

Anka Mašek Tonković, PhD

Phone: +385 31 224-490

E-mail: masek.efos@gmail.com

Edward Veckie, MBA, P.Eng.

Unified Engineering.com Corp.

171 Niagara Street, Hamilton ON

Canada L8L 6A8

Phone: +1 905 523-1700

Fax: +1 905 523-1700

E-mail: eveckie@unifiedengineering.com

Vlado Walter Veckie, B.Sc.Eng.

Unified Engineering.com Corp.

171 Niagara Street, Hamilton ON

Canada L8L 6A8

Phone: +1 905 529-7770

Fax: +1 905 572-9700

E-mail: walterv@unifiedengineering.com

APPLICATIONS OF PENTA HELIX MODEL IN ECONOMIC DEVELOPMENT

PRIMJENA MODELA PENTA HELIX U RAZVOJU GOSPODARSTVA

ABSTRACT

The paper analyzes the application of Penta Helix model, where the diaspora is added to the Quad Helix model as the fifth component. Its role in economic development can be seen through partnerships and cooperation by engaging in business investments in opening new plants and facilities, the introduction of modern technology, to create new employment opportunities and stop the emigration of young people, who are increasingly looking to other countries in terms of quality of life and dignity for themselves and their families.

There are various models that are recommended for use in economic development, in order to be a successful business, and use more favorable funds from domestic sources, as well as EU funds and donor funds of international monetary institutions.

In the 1990s usage of the Triple Helix model was recommended for economic development, which is supposed to include the three important factors for starting businesses, namely: government, through incentives and stimulation of entrepreneurship, companies and the inclusion of the scientific sector and universities.

Soon, due to the need for more competitive development of companies and export to world markets, the application of Quad Helix model was recommended for the development and prosperity of a company. That means in addition to the public sector, businesses and research institution, non-governmental organizations were introduced in stimulation of development. The fourth participant proved to be necessary to include the civil sector in the preparation of analyses of the current situation in the society, making the overall development programs, as strategic documents for development, development of business plans, investment studies,

feasibility studies, cost-benefit analyses (CBA) and programs in accordance to propositions of the Project Cycle Management (PCM) methodology for development, in order to use funds of the European Union (EU) and resources of other international monetary institutions. With regard to the process of globalization, competition and access to the world unknown markets, the role of the diaspora is becoming increasingly important in the business world. Diaspora involvement in the economic development in the Penta Helix model assumes partnerships with existing companies, investment in new plants and existing companies with modern equipment in order to be competitive in an increasingly demanding global market. In addition diaspora is well organized around the world. Successful Croatian entrepreneurs recognized in the business world are members of the Croatian Fraternal Union (Hrvatska Bratska Zajednica)¹, and members of a scientific organization in the Alma Matris Croatiae Alumni (AMCA)². Through its already beaten track and achievements, their involvement through the model Penta Helix will add to faster recovery from the recession and boost Croatia's economic development.

This model is called Penta Helix which means in addition to the existing impact of the previous four components of Quad helix model, it adds a fifth component, the diaspora, as an essential element in investing and opening foreign markets to entrepreneurs, with regard to competition and the globalization process.

The aim of this work is to highlight the need to involve the diaspora, with the support and stimulation of the Government, involve entrepreneurs, universities and civil society, in launching the accelerated development of the Eastern Croatia region and the whole Republic of Croatia.

Keywords: Penta Helix, investment, development, competition, prosperity of the company.

SAŽETAK

U radu se analizira primjena Penta Helix modela, gdje se kao peta komponenta na Quad Helix model za razvoj uključuje dijaspora. Njena uloga u razvoju gospodarstva, vidi se kroz partnerstva i suradnju uključivanjem u biznis investiranjem u otvaranje novih pogona i sadržaja, uvođenjem suvremene tehnologije, kako bi se zaposlilo stanovništvo i zaustavio odlazak mladih, koji sve više traže u drugim zemljama uvjete za kvalitetniji život dostojnog čovjeka, kako za sebe tako i svoju obitelj.

Postoje razni modeli koji se preporučuju za korištenje u razvoju gospodarstva, kako bi se uspješnije moglo poslovati, koristiti povoljnija sredstva iz domaćih izvora, ali i sredstva fondova Europske unije i sredstva donatora međunarodnih novčarskih institucija.

