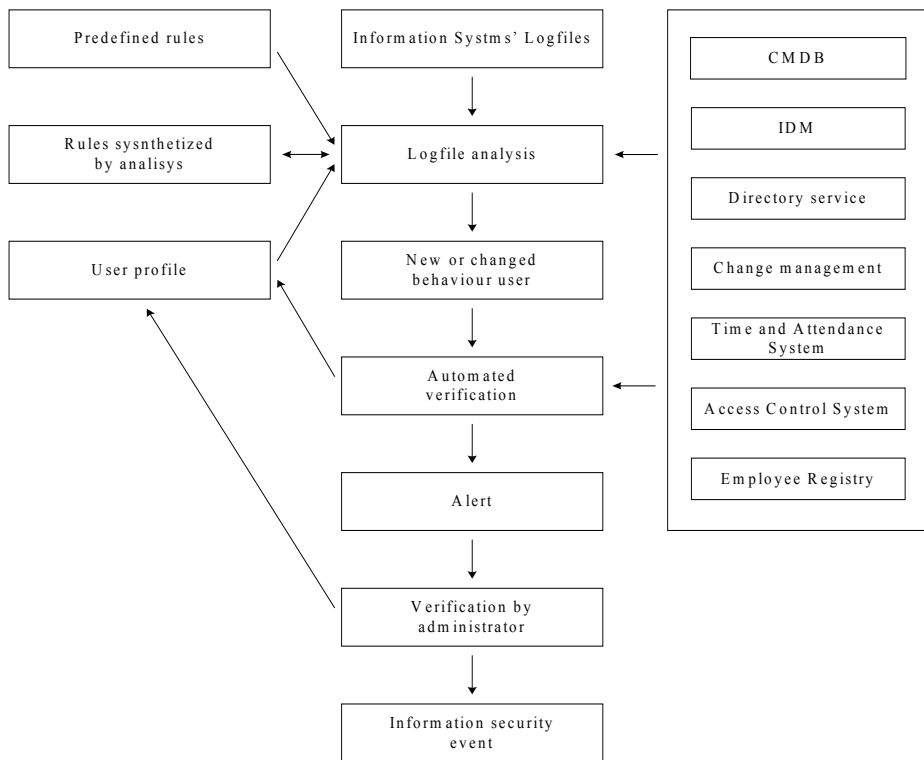
Most organizations do not have all the master data needed for user activity analysis available in information systems, so the all-inclusive analysis of the user profile is not achievable. There are two possibilities available for these organizations to do user profile analysis:

- Skipping the analysis connected to the master data elements missing from information systems, which may lead to loss of unusual event detection and information security events may remain undiscovered;

- Executing the analysis of log entries connected to the missing master data elements, which may produce false alarms.

Both approaches have advantages and disadvantages: if the log analysis is not complete, it can be executed faster, but information security events may remain undiscovered, while the analysis based on incomplete master data records takes longer, are inaccurate and may lead to several false alarms sent to administrators, which means administration overhead for the organization. There exist other configurations available between the two extremes which detect the information security incidents, but the filtering of false alarms does not mean too much administration. The successful SIEM and Log Management Strategies for Audit and Compliance (Swift, 2010) written by David Swift provides useful support for implementation of SIEM systems.

Figure 2. Automated user profile analysis model



Source: Prepared by the authors

## Conclusion

The real scope for the organizations is not the operation of a SIEM system, but:

- Minimization of unnecessary user access rights;
- Special attention and control of system administration activities;



- Identification of unusual events and information security incidents;
- Detection of security holes of information systems;
- Detection and response to attacks originating from inside and outside of the organization against information systems;
- Prevention of information leakage and data integrity assurance;
- Improvement of business continuity;
- Detection of information security awareness gaps and eliminating them;
- Identification of the participants of the events (event management, user identification and configuration management integration).

The implementation, maintenance and operation of SIEM systems is successful, when fulfils the following conditions:

- The number of false alarms and security events is minimal;
- The solution does not impose unnecessary administration burdens to the organization.

## References

- A Frost & Sullivan Market Study in Partnership with ISC2, <http://www.isc2cares.org/uploadedFiles/wwwisc2caresorg/Content/2013-ISC2-Global-Information-Security-Workforce-Study.pdf> (27.2.2015.)
- Albrechtsen, E. (2007) A Qualitative study of users' view on information security. *Computers & Security*. Vol. 26, pp. 276-289.
- Butler, J.M. <http://www.sans.org/reading-room/whitepapers/analyst/benchmarking-security-information-event-management-siem-34755> (5.7.2015.)
- Ernst & Young, [http://www.ey.com/Publication/vwLUAssets/EY-global-information-security-survey-2014/\\$FILE/EY-global-information-security-survey-2014.pdf](http://www.ey.com/Publication/vwLUAssets/EY-global-information-security-survey-2014/$FILE/EY-global-information-security-survey-2014.pdf) (27.02.2015)
- Karyda, M., Kiountouzis, E., Kokalakis, S. (2005) Information systems security policies: a contextual perspective. *Computers & Security*. Vol. 25, pp. 246-260.
- Kawakami et al. (2014) United States Patent No.: US 8,732,129 B2 Storage System for Managing a Log of Access. United States Patent and Trademark Office
- Kim, D., Solomon, M.G. (2013) *Fundamentals of Information Systems Security*. Jones & Bartlett Publishers, Second Edition
- Klarl, H., Molitorisz, K., Emig, C., Klinger, K., Abeck, S. (2009) Extending Role-based Access Control for Business Usage. *SECURWARE '09, The Third International Conference on Emerging Security Information Systems and Technologies*, pp. 136-141. Athens/Glyfada, Greece.
- Lancaster, L.C., Stillman, D. (2005) *When generations collide*. First Collins Business Edition. New York
- Michelberger, P., Beinschróth, J., Horváth, G. K. (2013) The Employee - An Information Security Risk. *ACTA OECONOMICA UNIVERSITATIS SELYE 2 (1)*. pp. 187-200.

- Miller, D.R., Harris, S., Harper, A., Vandyke, S., Blask, C. (2014) Security Information and Event Management (SIEM) Implementation. McGraw-Hill.
- Park, J., Robles, R.J., Hong, C., Yeo, S., Kim, T. (2008) IT Security Strategies for SME's. *International Journal of Software Engineering and its Applications*, Vol. 2. No. 3, pp. 91-98.
- PwC, <http://www.pwc.com/gx/en/consulting-services/information-security-survey/index.jhtml#> (27.2.2015.)
- SECUROISIS, [https://securosis.com/assets/library/reports/Securosis\\_Understanding\\_Selecting\\_SIEM\\_LM\\_FINAL.pdf](https://securosis.com/assets/library/reports/Securosis_Understanding_Selecting_SIEM_LM_FINAL.pdf) (7.6.2015.)
- Shackleford, D. <http://www.sans.org/reading-room/whitepapers/analyst/analytics-intelligence-survey-2014-35507> (18.6.2015.)
- Shackleford, D. <http://mpa.co.nz/media/34691/security-intelligence-in-action-sans-review.pdf> (14.07.2015.)
- Shenk, J. <https://www.sans.org/reading-room/whitepapers/analyst/eighth-annual-2012-log-event-management-survey-results-sorting-noise-35230> (01.08.2015)
- Stanton, J.M., Stam K.R., Mastrangelo, P. (2005) Analysis of end user security behaviours. *Computers & Security*. Vol. 24, pp. 124-133.
- Swift, D. <http://www.sans.org/reading-room/whitepapers/auditing/successful-siem-log-management-strategies-audit-compliance-33528> (2.7.2015)
- Tarala, J. <https://www.sans.org/reading-room/whitepapers/analyst/implementing-20-critical-controls-security-information-event-management-siem-systems-34965> (1.7.2015.)
- Webb, J., Ahmad, A., Maynard, S.B., Shanks, G. (2014) A situation awareness model for information security risk management. *Computers & Security*. Vol. 44, pp. 1-15.



**Zoran Jerotijević<sup>1</sup>**  
*Faculty of Business and Industrial  
Management University Union „Nikola Tesla”*  
**Milan Palević<sup>2</sup>**  
*Faculty of Law University of Kragujevac*

SCIENTIFIC REVIEW ARTICLE  
doi:10.5937/ekonomika1601141J  
Received: December 17, 2015  
Accepted: January 26, 2016

## THE BALANCE OF POWER – THE SECURITY CONCEPT OF THE INTERNATIONAL COMMUNITY

### Abstract

*During the development of the international community changing the institutional models of security. One of the oldest, which is applicable to the present day, is a system of balance of power (power). The balance of power means the ability of preserving peace in the world, or better yet, the existing positions of the great powers on the basis of approximately equal power (primarily military and economic). Extremely important role in this security concept played in the new century state-balancer that the war puts aside those forces that wish to maintain the status quo. Important role for a long time in international relations as a balancer had England (United Kingdom).*

**Key words:** the balance of power, force, security, international relations, war. Policies.

**JEL Classification:** N4, P37, K4

## РАВНОТЕЖА СНАГА – БЕЗБЕДНОСНИ КОНЦЕПТ МЕЂУНАРОДНЕ ЗАЈЕДНИЦЕ

### Апстракт

*Током развоја међународне заједнице мењали су се институционални модели безбедности. Један од најстаријих, који је применљив до данашњих дана, јесте систем равнотеже снага (моћи). Равнотежа моћи означава могућност очувања мира у свету или још боље, постојећих позиција великих сила на основу приближно једнаке моћи (пре свега војне и економске). Изузетно значајну улогу у овом безбедносном концепту играла је у новом веку држава-балансер која се у рату ставља на страну оних сила које желе да задрже статус quo. Значајну улогу у дугом временском периоду у међународним односима као балансер имала је Енглеска (Уједињено Краљевство).*

**Кључне речи:** равнотежа снага, сила, безбедност, међународни односи, рат. политика

<sup>1</sup> zoranjerotijevic@gmail.com

<sup>2</sup> milanpalevic@ptt.rs

## **Instead of introduction – and security forces in international relations**

In international relations, act many factors that influence the behavior of entities in these relationships and their interdependence. Special significance for relations between states has powers, as a factor of first class importance. (Ibler, 1971: 365) It is a complex phenomenon that consists of a series of elements, such as: geographic basis, the demographic bases, production capacity, ideology, political system, military power and so on. (Ibler, 1971: 366) Even the ancient world historians noted the importance of force in international relations. Thucydides believed that relations between states are based primarily on force rather than on law and morality. As above state there is no apparatus to maintain international order, each country must work to strengthen its power, to the time of the outbreak of the conflict could be as successful as possible to protect their interests. This ancient world view has not much changed until the beginning of the new century. The great German philosopher, Hegel, stressed the force as a universal value, giving war as a means of policy, of special importance. Quite a few modern scholars of international relations represents a similar view (of course adapted to the prevailing positive international order), and considers that the force, as well as the ability to impose the will of one person to another, the default constant in relations between states. In their view, in order to achieve their own interests the state is allowed to use all the means available to it, including those who are directly or indirectly related to the use of force. Route interest-force, they argue, is very important, even crucial for the distribution of power in the world. Attitude legalistic school, which is based on respect for the norms of international law in relations between states, has remained a dead letter. In practice, the prevalent opinion of the realist school that the main motive of the occurrence of the state in international relations, national interests, and that it can be defended only through force. A typical representative of this school, Hans Morgenthau („Politics among nations”) believes that the idea of the essence of interest policy and that all phenomem in international relations boil down to a struggle for power, and such power that will successfully pursue our national interests. In such a social discourse, law and morality have a secondary importance. Unfortunately, at the beginning of the twenty-first century, the role of law and morality is the same, maybe one notch and reduction.

The force is one of the key (default) security elements.

Concept of security includes multiple and different meanings. In the most general sense, it means freedom from fear, threats and physical violence. More precise definition is difficult circumstance that in a difficult sociological structure of the term, present moral, ideological and normative elements, and perhaps fairest to say that it is a socially constructed concept that acquires a specific meaning only within a given social context. (Avramov et al., 2003: 219)

In the context of international relations, security can be defined in different ways. In the view of Barry Buzan (Barry Buzan) it represents „the ability of states and societies to preserve their independent identity and its functional integrity“ Lipman Walter (Walter Lippmann) however, points out that “the nation is secure to the extent not in danger of sacrificing your core values in order to avoid war if it is capable of them, if challenged, to preserve the victory in such a war“ for Buta (Booth) and Wheeler (Wheeler) stable international security „can only be achieved by the people and groups

that other do not deprive it, and this can be achieved if the security is understood as a process of emancipation“.

Safety is and remains inextricably tied to the state and its defense. It is an essential feature of state sovereignty and the defense of its legitimate functions. Even in the year of the first countries we find the beginnings of jointly addressing issues of security of states; wartime alliance was one of the first institutions of international law in general. That is the issue of ensuring the security set with the emergence of the state and remains one of the most important issues of the entire history of international relations, to the present day, is evidence that life interest of the people to ensure their own security and independent development.

## **The balance of power and international security**

During the development of the international community changing the institutional models of security. One of the oldest and most famous of the system please do not hesitate to protect certain universal values of the international community, is a system of balance of power (power). The system of balance of power is a concept with a long history of use but relatively short presence in official agreements between political individuals.

David Hume balance of power is seen as a scientific law; Glenn Snyder observed in the balance of power the central theoretical concept of international relations; Henry Kissinger, the balance of power compared with the „Iron Law of Politics“, indicating that it is more art than science, more skillfully practiced by some political leaders in relation to the other. Richard Cobden for the balance of power says that it's just a fantasy, just a collection of sounds without meaning; John Bright thinks that the whole concept of balance of power harmful illusion inherited from the past. According to him, the balance of power is impossible as it is impossible and the achievement of perpetuum mobile. If the balance of power is an illusion, then it is a long-term illusion, says Bright. Ernst Haas provides eight different meanings balance of power, more accurately describes eight different meanings which covers its use. Balance (Balance) indicates the distribution of power; equilibrium, hegemony, stability and peace, instability and war, a general (overall) policy of force, the universal law of history, as a state of equilibrium and balance system as a guide for policy-making decisions. Despite variations in meaning, all that converge into one, so that the balance of power often defined as the interaction between the state, which ensures the survival of the system by preventing domination or hegemony of any state or coalition of states. The most famous definition of the balance of power is the one that gives Hedley Bull. According to this definition, „the main function of the balance of power in international society is to preserve peace but to defend the independence of sovereign states from the threat of domination and to prevent the society of sovereign states winning is converted into a universal empire, and to do so if necessary, and war“.

(Bull, 1965: 39)

The balance of power, relying primarily on the appearance of power, assumes that the power of one state or group of states, can not restrain anything else to be able to other states or groups of states. According to this view, piled power will inevitably be used to the detriment of other subjects, and the only way to prevent it consists in preventing such dominance by creating adequate amounts against power. From this it logically follows

that one region, and also for the entire international community, it is best that the power equal or balanced, because then no one will find the opportunity to reach for the values of others. Another way to limit the power does not exist, given that the international community, there is no higher authority which would restrict its owners and forced him to behave in accordance with the general interest.

When asked how exactly does the system of balance of power, there are gaps with regard to the establishment of a mechanism that leads to balance, and hence there are three main groups of view. Under the first, the system works automatically. States do not tend towards equilibrium, given that each of them wants to be as strong and so is the acting. This understanding was the most represented at the beginning of the nineteenth century, and has clearly indicated it owes the basic ideas of liberal capitalism. According to another view, the spontaneous processes of the so-called corrected. State balancers. In accordance with this vision of the functioning of the balance of power, the state balancer should be an exception to the other. Namely, while the latter only care to increase their power, to the detriment of other achieve gains, long state-Balancer has no such aspirations, but her only goal is balance, per se. In this way it describes the European system by the end of the fifteenth century to 1914. According to a third view, a balance should be aware that weight all countries participating in the international relations, the so-called. multiple equilibria. (Claude, 1962: 43) Its classic pattern we see in the eighteenth century, when in Europe there was a balance between Great Britain, France and Spain, in Central and Eastern Europe between Austria, Prussia, Russia and Turkey. In this game, teammates allies could easily be changed. The attempt of Napoleon to master Europe leads finally to an association of all the European powers against France and to its defeat. After that, the state winner trying to establish mutual balance. As a counterweight to the possible renewal of France, winner of the state create an alliance that has the role of tools to maintain absolutist order in European countries. However, as soon as they emerged contradiction between the major European powers, the multiple equilibrium replaces attempts to set up a simple balance between the states.

The firing system of balance of power is conditioned by the existence of the following socio-political circumstances:

- The system should be a greater number of equally powerful major countries that are usually called „great powers“ or „essential actors“.
- Decision makers who need to operate at the forefront of such countries should act rationally and in the interests of the system, which means to apply force only if they can not negotiate, to refrain from destroying any of the „essential factor“ to confront any of them when they want to be predominant or to create a supranational system. (Kaplan, 1957: 690)
- States should be similar among themselves in order to be replaced as allies, and among them there should not be any special kinship, affection, hostility and differences, other than those due to the current balance of power.
- Measurement of power should be feasible and reliable.
- Should be possible limited wars, which can take as long as it does not reach a precise objective (wars for balance).

The main principles for the peaceful exercise of the balance of power as compensation and interventions. The concept of compensation consisted in the fact that



none of the major powers could not allow the loss of other such forces without adequate “compensation” (compensation to) for yourself, because otherwise increased power of the first force and the balance would be undermined. The intervention is carried out within its own sphere of influence and in the system of balance of power tolerated by other holders of balance in the name of supposed higher interest. Whenever domestic political currents in the country, which belongs to the sphere of influence, in the opinion of hegemons threaten to expel the surface currents that would lead to independence, according to a hegemonic logic it can only be for the single purpose of joining another sphere. Such a change jeopardizes the whole system, ie relations between the holders of the balance, which then approved armed intervention and the violent suppression of internal political order. By understanding the holders of balance, from governments within the state’s sphere of influence is not a matter of its people.

