# SLQW ideas to market Case Studies



Lifelong Learning Programme





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#### Welcome

On behalf of the Leonardo SLIM Partnership, we wish you a warm welcome to our SLIM Case Study Book, and hope that you find our cases of innovative companies inspirational!

The SLIM (Stimulating Learning for Ideas-to-Market) project is funded by the European Union Lifelong Learning funds. It brings together 9 partners from across Europe, from businesses and universities, to work together to understand how we can most effectively help businesses and entrepreneurs bring their ideas to market.

Our partners are:

- 1. Manchester Metropolitan University, UK
- 2. University of Rijeka, Croatia
- 3. University of Zagreb, Croatia
- 4. Warsaw School of Economics World Economics Research Institute, Poland
- 5. EFMD (European Foundation for Management Development), Belgium
- 6. The Federation of Small Businesses, UK
- 7. The Science and Technology Park of the University of Rijeka, Croatia
- 8. BTM Innovations Ltd, Poland
- 9. Arenda Ltd, Croatia

Throughout our two year partnership, we have worked together to speak to SMEs through workshops and surveys, about what support you need and want in taking ideas to market, through development, marketing and IP issues.

Our colleagues at the Warsaw School of Economics have developed our eCourse platform and academic content, which is designed to enable companies and entrepreneurs to use the course as a source of useful information and learning.

This Case Study book has been developed to complement the online course, and to provide inspiration from across Europe in how innovative ideas have been brought to market.

We hope that you enjoy reading it!

Yours faithfully,

LM Matt

Professor Lynn Martin Professor of Entrepreneurship Associate Dean for Teaching and Learning; Director of the Centre for Enterprise at The Manchester Metropolitan University







#### **Partners**





# Federation of Small Businesses

The UK's Leading Business Organisation







Sveučilište u Rijeci University of Rijeka





University of Zagreb Faculty of Economics & Business



### Introduction

We know that SMEs and entrepreneurs are the lifeblood of the European economy, bringing highly innovative and disruptive ideas to the marketplace, and enabling enormous social and economic change. Here at the Centre for Enterprise at The Manchester Metropolitan University, we are conducting research into the mindset of entrepreneurs, to try to understand how revolutionary ideas are formed and carried through to reality.

However, we do know that many world-changing ideas do not get taken to market, due a multitude of reasons including IP issues, marketing and sales conditions, and lack of support. Together with our university and business partners across



Europe, we are working to support those with ideas, to bring them to market. All partner universities in this project are dedicated to supporting SMEs and entrepreneurs to drive their potential, and to work to make our teaching and learning useful for the business world. To this end, we have consulted with SMEs and business organisations throughout our project.

Along with an eCourse, developed at the Warsaw School of Economics, <u>www.e-sgh.com/slim</u>, we present this Case Study book, to inspire entrepreneurs with stories from those who have made the difficult transition from Idea to Market.

The book is organised into five distinct case studies, representing our partner countries of the UK, Poland and Croatia. Each case study describes the journey of an entrepreneur and their idea through to market success, and the case studies span a variety of sectors, from engineering to food production. There are three Croatian case studies, as Croatia is the SLIM project's target country. Croatia entered the European Union in 2013, and is keen to support their entrepreneurs to develop and grow through work with universities.

There is no prescribed way to navigate these stories, please browse those that spark your interest, and we hope that you find them useful.



Jennie Shorley Carling Project Manager, Leonardo SLIM Project Enterprise Fellow Council member - Association for University Research and Industry Links





## **Project Website**

The Stimulating Learning for Ideas-to-Market project (SLIM) has developed a eCourse for entrepreneurs and SMEs, to support them to gain knowledge and skills in taking their ideas to market, through translating academic knowledge about Intellectual Property into practical solutions for business. This Case Study has been produced to be read alongside the course, and to enhance learning.

Please see a map of the course below, and please explore at:

#### www.e-sgh.com/slim









# Shaping the future by innovation in production of vane machines, Croatia

This case study was authored by Prof. Marina Dabić and mr. sc. Dalibor Marijanović, Faculty of Economics and Business, University of Zagreb and BICRO Ltd (the Business Innovation Center of Croatia)