Devedesetih godina prošlog stoljeća za razvoj gospodarstva preporučalo se korištenje Triple Helix modela, koji je pretpostavljao uključivanje tri značajna faktora za pokretanje poduzetništva, a to su: vlada, kroz poticaje i stimulaciju poduzetništva, tvrtke i uključivanje znanstvenog sektora i sveučilišta.

Nedugo, s obzirom na potrebu za što konkurentnijim razvojem tvrtki i izvoz na svjetska tržišta, počelo se preporučavati primjena quadro helix modela za razvoj i prosperitet tvrtki. To znači osim uključivanja javnog sektora, poduzetništva i znanstvenih institucija postala je potreba za uključivanje i nevladinih organizacija u poticanje razvoja. Taj četvrti sudionik pokazao se potrebnim radi uključivanja civilnog sektora u izradu analiza postojećeg stanja u društvu, izradu programa ukupnog razvoja, kao strateških dokumenata za razvoj, izradu poslovnih planova, investicijskih studija, studija isplativosti, Cost Benefit analiza (CBA) i programa prema propozicijama Upravljanje projektnim ciklusom (PCM) metodologiji za razvoj, kako bi se

¹Hrvatska bratska zajednica, <http://croatianfraternalunion.org/>

²AlmaeMatrisCroatiaeAlumni, <http://www.unizg.hr/suradnja/alumni-i-zaklada-sveucilista/alumni/>

koristila sredstva fondova Europske unije (EU) i sredstva ostalih novčarskih međunarodnih institucija.

S obzirom na process globalizacije, konkurenciju i izlazak na svjetska nepoznata tržišta, uloga dijaspora postaje sve značajnija u svijetu biznisa. Njena uključenost u gospodarski razvoj po modelu Penta Helix pretpostavlja partnerstva s postojećim tvrtkama, investiciju u nove pogone i postojeće tvrtke sa suvremenom opremom kako bi bili konkurentniji na svjetskom sve zahtjevnijem tržištu.

Osim toga dijaspora, Hrvatska bratska zajednica³ uspješni poduzetnici prepoznatljivi u svijetu biznisa, znanstvena organizacija hrvatske dijaspora Almae Matris Croatiae Alumni (AMCA)⁴, kroz svoje već utrte staze i postignuća, omogućiti će kroz model Penta helix brži izlazak iz recesije i ubrzati gospodarski razvoj.

Ovaj model nazvan je Penta Helix što znači pored postojećih utjecaja svih dosadašnjih komponenti iz quadro helix modela, dodaje se i peta komponenta, dijaspora, kao bitna značajka za investiranje i otvaranje stanih tržišta za poduzetnike s obzirom na konkurenciju i proces globalizacije.

Cilj rada je ukazati na potrebu uključivanja dijaspora, uz podršku i stimulaciju Vlade, interes poduzetnika, uključivanja sveučilišta i civilnog sektora, u pokretanju ubrzanijeg razvoja kako regije istočne Hrvatske tako i cijele Republike Hrvatske.

Ključne riječi: penta helix, investiranje, razvoj, konkurencija, prosperitet tvrtke.

1. Introduction

As an example of the Penta Helix model, by involvement of the diaspora into economic development, Croatia would attract people who have already proved themselves in the business world, and created a significant financial capital that seeks room for investment and its increase. Examples of successful entrepreneurs of Croatian origin are numerous, and fields in which they proved themselves successful are globally well-known examples.

Their willingness to return to homeland is permanent, as well as a wish to invest both in production plants and numerous tourist facilities, following the examples of developed countries. Since there are no enough favorable conditions for their return, lacking the stimulation and secure legal framework, a quality involvement of the diaspora in economy or science has not come to life. Therefore, they do not want to invest their whole earnings into insecure investment climate with unknown outcome regarding the property right warranties, varying tax obligations and manipulations.

Furthermore, Croats who are members of worldwide organizations such as the Croatian Fraternal Union (Hrvatska Bratska Zajednica) and Alma Matris Croatiae Alumni (AMCA) invite scientists to cooperation, finance scholarships and specializations at universities as well as at research institutions, in order for them to acquire knowledge through scientific work and specializations, to be able to return to homeland and engage in economic development.