As a product of policies generated the so-called balance of power buffer state. They are a function of the physical separation of opposing great powers or alliance. These are countries outside the spheres of interest, but in areas where the pretensions of two forces intersect. Since none is able to dominate the area, and thereby is able to prevent rival to do so, the buffer state allows a free existence without obligation of allocating between the opposing forces. In the history we have more examples. During the invasion of the Ottoman Empire, after the fall of Bulgaria and Byzantium to Constantinople reduction of environment, Serbia Lazarevic and Brankovic decades was a buffer state between Hungary and Turkey. Later in their border areas, Austria created the so-called Military Frontier, populated almost exclusively by Serbs, as a shield against the Turkish invasion. Switzerland is particularly interesting as a buffer state. Founded in the central Alpine area between France, Germany, Italy and Austria, during its existence, to this day, Switzerland has not entered into any world and local war experienced by all countries with which it borders. At the same time, it had held many talks warring parties; it is the headquarters of many international organizations and banks; today many important international negotiation water just in Switzerland. During the Warsaw Pact in northern Europe a buffer state between the alliance and NATO were Sweden and Finland, and in Central and Eastern Europe that were Austria and Yugoslavia. With the disappearance of the Warsaw Pact lost and need to survive a multinational state as it was Yugoslavia. Finally we can mention that in Asia, Afghanistan was a buffer state in the nineteenth and twentieth centuries between the Russian and British spheres of interest.

From the eighteenth century until the First World War, the balance of power was considered the best and unequalled way to preserve stability in the international community and to protect the security of its members. XVIII and XIX century are considered the „golden age“ of the balance of power in Europe, and are taken as a model system of balance of power. In Europe at the time of the adoption of the so-called balance of power existed. the concept of force, which was created with the aim of expansionist and imperialist aspirations of its member directed, regulated and stabilized to avoid mutual conflicts. „Power“ and „power“ as a measure of balance usually were not what would be under such names could be understood. The ruling powers had access to other entities, nations in areas that were annexed and turned into colonies or part of the spheres of interest. This concept was preserved security holders of balance, but this is not true for medium and small states and nations whose good sacrificed for the sake of some „higher“ principles. For the policy of balance of power has a special significance the Congress of

Vienna held 1814-1815. at which it was agreed settlement for Europe and the world after the Napoleonic wars. One can say that this is a good example of a multilateral meeting at which its dominance manifested Russia, Prussia, Austria and England. After the final defeat of Napoleon at Waterloo, signed the Final Act which contained a provision 121. According to this act, France has returned to the border in 1792. and listed the major powers were given territorial expansion as well as expansion of the area of influence. England's gains in the Mediterranean, the Far East and the Caribbean, strengthened its dominance on the seas, Austria got the whole Tyrol, Lombardy and possessions of Venice and Dubrovnik Republic; Prussia annexed Pomerania, Danzig, Poznan, parts of Saxony, Westphalia and Rhineland. Created a German alliance (in which the dominant role had Prussia and Austria) independent German states, which had a joint Assembly in Frankfurt am Main. Russia recognized the annexation of Finland, Bessarabia and a large part of the Polish (with the Duchy of Warsaw). Norway and Sweden have been merged into a single kingdom, in the same way and the Netherlands and Belgium. Shortly after that in Paris he created the so-called „Holy Alliance” consisting of Russia, Austria and Prussia and whose goal was to preserve the decision of the Vienna Congress, and preserving the balance of power, which is then established.

The conventional system of European balance can not be imagined without even explain the role that it played in Great Britain. It is right to say that for many decades in Europe, the United Kingdom constituted the backbone of the system. Unrivaled on the seas and oceans of the world, this empire preponderance of France and Russia, and Germany and the European mainland, managed relying on the role of the diplomatic tase on the geopolitical balance of the time, so very successful and long protecting its interests primarily in the Middle East, Central Asia and India (in the narrow sense and in the Balkans generally supporting Turkey). United Kingdom maintained a balance of being „put your weight on this time, the time on the other side of the scale, but always on the side that was against the political dictatorship of the strongest individual country or group at any given moment”. (Claude, 1962: 43) As Churchill said this „beautiful, unaware of the tradition of British foreign policy“ is the very principle of the foreign policy of a country in its own interest. United Kingdom during that period had secured dominance outside of Europe, where they were positioned (stationed) its expansionist interests, given that it was not fully part of the European regional system, where her only goal was that no state realizes complete dominance, which could threaten the British Empire. The balance of European countries meant, in fact, their self-limited in comparison to the UK, with only wear their own energy, because she herself has intervened only once in a while.

Privacy balance of power leads today. The elements of this system are present in the work of personified (or it should do) the essence of the current system of collective security of the UN. The Security Council, normative and functional-political position in the organized international community today, is modeling the concept of balance of power in the nineteenth century, putting it in the epicenter of the Collective Security Council. But about this phenomenon on another occasion.

## **The balance of power and collective security – similarities and differences**

The concept of collective security can be viewed in a wider and in a narrower sense. In a broader sense, collective security is a common defense security of each member of a related group of countries scheduled in advance that the known and unforeseen that an unknown enemy. (Gavranov, 1969: 7) In the narrow sense of „collective security is an obligation inflow to the aid of victims of the attack on the core values and exists in any case and against any attacker, who cannot be determined in advance, but the aggression being conducted, which means that in the first place must include the state which have established a system of collective security, not only external enemies“. (Dimitrijević et al., 1996: 378)

The concept of collective security was created as a reaction to the system of balance of power, but he is not diametrically opposed to this system, but it also represents his training. Between these two concepts there are some similarities, but also differences. In both cases, the force appears as an essential element, but as a system of balance of power rests on the symmetry of force and such a distribution of power that no participant in this combinatory would not be able to dominate the collective security system rests on the unity of world peace and joint action by all Member States. „The main function of the balance of power is not to keep the peace but to defend the independence of sovereign states from the threat of domination and to prevent the society of sovereign states winning is transformed into a universal empire, and to do so if necessary, and war“. (Bull, 1965: 39) Therefore, „...the balance of power manifests itself as a myth: the skills of professional diplomats not only do not prevent a catastrophic war – indeed, it is widely believed that the suspicion between the alliance and the underestimation of the value, which cannot be translated into the language of force, its main causes“. (Dimitrijević et al., 1996: 372) It is also clear that the advocates of the balance of power and do not expect her to secure peace, but to protect the safety of members of the international community. Leading policy of balance of power of the state and not as they want to avoid war, but to greet him ready for the party which will not lose.

Unlike the balance of power, which transposes the so-called? Preventive wars and wars to establish disturbed balance in the system of collective security can clear only real war between the attacker and the group of countries that defend the attacking, although it does not name. (Dimitrijević, 1973: 53-54) This armed conflict degrades in international tort who performed the attacker and the sanction applied by defense lawyers, which means that the war ultimately not be avoided by the infringer. Simply put, the essence is the following assumption - security is a security of all; an attack on one country means the attack and to all the others that she would come to the rescue, and thus anyone who is planning any attack on another country will advance prevented or stopped, intimidated by the consequences that such an attack would have, because the country will become aware that ultimately cannot fight against the whole world.

In relation to the collective security system, the system of balance of power shows the following characteristics:

- In the system of balance of power, alliances were created against any state that could become „too strong“, „meaning that the emphasis was focused on“

capacity“state. In contrast, in the system of collective security emphasis is placed on the aggressive policies of the State rather than its capacity,

- In the system of balance of power alliances were created in advance while in the system of collective security that is not the case because they do not know that the state will commit an act of aggression. Spontaneous acting member of the international community in applying the collective security system to this system too closer to the system of balance of power,
- In the system of balance of power of the state are governed solely by its own subjectively defined „national interests“, and the water completely separate policy, and the collective security designed to be global and universal, without neutral countries or those that played the ‘lone wolf’ ‘international politics. If a large number of States in that role, „a coalition of good“ would look weak, and its ability to deter and punish aggressors would be reduced.

The similarities of these two systems consist of the following:

- In the collective security system should also be a larger number of equally powerful countries to not aggressive alliance functioned, because reality can never expect that all other countries come to the rescue of endangered,
- Among the states there should be no such distinction that prevents them to oppose the aggressor,
- The application of armed force shall be prohibited (except for the right to individual or collective self-defense),
- To be made a precondition that there are clear criteria for what can be qualified as an act of aggression,
- Affluence in aid for the victims of aggression should be an obligation other countries,
- Because the coercion is prohibited, must be provided the opportunity to be justified and lawful claims achieve a non-violent, peaceful manner.

## Conclusion

The concept of balance of power from today’s perspective it is theoretically poor, because it is based on the state as inviolable the subject of international relations and starting from only one of its size, power, and the assumed goal is always expressed through some kind of territorial possession. The system of balance of power is not able to keep the peace, however, often leads to conflict, either because they establish a balance of power requires war, either because the balance itself is no guarantee of peace. We can cite at least two reasons, the conclusion that the policy of balance of power similar to preserve the peace, which was the main reason for its occurrence. The first historical experience and other reasons are theoretical. European system of balance of power failed to prevent minor wars, even led to the First World War, and the neglect of the League of Nations and the policy of the rival alliance after World War paved the way for even more catastrophic Second World War. Also, recent experiences have convinced us that in addition to the state, there are other significant actors in international relations, and whose activities may not fit into the scheme of balance of power, because of their power, not only through military force, nor are their goals now always only expansionist.

## References

- Аврамов, С., и Крећа, М. (2003). *Међународно јавно право*. Београд: Савремена администрација.
- Bull, H. (1965). *The control of the Arms Race*. New York: Praeger.
- Claude, I. L. (1962). *Power and International Relations*. New York: Random House.
- Dimitrijević, V. (1973). *Појам безбедности у међународним односима*. Београд: Savez удружења правника Југославије.
- Dimitrijević, V., i Stojanović, R. (1996). *Међународни односи*. Београд: Службени лист СРЈ.
- Dimitrijević, V., Račić, O., Đerić, V., Papić, T., Petrović, V., i Obradović, S. (2005). *Основи међународног јавног права*. Београд: Београдски центар за људска права.
- Dugin, A. (2004). *Основи геополитике, књига 1 геополитичка будућност Русије*. Зренјанин: Ekopres.
- Gavranov, V. (1969). *Принципи и примена система колективне безбедности Уједињених нација*. Београд: Институт за упоредно право.
- Ibler, V. (1971). *Међународни односи-изабрани текстови*. Загреб: Naprijed.
- Ibler, V. (1987). *Ријечник међународног јавног права*. Загреб: Informator.
- Kaplan, M. (1957). Balance of power, bipolarity, and other models of international systems. *American Political Science Review*.
- Kisindžer, H. (2011). *Дипломатија*, Београд: Klub Plus.
- Kreća, M. (1989). *Апсолутно обавезне норме (jus cogens) у међународном јавном праву*, Београд: Научна Књига.
- Naj, Dž. (2006). *Како разумевати међународне sukobe – увод у теорију и историју*. Sa engleskog превео Dragan, R. Simić. Београд: Stubovi kulture.
- Petković, R. (1982). *Теоријски појмови неутралности*. Београд: Rad.
- Petković, R. (1985). Безбедност у политичком и правном поретку УН. *JRMP*, br.1-2/1985.
- Petković, R. (1994). *Нова улога НАТО*. Београд: Међународна политика.
- Potemkin, V. P. (1949). *Историја дипломатије, три свеске*, Београд: Државни издавачки савез Југославије.
- Radojković, M. (1969). Колективна безбедност и регионални споразуми у време Друштва народа у Уједињених нација. *JRMP*, br.2/1969.
- Šahović, M. (2008). *Међународно право у међународним односима*, Београд: Службени гласник.
- Stanley, T. W. (1955). *NATO in Transition: The future of the Atlantic Alliance*. New York.
- Todorović, V. (1999). *Ратно право и безбедност, књига 3, том 1*. Београд: Службени гласник.
- Vučinić, Z. (1996). *Војни savezi od Svete Alijanse do NATO*, Београд: Војска.
- Vučinić, Z. (2006). *Међународно ратно и хуманитарно право*. Београд: Службени гласник.



**Ivica Terzić<sup>1</sup>**  
*Singidunum University,  
Faculty of Business Economics*  
**Marko Milojević<sup>2</sup>**  
*Singidunum University,  
Faculty of Business Economics*

SCIENTIFIC REVIEW ARTICLE  
doi:10.5937/ekonomika1601151T  
Received: December 18, 2015  
Accepted: March 7, 2016

## RISK MODEL BACKTESTING

### Abstract

*Within this paper we shall research the validation methods of the risk model and we shall provide an overview of the existing literature which deals with validation and performance assessment of the VaR (Value at Risk) model. The importance of backtesting of the risk model stems from the fact that credit institutions have been allowed by regulatory bodies to use internal model-based approach to market risk measurement and based on such assessments, to determine the capital adequacy. Therefore, the regulator has developed a “traffic light” approach for the backtesting model. However, the last financial crisis has shown that this approach of model validation has failed to provide valid assessments of the VaR model, which has further led to significant underestimation of the risk and a collapse of many banks worldwide. For this very reason, the academic literature has been focused more than ever before, on proposal and development of new techniques for the verification of the risk model. Therefore, the aim of this paper is to provide a comparative overview of the validation methods of the market risk model, which have evolved during the past several years.*

**Key words:** Value at Risk, market risk, backtesting, bank

**JEL classification:** C15, C22, C52, G21, G32

## BACKTESTING МОДЕЛА РИЗИКА

### Апстракт

*У овом раду истражујемо методе за валидацију модела ризика и дајемо преглед постојеће литературе која се бави валидацијом и оценом успешности VaR модела. Важност валидације модела ризика је проистекла из чињенице да је кредитним установама дозвољено од стране регулаторних тела да користе интерне моделе за процену тржишног ризика и на основу њих одређују адекватност капитала. Такође у ту сврху, регулатор је развио „traffic light” приступ за backtesting модела. Међутим, последња финансијска криза је показала да овај приступ валидације модела није давао добре оцене VaR модела, што је довело до значајне потцењености ризика и краха многих банака широм*

<sup>1</sup> iterzic@singidunum.ac.rs

<sup>2</sup> mmilojevic@singidunum.ac.rs



*света. Из тог разлога, академска литература је фокусирана више него икада пре ка предлагању и развоју нових техника и процедура за верификацију модела ризика. Стога, циљ овог рада је компаративни приказ метода валидације модела тржишног ризика које су еволуирале током последњих неколико година.*

**Кључне речи:** *Value at Risk, тржишни ризик, backtesting, банка*

## Introduction

It is important for a financial institution to monitor the volatilities of the market variables (interest rates, exchange rates, equity prices, commodity prices, etc.) on which the value of its portfolio depends. Financial institutions are faced with various forms of risk. In order to control, manage and measure risks, they have been actively engaged in the financial risk management process. The risk management function contributes to better risk management within banks, through continuous measurement of risk of the current portfolio of financial assets and other exposures, as well as by taking steps, either directly or in cooperation with other functions of the bank, in order to reduce the possibility of loss. From the regulator's perspective, the size and the risk of the bank's assets are one of the most important determinants for defining the amount of the necessary capital of the bank.

The globalization of the financial market has led to the need for the globalization of the supervision system of the financial sector. Regulatory bodies are in charge of protection of the financial system against catastrophic events, which could be source of systematic risk. In the last couple of years, the central issue of risk management is to determine the capital adequacy for financial institutions, in order to protect themselves against the market risk. The assessment of the market risk is a complex and an extremely important task for each and every credit institution. This increased focus on risk management has led to the development of various methods and tools for the risk measurement, which financial institutions are faced with.

Financial risk management has truly undergone a revolution in the last couple of years, which has been initiated by the introduction of Value at Risk (hereinafter: VaR), a new method for measuring one aspect of the financial risk, the market risk. In the light of the recent financial crisis, measuring of the market risk is drawing even more attention and is becoming more and more significant. The last global, financial crisis has shown that systems for management and calculation of exposure to such risks, have significantly failed, and has therefore forced banks to take certain steps for the purpose of forming efficient internal approaches and methods for market risk management. Risk managers are attempting to revise the previous methods, given that they feel that one of the most important causes of the recent crisis is the actual poor risk management.

Market risk arises primarily from the bank's trading operations. It is the risk relating to the possibility that instruments in the bank's trading book will decline in value. (Hull, 2012). The trading book marks the positions within the business books of the bank which refer to the financial instruments and the real assets. These are intended for trade or hedging of other elements of the trading book and for such there are no restrictions in regard to their trade, nor restrictions for these positions to be protected

against risk (Base Committee on Banking Supervision, 2009).

The VaR models measure the market and the price risk of securities portfolio, that is, the risk of decrease in portfolio market values, as a result of changes in the movement of interest rates, foreign currencies, prices of securities and the price of commodities. The VaR models encompass several components of the market risk into one quantitative measure of potential losses within a given time horizon. So, the model for assessment of the market risk is the model that envisages the value at risk of the portfolio for one or several confidence levels, during a specific time horizon. In practice, horizon is most often defined as one day (*trading day*). However, the calculation of VaR is a complex task, which includes numerous mathematical and statistical assumptions. Given that they cannot be always fulfilled, VaR models must be subjected to the backtesting process, with the help of various statistical tools.

Backtesting is an important part of the VaR system. It examines how well the VaR model would have performed in the past. Both literature and practice have developed two most frequent manners of model validation, which could refer to potential weaknesses of the VaR model (Kupiec, 1995; Christoffersen; 1998). One refers to the number of outliers, i.e. the number of times when the realized loss exceeds the VaR value. The other manner refers to the extent, in which outliers have been grouped, i.e. whether in time, they have become independent. There are statistical tests which can help determine the accuracy of the VaR model and suggest whether a model should be rejected due to excessive or insufficient number of outliers or due to their frequent grouping.

One of the major disadvantages of adequate measuring of exposure to market risk, by the Serbian banks, in regard to the securities trading activities or calculation of the currency and interest rate risk, primarily lies in the insufficient use of internal models for risk measurement, which are based on VaR methodology. In that sense, the contribution of this paper is to support and suggest the local banks the introduction of sophisticated internal risk models, as well as reliable techniques for validation of their accuracy and reliability when assessing market risks.

The remainder of this paper is organized in the following way. The second part of the paper elaborates on basic concept and the objectives of the backtesting process, as a critical process in financial risk management and the assessment of performance of the risk models. The third part provides an overview of the several, most frequently used and standard techniques and tools, for the purpose of validation of the VaR model. We shall also present the backtesting methodologies which have been proposed and developed during the last world crisis and present the latest state of the art techniques of the risk metrics validation. The fourth part provides a brief conclusion and recommendations for future researches.

## Backtesting

In the past twenty years, the banks have allocated significant funds and resources for the development of internal risk models for the purpose of better quantification of financial risks and determination of the necessary economic capital. These efforts have been acknowledged and supported by regulatory bodies. Thus, the amendment to the Basel Accord from 1996 (MRA), which referred to the market risk, has formally

incorporated internal models of banks for market risk, when calculating the regulatory capital. The regulatory capital requirements for exposure to market risk are exclusively the function of the bank's own VaR assessment. The key component in implementation of MRA was the development of standards related to validation and verification of models (backtesting), which must be fulfilled, so that the bank's models could be used for the purposes of regulatory capital.