#### Summary

Our case, Shaping the future by innovation in production of vane machines aims to enhance the process of knowledge exchange between universities and enterprises, with the aim of facilitating knowledge co-creation (between universities & enterprises with the support of local/regional authorities) & innovativeness, and by implication competitiveness across Europe. The Banko vane machine essentially represents a new way of greatly improving the performance of vane machines in any product. It is important to note that the improved performance from the Banko vane machine may be applied in all vane machine applications including: pneumatic tools, compressors, expanders for hydrogen fuel cells, pumps (especially vacuum pumps), starters for large diesel engines, and compressors for air pre compression in internal combustion engines (i.e. superchargers). In collaboration with the Zagreb University, BANKO has constructed a vane pneumatic grinder with technical guality that is superior to existing machines on the market The Banko vane machine's potential was recognized by the Government of Croatia's wholly owned business innovation development company, BICRO Ltd (the Business Innovation Center of Croatia). Following a competitive process, BICRO Ltd awarded start-up funding to Banko for project development. This new technology, with its several product applications, is protected by patents. In general, vane machine technology has been unchanged and unimproved for more than half a century. The Banko vane machine supersedes current rotary vane technology making all current vane machine technology increasingly obsolete. In addition, the Banko vane machine outperforms alternative technologies in air compressors, which include reciprocating piston, rotary screw, rotating centrifugal etc. With the rights to these patents, the manufacturer of air compressors or pneumatic tools can greatly improve the product and gain market share at the expense of competitors. The greatly improved efficiency afforded by the Banko vane machine will allow companies owning and operating these units to increase their bottom line. Further, the likely cost of the Banko vane machine is no greater than existing units available on the market, which coupled with its greatly improved efficiency will lead to a guickpayback period for companies that choose to either gradually replace their stock of existing machines and/or add new product lines. The lubricant/oil free nature of the vane machine has increased environmental efficiency, as there are fewer pollutants emitted by the Banko vane machine installed in air compressors.

#### Learning outputs

- Understand how policy makers aspire to create better framework conditions for innovation in Croatia's enterprises.
- Understand the scope of cooperation within the development of knowledge exchange
- Increase awareness of the need for cooperation between industry, academia and regional authorities
- Understand the process of knowledge exchange practices between universities and businesses in helping to gain advantage for both parties
- Participate in developing Human potential in R&D as an important factor for innovation capacity.



#### Introduction

The recent "Triple Helix System of Innovation" concept (Ranga and Etzkowitz, 2013) introduces a new vision by connecting key inflections of the Triple Helix model with innovation systems theory (Loet Leydesdorff and Girma Zawdie 2010). While NIS is ultimately an institutional program focused on wealth creation at the national or regional—level, a Triple Helix System is defined, similarly to an innovation system, as a set of components, relationships and functions that generate and promote innovation. The components include institutional and individual players that can be further differentiated into R&D and non-R&D innovators, the relationships consists of five different types of activities among which technology transfer, collaboration and collaborative leadership are particularly salient, while functions are realised through a set of activities in the Knowledge, Innovation and Consensus spaces.

A comprehensive innovation policy was introduced in Republic of Croatia at the beginning of 2001. It resulted in several funding institutions (e.g. the Business Innovation Agency-BICRO, Unity through Knowledge Fund), various programmes for university-industry cooperation (RAZUM, TEHCRO, IRCRO, KONCRO, PoC, TEST, etc.) as well as programmes funded by the European Union and the World Bank (SIIF, STP), focused on transfer and commercialization of university research and strengthening cooperation between business and universities. In order to increase awareness and identify and eliminate bottlenecks BICRO was actively involved in several projects: CARDS 2003 - Intellectual property infrastructure for the research and development sector, FIDES (FROM IP TO BUSINESS: Developing the environment for start up companies), FINNO project, which contributes to greater effectiveness of measures that come from public policies covering technological development and support to small and medium-sized enterprise, FIDIBE - Development of Innovative Parks to Foster Innovation and Entrepreneurship in the SEE Area and VIBE Venture Initiative in Balkan Europe.

This case presents results of policy makers undertaking the necessary intervention in Croatia's "catching-up", and demonstrates that similar practice would enhance the chance of establishing long-term, strategic and productive cooperation between science and enterprises.

#### **BANKO** company background

BANKO was established in 1991. At the beginning it had only a sales department and as it has grown it started with the production of mechanical and spare parts and eventually with the development of new products. The idea about pneumatic tools has started in 2003 based on and inspired by the large consumption of pneumatic tool in the Split shipyard. The first idea was to produce a product rather similar to the best existing product on the market.

BANKO contacted the Faculty of Mechanical Engineering and Naval Architecture in Zagreb, Department of Turbo Machinery, headed by prof. Matijašević, and agreed upon collaboration.