There are no significant investments, not enough active tourist facilities following the examples of developed countries and their tourist offerings; there is a lack of connections between research institutions and universities in order to mutually start the development.

Without a mutual action and involvement into economic development of the Republic of Croatia, by the Government, entrepreneurs, universities and research institutions, civil sector and the diaspora, the road to exit the recession will be far longer than it could be. With the planned GDP

³ Hrvatska bratska zajednica, <http://croatianfraternalunion.org/>

⁴ Almae Matris Croatiae Alumni, <http://www.unizg.hr/suradnja/alumni-i-zaklada-sveucilista/alumni/>

growth per capita of 0.5%⁵ predicted by the World Bank, we will not reach in 100 years the current GDP per capita level of Germany.

2. From the Triple Helix and Quad Helix models to the Penta Helix development model

2.1. Triple Helix model

In the 1990s usage of the Triple Helix model was recommended for economic development, which is supposed to include the three important factors for starting businesses, namely: government, through incentives and stimulation of entrepreneurship, companies and the inclusion of the scientific sector and universities.

For example “In Canada government has a variety of incentive programs to finance innovation, technological improvements and product development. (SHRED, IRAP, Ives Laundry ...) One is to have university centers lead programs to assist company technological improvements and product development, where government funding is managed by the university center. This type of contract cooperation might give university patent rights. If company finances research and development of innovation program and product development internally, the company can apply for government funding and recover innovation part of a project cost. (SHRED)”⁶

“The concept of the Triple Helix of university-industry-government relationships initiated in the 1990s by Etzkowitz (1993) and Etzkowitz and Leydesdorff (1995), encompassing elements of precursor works by Lowe (1982) and Sábato and Mackenzi (1982), interprets the shift from a dominating industry-government dyad in the Industrial Society to a growing triadic relationship between university-industry-government in the Knowledge Society.”

Sanford University: Triple Helix Concept - http://triplehelix.stanford.edu/3helix_concept⁷

The Triple Helix thesis is that the potential for innovation and economic development in a Knowledge Society lies in a more prominent role for the university and in the hybridization of elements from university, industry and government to generate new institutional and social formats for the production, transfer and application of knowledge. This vision encompasses not only the creative destruction that appears as a natural innovation dynamics (Schumpeter, 1942), but also the creative renewal that arises within each of the three institutional spheres of university, industry and government, as well as at their intersections.

Through subsequent development, a significant body of Triple Helix theoretical and empirical research has grown over the last two decades that provides a general framework for exploring complex innovation dynamics and for informing national, regional and international innovation and development policy-making.”⁸

⁵ World bank: <http://www.tradingeconomics.com/germany/gdp>

<http://www.tradingeconomics.com/croatia/indicators>

<http://www.balkaninsight.com/en/article/world-bank-cuts-croatian-gdp-growth-predictions>

⁶Government of Canada:

<http://www.actionplan.gc.ca/en/initiative/canada-job-grant>

<http://www.mentorworks.ca/what-we-offer/government-funding/>

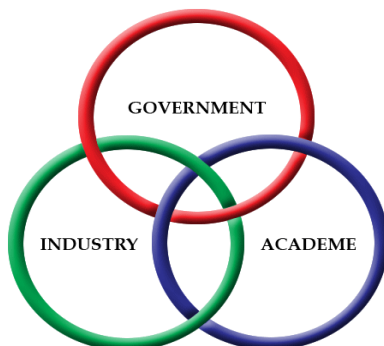
<http://www.mentorworks.ca/blog/government-funding/top-4-canadian-small-business-grants-and-loans-for-manufacturers-09-2013/>

⁷Sanford University: Triple Helix Concept

⁸http://triplehelix.stanford.edu/3helix_concept

Scheme 1 Triple Helix model

THE TRIPLE-HELIX MODEL



Source: Henry Etzkowitz and Loet Leydesdorff, 2000
Diagram: www.techpinoytrend.blogspot.com (03 March 2011)

Source: Henry Etzkowitz and Loet Leydesdorff, 2000 www.techpinoytrend.blogspot.com (March 3, 2011)