The Basle Committee believes that backtesting offers the best opportunity for incorporating suitable incentives into the internal models approach in a manner that is consistent and that will cover a variety of circumstance (Basel Committee on Banking Supervision, 1996).

In finances, the term “backtesting” is used in several different manners. Most often, backtesting implies 1) assessment of performance of trading strategies in the past or 2) assessment of the financial risk model by using historical data for risk forecasting and comparison with the realized rates of return (Christoffersen, 2009). In order to be sure of the reliability of the VaR model, their validation needs to be carried out. This further implies that the critical issue when assessing the risk model is the backtesting. Backtesting requires the application of quantitative, most often statistical methods, for the purpose of determining whether a model for the assessment of risk is adequate or not. The backtesting process can be used for three complementary purposes.

The first objective of the backtesting process is to determine whether the assessments have come close enough to the realized outputs, in order to enable the reaching of the conclusion that such assessments are statistically compatible with the relevant outputs. The backtest, which has been carried out for this purpose, involves statistical testing of hypothesis, in order to determine whether the assessment models are acceptable. The testing of hypothesis can be applied to observations which include the loss exceeding the VaR value, for the given confidence interval, or for the assessment of VaR for several confidence intervals. The second objective of backtesting is to aid risk managers when diagnosing problems they are faced with within their risk models, so as to improve them. The third objective of backtesting is to rank the performances of several alternative risk models, in order to determine which model provides the best performance assessment. A good risk model should fulfill all of the three mentioned criteria: to pass the statistical test, it should not create any concerning diagnostics and it should be well-ranked compared to the alternative methods. The significance of backtesting is obvious: if risk managers have confidence in their risk models, than the models should be properly tested and in such case, should provide proper results.

VaR models for measuring of risks are useful if providing a reasonable anticipation of risk. Therefore, the accuracy of these models should always be verified. This can be done in several ways, including backtesting which represents a procedure for verifying whether the actual losses are in accordance with the projected ones. Backtesting includes comparison of historical anticipation of VaR with portfolio incomes and is very important for managers, in regard to evaluation of errors made in assumptions, wrong parameters and inaccurate modelling. It is a method for comparison of daily profits and losses, with assessments of VaR models, for the purpose of measuring their accuracy and preciseness. Also, according the Basel Accord, backtesting plays a significant role in deciding on the use of bank's internal VaR model for determining the required capital (Terzić, 2014).

If such model is correct, the number of realized losses suits the confidence interval,

i.e. if the confidence level is 99%, then the actual loss occurred in 1 % of cases. For example, if the daily VaR is 1 million € and the confidence interval is 99%, according to the VaR model we can expect for the loss to be greater than the 1 million € in only 1% of cases, i.e. within 2.5 days of a total of 250 working days within a year. If the number of days on which the loss exceeds 1 million, is small, equal to or somewhat greater than 2.5, the model is then correct, but if the number of days when the loss exceeds 1 million is significantly greater than predicted, based on confidence level (2.5 days), the model then, is incorrect. The number of situations in which losses occur, i.e. the number of those incomes which are beyond the confidence interval of VaR, is known as the number of outliers. In case of numerous outliers, the model has underestimated the risk (Terzić, 2014).

In order to finalize the VaR model backtesting, we need a series of data which comprises of estimated model values, on the one hand, and daily profits and losses, generated by the portfolio, on the other hand. Upon collecting a series of necessary data, the following stage is approached, the preliminary data analysis. A backtesting diagram needs to be designed, which would comprise of the realized rates of return, during a specific time horizon and the estimated VaR, and breaches should then be sought, i.e. outliers. Dowd (2008) suggests that good practice is to supplement the backtesting diagram with a histogram of returns, which sometimes tends to provide a clearer indication of the empirical distribution of returns as well as the QQ diagram, which contains a quantile empirical distribution of returns against those predicted by return distribution. Furthermore, it also states that it is good to examine the so called descriptive statistics of returns, including the statistics of mean value, variance, asymmetry, kurtosis, skewness etc as well as the number and the size of the extreme events.

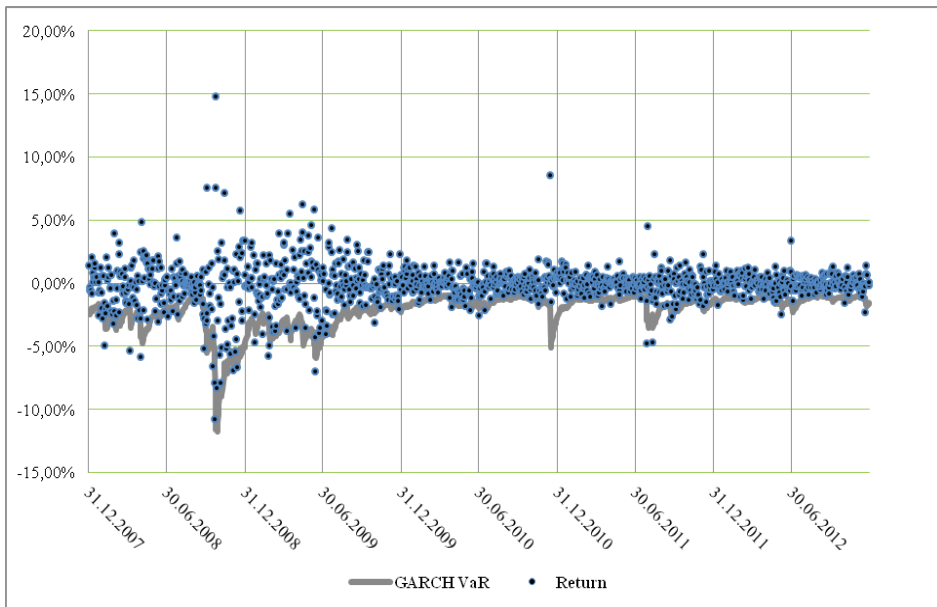
Many financial institutions use and implement various verification models. Thus for example, the KPMG Advisory has implemented a backtesting process based on five steps, shown in Figure 1, in order to test the unconditioned coverage, independence and has developed appropriate solutions for possible model weaknesses (Muehlenbrock, 2011).

*Figure 1: Implementation of the backtesting process*



*Source: Muehlenbrock, S.(2011).Backtesting Value at Risk Models. Luxembourg, KPMG Advisory, p.2*

As it can be seen in Figure 1, the first step in implementation of the backtesting model is the graphic analysis and it enables us insight into the results and provides visual aid in revealing the problems. For example, in Chart 1, the assessed GARTH VaR has been shown and changes in percentages in portfolio values.

*Chart 1: Backtest chart for 1-day 1% GARCH VaR*

*Source: Author's calculation*

The second step is the so called “traffic light system” which is based on a binomial approach and which groups results into various categories, starting with the green (correct model) up to the red (rejected model) zone. The previously described measures of VaR validation should be supplemented in the following step, with certain statistical tests. This strategy, based on the modern statistical theory can reveal potential weaknesses of the applied VaR model. The fourth step refers to the backtesting report which sums the results and points to the possible weaknesses of the used methodology. Finally, the last step, based on the prepared report, KPMG is able to develop an adapted solution for possible problems, i.e. to assist in implementation of the improved VaR model.

## Review of backtesting procedures

VaR is by far the most popular portfolio risk measure, when it comes to risk management practice. The revolution of VaR in risk management has been initiated when JP Morgan launched the RiskMetrics approach in 1994. The supervisors immediately recognized the urgent need for VaR validation methods and soon after, first researches have been carried out on the risk model backtesting.

Many authors are concerned about the adequacy of the VaR measures, especially given the fact that they compare several alternative methods. Since the end of 1990s, various types of tests have been proposed for performance assessment of the VaR model. Papers, dealing with the comparison of the VaR methodology, most often use

two alternative approaches: statistical test based on the testing paradigm of hypothesis and/or the loss function. In this paper we shall elaborate on the first approach. As for this approach, several procedures based on statistical testing of hypothesis, have been proposed in literature and the authors usually choose one or several test for the performance assessment of VaR models and their comparison. The standard tests for the performance assessment of VaR models are: 1) Basel approach, 2) unconditional and conditional coverage tests and 3) quantile dynamics test.

In order for all of these tests to be implemented indicator function of VaR exceptions must be defined, the so call “hit sequence” (Christoffersen, 2009).

$$I_{t+1} = \begin{cases} 1, & \text{if } r_{t+1} < -VaR_{t+1}^p \\ 0, & \text{if } r_{t+1} \geq -VaR_{t+1}^p \end{cases} \quad (1)$$

The negative prefix which stands before VaR in the equation (1) is due to the fact that VaR is a positive number, according to the convention.

The Basel Committee on Banking Supervision has, in 1996, developed a backtesting framework, based on the number of outliers during the 250 daily observances, generated by VaR models of banks for the confidence interval of 99%. Depending on the results, a supervisor may pronounce a penalty which would suit the increase in capital exposed to the market risk by a scaling factor. In order to support supervisors in interpretation of the backtesting results, the Basel Committee has introduced the so called “traffic light” framework, which is related to a number of marked outliers (Basel Committee on Banking Supervision, 1996):

1. The Green zone: between zero and four outliers. This is deemed to be an acceptable result of backtesting. There is no concern in regard to this model which the bank is using and consequently, there is no penalty.
2. The Yellow zone: between five and nine outliers. The supervisor shall attempt to find out what has caused deviation from VaR and shall then decide whether a bank should be fined or not.
3. The Red zone: 10 or more outliers. This points to a major problem within a model and automatically generates a penalty, with an increase in the scaling factor by 1.

According to the Basel Accord, backtesting of internal models is obtained directly from the testing of rates of failure, i.e. the number of outliers from VaR. In order to design one such test, we should first choose the type 1 error rate, which represents the probability of rejecting a model, when it is actually correct. In such situations, the bank shall not be fined unjustifiably and we could then be able to choose a test with a small error rate, type 1. However, should the bank decide so, the supervisory body making errors of type 2 as well, shall completely trick the VaR bank reporting. The current verification of the procedure comprises of the daily recording of outliers from VaR with a confidence level of 99% in the last year. In such circumstances, a 1% of outliers is expected out of the 250 cases, i.e. 2.5 outliers during a year. In order to better understand the dilemma with which supervisory bodies are confronted, Table 1 provides error types I and II for various numbers of outliers from VaR, with a correct VaR model (i.e. with coverage of 99%) and incorrect models (i.e. with coverage rate of 97% or 95%). Thus, for example, if we were to have 5 or more outliers, the cumulative probability or the

type 1 error rate, amounts to 10.8%. This represents a probability of fining a bank which has a correct VaR model, for no other reason than “bad luck”. However, if we were to have 10 outliers, type 1 error rate would than fall down to 0% value.

*Table 1. – Basel backtesting rules*

$\{U_t(\alpha)\}_{t=1}^{n-1}$

*Source: Basel Committee on Banking Supervision: „Supervisory Framework for the Use of ‘Backtesting’ in Conjunction with the Internal Models Approach to Market Risk Capital Requirements, Januar 1996.*

In regard to type 2 error, table 1 shows that the type 2 error rate by 5 outliers less, amounts to 12.8%. This represents a probability of not fining a bank which wilfully underestimates its risk. This not a very low probability. However, this probability reduces as the correct model deviates more and more from the target 99% of coverage. With 95% of coverage, the type 2 error rate is only 0.5%. Therefore, it is quite probable that the supervisor would fail to notice a bank which significantly underestimates its VaR.

Christoffersen (1998) emphasizes that the problem of determining accuracy of the VaR model can most certainly be reduced to the problem of whether a “hit sequence”,  $\{U_t(\alpha)\}_{t=1}^{n-1}$  fulfills two key characteristics, and these are the unconditional coverage and independence.

The test of unconditional coverage, which has been proposed by Kupiec (1995) enables testing so as to check whether the realized deviation rate from VaR, which represents the number of days when the loss was greater than VaR, divided by the size of the sample, is in line with the confidence interval. If we were to expect for the losses which exceed the amount of the established VaR, to occur more often than  $\alpha \times 100\%$  times, then this leads us to the conclusion that VaR measure systematically underestimates the portfolio risk. On the other hand, if we were to expect deviations to occur rarely, this



would perhaps be a signal that the VaR measure is perhaps too conservative. Although this test has remained until today as one of the reference tests in managing financial risks, it nevertheless shows to a low statistical power, when used on a small data series, such as a one-year period.

As for independence property, it represents powerful limitation in regard to ways in which deviations from VaR can occur. More specifically, any of the two elements from the “hit sequence” ( $It+j(\alpha)$ ,  $It+k(\alpha)$ ) must be independent one from another. This sort of condition does not require for previous deviation from VaR  $\{\dots, It-1(\alpha), It(\alpha)\}$ , to transfer any sort of information as to whether additional deviation from VaR will occur or not. If, for example, there is a greater probability of deviation from VaR happening upon previous deviation from VaR, then it implies that probability that  $It+1(\alpha) = 1$ , having been conditioned by the event  $It(\alpha) = 1$ , exceeds the amount of VaR, which further implies that the amount of VaR is too small and that it should be increased. It is important to understand that the features of unconditional coverage and independence of the “hit sequences” are mutually separated and different and that they both need to be fulfilled for the purpose of a precise VaR model. Mainly, a specific VaR model, in case of outliers in VaR, may fulfill either one or the other feature, but not both. Only the “hit sequences” which fulfill both of the stated properties can be deemed as relevant evidence of a precise VaR model (Christoffersen, 1998).

Christoffersen (1998) has also developed a conditional coverage test, which represents an incorporated test of hypothesis of unconditional coverage and independence.

Christoffersen and Pelletier (2004) have developed a backtesting approach of the VaR model, based on duration. If VaR complies with the coverage rate  $p$ , it is then assumed that the hit sequence should be the Bernoulli i.i.d process with parameter  $p$ , and the duration between the outliers has no memory and that the mean value equals  $1/p$ . The distribution of duration under null hypothesis is approximated by exponential distribution, given that it is only continuous distribution with a constant risk rate. For an alternative hypothesis they have considered the Weibull's distribution with a decreasing risk rate. Their test can also be decomposed to a test of unconditional coverage and independence test, whereby the unconditional coverage test verifies whether the mean value of duration equals  $1/p$ , and the independence test verifies whether the risk rate is constant. They have also considered the autoaggressive model for the expected conditional duration. It is also possible to define a discreet distribution for duration. Haas (2005) believes that discreet distributions have a better power toward grouping of outliers from VaR, unlike the continuous distributions.

Candelon, Colletaz, Hurlin, and Tokpavi (2011) suggest a new GMM test based on duration, for the purpose of VaR model validation. They believe that discrete distributions act the same as the continuous distributions, within the GMM approach. Berkovic, Christoffersen and Pelletier (2011) have implemented a test of discrete distribution within the likelihood ratio test (LR test), which they called the geometric test. Under null hypothesis that duration has no memory, discrete duration follows geometric distribution. This is why it is called a geometric test. Monte Carlo simulation shows how a geometric test is the most powerful, compared to the Weibull's test, which is based on continuous distribution.

Engle and Manganelli (2004) claim that a necessary request is for the hit sequence, or rather the violations from the VaR assessment, to have identical and independent

distribution, and not a sufficient requirement for proper determination of VaR. If VaR prognosis is a valid measure of quantiles, the anticipation of outliers which depend on the set of information at the moment  $t-1$  should be equal to the coverage rate. In other words, violation from VaR It should be unbiased and should not be in correlation with any other information at the moment  $t-1$ . They have suggested a dynamic quantile test (DQ) for the backtesting of the VaR model, which has proven to be very reliable and credible. Nowadays, it is an important tool for the verification of the VaR model.

Dumitrescu, Hurlin, and Fam (2012) have expanded this approach into a model of dynamic binary choice which enables non-linear dependence between deviation likelihood from VaR and explanatory variables.

Perignon and Smith (2008) have developed an innovative backtesting framework, based on multidimensional VaR, which focuses on the left tail of distribution of the bank's incomes from trading activities. Their coverage test is a multivariate generalization of the Kupiec unconditional test (Kupiec, 1995). They have applied this new methodology of backtesting on actual bank data and have concluded that non-parametric GARCH VaR models and filtered historic simulation provide the best performance in the assessment of market risk.

Danciulescu (2010) has proposed for backtesting to be based on multivariate of Ljung-Box statistics. The test considered autocorrelations and crosscorrelation between the outliers from VaR. The procedure encompasses the creation of a joint test for the properties of unconditional coverage and independence, using deviations from several business lines. The test is easily applicable and has shown improvement compared to the univariate procedures in the performance assessment of VaR.

Colletaz et al (2013) have developed a new method for validation of the risk model, called, risk map (RM). This method calculates both the number and the size of the extreme losses and graphically sums all information on performances of the risk model. Based on the concept of super outliers, which is defined as a situation in which realized loss exceeds the amount of the standard VaR and VaR defined at an extremely low confidence interval. The main advantage of RM lies in its simplicity and can therefore be applied as a standard technique for the validation of the VaR model. In order to facilitate the implementation of this methodology, the authors have created a website which automatically generates RM.

Leccadito et al (2014) have suggested innovative, multitests for the purpose of assessing the accuracy of the VaR forecasting. Tests are based on independence tests and conditional coverage. The first test which has been proposed is the generalization of Markov test, which was proposed by Christoffersen (1998), whereby the second is type of the Person test, based on joint distribution of the total number of outliers from VaR and their lagged values. The tests have shown greater efficiency and statistical superiority, unlike the separate tests.

Pelletier and Wei (2015) have developed a new geometric VaR backtest for the evaluation of VaR prognosis. The test uses duration between deviations from VaR as well as VaR values. Findings of the research have shown that the test has great power, compared to alternative models.