#### Mission

BANKO goal has always been to reach a leading position in our industry on global markets by continually upgrading the existing products and by designing the new ones with increased service performance level

#### Vision

BANKO research and development teams have been focusing on innovation and technological



advancements. They have been continuously committed to quality enhancement and utterly dedicated to meeting customers' expectations worldwide. An environment of mutual respect between the BANKO management and highly motivated and trained human resources has created an impetus to achieve unlimited success in their field of work.

Even in its early development days, Banko set up values that they live while working with in BANKO, and these are demonstrated by BANKO's responsibilities, which are to:

- establish long and lasting business relationships with our customers and to meet their growing expectations.
- deal with customers and suppliers ethically.
- be innovative leaders in our industry.
- be continuously committed to improving our internal processes and to maintain and enhance knowledge and skills of our employees.
- be continuously committed to increasing cost-saving and accurate productivity for customers' benefit.
- continuously improve maintenance through training of personnel and distribution of upto-date manuals.
- achieve shorter lead times and to make faster deliveries.
- stimulate new levels of productivity through innovations.
- design products for more environmentally friendly operation in order to improve human welfare.
- be responsive to the needs of the community by offering our business and personal support.

#### **BANKO's products and services**

In collaboration with Zagreb University, BANKO has constructed a vane pneumatic grinder with a technical quality superior to that of existing machines on the market. BANKO pneumatic grinders generate 60-100%, increased levels of productivity, up to 100% longer life time, a new and improved ergonomic design, and oil free operation for more environmental-friendly operation.

The BANKO vane machine essentially represents a new way of greatly improving the performance of vane machines in any product application based on vane machines. It is important to note that the improved performance from the BANKO vane machine may be applied in all vane machine applications including: pneumatic tools, compressors, expanders for hydrogen fuel cells, pumps (especially vacuum pumps), starters for large diesel engines, and compressors for air pre compression in internal combustion engines (i.e. superchargers).

The BANKO vane machine's potential was recognized by the Government of Croatia's wholly owned business innovation development company, BICRO (the Business Innovation Center of Croatia). Following a competitive process, BICRO awarded start-up funding to BANKO for project development. This new technology with several product application, s is patent protected.

The BANKO vane machine is used very successfully in one of BANKO's current products, the



pneumatic grinder. The BANKO pneumatic grinder with vastly superior performance to its competitors is BANKO's "flagship" product and is produced at its manufacturing facility in the city of Split, Croatia. Key customers are foundries, shipyards, and big metal construction companies. The success of the project is reflected in sales in 20 EU countries (through partners) in which grinders have been working and have delivered superior grinder performance, compared to the competition.

#### Innovation in a nutshell

In this paragraph we shall try to "go under the hood" in order to understand the innovation and potential of the product.



Figure 1: Classic vane machine



Figure 2: BANKO vane machine

As a result of the innovation, the BANKO vane machine has solved several technical problems :

**Enhanced charging and discharging:** There is an enhanced charging and discharging of the working chamber with the maximum working media intake and exhaust canals of the working chamber may be charged and discharged radially. Since the vane does not touch the canals, they may be designed as rectangular openings. This design enables additional increasing of cross sections in the intake, and exhaust canals for the working media. That improves conditions of charging and discharging of the vane machine working chamber and leads to volumetric efficiency.

**Decreased wear:** Decrease of wear of the vane surfaces in contact with the cylinder axial and radial surfaces. The rotating bearing inner or additional rings, and the rotating rotor lateral plates, decrease the relative speed of sliding at the sliding contact points. Thereby their wear and the noise level decrease and durability increases which leads to mechanical efficiency.

Enhanced sealing: Enhanced sealing of vanes against the cylinder axial and radial surface have



been accomplished.

As a result of these significant technological improvements, the innovative BANKO vane machine has the following inherent practical commercial advantages over classic vane machines.

**Efficient:** The approximate recorded improvement in efficiency is a conservative  $\sim 30\%$  to 50% over current vane machines – however, it should be noted that the optimal results achieved are in the range of  $\sim 60\%$  to 100%. These results were derived from tests conducted by Banko on a Swiss made eddy current dynamometer Magtrol 2WB65 testing machine and by customers on the market.

**Durable:** A BANKO vane machine has increased durability and lower maintenance costs compared to the classic vane machine.

**Economical:** A BANKO vane machine will operate without oil at a higher RPM with equal or lower mechanical losses and more than half the volumetric losses.