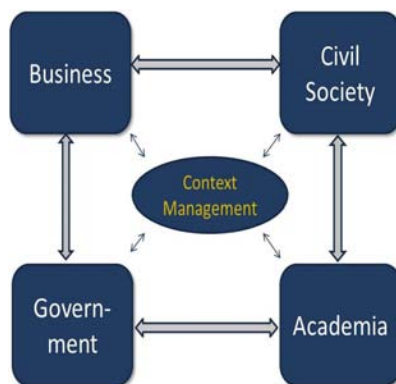
*"Triple-Helix is a model which describes the crossing of three worlds; academia, business and government. In the model, the business segment operates as the locus of production; government as the source of contractual relations that guarantee stable interactions and exchange; the university as a source of new knowledge and technology, the generative principle of knowledge-based economies." by Christer Asplund on March 22, 2012 (Ernest J. Wilson III, at the University of Southern California, **How to make a region innovative**)⁹*

2.2. Quad Helix model

Due to the need for more competitive development of companies and export to world markets, the application of Quad Helix model was recommended for the development and prosperity of a company. That means in addition to the public sector, businesses and research institution, non-governmental organizations were introduced in stimulation of development. The fourth participant proved to be necessary to include the civil sector in the preparation of analyses of the current situation in the society, making the overall development programs, as strategic documents for development, development of business plans, investment studies, feasibility studies, cost-benefit analyses (CBA) and programs in accordance to propositions of the Project Cycle Management (PCM) methodology for development, in order to use funds of the European Union (EU) and resources of other international monetary institutions.

⁹ Ernest J. Wilson – University of Southern California: How to make region innovative <http://www.strategy-business.com/article/12103?pg=all>

Scheme 2 Quad Helix model



Source: <http://blog.bearing-consulting.com/2012/03/22/beyond-triple-helix-towards-quad-helix/>

*"Ernest J. Wilson underlines in his paper that especially in the context of innovative clusters it is critical to involve resourceful persons, not as representatives, but as resourceful entrepreneurs. He focuses on talented people who are open minded and capable to combine complex and disparate factors, irrespective of their heritage or birthplace. Ernest J. Wilson calls these persons "quad leaders", which we have used as the forth corner in the "Quad Helix" model, see below. The **Quad-Helix** model recognizes that the drain pipe approach is not competitive (but unfortunately common). It also illustrates the key importance of the central **context management**, connecting the civil society with talented people irrespective of their home base. The prime background is if the resourceful individuals are capable to connect diverse facts, curiosity and sometimes even economic resources of their own or via their networks."*¹⁰

It is important to have central context and Quad Helix opens an opportunity for creative talented people from internal sources, academia, government and experts from Non-Government sector to connect in innovative research and new product development.

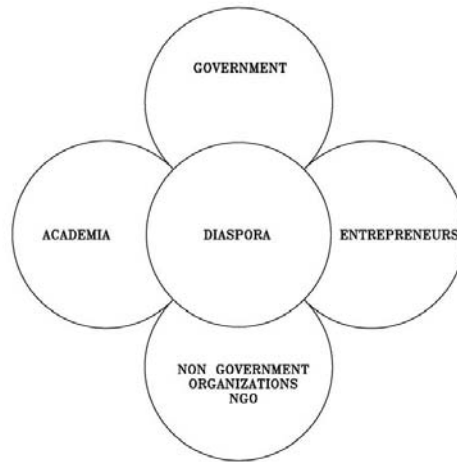
2.3. Penta Helix model

Application of the Penta Helix model presupposes the addition of the diaspora as the fifth component to the Quad Helix model, here introduced into development program of Eastern Croatia region, as well as the whole Republic of Croatia.

¹⁰Ibidem

<http://blog.bearing-consulting.com/2012/03/22/beyond-triple-helix-towards-quad-helix/>

Scheme 3 Penta Helix model



Source: Authors

The role of the diaspora in economic development can be seen through partnerships and cooperation by engaging in business investments in opening new plants and facilities, the introduction of modern technology, to create new employment opportunities and stop the emigration of young people, who are increasingly looking to other countries in terms of quality of life and dignity for themselves and their families.

However, application of the Penta Helix model by involvement of the diaspora into economic development primarily demands stability and security of legal framework and consistent tax obligations rules. Legal security would provide the Croatian diaspora a positive base for investments into their homeland economy, and so enable investors to gain a return on invested capital.