## Conclusion

The banks and other financial institutions have implemented numerous highly-sophisticated mathematical and statistical techniques for managing market risks. One of the basic techniques among them is the VaR methodology, which has in the past twenty years become an industrial and regulatory standard in measuring market risk. It is the measure regulators have chosen to use for many of the calculations they carry out concerned with the setting of capital requirements for market risk. Many banks that have adopted VaR based approach to market risk measurement routinely compare daily profits and losses with model-generated risk measures to gauge the quality and accuracy of their risk measurement systems. This process, known as backtesting, has been found useful by many institutions as they have developed and introduced their risk measurement models. There are two ways in which backtesting may indicate weaknesses in a VaR model. One is in the percentage of exceptions, that is, the percentage of times the actual loss exceeds VaR. The other is in the extent to which exceptions are bunched. There are statistical tests to determine whether a VaR model should be rejected because of the percentage of exceptions or the amount of bunching. In this paper we have focused on the significance of validation of the VaR model and we have presented the latest, available, backtesting techniques. The tests differ in details, but for the majority, the common characteristic is that they focus on a specific transformation of the assessed values of VaR and realized incomes. The backtesting procedures that we have presented in this paper can be deemed to be the final diagnostics of the risk model, which the risk managers must implement or they can be used by external supervisors. The banks in Serbia should use the findings of this paper as a starting point for the validation of internal models for market risk.

## References

- Basel Committee on Banking Supervision (January 1996). Supervisory Framework for the Use of ‘Backtesting’ in Conjunction with the Internal Models Approach to Market Risk Capital Requirements
- Basel Committee on Banking Supervision (July 2009). Guidelines for Computing Capital for Incremental Risk in the Trading Book
- Berkowitz, J., Christoffersen, P., & Pelletier, D. (2011). Evaluating value-at-risk models with desk-level data. *Management Science*, 57(12), 2213-2227.
- Candelon, B., Colletaz, G., Hurlin, C., & Tokpavi, S. (2011). Backtesting value-at-risk: a GMM duration-based test. *Journal of Financial Econometrics*, 9(2), 314-343.
- Christoffersen, P. (1998). Evaluating interval forecasts. *International economic review*, 39(4), 841-862.
- Christoffersen, P., & Pelletier, D. (2004). Backtesting value-at-risk: A duration-based approach. *Journal of Financial Econometrics*, 2(1), 84-108.
- Christoffersen, P. (2009). Backtesting, In *Encyclopedia of Quantitative Finance*, R. Cont (Ed), pp 355-389, Chichester, John Wiley and Sons.

- Colletaz, G., Hurlin, C., & Pérignon, C. (2013). The Risk Map: A new tool for validating risk models. *Journal of Banking & Finance*, 37(10), 3843-3854.
- Danciulescu, C. (2010). Backtesting value-at-risk models: A multivariate approach. Center for Applied Economics & Policy Research, Working Paper, No.004-2010.
- Dowd, K. (2008). Back-Testing Market Risk Models. In *Handbook of Finance*, pp. 93-99, New York, John Wiley and Sons.
- Dumitrescu, E. I., Hurlin, C., & Pham, V. (2012). Backtesting value-at-risk: from dynamic quantile to dynamic binary tests. *Finance*, 33(1), 79-112.
- Engle, R. F., & Manganelli, S. (2004). CAViaR: Conditional autoregressive value at risk by regression quantiles. *Journal of Business & Economic Statistics*, 22(4), 367-381.
- Gaglianone, W. P., Lima, L. R., Linton, O., & Smith, D. R. (2012). Evaluating value-at-risk models via quantile regression. *Journal of Business & Economic Statistics*. 29(1), 150-160.
- Haas, M. (2005). Improved Duration-Based Backtesting of Value-at-Risk. *Journal of Risk*, 8(2), 217-38.
- Hull, J. (2012). *Risk Management and Financial Institutions*. New Jersey, John Wiley and Sons, Hoboken
- Kupiec, P. H. (1995). Techniques for verifying the accuracy of risk measurement models. *The Journal of derivatives*, 3(2), 73-84.
- Leccadito, A., Boffelli, S., & Urga, G. (2014). Evaluating the accuracy of value-at-risk forecasts: New multilevel tests. *International Journal of Forecasting*, 30(2), 206-216.
- Muehlenbrock, S. (2011). Backtesting Value at Risk Models. KPMG ADVISORY FINANCIAL RISK MANAGEMENT.
- Pelletier, D., & Wei, W. (2015). The Geometric-VaR Backtesting Method. Working Paper, *Journal of Financial Econometrics*, forthcoming.
- Pérignon C., Smith D. (2008). A New Approach to Comparing VaR Estimation Methods, *The Journal of Derivatives*, 16(2), 54-66.
- Terzić, I. (2014). *Savremene metode merenja rizika na tržištu kapitala u Srbiji*. Neobjavljena doktorska disertacija, Univerzitet Singidunum, Beograd, Srbija.

**Nedeljko Prdić<sup>1</sup>**  
JKP Tržnica, Novi Sad

SCIENTIFIC REVIEW ARTICLE  
doi:10.5937/ekonomika1601163P  
Received: February 7, 2016  
Accepted: March 17, 2016

## COMPETITIVE ADVANTAGE ON THE BASIS OF THE STRATEGY LOW PRICE

### Abstract

*The main objective of the work stems from just a definition of competitiveness that is gaining market advantages of applying the basic elements that make up a strategy of low prices. Adequate adopted business strategy to achieve strategic and operational objectives of the enterprise market. The paper wants to achieve such a strategic market access to the basis of the elements that make a successful strategy of low prices allow the company a competitive advantage. The aim is to analyze the competitive advantage of low price strategy that will enable practical implementations benefit the company in relation to the competitive compared to competing on the basis of market applications based on marketing principles. The aim of the research is to know the level and degree of satisfaction of consumers buying products or services at reasonable prices. On the basis of theoretical views known authors in the field of competitiveness of enterprises or the authors' experiences both in theoretical and practical knowledge of the problems is that economic theory contribute to a better understanding and improve the competitiveness of existing knowledge in both theory and practice.*

**Key words:** competition advantage, low price strategy, market, prices, efficiency

**JEL Classification:** O12, M31

## КОНКУРЕНТСКА ПРЕДНОСТ НА ОСНОВУ СТРАТЕГИЈЕ НИСКИХ ЦЕНА

### Апстракт

*Основни циљ рада произилази из саме дефиниције конкурентности а то је стицање тржишне предности применом основних елемената који чине стратегију ниских цена. Адекватно усвојена пословна стратегија омогућава постизање стратешких и оперативних циљева предузећа на тржишту. Радам се жели постићи такав стратешки приступ тржишту који ће на основу елемената који чине успешну стратегију ниских цена омогућити предузећу конкурентску предност. Циљ рада је да анализира предност конкурентске стратегије ниских цена која ће практичном реализацијом омогућити предност предузећу у односу на конкурентска на основу тржишне примене на маркетинг заснованим принципима. Циљ истраживања је спознаја нивоа и степена задовољства потрошача куповином производа или*

<sup>1</sup>Ekonomistdoo@sbb.rs; nprdic@nstrznica.co.rs

*услуга по прихватљивим ценама. На основу теоријских ставова познатих аутора из области конкурентности предузећа али и искустава аутора како у теоријским тако и практичним сазнањима циљ рада је да економском теоријом допринесе бољем разумевању конкурентности и унапреди постојећа сазнања како у теорији тако и пракси.*

## Introduction

The main objective of the study was to analyze the existing situation in this field but also wishes to point out the changes and remove obstacles to the strategic positioning of enterprises in the market. Modern global market economy involves huge competition and survival on the market and the aim of this paper is that the strategy of low prices, to enable effective decision making based on product or service quality win, retain and win new customers in order to achieve business goals and survive in the market. The subject of analysis stems from the planned objectives that the company wants to achieve in the market in the form optimizing competitiveness and gain strategic advantages over the competition. The theoretical hypothesis arises on the basis of analysis literature and knowledge by studying scientific papers that deal with this economic area. The research base on the application of latest methods of knowledge and methods of marketing research, as well as methods of logical reasoning, and as auxiliary methods used statistical and other methods of data processing.

The new economy is characterized by pro me in communication activities with the inverse target market segment or a particular target group. From this point there was an application of the new concept of integrated marketing communications, which implies the need of coordinating and combining instruments of communication mix, and developing an integrated strategy to communicate with the selected companies, market segments and other public. This concept involves various market groups and segments of the public. On the name, the main target group of companies consists of a consumer or buyer that the basic message recipient companies. Therefore, when defining the communication strategy of the enterprise, based on the need to make the needs and demands of consumers for precise sending communication messages. One to search and gather information about consumers basic postulate send specific communication messages (Prdić, 2012).

Based on the above mentioned opinions should be emphasized that the precondition to economic efficiency of enterprises, really good communication with that target group that is interested in the products or services of the company in the market. When comes to the effectiveness of the strategy of “low price” which is the subject of this paper it should be noted that the effects of low prices reflect and to other business strategies or are directly linked to them, whose effective implementation depends on the realization of marketing strategy in the market.

## **Basic elements of strategy low price**

### **1. The quality of the product or service as the basis for the implementation of the strategy**

Quality of services realized year or the first and basic precondition for the realization of the strategy which is based on a market perception that the quality product with all its positive performance benefits for customers and consumers, benefiting the company in the form of strategic positioning in the market or market segments.

It happened that the dominant industrial sectors, based on the classic technology and extensive capital investment, because growing competition in developing countries, began record slowing growth and employment and reducing the share of world trade. (Prokopović, 2014)

Term “costs of quality” has different meanings for different people. Some think that this is mostly found the costs of poor quality and that, in this case, finding the bad goods or poor service (Ristic i dr. 2013).

Competitive strategies in complex market conditions give primacy to a quality product or service, which, with reasonable price favored by attracting new and retaining existing customers and consumers. Quality product has properties specific properties that belong to finally when it comes to beneficial effects for the customer and therefore it is necessary to continuously check the level of quality as well as performance and attitudes of users.

The basic postulate of the modern market business is in adapting these market processes in order to maintain stable price levels and competitive advantage based on the quality of products and services. Integrated processes in the company are based on the integration of price and quality of products or services as well as integrated marketing communications when it comes to establishing quality relationships between buyer – consumer – company. Modern market circumstances are quite addition in the form of increased competition but a chance to enterprises whose business strategy quality product or service and reasonable price based on the interests of customers, consumers and other interested parties.

Quality in bustin means comparasion of products or services competition products and based on the known method of checking the quality, optimal use value and utility as well as other information that may be used to check the quality of products or services. A quality product or service contribute an affordable price that the end user is willing to pay to meet the needs.

How do i say quality product primarily refers to its features in terms of the ultimate usefulness of the purchaser or consumer or not the characteristics of the product in terms of quality assessment. High quality product with reasonable price certainly makes strategic advantage is on the market.

### **2. Low prices as a basis for the realization of the set strategy**

Low prices are one of the most important instruments of micro-economic and macro-economic policy of a country in order to maintain economic and political stability.



Therefore, this paper and is one of the theoretical works that contribute to a successful analysis of opinions and attitudes that can initiate scientific and professional public to a greater extent adapt this strategy, which is a strategic approach to the business interests of firms in the market.

Trust is one of the most important elements in all transactions. An ideal model of a market economy starts with the assumption that customers are rational and will not spend more than they can afford. (Babić I dr. 2015)

Competitive devaluation of currencies of the country have the ability to increase demand for their products because they become cost-competitive (Gligorić i dr. 211).

Price level provides the company strategic planning in the sale and transport of products or services and also contributes to the stability of the exchange rate and foreign trade balance.

Competitive commitment is a function or a more efficient service customer value than its competitors (low cost) or carry out activities with a similar cost but in unique ways that create greater customer value than its competitors and, therefore, can determine the highest price (differentiation) (Hidl, 2006).

The strategic position of low prices with all the appropriate elements of the marketing strategy certainly brings real basic earnings enterprise. Such a position of the company in the market and provides real income workers of the company but also the collection of taxes and contributions to the state. However it should be noted that the „low prices“ do not always have a decisive importance in terms of the structure, ownership, existence and objectives of the enterprise market.

Determination of low initial price with the aim of market penetration strategy is based on the assumption that the average production costs per unit of output will continue to decrease in parallel with an increase in cumulative production volume. Potential profits in the early stages of the product life cycle sacrifice stig are still anticipates that the volume in later periods to generate profits that will be enough that the product generates higher gross profit during its life cycle (Aker, i dr. 2008).

Different methods of evaluation of competitive advantage:

- Natural curve of experience
- Breakpoint
- The cost of product units sold additional market segments
- Cost competitors
- Prediction phase „decline“ in the product life cycle (Aker, i dr. 2008).

In some cases price possible not buti equilibrium. Inasmuch as it is not an equilibrium, or there will be an excess supply or excess demand, depending on whether it is above or below the equilibrium price. However, these imbalances encouraged price changes to the equilibrium price. Markets have a mechanism for self-correction. Some of the fundamental issues in the economy deal with time how fast the price is adapted to the specific markets regained balance (Beg, i dr. 2010).

When it comes to the interests of the company low prices allow for preserving strategic market positions and predictable number of customers and consumers. Strategy of low prices and satisfactory quality of enterprises and protect the domestic market of products and services as the goods from abroad will be more expensive and less competitive in the market. Of course, this does not mean opening the national economy

but rather allows local entrepreneurs and companies that represent the domestic market and later on regional and other economic markets. Regional market countries approximate level of development contributes to the development of enterprises at the domestic and regional market. It may be noted that companies that do not have barriers to domestic and regional markets have a greater chance to qualify to other developed world markets.

### 3. Market assessment of the competitive advantages of the strategy of low prices

Buy a basic modulator existence of an enterprise with all of its properties and characteristics. The survival of the enterprise market is a confirmation of his identity as an entity whose purpose is realistic based on the value of indicators in the business. When the company competitive in the market based on different methods of assessment of competitiveness can talk about the fulfillment of conditions for the strategic direction of its development.

Modern enterprise here in terms of fluctuations in demand for its products and services, provided that the changes in the market needs in a timely manner in order to predict the company can flexibly adjusted (Prdić, 2012).

Competitor advantage can be percentages of the immediate ways. The methods can be broadly classified into methods of market assessment and evaluation methods of the manufacturing process. The market estimate is based on a direct comparison with a few targeted competitors and assessment of production processes based on a comparison of the methods used by competitors to achieve his distinctive front.

Methods of estimating market advantages: of the production process:

<b>Market assessment</b>	<b>Cent of the production process</b>
Market share	Revision marketing skills
Participation in remembrance	Comparasion of relative costs
Participation in advertising	Comparasion of successful and unsuccessful competitions
Participation in investment in research and development of high (Aker, i dr. 2008).	Identifying the appearance of leverage

Strategic plan market presents an overview of methods and resources that are needed to meet the goals of the organization within a specific target market (Macura, 2008).

Competitive advantage is the basis for the success of any company in competitive markets (Župljanin, 2010)

Famous Russian economists Nureev, Simkin, Korhej, analyzed the very important relationship trini, „The market in which quality product is displaced from the market by products whose quality is lower (Šolak,2003).

It is very important knowledge about the present conditions where possible in large retail chains across and low quality products with price which is acceptable but left

to answer a real need for customer or consumer product with which to meet the basic, intermediate or higher level of need depending on what product is working on scale value of the customer or consumer.

The manner of price formation which is adopted in order to achieve increasing market share should:(Aker, i dr. 2008).

- Offer a lower price (even below cost price) when they appear on the market
- Maintain price at the same level until the cost per unit does not generate the desired percentage increase in the rate of profit
- Reducing the cost of the savings to the rate of profit had the same (desired) percentage share in the costs.

Based on the research conducted through a questionnaire, directly at the fairs in Belgrade and Novi Sad, as the most important instruments for gaining competitive advantage by using a strategy of low prices, in the opinion of the enterprises surveyed are, sales volume (81%), profit (76%), market (71%), liquidity (65%), and marketing expenses (59%). It should be noted that the respondents had the opportunity to ask more instruments considered relevant to the status of a company on the market

It is necessary to emphasize the importance of market share in the domestic and regional markets because their scope is the economic impact in terms of higher product brand positioning and creating a positive image of a company that has economic and human resources to produce, and increase sales volume.

#### **4. Human resources as a competitive advantage**

Businesses in a competitive market tend to gain competitive advantage by finding new business structure based on their own vision of business structure and quality management and enterprise development. Human resources are an important part of the survival of the company in the market and represent its business culture. Market approach to business includes strategic relationship with the selection of personnel who are part of the adopted business behavior culture.

Job security, compensation, safety, harassment, prejudice, and even the quality of work experience, are all aspects which are important ethical. (Mihailović i dr. 2015)

Many Serbian entrepreneurs are heavily in favor of the activities of human resource management, although they are aware of possible risks as a result of neglect of the formal activities of human resource management (Salai, 2010).

Human resources as a competitive advantage are essentially a confirmation own identity but also a complex analysis of the weaknesses and strengths of the company as a market entity. Companies with built business culture have a strategic approach to business and human values.

Human resources are the main instruments to carry out adequate business strategy to develop new ideas in order to achieve growth and development and the elimination of destructive thinking that protect the reputation of business in society and their own market. Companies with the adopted business strategy of low prices and adequate quality of products or services for the realization of their goals using the tools of marketing and marketing strategies for a profit in the market and increase productivity in business,

deliberately adopted a strategy that is key to success in the market to increase investment in knowledge. Companies with the adopted business strategy of low prices and adequate quality of products or services for the realization of their goals using the tools of marketing and marketing strategies for a profit in the market and increase productivity in business, deliberately adopted a strategy that is key to success in the market to increase investment in knowledge.

Modern approach to strategic human resource management involves the idea that the basis of business performance in productivity, efficiency and economy of human resources who can achieve corporate objectives in the market. It can be concluded that human resources are crucial for the future of the company in the market but successful career employees effective strategy for human resources management, based on low prices and cost of investment, contribute to the development of enterprises. Time employee adaptation to changes in the market increases the importance of competence give them the possibility to achieve their own ambitions.

Human resources in this work are viewed as one of elements of the strategy “low price” and from that point of view observe their contribution to the realization of the planned strategy. Their contribution to the realization of the respective strategy depends primarily on the knowledge that enables the implementation of the strategy as well as knowledge of how to implement the planned strategy when it comes to communication with customers and consumers or other interested parties.

## 5. Brand as a value competitive advantage

Communication with customers and consumers is extremely complex and the interests based process. The most important task of the management of enterprise management is to deal with conflicts with customers and establish long-term strategic objectives for mutual benefit. The credibility and competence of the management of enterprise management contributes greatly to the establishment of a knowledge-based management, which will result in the establishment of strategies best business relations.

Brand value as a competitive advantage is defined as a number of its strengths and weaknesses, which increase or decrease the value of the relevant products or services for the company or its customers (Aker i dr. 2008).