**Oil free:** There is no need for lubrication, which enables clean air and more environmentally friendly operation.



# Figure 3: Diagram of preliminary testing results of standard vane machine vs. BANKO vane machine

The Figure 3 diagram shows preliminary testing results of standard vane machine (green line) vs. Banko vane machine (blue line). We sent BANKO vane machine to few potential partners from compressor market, by making two completely same motors (in length, diameter, number of vanes...), with the only difference in the type of vane machine installed: standard vane machine in one, BANKO vane machine in the other, and results of comparison are as follows:

• BANKO vane machine: 6,4 kW



• Classic vane machine: 3,5 kW

Additional explanation of the diagram:

Due to friction and big mechanical losses, a standard machine has maximum power at 6.000 rpm and cannot work at more than 9.500 rpm. The BANKO vane machine has maximum power at 10.000 rpm (see Figure 4). Governor does not allow testing speeds greater than 10.000 rpm (at that rpm, air intake closes).

#### Banko's advantages



Figure 4: Diagram power/speed for standard vane machine vs. BANKO vane machine

Power measuring was done on the basis of vane machine used as a motor; however if reverse process is used (vane machine used as a compressor), the same difference is obtained measuring the air flow.

Comparison was made with air, without lubrication (oil). Standard vane machine with oil will have approx. 15% better results while BANKO vane machine with oil will have approx. 10% better results. On the other hand our vane machine was built with lower clearances due to parts for enhanced sealing among stationary and rotating parts, and it needs some time to elaborate. After elaboration BANKO vane machine is expected to have approx. 5% better results and the difference will be practically the same. However, vane machine offers additional improvements of 17% based on additional equipment (sliding valve), that the standard one cannot use.

All results were acquired here in BANKO's lab by testing on eddy current dynamometer produced by Magtrol from Switzerland.



# Figure 5: Comparison in torque and speed standard vane machine vs. BANKO vane machine

The torque is force applied in a turning direction and it is directly proportional to the operator's feed force. If the vane machine doesn't have enough power and the operator applies more force to the tool, the rotational speed decreases until the torque of the operator becomes equal to the machine torque. If the rotational speed decreases then both the material removal rate and overall efficiency of the grinding process also decrease. The Figure 5 shows that BANKO machine generates double enhanced torque and power in working range. If the force of the operator is the same, our machine will operate at higher velocity. At each turning the tool removes a certain amount of material, and if the velocity is higher more material is removed and the operating time is decreased.

After testing and finally developing products, results were even better then predicted.

**Efficiency:** The BANKO pneumatic grinder achieves 60-100 % faster grinding at the right speed with extreme high material removal rate, which improves production rates and allows new levels of productivity

**Durability:** A BANKO vane machine has increased durability with few times longer life time and lower maintenance costs compared to the classic vane machine.

**Environmental friendly:** There is no need for lubrication which enables clean air and more environmentally friendly operation

Pneumatic grinders work at the maximum number of rpm. In classic vane machine wear of textolite vanes ranges from 1-2 mm per 100 hours – average grinder life cycle is 100-300 hours with extensive oil lubrication.

In BANKO vane machine grinder wear of the parts is reduced by 90% and this machine can easily run for 500-1500 hours without oil.

Classic vane machine work at 40% of the grinder speed and run for 100,000 hours.

BANKO vane machine can easily run over 100,000 hours.



#### Partnering

BANKO closely cooperated with different department at the Faculty of Mechanical Engineering and Naval Architecture in Zagreb and the Faculty of Electrical and Mechanical Engineering and Naval Architecture in Split and also with companies from mechanical engineering field at home and abroad.

During its early development stage, the BANKO team, as they proposed in their business plan, intended to do everything within an own capacity. However, initial problems have forced them to find a solution from outside. This represents an excellent ground to scale their production levels.

BANKO's marketing goals are the development of a widespread network through distributors for each country and opening BANKO branch offices for markets with higher sales potential. The first office of this kind is located in Turkey.

#### **IPR policy**

The BANKO Vane machie is protected with 3 patent applications:

1. "Vane machine with stationary and rotating cylinder parts" filed 06.03.2006 with international registration number PCT/2006/000002. US patent 8,047,824

2. "Vane machine with enhanced sealing among stationary and rotating cylinder parts", filed 13.08.2010 with international registration number PCT/2010/000028.

3. "Vane machine having stationary and rotating cylinders with reduced clearances", filed 31.10.2013 with international registration number PCT/HR2013/000031.

BANKO company also expect new patent application with some innovative ideas that they have already had and new innovative solutions that BANKO company will achieve during development of the compressor production line.

Most outstanding is their continuous granting of international patents - rather than national ones.