“In advanced nations, this formal property representation functions as the means to secure the interests of other parties and to create accountability by providing all the information, references, rules, and enforcement mechanisms required to do so.” (Mystery of Capital by Hernando de Soto)¹¹

Regarding the economic development of Croatia, where the predicted annual GDP growth rate of 0.5%¹² (estimated by the World Bank) will not be enough to reach the level of developed countries even in 100 years,¹³ a significant turn should be made in planning and stimulating development in order to come closer to developed countries economy-wise.

Since Croatia has a significant human capital in knowledge and quality approach to work, natural beauties, natural potentials for development of processing industry, unpolluted land, rural areas with rivers, lakes and forests with potential for development of game and fishing tourism, numerous tourist offerings such as rural tourism, tennis and golf courts, thermal springs for

¹¹ International Monetary Fund, <http://www.imf.org/external/pubs/ft/fandd/2001/03/desoto.htm>

¹² World Bank's Outlook for Croatia's Gross Domestic Product for 2015.

¹³ Croatian GDP per capita for year 2014, US\$ 10,454

Trading Economics.com Germany GBD per capita US\$ 38,291.62

development of health tourism, if we use the Penta Helix model we will accomplish significantly faster development than the one the World Bank predicted.

By having stable legal regulations with precisely defined long-term rules, conditions are created for cooperation of the diaspora with Croatian entrepreneurs, universities, research institutions and the civil sector to achieve economic development faster than the one the World Bank predicted.

There are no reasons for Eastern Croatia, as well as the whole Croatia, not to have an economy boom, employment of all work-capable population in this region and people achieving dignifying lives.

We cannot acknowledge incompetence, entropy, collapse, hopelessness, escaping from reality and going to foreign countries where our teachers and engineers occupy low-qualification jobs, working as waiters, construction workers or street cleaners.

Penta Helix model could accelerate development of the whole Croatia in the same way Roosevelt¹⁴ stopped the well-known worldwide crisis, and in 6 months from completely ruined economy, devastated banking system and unprecedented unemployment in the USA, he restored order and initiated economic development.

There is no reason for us not to do the same. The door to success and exit from recession is opened ahead of us, if we give chance to successful businessmen from the diaspora to get involved in economic development programs and if we reverse the downward trend of the curve into progress, employment and GDP increase in accordance with the achievements.

Without a mutual action and involvement into economic development of Croatia, by the Government, entrepreneurs, universities and research institutions, civil sector and the diaspora, the road to exit the recession will be far longer than planned.

3. Conclusion

Application of the Penta Helix model presupposes involvement of the diaspora in economic development with stable legal framework and stimulation from the Government, with precisely defined long-term rules for investors, and cooperation with Croatian entrepreneurs, universities, research institutions and civil sector in order to achieve faster economic development than the one estimated by the World Bank and International Monetary Fund.

REFERENCE

AlmaeMatrisCroatiae Alumni: <http://www.unizg.hr/suradnja/alumni-i-zaklada-sveucilista/alumni>

Christer Asplund, Beyond Triple Helix / Toward Quad Helix, March 22, 2012;

¹⁴<http://www.u-s-history.com/pages/h1851.html>: At his inauguration in March 1933, Roosevelt declared in his liting style, "Let me assert my firm belief that the only thing we have to fear is, fear itself — needless, unreasoning, unjustified terror which paralyzes needed efforts to convert retreat into advance." In his first 99 days, he proposed, and Congress swiftly enacted, an ambitious "New Deal" to deliver *relief* to the unemployed and those in danger of losing farms and homes, *recovery* to agriculture and business, and *reform*, notably through the inception of the vast Tennessee Valley Authority (TVA). The New Deal effects would take time; some 13,000,000 people were out of work by March 1933, and virtually every bank was shuttered.

Ernest J. Wilson III, at the University of Southern California, How to make a region innovative, March 22, 2012;

Hernando de Soto, *Mystery of Capital*, 2003;

<http://www.tradingeconomics.com/croatia/indicators>

<http://www.balkaninsight.com/en/article/world-bank-cuts-croatian-gdp-growth-predictions>

The World Bank in June 2014 estimated Croatia's GDP growth that year would be minus 0.5 percent, rising to 1.2 percent growth in 2015.

Its new forecast for 2015 is more pessimistic, predicting growth of only 0.5 percent of GDP in 2015, rising to 1.5 percent in 2016 and 2017.