These advantages or disadvantages must be linked to name or symbol of the brand. Advantages and disadvantages on which it is based brand value will vary depending on the context. No matter may be practical reasons fall into five categories:

- Brand loyalty
- Familiarity with the name
- Perceived quality
- Associations that are associated with the brand in addition to perceived quality feet
- Another protected property brand such as patents, trademarks, refers to the channels, etc. (Aker, i dr. 2008).

The most important product company that has specific weight in terms of achieving higher revenues as compared to other products is the „brand“ or the product.

A product with a specific weight for company a higher profile and communicating with business and other public, because it represents the corporate identity and image of the company. Brand product, there are plenty of visual identity of the company and is its real market opportunities. The increase in sales is given to the product a special image and compared to competitive enterprises with a strategic advantage in the marketplace. The value „brand product“ is one of the most important competitive advantages, of course, when the quality of the product at the required level, with a price that makes it attractive to increase the number of purchases. It should be noted that the „brand“ of the product, the identity of the company and one of the basic elements in the implementation of competitive strategy of low prices, to dominate the market.

## 6. Marketing as a competitive advantage

Marketing is the business activity of the company that directly affect better communication because of her staying on the market. Communication with the target companies and other public represents a continuation of the realization process of selling a product or service known or new customers and consumers. Marketing is in fact one of the essential instruments of selling products or services. The sale is a result of good communication between the company and its business partners as well as other social public, which contributes to its better image.

To be able to plan an effective marketing strategy, the company needs to know everything about their competition. It must constantly compare their products, prices, channels and advertising to those with direct competition. It this way we can find areas of potential competitive strengths and weaknesses. It can launch more effective marketing campaigns against their competitors and prepare a stronger defense against acts that prepare competitors (Kotler, I dr. 2007).

The objectives of marketing activities are conditions or situations in which you want to reach undertaking marketing activities. The aim of marketing activities will not be difficult to determine if we are previously well defined mission (Milisavljević, 2001).

Marketing management can be defined as the craft and knowledge dialing target markets and building profitable relationships with them. This includes the acquisition, retention and development of the consumer through the creation, administration and information about the ultimate value for the consumer. Thus marketing management includes demand management, which means managing relationships with consumers (Kotler, i dr. 2007).

The point is that it highlights the importance of communicating with consumers of all organizational units and functions in the company, combining different forms and media. Consumer perceptions of the enterprise or its various brands are the synthesis of all the messages they receive or all contacts they have, such as advertising, pricing, packaging design, direct marketing, publicity, sales promotion, websites, etc. (Stanković, i dr. 2006).

Based on the definition of famous international and domestic author can conclude that the special scientific and marketing business which makes direct contact between the company and its target audience. The marketing contribution is reflected in, and what makes it one of the last links that represents a product or service to direct users, and has

a decisive importance for the implementation of the business strategy of „low“ price, as well as other positive values with customers and consumers as well as with other interested public.

How is the essence of this work a competitive advantage based on low price strategy, the role of marketing as an instrument for the implementation of the strategy is seen in terms of product quality, price communication and sales. Those tools are part of the pledge ahead of the views expressed in terms of the observed elements of the strategy. The importance of marketing in this paper stems from its importance as a direct communication link between businesses and the public concerning its activities.

## **7. Consumer satisfaction as a competitive advantage**

The consumer is the last link, which provides a baseline assessment of the overall value of the enterprise in the market. Consumer satisfaction is a “half success” when it comes to the market position of the company and its market share. Estimate the value of production or service companies is seen in the number of repeated purchases production or services by permanent, and potential new customers or consumers. Competitive advantage for the company is the best when users evaluate its products or services and represents its real value in the market.

Dissatisfaction with customer product or service arises, ignorance attitude of buyers and their perceptions when it comes to knowledge about the values of a product or service. A conflict with consumers occurs when buyers are long attached to a product or a service company and their sense of confrontation increased because they believe that they already have certain rights. Of course, the greatest pleasure in establishing business relations with customers and consumers because the next steps in the perception of the initial level when it comes to product and services companies. A serious company with a vision and clearly defined goals relations with customers and consumers and on the strategy of low prices, which is the subject of research in this paper, makes it all possible concessions to the users of their products or services in the form of numerous post sales service or services that enable realistic assessment of the value of products. Buy and customers post-sale service check the use value production and services, both in terms of quality inspection, and acceptance of purchases with low prices, have strategic importance and practical marketing based on the longevity involved in managing the company.

Consumer satisfaction or customer manufacturing companies primarily depends on its interest to products with reasonable price. Quality product and long-term price stability are an integral part of the strategy, which is the subject of this paper. It can be concluded that the buyer or the consumer is a basic postulate of longevity survival of companies in the market which is certainly contributing to the continued sale of a product company. Constant buy from regular and potential customers contribute to the realization of this strategy and the building of such relationships based on usefulness to consumers and companies better market.

## 8. Measuring the effects of competitive strategy of low prices

Today efficiency is one of the main factors that determine business success, market position and survival of the modern enterprise. Efficiency can be defined as a measure to achieve the objective (Prdić, i dr. 2014).

The efficiency is achieved by the management company based on knowledge, communication, application of modern methods in work and moral attitude toward social issues. (Prdić, 20015)

Cost accounting as a segment of an integrated accounting information system by generation of the relevant information provides significant support for both financial and managerial accounting. (Savić i dr. 2014).

Measurement and control of the results achieved in the enterprise market represents a basic connection that makes the reporting of the governing bodies of the results obtained. Efficiency in reaching the goals set gives the company the identity and in economic terms the possibility of further improving the quality of products or services with reasonable price.

Productivity market is the realization of higher earnings for the same amount of sales. The advantage by market leaders that their size could allow them to lower the cost of those has competition (Kotler, i dr. 2007).

The process of creating wealth and value maximization can see from two perspectives—from the perspective of the company and the consumer angle. Companies focused on the customer both processes from the perspective of consumers, helping them to realize the value that maximizes the market such as:

- They provide services that help customers make decisions more easily on the basis of good information regarding the purchase of better and cheaper products
- Helping consumers to maximize efficiency, productivity and market value of their personal property, money, time, information, attention, and emotional
- They offer what is relevant from the standpoint of the unique features of a particular customer and who care about what customers want now to achieve. In the spotlight are consumers, and create value for them is more important than anything else (Aker I dr. 2008).

The most optimal approach to strategy „low price“ is the one based on consensus in the company, its customers and consumers as well as targeted public and other interested individuals and groups. The strategic orientation of the company must be based on a consensus of interests of all stakeholders in the interest of firms in the market. After conducting analysis and views known experts as well as theoretical and other studies when it comes to the effects of the strategy of low prices on the market, can be performed to a certain conclusion that it is necessary to continuously measure that set strategies and adapting to new market conditions of importance for the efficiency in achieving the objectives of the company market. The establishment of consumer confidence and the credibility of enterprises create the conditions and the impression is about the competence of companies that adopted the strategy can achieve all planned goals in the market. Studious analysis that strategic approach to consumers established on the basis of data on consumers and customers, post sales services, continuous communication with the public and other interested partners will enable real basis for obtaining competitive advantage and positioning the company as a stable market operator, continuous communication with the public and other interested partners will enable real basis



for obtaining competitive advantage and positioning the company as a stable market operator, which on the basis of low price strategy builds positive effects in terms of work efficiency and long retains its customers and consumers as a guarantee of market.

## Conclusion

The main objective of this research is, how to choose an adequate strategy by which a company can achieve its planned goals. The advantage on the basis of theoretical views known authors and their analysis, and their own attitudes. The author of this work gives priority to the strategy of low prices of products or services compared to other business strategies. Hypothesis based on the view that the business strategy favorable to the overall status of the company on the market, or parts of the target market. It can be concluded that this long-term business strategy gives greater stability of the company and the possibility of expanding its potential compared to other business strategies in the short or medium term, bringing more revenue the company. Concrete conclusion when it comes to practical implementation of the strategy of low prices, is the implementation of all the elements that make a successful strategy of low prices that it would have a real impact on the business status of the company. It should be noted that the „low prices“ does not represent, prices below cost, which represents the amount of funds invested for a specific product or service. One of the most important elements of this strategy is „quality product“ whose characteristic and usefulness for the customer or consumer give this strategy the importance and long-term advantage compared to other business strategies but also the stability of the company in the market. The most important segment of the undertaking in the modern way of doing business is measured by market share or sales volume, and can be confirmed hypothesis that long-term stability of the company, depending on the planned investments that will increase its importance in the market and make real revenue based on an assessment of the management team applying the adopted strategic. After, to achieve a stable market position and market share the company can develop and „tactics“ to create so-called „brand“ products or services in addition to increasing income, contribute image by using appropriate marketing strategies as an element for the implementation strategy of low prices on market. The immediate fact which should be noted as the main conclusion is that it is necessary to measure, compare, analyze and propose some changes in the implementation of these strategies depending on that actions of competitors, and the interests of the company and its end users. It should be noted in conclusion that the full implementation of the strategy „low price“ and its practical application is bringing long-term stability, loyalty and consumers as well as the recommendation to continuously research and application of positive values and other indicators of business strategy, contributing to the establishment of good communication and increase sales.

## References

- Акер, А., Кумар, Б., Деј, С. Џорџ. (2008) . Маркетиншко истраживање. Економски факултет, Београд
- Бабић, В., Зарић, С. (2015). Young entrepreneurs' trust during the recession: Evidence from Serbia, Економски анали, NO.207, Октобар-децембар 2015, Економски факултет, Београд, стр 49-68

- Бег, Д., Фишер, С., Дорнобусцх, Р. (2010). Економија, Дата статус, Београд
- Глигорић, Д., Тешић, Ј. (2011) . Појавни облици и ефекти конкурентских девалвација у условима кризе. Рад са конференције, криза као изазов за креирање нових стратегија и политика, Акта економіса, бр. 14, Економски факултет, Бања Лука
- Котлер, Ф., Вонг, В., Цондерс, Ц., Армстронг, Г. (2007) Принципи маркетинга, Мате, Београд
- Мацура, П. (2008). Процес и проблеми у креирању маркетиншког плана, Акта економіса, бр.9, стр.53-69 Бања Лука
- Милисављевић, М. (2001) . Маркетинг, Савремена администрација, Београд
- Михаиловић, Б., Цвијановић, д., Симоновић, З. (2015). Улога пословне етке у менаџменту људских ресурса, Економика, вол.61, бр.1. стр. 85-96, Ниш
- Прокоповић, Б. (2014). Време за промену потрошачког модела, Економика, вол. 60, бр.2, стр. 1-8, Ниш
- Прдић, Н. (2012). Сајмови као инструмент интегрисаног комуникацијског микса, необјављена докторска дисертација, Факултет пословне економије, Сремска Каменица
- Прдић, Н. (2012). Ефекти наступа предузећа на сајму, Анали економског факултета, бр.28, стр. 133-143, Суботица
- Прдић, Н. (2015). Модел друштвеног маркетинга у јавном сектору, Култура полиса, бр.27. Нови Сад, стр. 429-443.
- Прдић, Н., Кузман, Б., Барјактаровић, М. (2014). Practical research results of a successful company appearance at the fair, Економика пољопривреде 61(4), стр. 903-915, Београд
- Ристић, М., Паспаљ, М., Ристић, Ј., Прдић, Н. (2013). Трошкови квалитета као предуслов развоја предузећа, Научна конференција, бр.13, стр. 5- 9, Београд
- Салаи, Ј. (2010). Приступ дефинисању модела управљања људским ресурсима у малим и средњим предузећима, Анали економског факултета, бр.23, стр. 153-161, Суботица
- Савић, Б., Васиљевић, З., Ђорђевић, Д. (2014). Strategic cost management as instrument for improving competitiveness of agribusiness complex, Економика пољопривреде 61(4), стр. 1005-1020, Београд
- Станковић, Љ., Аврамовић, М. (2006). Пословно комуницирање, Економски факултет, Ниш
- Жупљанин, С (2010). Конкурентска предност као услов компанијског развоја и останка на тржишта, Сварог, бр.1 стр. 85-96, Бања Лука
- Хидл, Т. (2006). Менаџмент појмовник, Адигес, Нови Сад
- Шолак, З. (2003). Економика асиметричних информација, Футура, Петроварадин

**Karolina S. Prokopović<sup>1</sup>**

**Tijana B. Prokopović<sup>2</sup>**

**Miloje A. Jelić<sup>3</sup>**

*Niška poslovna škola strukovnih studija, Niš*

SCIENTIFIC REVIEW ARTICLE

doi:10.5937/ekonomika1601175P

Received: December 16, 2015

Accepted: February 29, 2016

## INFORMATION TECHNOLOGIES IN INTEGRATED LOGISTICS

### Abstract

*The rapid development of the Internet and the use of new possibilities which the digital technologies have brought about, have made significant changes in all the areas of business, including logistics. The question of whether the advantages of information technology should be used in integrated logistics is no longer posed, rather a new question arises – ‘‘How to exploit the advantages of the modern electronic business?’’. This work attempts at answering this broad & complex question.*

*All the subsystems of integrated logistics, such as warehousing, order processing and supply, must be integrated in one unique system via IT. A well established information; system may improve the company’s attempts to satisfy the customer’s needs, thus improving the aim of the integrated logistics. The practice of successful companies has shown that the elements of integrated logistics, such as low stock levels, just in time delivery, the possibility of replacement of goods depend on timely and accurate flow of information. The application of IT enables faster processing of information, which influences the logistics systems management significantly. Nowadays, the most widely used IT in logistics are: DSS, EDI, barcode technology, RFID. The efficient consumer service policies will soon be inconceivable without the use of these technologies, which is the reason, why they are explored with special attention in this part of the paper. The final part of the paper will show a practical example of the usage of RFID technology for the reduction of fresh food waste in retail.*

*RFID technology enables the optimization of the entire logistics system, since it monitors the stock continually regardless of whether the products are in the process of manufacturing, distribution center, a retail store or in transport.*

**Keys words:** *integrated logistics, IT, DSS, EDI, barcode technology, RFID technology.*

**JEL classificatio:** L81, M15

---

<sup>1</sup> prokopovic.karolina@gmail.com

<sup>2</sup> ticapro89@gmail.com

<sup>3</sup> jelic.m@mts.rs

## ИНФОРМАЦИОНИ СИСТЕМИ ИНТЕГРАЛНЕ ЛИГИСТИКЕ

### Апстракт

*Убрзани развој интернета и коришћење нових могућности које пружа дигитална технологија донеле су значајне промене у свим областима пословања па и у логистици. Више се не поставља питање: да ли треба користит предности које пружају информационе технологије у интегралној логистици већ се намеће питање: како најбоље искористит предности савременог електронског пословања? Овај рад је покушај одговора на ово широко и комплексно питање.*

*Сви подсистеми интегралне логистике као што су складиштење, обрада поруџбине и снабдевање захтевају повезаност информационим технологијама у један јединствени систем. Добро постављен информациони систем може да помогне предузећу да задовољи потребе потрошача а самим тим олакша мисију интегралне логистике. Пракса успешних предузећа показује да елементи интегралне логистике као што су низак ниво залиха, испорука на време као и могућност замене производа зависи од благовременог и тачног протока информација. Примена информационих технологија омогућава бржу обраду информација која значајно утиче на управљање логистичким системима. Данас су најчешће коришћене информационе технологије у логистичком пословању: ДСС, ЕДИ, бар код технологија, РФИД технологија. Ефикасна политика услуживања потрошача ће врло брзо бити незамислива без употребе ових технологија, због чега је у овом делу рада њима посвећена посебна пажња. На крају рада приказан је практичан пример примене*

*РФИД технологије у смањењу пропадања свеже хране у малопродаји. РФИД технологија омогућава оптимизацију целокупног логистичког система јер континуирано прати залихе без обзира да ли се они налазе у производњи, дистрибутивном центру, малопродајном објекту или можда у транспорту.*

**Кључне речи:** *интегрална логистика, информационе технологије, ДСС, ЕДИ, бар код технологија, РФИД технологије.*

### Introduction

Globalization and technological IT development today are the two main pillars underpinning the modern business enterprise. The explosive development of international trade, harmonization of business conditions in the world, turbulence of the business environment, increasing the number of participants in the markets, only some aspects of the business environment today. In such conditions, decision-making is not at all easy and no longer a matter of routine. Different business decisions are made in order to establish a balance between the potential of the company and demand for its products or services. The adoption of such decisions requires timely and accurate information obtained from the management information system. Logistics information systems can be defined as:

“Turning people, equipment and procedures that are required to collect, sort, analyze, evaluate, and distribute needed information to appropriate people who make decisions and to timely and accurately so that they can make quality logistics decisions.”<sup>4</sup>

The definition clearly indicates that the main problem faced by managers of integrated logistics, timely provision of information to decision-making. Otherwise, the logistics information system helps to collect information from various sources, as it is associated with the manufacturing, marketing and financial information systems. Not enough just to have more information, they must be accurate, collected, sorted and delivered to the right people at the right time and in an appropriate form. Information systems are as seen formed and have survived as the necessity of meeting the needs of managers in making right and timely as well as tactical and operational decisions. The significance of information increases with raising the hierarchical levels of decision making. At higher levels of decision-making information used for making strategic decisions, while at lower levels of decision-making information enables operational decisions. Thus, the construction of the logistics information system is one of the key factors to improve the various fields of management integrated logistics.

## 1. Principles and functionality of information logistics

Dispersion and dissemination of technology, as we have seen is changing the way companies operate and the way you communicate with customers and suppliers. In today's dynamic economy, current methods of managing logistics activities are becoming inadequate and managers are forced to innovate the existing methods, and logistics activities such as transportation, warehousing, materials management, purchasing, buying and processing of orders, modernized. If companies ignore these changes and do not meet the requirements of the market at the time, may face a loss in market share and a reduction of competitive advantage. Therefore, great importance attaches to the logistics information system that today is the thread that connects the logistics activities within an integrated road logistics. Functionality and good organization of integrated logistics system based on IT support for all four hierarchical levels of management decision making logistics. Logistical aspects of strategic decision-making involves the development of business capacities, creating business alliances and profit analysis services to consumers.

The second level of distribution logistics information relates to decisions concerning the organization of transport, the determination of the necessary level of inventories, determination of the structure and location of facilities and all decisions of the “make or by”.

The third level of information requirements in logistics focuses on the daily activities of management and control as well as financial cost analysis and management of the company.

Last, operational level required logistical information needed to order the entire process from receipt of order to realization.

Functionality distribution logistics information clearly shows that the information requirements of different levels in the decision-making of integrated logistics require

---

<sup>4</sup> D. Bloomberg, S. LeMay, J. Hanna, Logistics, Prentice Hall, New Jersey, 2006, str. 235.

differentiation in the logistic information. For example, the strategic level to serve the qualitative aspect of the information while the operational level required quantity. The frequency of the use of information is much more pronounced at a much lower operating at the strategic level. It is also informative width required at the strategic level, while for operational decision-making specialization necessary information. Generally speaking, the information included in the logistics system of the company are different in their content and the main task of the people who are engaged in the organization of physical distribution in the company, so that from a heterogeneous set of information obtained isolate those important for certain levels of logistics management.

All hierarchical needs logistics manager for information should be provided while respecting the basic principles of good logistics of information:<sup>5</sup>

- Accuracy - means the well-organized logistics information system. The essence of the logistics information system is accurate conversion of data into useful information and as such, is directed towards the kind of logistics management to assist in the formulation and adoption of strategic cooperative decisions. Bad data and scant information disturb the logistics activities, but cannot always get to perfect information, either because it cannot be obtained, or because it is too costly.
- Availability - all information must be constantly accessible by enabling information technology. For example, information on stocks and the processing of orders, only some of the information that must be currently available. For the placement of the final products of the utmost importance to the possession of and feedback from the market.
- Elasticity - does the ability to adapt logistics information and readiness of information systems to respond to such demands of its users.
- Up to date - is required in the logistics information system because the weather may be that he does not recognize the new order.

This principle has a direct impact on the fulfillment of the aforementioned principles.

Flexibility and format - is now necessary because customer requirements are very specific, so the system itself must be so designed to quickly and effectively respond and such requirements. Customers can purchase goods from any geographical distance and at any time of day. Flexible system needs all the necessary logistics to format reports and documents at any time and for every need.

It is not easy to develop and organize a good logistics information system because it must respond to the individual needs of the company. For this there is no universal recipe, but personal experiences and needs of businesses are crucial to its development.

## **2. Logistics Information systems as a function of processing orders**

Different activities integral logistics must be covered by the logistics information system. Such a system should control all the processes in the physical movement of

---

<sup>5</sup> Ibid. pp. 193.

products through the entire distribution process. In fact, the key organization of the logistic system should be the management system for order processing. This system constitutes the connecting link between serving consumers and the logistics information system. Specifically, if the measure of success integral logistics activities competitive and quality level of customer service, then I logistics information system must be functional modern consumer policy service.

The management system of processing orders is generally speaking very complex process. It includes a reception and dissemination of information about the goods commissioned by the customer, then sorting, packing and separation of goods where all accompanied by appropriate documentation. All of these activities are fully in the field of integrated logistics, regardless of whether the company works in the self-directed or uses the services of another company. Modern logistics organization in function of customer service is not possible without the logistics information system itself. This system brings together a series of logistic step in the ordering process.

There are different ways of ordering by customers. The first and oldest method is manual, whether in writing or orally. Most often it is a verbal agreement between the buyer and seller that tracks written confirmation. It is possible to order by phone with the customer will be informed as to whether the required goods in stock. Modern electronic commerce implies a way of ordering the product that best fits in today's logistics information system. Reception of customer orders is carried out its transformation into a logistics information system further checks the state of the stock and credit worthiness of the customer. If the required product is not in stock triggers the process of its procurement. Then form the corresponding document accompanying the goods and sends the signal storage like packaging and separation of goods and transport planning. By specifying the mode of transport, the goods arrive at the place of destination of the buyer.

Order processing system is the center of an integrated logistics system of the company. Efficiently organized, with the help of this system of rapid information flows directly reduces logistics costs for the execution of orders that allow you to maximize the level of customer service while minimizing costs. Fast and accurate information systems are more expensive but it is well organized efficient way to connect with suppliers and customers. On the other hand, the electronic processing of orders organized way to increase sales and profits of the company which has the effect and increase its competitive advantage. An excellent example of the success of the Japanese “just in time” system is a complete organizational and interconnectivity of all flows from production to sales of goods to the end user.

### **3. Information technologies in support of information systems, logistics**

Information technologies are now present in all areas of business and enable the transition “from the paper economy” in the virtual reality. Technology, e-business is achieved faster, more accurate and more efficient data exchange, easier and more effective dissemination of information, ie. effective communication between all participants in the e-chain. The time required for the transmission of messages from one end of the world



on the other, is now measured in seconds. Rapid technological changes affect the area of integrated logistics including the use of laser bar code scanning, integrated circuits, electronic data, satellite data transmission, artificial intelligence, software for warehouse management, etc. Modern managers see the development of logistics information technology as a great opportunity to improve the performance of all logistics activities. All phases of the logistics can be included in the wide application of information technology, which will shorten the time of the exchange of information and thus the completion of orders and this will lead to huge savings in business.

In the sphere of logistics operations now apply many information technologies and some of them will be presented in more detail below:

- Decision Support Systems (DSS);
- Electronic Data Interchange (EDI);
- Bar code system;
- Radio frequency identification (RFID);
- Satellite tracking of vehicles and others.

Solving complex methodological procedures and problems in day to day operations of logistics may speed up and facilitate the application of decision support systems (Decision support systems - DSS). These systems are intended to provide every kind of information support as an input for logistics easier decision-making.

DSS should provide logistics manager in time the information, which will also be accurate, relevant and complete. It must also display information in an appropriate form, to be easy to understand and operate. Information displayed by this system can be the result of internal or can be collected from external sources through the different opinions and forecasts to help a manager. To DSS system was finally able to model through which solves the real problem simplify where appropriate and possible, and that in those aspects that keep his analyzes in detail the real complexity. Decision support systems supporting all phases of decision-making process, starting from the stage of formulation of the problem, through the design phase, selection phase, all the way to its implementation.

Decision support systems provide support for decision-making at all levels of decision-making logistics, or are of special importance to the higher levels. Unlike management information systems, predominantly horizontal facilitate the flow of information, decision support systems supported vertical information flows and so help each other with the integration of the information used at different organizational and managerial levels. So, for example, logistics managers can more easily and quickly decide on the amount of purchases or time when you need to access procurement.

Systems to support decision-making are very efficient but certainly cannot replace managerial decision-making. Can increase the efficiency of decision-making in logistics, and speed in decision making for logistics managers is crucial.

The IT support Integrated Logistics is now widely used electronic exchange of data in a modern way, providing timely and accurate information. Today, electronic data interchange applicable in almost every aspect of integrated logistics, because it allows the flow of documentation i.e. paperless. completely replaces traditional forms of communication by letter, phone or fax. Thus significantly reducing administration, inventory, costs, increases productivity, logistics first and then the whole enterprise.

Perhaps the greatest benefits of the application of electronic data interchange greater focus on the customer and quickly responding to their needs.

Electronic data affected the way people live and work in all areas, and one of the major impacts is the phenomenon of e-commerce, buying and selling goods and services that erase geographical borders. A large increase was recorded in this area, since the efficiency and effectiveness of logistics key factors of electronic commerce.

There are two basic types of e-commerce: from entrepreneurs to entrepreneurs (B2B - business to business) and from entrepreneurs to customer (B2C - business to customer). Thus, B2B companies interact with each other in many ways, including the purchase of raw materials and services, obtaining information, increasing speed, communication, monitoring, and other products. There are great benefits of B2B commerce and reflected in cost reduction, easier predicting the markets and reducing inventories. But the most attractive is that this mode can make the company more efficient. The second, however, e-commerce category of entrepreneurs to customer (B2C), where trade buyers cooperate with the company over the Internet to obtain goods, services or information. Otherwise, management of integrated logistics in this way for lower purchase costs, faster exchange of information, electronic payment, shorter delivery times and even better service and higher profits. B2C trade advantage is the reduced need for intermediaries. No, however, although the effective use of the Internet can reduce and simplify the supply chain, its complete abolition is not possible because many products require the physical supply chain in order to complete the delivery of the product. The mass of the products are now sold to consumers and a business over the Internet is large and in 2000 amounted to over 2 billion of orders. According to agency reports, the total turnover over the Internet at the global level in 2001 was around 444 billion dollars, while in 2004 reached the incredible sum of 2.7 trillion dollars. These data show that from a logistics system requires high speed and efficiency.

Especially in recent years intensively working on improving electronic commerce with the government. Thus, there are: G2C (government to customer, or a government - users), G2B (government to business or government - entrepreneur) and G2G (government to government, or the government - the government). Those shops are a symbol of the modern state, which applies the principles of modern communication and thus exchanges information with companies, customers, or the governments of other countries.

No matter what type of e-commerce benefits, one thing is certain: it will affect the integral logistics system as a result of e-commerce integrated logistics managers are faced with increasing customer expectations, requirements for quick delivery of products or services and direct communication with buyers. A commercial practice of this kind will still continue to pose a challenge for logistics managers in the future.

The importance of e trade is rapidly growing in the world and talk about the increasing traffic in this market. Thus, for example. Last year on Monday, the first day after the Thanksgiving weekend in the US, called “Cyber Monday” due to the start line on big promotion, the day with the largest on line purchase in history. That day has the highest line on turnover of 1.25 billion dollars. On the same day two years ago, the turnover of one billion dollars. The term “Cyber Monday” has introduced The National Trade Federations in 2005 in order to encourage customers to buy on line Monday, after the big feast. The idea was accepted by the sellers of the day offer great discounts and free delivery, to make as much use on the growing trend of online shopping.

Social networks have now become an integral part of everyday digital life. Many logistics companies are using this fact to be closer to our clients. For example, the company Timocom believes that Facebook offers an ideal opportunity to connect the business and personal aspects of establishing and relaxed dialogue. Their profile provides pictures from the last fair, the actual video footage and sweepstakes to lure customers freely. Expectations are that the company will communicate with customers in this way, directly and without filtering provide new jobs in different parts of the world.

The leading transport and logistics company in Europe Gebrüder Weiss also uses social networks to attract more customers. They offer logistic game “Logistics Expert”, which allows players from beginners to become experts in the logistics puzzle. Puzzle aims to cases, pallets and other goods move to allow the passage of fork-lift trucks carrying cargo. The less you use the player moves, the better the result. With a focus on leisure “Logistics Expert” its directivity to the field of transport and logistics should serve as a form of promotion services company Gebrüder Weiss.

#### **4. Bar code technology**

It has always been a need to mark items for easy identification. In the beginning, to the participants in the chain provide additional information about goods, items were given general names that became increasingly complex. E-business were the reasons that the goods means and symbols that are recognized machines. Therefore, at the initiative of manufacturers and distributors of 12 European countries formed a council with the task to explore the possibility of a uniform and standard numbering system for Europe. Thus, in 1977. Formed organization numbering items - European Numbering EAN Arctic. The aim of establishing EAN system is the development of global standards for the identification of products and services in order to provide a common language in international trade. Inseparable part of this system is a bar code, as a way of representing data that can be automatically read. This system has quickly become part of information technologies, which has a very important role in the collection and capture the data and their transfer to the computer. Thanks to this system, sales, warehouse and supply logistics provide simultaneous information on the status and trends of each article at any point in time. Bar code system should allow the identification of products that present additional information regarding the date, time, price, specify the manufacturer or importer, and to reduce the amount of stock every item.

An integral part of this system and logistic labels. The purpose of these labels is to provide clear and concise information about the unit in which he adhered. It identifies the items and any additional information required for administrative and logistic purposes. Logistics labels can be affixed to the boxes, crates, pallets and containers, and each of these packages can be composed of homogeneous or heterogeneous products depending on customer requirements. Business partners at different times required information on the identification and movement of these products in order to provide efficient reception, tracking, sorting or repackaging of goods. Therefore it is not modest to say that the advantages of logistic labels especially for the good organization of large integrated logistics:

- As part of the EAN system is compatible with internationally recognized standards

- It represents a safe solution for logistics systems because it provides one of the most accurate forms of data capture
- Allows you to save time and costs because it reduces errors and helps internal and external integration of logistics operations.
- It only takes one label for all participants in the supply chain. Label manufacturer creates a benefit for everyone in the distribution chain.
- Provided a good link between the physical flow of goods and the flow of electronic information.

Bar code technology allows the optimization of the entire logistics system as it continuously monitors the stocks regardless of whether they are in manufacturing warehouse, distribution center, and retail store or perhaps in transport. Serious policy serving the consumer today is unthinkable without a bar code system that will enable firms not only to be closer to consumers, but also significantly more cost competitive.<sup>6</sup>

## 5. RFID Technology

RFID (Radio Frequency Identification) is a new technology fast automatic identification. It differs from the bar code technology, for data transfer between the reader and the units of goods to be monitored using radio frequency signals instead of optical scanners. RFID is highly efficient wireless technology that is found effective application for tracking goods in the supply chain. RFID tags or labels are placed on objects, boxes or pallets which are monitored throughout the process of distribution and does not require physical contact even have to be in sight of the reader, which significantly accelerates the transport of large quantities of goods.

RFID tag consists of an integrated electrical circuits and memory chips, which are used for storing data and an antenna which can be installed on various types of substrates. RFID systems can read data from tags at a speed of at least 40 tags per second. Size tag can be different, even very small, only a few millimeters depending on the need. In order to achieve the optimum efficiency of each element of the RFID tag is determined according to the specific need. In practice, the most commonly used active and passive tags. Active RFID tags have a battery, which is used to initiate a circuit and a microchip reader to broadcast. Passive tags have no battery. They initiated reader, which sends electromagnetic waves that induce an electrical current in the antenna tag. Semi-passive tags use a battery to run a circuit chip, but communicate by drawing power from the reader. Active and semi-active tags are useful for tracking high-value goods that require to be scanned at large distances, such as the transport of cars on the truck.

There are numerous advantages of this technology compared to bar codes:

- Unlike bar codes RFID tags is virtually impossible to forge.
- RFID technology is very fast. Tag can be read and feedback is available in a very short period of time. RFID systems can also read multiple tags at once (40 tags per second), which is much faster than bar code systems

---

<sup>6</sup> Lisa H. Harrington, Rast, Rirst, Frightened, Supply Chain Technology News 2, no. 1 January 2000., str. 39.

- RFID systems help companies not only improve the technology, but also to lower costs, improve services and reduce the work effort.
- Bar codes and optical systems based on optics and require a relatively clean environment, especially protected from moisture. RFID is ideal for dirty, greasy, damp industrial environment.
- RFID tags and readers have no moving parts, therefore, do not require maintenance. RFID tags can be read into them and can write data that can be far more substantial than other automatic identification technology.
- RFID provides dynamic updating of data on goods that are monitored throughout the haul road in real time.
- With the RFID technology it is possible to remember raw materials, tracking, change from production to end-user supply chain and monitoring packages.

Many companies that have adopted this superior technology, see RFID as a competitive advantage in lowering their costs.

## **6. Application of RFID technology in reducing decay Fresh Food retail**

The latest American research institute might show that the use of sensors and RFID technology can provide control of fresh fruit and vegetables and thus reduce retail losses due to rotting and throwing rotten food. The new sensors can detect small amounts of ethylene, which shows the maturation of fruits and vegetables. Sensors are attached to the packaging and manually scanned computer can detect maturity fruits and vegetables in the package. In this way, dealers can know what foods to first make available to the purchaser before it loses the freshness so that no one will buy at any price!

According to the US Department of Agriculture, 10% of fruit and vegetables are thrown in the middle of putrefaction. MIT researchers have tested the sensors in several kinds of fruits and precisely measure their maturity by detecting the amount of ethylene released by the fruit. Since the level of ethylene broadcasts varies from fruit to fruit is very important to distinguish that product is controlled. Major retailers see that huge savings as they may hold inventories to a minimum, it is easier to prevent shrinkage of perishable goods, thus achieving significant cost savings.

In recent years, developing tags the size of a postage stamp that can be placed on meat and fresh meat and radio frequency by sending information on the condition of a dozen sensors to measure temperature, humidity, the number of bacteria, monitor chemical and other changes. These sensors provide the food industry traceability information on the date of production and the origin of food and all for the purpose of consumer safety. Application areas RFID tags can be extended to products in plastic containers, such as juice, milk and other beverages.

## Conclusion

All the listed information technology represents a very significant support to the functioning of the logistics information system. Their synergistic effect allows for lower costs, increase productivity, accuracy in information, the flexibility of the logistics business as well as support in the strategic analysis. It is certain that each new generation of technology solutions accelerates the process for which it is intended to expand its capacity of work and most importantly, reduce costs. Finally, we summarize the multiple benefits of applying information technology in the integrated logistics:

- E-commerce to sell products directly to consumers, as a result of such sales is to reduce an intermediary in sales while reducing costs, especially storage.
- Information technologies enable customers to order goods at any time, even when the operating time of the retail facility complete.
- E-commerce facilitates the exchange of information in the supply chain, which automatically improves the coordination of its members. Companies offering information on a wide range of its products, and the Internet can be used to obtain information relating to planning and forecasting, which further enhances communication among members of the supply chain. At the same time, the better align supply and demand.
- Companies that do business electronically introduce new products more rapidly, as compared to companies who use traditional methods. The new product is available through a web site as soon as the first units produced. Logistics should be involved in all aspects of new product development, in order to eliminate potential problems, or reduced to a minimum.

In a word, information technology in logistics are a prerequisite to increase competitive advantage and increase the level of customer service, which also represents the main goal of integrated logistics.

## Reference

- Acimovic S., Bozic V., (2012), Marketing Logistics, Faculty of Economics, Belgrade.
- Bloomberg, D. LeMay, S., Hanna, J., (2006), Logistics, Prentice Hall, New Jersey.
- Barac, N. Milovanovic, G., (2006), Strategic Logistics Management, SKC, Nis.
- M. Bitner, Brown Meuter S. & M. (2000), “Technology in service encounters infusion”. Journal of the Academy of Marketing Science 28 (1).
- Bloomberg D. LeMay S, Hanna J. (2006), Logistics, Prentice Hall, New Jersey.
- Chopra, S. (2004), Supply Chain Management: Strategy, Planning and Operation. Prentice Hall. Englewood Clifs.
- Cottrill, K. (2000), “Logistics sold short”. Traffic World. 261(2).
- Cullen, T., (2012), “BASF seeks improvement in quality of service firms.” Chemical week. no. 162(3)
- Jack Farrell W. ,, (2010), “Oranization study: New Clout for Logistics’ Traffic Management,

- Galbraith, J. R. (2010). *Designing the Global Corporation*, Jossey-Bass, San Francisco.
- Gligorijević, M. (2004), *Industrial marketing*. Faculty of Economics, Belgrade, *Logistics and transport*, newspaper, *BEOLOGISTIKA*, Novi Sad, br.55-58.
- LYSONS, K., (2013), *Purchasing and Supply Chain Management*. Prentice Hall & Financial Times.
- Clifford F. Lynch (2014), *Why outsource ?*. *Supply Chain Management Review*, New York.
- Maltz Arnold B (2004), *the Warehousing Function Outsourcing; Economics and Strategic Considerations*, *Logistics and Transportation* 30 (2).
- Maricic B. (2003), *Consumer Behavior*. Faculty of Economics, Belgrade.
- P. Robbins, Stephen Coutler Mary, (2005), *Menagement, Data status*, Belgrade.

Links:

- [www.gw-world.rs](http://www.gw-world.rs) (22.11.2016.)
- [www.logistika/info.net](http://www.logistika/info.net) (22.11.2016.)
- [www.logistika i transport.com](http://www.logistika i transport.com) (22.11.2016.)
- [www.logistikausbiji.rs](http://www.logistikausbiji.rs) (22.11.2016.)
- [www.logistik.nrw.de](http://www.logistik.nrw.de) (22.11.2016.)
- [www.storactlog.com](http://www.storactlog.com) (22.11.2016.)
- [www.timocom.rs](http://www.timocom.rs) (22.11.2016.)



Jelena Jovanović<sup>1</sup>  
Biljana Grujić<sup>2</sup>  
*Institute of Agricultural Economics, Belgrade*

SCIENTIFIC REVIEW ARTICLE  
doi:10.5937/ekonomika1601187J  
Received: January 22, 2016  
Accepted: February 16, 2015

## HISTORICAL DEVELOPMENT OF CORPORATE GOVERNANCE AS THE BASIS FOR CURRENT CORPORATE TRENDS<sup>3</sup>

### Abstract

*The subject of this paper is to analyze different understandings of the term „corporate governance“ which is, from the 14<sup>th</sup> century to the present day, passing through various stages of development, definitions and procedures, stating the contributions of individual scientists. Then, it presents and analysis of corporate governance in the 21<sup>st</sup> century (the importance of corporate governance is growing) and the trends that have already begun, expected to significantly alter this area in the forthcoming period (greater involment of shareholders in the company's operations, board's performance audit, the number of women in boards, the transparency of the company). The aim is to present different aspects of the management and functioning of the company's board, while increasing involvement of employees (shareholders) in corporate desicion-making. The purpose of this paper is to highlight the importance of corporate governance in modern business because with the increase in the number and scope of the organization there is also an increase of need for management.*

**Key words:** corporate governance, company, board, modern business, code, trend.

**JEL classification:** B12, B20, B21, M12, M14

## ИСТОРИЈСКИ РАЗВОЈ КОРПОРАТИВНОГ УПРАВЉАЊА КАО ОСНОВА ЗА АКТУЕЛНЕ КОРПОРАТИВНЕ ТРЕНДОВЕ

### Апстракт

*Предмет рада је разматрање различитих схватања термина „корпоративно управљање“, који је од XIV века до данашњег дана пролазио кроз различите фазе развијања, дефиниција и процедура, уз навођење доприноса појединих научника. Потом, представљена је анализа корпоративног управљања у XXI веку (важност*

<sup>1</sup> jelena.jovanovic101@yahoo.com

<sup>2</sup> biljana\_g@iep.bg.ac.rs

<sup>3</sup> Paper work is part of the project research 46006 „Sustainable agriculture and rural development in function of Republic of Serbia strategic goals achievement within the Danube region“, financed by the Ministry of Education, Science and Technological Development of the Republic of Serbia.

корпоративног управљања расте) и трендови који су већ почели, а очекује се да ће значајно мењати ову област у наредном периоду (већа укљученост акционара у пословање компаније, ревизија перформанси одбора, повећање броја жена у одборима, транспарентност компаније). Циљ рада је да се представе различити аспекти управљања и функционисања одбора компаније, уз повећање учешћа запослених (акционара) у доношењу компанијских одлука. Сврха рада је истицање значаја корпоративног управљања у савременом пословању јер са растом броја и обима организација, расте и потреба за управљањем.

**Кључне речи:** корпоративно управљање, компанија, управни одбор, савремено пословање, кодекс, тренд.

## Introduction

Corporate governance as a way of thinking occurs centuries before the official use of this term. It can be said that it began to arise and develop as the companies in the simplest form of its existence. Starting from small entrepreneurs and their family business and all the way up to multinational corporations such as known today, the goal of establishment of each company was and remains to be the same – profit. With the Industrial revolutions, wars, changes and development of the world as a whole there have been changes, not only the conditions in which business is conducted, but also the size and the structure of the company.

The term *corporate governance* emerged in eighties of the 20<sup>th</sup> century and its significance has increased the most at the beginning of the 21<sup>st</sup> century. To a large extent it is influenced and shaped by *codes of desirable behavior* that are applied throughout the world, but bear in mind that not a small number of companies are adapting codes to their needs. Even when code is adjusted to a certain organization, in its core code consists of four cornerstones and they are: openness, integrity, honesty and responsibility towards shareholders, employees, the environment and all stakeholders. The successful implementation of the code and corporate governance in general significantly aggravate the increasingly complex forms of the company, both in structural and in geographical terms. What further complicates corporate governance in all countries of the world is changing business environment. Related to that, what also should be mentioned are numerous collapses which, in the world's leading companies, incurred as a result of insufficiently analyzed business options and potential (positive and negative) effects of such decisions taken. Confidence in corporate governance has often been shaken due to the poor selection of the primary objectives of management, therefore often in question were brought out their business ethics.

So far, the two biggest challenges of corporate governance were crashes of the companies from the beginning of 21<sup>st</sup> century and in the same decade – the global financial crisis, which put in foreground disadvantages of corporate governance and the need for greater diversification in boards. All of above are only an indication that corporate governance over the years is getting more and more attention, and this trend continues in time to come.

## Origin and development of corporate governance

The idea of *corporate governance* is centuries old but the expression is new. The concept of *governance* is linked to the English writer Geoffrey Chaucer (c. 1343-1400). This concept in its history carries the stories of many ambitious people who have led companies into bankruptcy, and often did malfeasances that would increase their personal wealth (Tricker, 2012, pp. 4-5). There is an opinion that in some way corporate governance exists at least as much as there are forms of organization in which is possible to come to a conflict between those who invest their money and capital, and those who manage it.

Even in 18<sup>th</sup> century Adam Smith in his book *The Wealth of Nations* (1776) observed a totally different interests between owners and company managers. From his point of view it seemed as insurmountable problem for the efficiency of the corporation. According to him „directors, as managers of other people’s money, can never take account of that money with the same caution as they would with their own money“ (Wells, 2010, p. 1251).

The beginning of the 19<sup>th</sup> century was marked by great economic growth caused by the Industrial revolution and during this period many companies needed external capital in order to keep up with this growth. Already in 1807 in France appeared type of company that makes it possible. In this type of company CEOs were still exposed to the company’s debt, but external investors had limited liability. In this regard, the British Parliament considered the need of raising capital without exposure of external investors to the risks in case of bankruptcy. Although some members of Parliament were for the system that was implementing in France, according to the Acts of 1855 and 1862, all shareholders had limited liability – whether they were part of the company’s management or not.

New changes have occurred already by the beginning of the 20<sup>th</sup> century. In the UK, US and many other developed countries companies have become large and complex – shareholders became numerous, geographically widespread and diverse in terms of expected returns. At that time an increasing number of companies had shares listed on stock exchange, the number of intermediaries was increasing and thus the investors and managers became more and more remote. As the years passed many questions have been arisen, such as the requirement for companies to have audit committee as a permanent body which would be composed of independent external directors; or the role of state enterprise in society and their legal and moral obligations (Cadbury, 1992, p. 16).

The corporate social responsibility concept within which companies integrate concern for society and environment as a whole and accordingly direct interaction with shareholders and course of action for the company attracted a lot of attention in the 1970s. Numerous authors have recognized the impact that company activities have on the external environment and it was suggested that one role of accounting reports should be focused on this issue. But there were authors who believed that there is no reason why shareholders would tolerate non-profit activities of the company because it would reduce their dividends and company’s earnings. On this topic Milton Friedman in 1970 said that „to the company there is only one social responsibility – to engage their funds in activities that are designed to increase profit, but without violating the rules of the *game*“ (Crowther, 2008, pp. 11-12).

The most important milestone in the development was the one which referred to the first concrete shaping and defining this term – the formation of expression corporate governance

that emerge in 1980s and quickly was accepted worldwide. Already in 1988 Philip L. Cochran and Steven Leslie Wartick published *Bibliography of corporate governance*, and only four years later was founded a research journal that specializes in this area. Same year (1992) in the UK was created *Corporate governance Code*<sup>4</sup> in which first time was defined what is meant by good business practice. This Code was intended for all members of the board of directors all companies whose shares are listed on stock exchange, but also served as an incentive for other companies to align their operations with the Code. Basic principles of the Code were *openness* that should exist between the company and everybody who have a stake in its success; *integrity* refers to the clear and complete business, that is, the financial statements should be honest and reflect a clear picture of the company's situation; and *responsibility* of the board of directors refers to their responsibility to the shareholders in terms of the quality of information they provide, but also the responsibility of shareholders to perform their duties which they have as owners (Tricker, 2012, pp. 4-7). Code was changed and evolved over the years and its last edition was published in September 2014 (this will be discussed later).

## Corporate governance and 21<sup>st</sup> century

At very beginning of 21<sup>st</sup> century corporate governance gets above all the attention, and reason for this lies in the growing number of scandals and crises that occurred in those years. Collapse of companies such as Enron, WorldCom, Tyco and others led to numerous re-examination of the role of the committee, auditors, independent directors and so on; and that led to questioning the professional ethics of the companies.

The scandals and crises are in fact merely the manifestation of a number of structural problems for which corporate governance gained and keeps increasingly gaining in importance in field of countries economic development. The cause of the problem is in several segments, such as: privatization – which drew a number of issues of corporate governance in the areas that were previously in hands of the state; technological development, liberalization and the opening of financial markets, free trade and other structural reforms make the importance of corporate governance grows, and with time it becomes more complicated; the growing role of institutional investors through the mobilization of capital and increases the need for well-managed arrangements; growth of international financial integration, trade and investment create difficulties in corporate governance across their borders (Claessens, 2003, pp. 6-7).

Crash from the beginning of the 21<sup>st</sup> century was followed by a new collapse that hit the whole world – it was crisis 2007/2008. As a result of the financial crisis obvious weaknesses due to which corporate governance fell test became apparent. The reason was the fact that management routines have not served the purpose – many companies engaged in financial services did not protect themselves from taking excessive risks. After all of this became apparent, the importance of qualified monitoring of board and common risk management as well as widely accepted standards (which are not limited only to financial institutions) and accordingly further develop the Code (Kirkpatrick, 2009, p. 3). Code changed over the years and last edition of UK Corporate governance

---

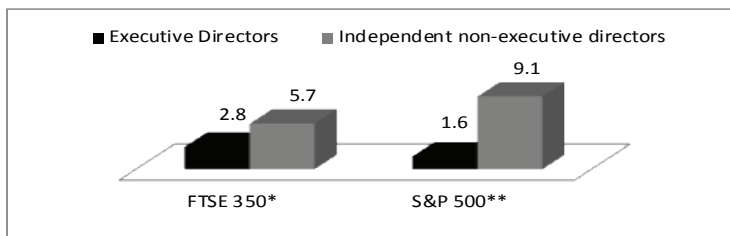
<sup>4</sup> For more information see: The Financial Aspects of Corporate Governance, The Committee on the Financial Aspects of Corporate Governance and Gee and Co. Ltd., 1992.

Code was published in 2014 by the Financial Reporting Council (FRC, 2014, pp. 5-23) and it points out the following basic principles:

- *Leadership* – there should be a clear division of competences and responsibility between the supervisory and executive boards. Chairman is responsible for management board and for ensuring its success in all aspects;
- *Effectiveness* – the board and its committees should have appropriate range of characteristics, ie. skills, experience, independence and knowledge about company that allow effective performance of their duties;
- *Accountability* – the board should present a fair, balanced and understandable assessment of company’s status and prospects. Board is responsible for determining the nature and extent of the main risks, and it should find a reasonable way to manage them. Also, board should establish transparent principles of corporate reporting, risk management and internal controls;
- *Remuneration* – compensation of executive directors should be designed in that way to encourage the long-term success of the company. There should be a formal and transparent procedure for developing policy on the compensation of executive management, as well as for fixed salaries of individual directors (no director should be involved in deciding on the amount of their own fees);
- *Relations with shareholders* – on the basis of a common understanding of goals there should be a dialogue with shareholders and in charge for that is board as a whole. Board should use regular meetings to communicate with investors and to encourage their participation.

Corporate governance Code propose that board shall consist of at least half of independent non-executive directors and according to Grant Thornton’s annual report corporate governance, on average, committees in the UK consists of 9.5 members and 5.7 of them are independent non-executive directors. In the US, the situation is slightly different so the average size of the board is 10.7 members and on average 9.1 of them are independent non-executive directors (Grant Thornton, 2014, p. 21). Graphically illustrated it looks like this:

*Graph 1: Participation of non-executive directors on boards*



*Source: Grant Thornton, 2014.*

\* The FTSE 350 is a market capitalisation weighted stock market index incorporating the largest 350 companies by capitalisation which have their primary listing on the London Stock Exchange.

\*\* The S&P 500 is an American stock market index based on the market capitalizations of 500 large companies having common stock listed on the NYSE or NASDAQ.

## Trends in the development of corporate governance in modern business

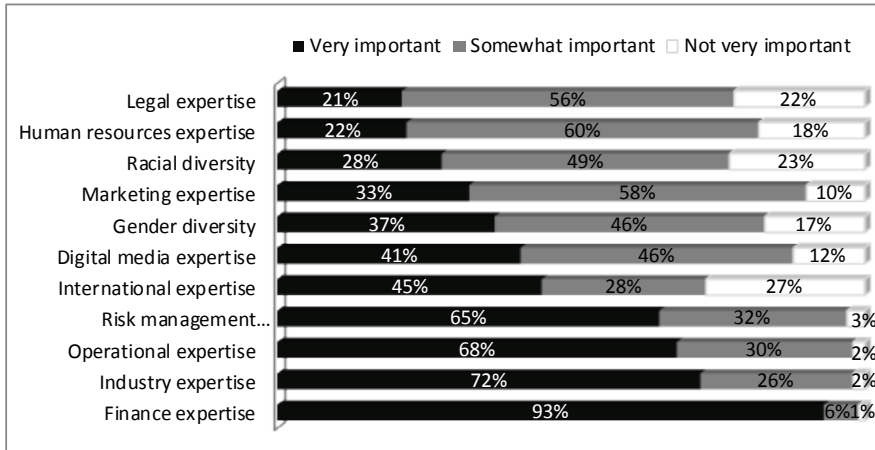
Corporate governance over the years is getting more and more attention. It is expected that this will be the case in the time to come and that boards will be carefully monitored by investors, customers and all other stakeholders. In the text bellow is a list some of the trends and issues which are considered that will shape this area in the next period:

- *more independent directors and advisers* – directors and advisers may be formally independent, but still trapped inside the meeting hall;
- *greater responsibility of shareholders* – there is a tendency to put shareholders in more involved role in business decision-making process and accordingly board should hold executive meetings with long-term shareholders in order to discuss the risks, salaries, value of the company and management as a whole;
- *focus on strategy and value creation – profit* – the focus of any good board should be aimed at the creation of value and monitoring of the plan realization. This trend brings problems to an inexperienced boards and directors who have recieved hteir position through inheritance;
- *board performance audit* – regulation, activism, technical and public tributaries are leading to the objective standards for evaluation of activities conducted by directors (and lack of them). Failures in the existing management patterns (bribery, corrpution, poor performance) often took place in companies whose management system was taken as a good example. That is why now is going toward an independent, internal and deep revision of board, risks and control. Management can not guarantee for their good work and same situation is for boards – board can not revise its work.
- growing pressure from the public and the media about *compensation* – these pressures have resulted in relugations for the harmonization of fees, but the role of boards in the executive compensation process still requires much attention and also payment based on performance operating activities and gains arising in specific circumstances still remained unregulated (Lebland, 2014; Kumar, Zattoni, 2016, p. 1).
- perhaps one of the most obvious trends in corporate governance is focus on *members, diversity* and *committees performance*. Regulation is increasingly moving up to the prescribed competencies, biographies etc. in order to determine wheter all members of board actually correspond to the scope of their activities. Boards are increasingly under pressure to evolve to meet the expectations and successfully meet the challenges. So, directors are nowadays more than ever focused on board members and need that they have appropriate knowledge and experience to make their work more effective (PwC, 2014, p. 4).

The following graph shows the results of a survey conducted by PwC company that specializes in audit, insurance, consulting services and others. The result shows that the most important features of board members are knowledge in finance (93%), industry in which company operates (72%), operational functions (68%), risk management (65%). Less than half of respondents believe that is very important knowledge about international business

(45%), technology and digital media (41%), sexual diversity (37%) and marketing (33%). Knowledge of racial diversity (28%), human resources (22%) and legal aspects (21%) are considered to be the least important.

Graph 2: Desirable knowledge of board members

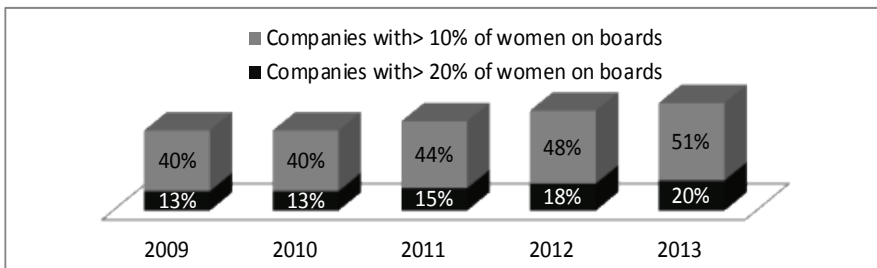


Source: PwC, 2014.

\*due to rounding the sum of percentages in the chart can be less than 100

When it comes to women in boards in recent years that topic is pervasive. Although it was observed that the number of women on the boards is growing, the increase is still quite small. The company Thomson Reuters in October 2014 announced the results of an analysis they conducted. That study included 4,255 companies which can be found in ASSET4 ESG<sup>5</sup> database (Chanavat & Ramsden, 2014, pp. 1-2). As shown in Graph 3. compared to 2009 when 13% of companies reported to have 20% or more women on boards, in 2013 that percentage rose only up to 20%.

Graph 3: The percentage of women on boards



Source: Thomson Reuters, 2014.

<sup>5</sup> A database where you can see and evaluate the company based on 750 individual criterias which are connected to over 250 business performance indicators.



It is expected that these percentages will be higher in years to come because many countries have adopted quotas on how much women should be on boards. Thus, for example, in the Netherlands company over 250 employees should have at least 30% of women and 30% of men on the boards; in France until 2017 companies whose shares are listed on stock exchange and have more than 500 employees should have 40% female representation on boards; in Japan two years ago was announced target quota of up to 30% of women in executive positions which is, due to the deep foundations of culture, a very high percentage for this country (Orsagh, 2014).

- *transparency* as key to success – providing greater insight into company politics and business moves will encourage shareholders to engage in the companies in which they invest, because the more shareholders know they will be more motivated to be involved in the life of the company. This is also true for applying the principles of corporate governance – shareholders should be familiar how to apply these principles, and in case where principles are not applied – reasons should be explained and members should together come to solutions to problems. And it is expected that in 2016 companies will be more oriented on rules on disclosure which would lead to increased transparency (European Confederation of Institutes of Internal Auditing, 2013, pp. 3-4; Goodman & O’Kelley, 2016, p. 4).
- one of the areas of directing research in this field is *connection between the ownership structure and performances*, because in companies with complex ownership structure too little is known about the owners, the role of shareholders, relations between shareholders and their representatives in boards and how all of this affects the private, state-owned companies and institutional investors. Likewise, in the growing markets of developing countries it is necessary to investigate in detail the relationship between the corporation and all stakeholders (Claessens & Yurtoglu, 2012, pp. 41-45).
- *risk management as old, but problem with more challenges* is one of the most difficult tasks for corporate governance today. In order to be competitive and to beat rivals companies have to manage a complex business, financial, legal and other risks that require constant monitoring, technical expertise and resources. The paradigm of risk management has evolved from the fact that it is primarily commercial and operational management responsibility, to the point that it comes within the scope of board responsibility. The fact is that companies that introduce completely new products and services, or new technologies achieve a significant advantage but they also bear a significant risks. In recent years, a segment that is gaining attention is *information technology management*. The rapid progress of technology has created great opportunities, but also risks. The root of these risks lies in the ignorance of technology by many, if not most of the board members which prevents effective management and monitoring. Companies are increasingly relying on business over the internet and mobile devices which increases their vulnerability due to more frequent and sophisticated cyber attacks (Lipton & others, 2014, pp. 2-11; Jovanović, 2015, p. 149)

## Conclusion

The concept of corporate governance is as old as the concept of company itself (even in the simplest sense of organization), so it can not be observed only from the eighties of the 20<sup>th</sup> century and the time of occurrence of the term. With the increase of number and size of the organizations, the need for management did also increase. All types of organizations, ranging from small family all the way up to multinational corporations whose capital can be measured by capital of smaller country have always had same fundamental objective, which is to maximize profit. Very common problem that is related to this objective is gap between primary goal one who invest capital, and those who manage it. Through history, often this gap led to the bankruptcy of the company, and that led to shaken confidence in those who manage capital.

The problem of confidence in managers escalated with collapses that arose at the beginning of the 21<sup>st</sup> century. In order to restore confidence in managers, companies over the years are more and more directed into involment of the independent non-executive directors on their boards; which were mostly composed of male members and in time that led to strengthening requirement that women should also be an equal members of the board. The shaken confidence in corporate governance emerged a trend tightened, independent and profound revision of companies board of directors, as well as an increasing public pressure for harmonization of fees regulations and greater transparency of company operations.

Board and investors should focus on the effect that company achieves, and over time it became increasingly evident that company activities do not affect only internal but also external environment. Although there was an opinion that earning profit for companies is not just essential but the only target, failures of companies have shown that subjects who were led by policy of this kind were wrong and that every business system must take into account what kind of impact it has on all stakeholders. On the one hand, companies should find a way to create a balance between earning profits; and on the other hand, the effects they have on the environment, employees and all others who are in some way influenced by it. Corporate governance should contribute to long-term sustainable development, because there is a feedback between every company and environment in which they exist – environment benefits from successful company, and company can have benefit from environment that support its development.

One of the problems with which corporate governance was faced throughout history, and no doubt will face in future, is a risk. In the past, risk management that was not good enough had put companies through painful shocks and now danger of that outcome increases every year. In addition to general risk, companies in modern business are facing a new challenge – information technologies. Companies are increasingly relying on information technologies, so if they do not exploit its potential, educate employees and keep up with the latest trend they may face serious consequences.

World economic and legal environment is constantly changing and corporate governance should follow these changes through codes and principles of conduct, but that is not enough. Each company is an organism for themselves and in addition to general code every company should have its own rules and should adapt them to their and characteristics of environment in which company conducts its business. Similarly, every company should follow development and trends of industry in which it operates, but also in the areas of

corporate governance so it could be in time introduced to demands, risks, aspirations and all possibilities that exist in the area of its business.

## References

- Cadbury A., (1992). *The Financial Aspects of Corporate Governance*, A Report of the Committee on Corporate Governance, Gee & Co, London.
- Claessens S. (2003). *Corporate Governance and Development*, A Global Corporate Governance Forum, Focus 1, The International Bank for Reconstruction and Development, Washington.
- Claessens S. & Yurtoglu B. (2012). *Corporate Governance and Development - An Update*, A Global Corporate Governance Forum Publication, Focus 10, International Finance Corporation, Washington.
- Crowther D. & Aras G. (2008). *Corporate Social Responsibility*, BookBoon, ISBN 978-87-7681-415-1.
- Chanavat A. & Ramsden K. (2014). Climb to the top – Tracking gender diversity on corporate boards, Thomson Reuters Financial and Risk, Thomson Reuters (<http://thomsonreuters.com/en/articles/2014/tracking-gender-diversity-on-corporate-boards.html>, 22.12.2015).
- European Confederation of Institutes of Internal Auditing (2013). *The Future of Corporate Governance*, Key Views from Key People (доступно на: <http://www.eciia.eu/wp-content/uploads/2013/10/ECIIA-Future-of-corp-gov-2-10-13.pdf>, 17.01.2016).
- Financial Reporting Council (2014). *The UK Corporate Governance Code*, London (<https://www.frc.org.uk/Our-Work/Publications/Corporate-Governance/UK-Corporate-Governance-Code-2014.pdf>, 28.12.2015).
- Fraser I. A. M. & Henry W. M. (2003). *The Future of Corporate Governance: Insights from the UK*, The Institute of Chartered Accountants of Scotland CA House, Edinburgh.
- Goodman A. & O’Kelley J. (2016). Global and Regional Trends in Corporate Governance for 2016, *Russel Reynolds Associates* (<http://www.russellreynolds.com/insights/thought-leadership/Documents/Global%20and%20Regional%20Trends%20for%20%20Corporate%20Governance%20in%202016.pdf>, 21.01.2016).
- Grant Thornton (2013). *Governance steps up a gear*, Corporate Governance Review.
- Grant Thornton (2014). *Plotting a new course to improved governance*, Corporate Governance Review.
- Jovanović, Z. (2015): Management and changes in business environment, *Journal Ekonomika*, Vol. 61, No. 2, Society of Economists “Ekonomika”, Niš, pp. 143-151.
- Kirkpatrick G. (2009). The Corporate Governance Lessons from the Financial Crisis, *OECD*, Pre-publication version for Vol. 2009/1.
- Kumar P. & Zattoni A. (2016). Executive Compensation, Board Functioning, and Corporate Governance, *Corporate Governance: An International Review*, John Wiley & Sons Ltd, doi:10.1111/corg.12150, 24(1), pp. 2-4.

- Leblanc R. (2014). 2015 Trends and Answers in Corporate Governance, *Huffington Post* ([http://www.huffingtonpost.ca/richard-leblanc/2015-trends-and-answers-i\\_b\\_6296364.html](http://www.huffingtonpost.ca/richard-leblanc/2015-trends-and-answers-i_b_6296364.html), 28.12.2015).
- Libert B. (2013). *Governance 2.0: the future for boards in the age of big data*, Corporate Secretary (<http://www.corporatesecretary.com/articles/technology-social-media/12562/governance-20-future-boards-age-big-data/>, 20.12.2015).
- Lipton M, Rosenblum S. A. & Cain K. L. (2014) Some Thoughts for Boards of Directors in 2015, *Harvard Law School Forum on Corporate Governance and Financial Regulation* (<http://corpgov.law.harvard.edu/2014/12/02/some-thoughts-for-boards-of-directors-in-2015/>, 08.01.2016).
- Organization for Economic Co-Operation and Development (2004). *OECD Principles of Corporate Governance*.
- Orsagh M. (2014). *Women on Corporate Boards: Global Trends for Promoting Diversity*, Cfa Institute (<http://blogs.cfainstitute.org/marketintegrity/2014/09/24/women-on-corporate-boards-global-trends-for-promoting-diversity/>, 25.12.2015).
- PwC (2014). *Governance trends shaping the board of the future, Board performance and diversity*, Annual Corporate Directors Survey (<http://www.pwc.com/us/en/corporate-governance/annual-corporate-directors-survey/assets/pdf/annual-corporate-directors-survey-2014.pdf>, 15.01.2016.).
- Russell Reynolds Associates (
- Sullivan J. D. & Nadgrodkiewicz (2013). *Looking Toward the Future: The Business Case for Corporate Governance*, Center for International Private Enterprise (<http://www.cipe.org/publications/detail/looking-toward-future-business-case-corporate-governance>, 20.12.2015).
- Tricker B. (2012). *Corporate Governance: Principles, Policies and Practices* (Second edition), Oxford University Press.
- Wells H. (2010). The Birth of Corporate Governance, *Law Review*, Vol. 33, No. 4, Seattle University, pp. 1247-1292.



## BOOK REVIEWS

Zoran D. Simonović

### MANAGEMENT OF SERBIAN AGRICULTURE IN TRANSITION

Institute of Agricultural Economics, Belgrade 2014.

(Monograph), 2014

Зоран Д. Симоновић

### УПРАВЉАЊЕ АГРАРОМ СРБИЈЕ У ТРАНЗИЦИЈИ

Институт за економику пољопривреде, Београд 2014.

(Монографија), 2014

At the end of 2014 came out of print monograph Dr. Zoran Simonovic "Management of Serbian agriculture in transition." Thus extensive and rich research ventures usually work teams within the Institute, the Ministries and the like. Simonović work is all the more significant because it deals with complex and current management issues in agriculture which by its nature involves a multidisciplinary approach, and knowledge of cultural, sociological, philosophical and historical phenomenon. Without such an approach, the writer could hardly establish two, in our opinion, supporting verticals: the management of agriculture in the European Union and Serbia. Otherwise monograph has six chapters, the preface and conclusion. The very titles of the most extensive chapter "Managing the agriculture in the process of European integration", "Management of Serbian agriculture in the process of transition", "Reform of the agrarian policy of Serbia in the process of transition and European integration" suggests that the author of the monograph gave the most attention to current problems of agriculture in the EU integration and transition processes of agriculture of Serbia.

The European Union has improved its institutions so far is for Serbia and countries in transition in general tend to the task when it comes to fulfill the requirements of the Union. Eligibility for membership includes the comprehensive analysis of the processes that have been happening, and who also have their controversy and legality. The difficulties stem from the very incompleteness of institutionalizing the European Union that Serbia should look up to. Management of agriculture involves mechanisms subject to constant changes. They had to be identified, look for regularities arising from their training and be trendy when it comes to agriculture Serbia. Hence the complexity of the problem, because harmonization of agriculture cannot be so quick to end up in "the fragile" democracies such as in countries in transition. Simonovic is inter alia for that reason resorted comparative approach in order to avoid any possible surprises that with the passage of time is certainly coming due to changes occurring in the European Union. He thus avoided the trap of static recording of facts that would lead to conclusions which would be content with the passage of time wearing attribute obsolescence. In this approach all the discrepancies Serbian and European management in agriculture would lead to heterogeneous and unproductive mere chronological presentation materials. Simonovic has not fallen into this trap has already resorted to the correct solution: dissected it and

elaborated on the issues of governance especially in the EU and especially in Serbia and then a comparative analysis came to transparent and productive results. Under the mean productivity differences and displacement by the author identified that is incurred in the process of institutionalization of management in agriculture both in Europe and in Serbia. Simonovic was very well presented paradigmatic and conceptual phenomena while being careful when making final conclusions which means the same is left “open” for further upgrading and improvement. It is this creative approach Simonović book makes it special and largely non-dogmatic. All this does not mean that their empirical research has not turned into an interesting and often provocative reading, sometimes only apparently the local level such as the SWOT analysis of the state of agriculture in the NIS. The author presents the tasks of managing the transition process constantly making digressions and analogy in relation to the European Union. On when “scans” the control mechanisms still points to the wealth of data that actually water training, and reform of agricultural policy in Serbia from 2000 to 2013. Serbian Agriculture Development Strategy adopted by the government in 2005 in particular was the subject of his research as well as the Law on agriculture in rural development (of 2009. Years) who Simonovic seen as the beginning of affirmation of new trends in agriculture and the opening of roads to implement the harmonization of incentives to the requirements of the European EU and WTO. This is more radical changes in the management concept that is elaborated Simonovic consistently showed that the concept of market economics with its principles and those that are concerned and Agriculture. Simonovic believes that agriculture is not possible without competitiveness. According to him, it springs from the very principles of the functioning of the agricultural policy of the European Union. One of the priorities is the problem of enlarging holdings, which means rationalization of costs, without which the competitiveness of agricultural products.

Simonovic has successfully explored ways of functioning of agricultural management in the European Union in establishing this analogy with the reforms being implemented in agriculture of Serbia. He thus indirectly to the tasks that lie ahead in order to manage agriculture in Serbia functioned in a similar, if not in the same way as in the EU. He believes that agriculture cannot be modernized without stable and harmonized with the EU legislation and only then approach of modernization of machinery equipment. Particular attention to the ecology. The modernization of agriculture, according to him, is not possible without a reformed tax policy. On the parallel and complex analyzes pointed to the ways of taxation in agriculture Polish, Czech, Estonia, Slovakia, etc. Different experiences he managed to summarize the valuable lesson of which Serbia would have to adhere to if he wants a successful reform of agriculture in Serbia. Experience has shown that the Serbian agriculture so far ignored such examples.

Simonovic monograph does not derive only from the transitional news but also of time before the changes started. Successfully establishing a correlation between contrasting policies. The author has paid special attention to the problem of social security which has yet to actualize the concept of neo-liberal economy. He did not hesitate to point out any shortcomings as well as the benefits of neoliberal concept. This is done consistently and precisely: Every problem is explored with an abundance of the latest statistical data, comparative tables and the like. Such analysis has contributed to a relatively uninformed reader understand the importance and necessity of the contemporary management of agriculture. All actors in the Serbian agriculture should



be, according to him, to use the experience of the failure of agrarian reform in Serbia in the twentieth century, then the experience of other countries in transition and of course as a crucial matter, the experience of successful countries of the European Union (Germany, France, Italy). Serbia is still treated as a country with great potential, where agriculture is concerned, that has not been used enough. Her imminent serious work not only to align legislation with the European Union, which is largely made, but also on its implementation.

Simonovic monograph is valuable reading for all those looking for an answer to the question: how agriculture that strengthened and strategic orientation out of the transition? According to him, the guarantee of resources to the favorable climatic conditions, water resources, soil quality, etc. All this should be used as standards in the developed world, particularly the European Union. For something like that it is necessary to devise a management strategy that will take into account the uniqueness of Serbian agriculture or pushing and absorb everything that is good in agriculture developed world. The author has successfully elaborated on the advantages and disadvantages of the existing management of the transition of agriculture which, in our view, enrich the literature on the management of agriculture. The monograph is supported by a large number of tables, graphs, SWOT matrix and other data that his work seems relevant for the most demanding professionals who deal with the problems of agriculture. The book has statistical data of various competent European institutions which only indicates that the exactness of one of the essential value of this book. Successfully documented their claims number and structure of beneficiaries of various measures taken in agriculture after which is usually structured chart that would answer the question: Are you satisfied with the support they receive from the Ministry and thus indirectly hinted that agriculture is very much dependent on from properly made political decisions. Then and charts such as: do you have a computer and internet? What are the reasons for not belonging to an association or cooperative? Do you have suggestions or proposals to the Ministry of Agriculture in the future direction and encouragement of agriculture? This only indicates that Simonović approach was dynamic and creative at the same time. Scientific results of this study were derived from dissection of agrarian flows in different conditions of the international environment. This approach has enabled the management of Serbian agriculture in transition at every moment has its own landmark and that the successful countries of the European Union. Simonovic monograph because of its content and the news will be unavoidable literature for future researchers who deal with the problems of modern agriculture.

Vladimir Kostić  
Faculty of Economics, Kosovska Mitrovica



## ШАБЛОН / ТЕМПЛАТЕ ЗА ПИСАЊЕ РАДОВА

Име аутора (Font size 10 Normal) Times New Roman (SR-Cyrilic)  
*Факултет или институција и Град (Font size 10 Italic)*

### НАСЛОВ СРПСКИ (Font size 11 Bold)

#### Апстракт

*Текст апстракта на српском ...*

***Кључне речи:***

### NASLOV ENGLISKI ili neki drugi jezik (Font size 11 Bold)

#### Abstract

*Tekst apstrakta na engleskom ili na nekom drugom jeziku...*

***Key words:***

### НАСЛОВ (Font size 11 Bold)

Текст (Font size 10).....

## Литература

### 1. Списиак литературе

Veličina strane 170mm x 240mm  
Margine: Top 30mm Bottom 20mm  
Left 22mm Right 22mm

CIP – Каталогизација у публикацији  
Народна библиотека Србије, Београд

338 (497,1)

**ЕКОНОМИКА** : Часопис за економску теорију и праксу и друштвена питања / главни уредник Драгољуб Симоновић. – Год. LXII. бр. 1 (2016) - Ниш (Максима Горког 5/36) : Друштво економиста ЕКОНОМИКА, 2016 – (Ниш : МЕДИВЕСТ). – 214 стр. : 24 см.

Часопис излази четири пута годишње  
ISSN 0350–137X = Економика  
COBISS.SR-ID 26903