#### Quality

Each BANKO product undergoes a rigorous quality test at each stage, which starts with design and ergonomic adjustments, followed by the choice of the highest quality materials for production, by accurate production and assembly with final inspection, ending with product packaging accompanied by up-to-date documentation.

In order to maintain our own high quality standards, we endeavour to make corrections and meet the demands of our customers received through immediate feedback.

All BANKO products are built and produced in accordance with the ISO 9001:2008, machinery directive and highest safety requirements to fulfil EC declaration of conformity and all existing standards for the pneumatic grinder line. Our pneumatic grinders are more environmentally friendly and more energy efficient than the currently existing products on the market and they set new standards in our industry.



#### Investment

The project team that designed and built the BANKO PNEUMATIC grinders introduced the BANKO VANE MACHINE technology in 2011. Professor Matijašević from Zagreb University and Mr. Bošković from BANKO are the leaders of our 15 team members. The potential of our team and our technology was recognized by BICRO, which funded 50% of total premarket investment of pneumatic grinders (4 mil EUR). Further, the team's initial predictions about superiority, efficiency and durability of BANKO grinders have been recognized and proved by market.

#### **BANKO** Development

BANKO has experienced a steady development over recent years and is particularly ambitious with respect to its future growth potential. While being a micro company in 2007 (7 employees), it has at present (2013) thirty employees and it will grow to 49, 81, and 122 employees in the coming three years. This particularly implies a rather difficult transition from a size with rather simple management, decision-making, and supervisory structures to a size that requires numerous support structures such as controlling, human resource management, finance etc.

The fact that BANKO has available planning numbers can be seen as an indication of advanced management standards.

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
No of employees of the company	9	12	16	19	21	25	30	49	81	122
No of R&D employees of the company										
Total income of the company (HRK mio)	9.6	12.3	13.1	14.3	14.5	16.8	20.3	41.8	76.8	125.3
Income of the company from sales (HRK mio)	9.6	12.3	13.1	14.3	14.5	16.8	20.3	41.8	76.8	125.3
Income of the company from other sources (HRK mio)										
Earning of the company before interest and taxes (HRK mio)	0.4	2.2	3.5	2.4	1.2	0.4	1.7	9.8	17.8	24.4

 Table 1: Development of BANKO in terms of people, revenues and earnings (after 2013 is plan)

#### Market share

The target segment of the market for the new product is industrial users in the global market. Pneumatic tools for metalworking, primarily pneumatic grinders, are extensively used in shipbuilding, manufacture of metal structures and foundries, and power tools have a primary use in maintenance (light industry and residential use). According to all available market analyses, the need for pneumatic grinders in 2009 amounted to approximately U.S. \$ 0.79 billion, and the market expects annual growth of 2.9% over the next 5 years (see Table 2).



Pneumatic grinders	2014	2015	2016	2017	2018
BANKO sales (mil HRK)	8,28	29,01	63,29	111,02	189,42
Market size (mil. US\$)	861	886	912	939	967
Market size (mil. HRK)	4305	4430	4560	4695	4835
BANKO market share %	0,19	0.65	1.39	2,37	3,92

#### Table 2: Market share BANKO [%]

#### **Sales strategy**

The focus of the sales strategy of the pneumatic grinder is organizing a network of distributors and its own subsidiaries in certain markets with a view to a more rapid increase in the proportion of sales and better product promotion. For the part of the market in which we find appropriate partners or are in negotiations with major distributors, and which we consider that opening will get better sales results, we will then keep the existing business partners. Branches will be opened for larger markets with greater growth potential where we have contacts with a number of smaller regional distributors who can not cover the entire market, and when revenue from these markets reaches the requirements for rent pneumatic grinder, we will form a channel for renting pneumatic tools. Rental tools allows the user a fixed cost, the use of tools, and the company along with a well-organized service network allows higher incomes.

The main tasks of distributors / subsidiaries are market affirmation of products, development of internal sales network at the state level through distributors by region or own sales network, the establishment of a service centre with the provision of spare parts in stock, and technical support to distributors and end customers. Employees of subsidiaries work to a certain parts of the region with the location of branches and key customers within the state, taking into account that each region within the country covered by a sales network through distributors and its own sales network. Promotion of products will be done through direct contact with key customers, contacts with distributors and their customers, specialized fairs and presentations over the Internet.

Part of the sales of pneumatic grinder will be done through OEM production for well-known foreign brands.

#### **Financial issues**

Seed capital obtained from BICRO allowed BANKO to develop the pneumatic grinder line and to strengthen its negotiating position to other financial institutions. Expansion of production has been made with a loan from HBOR (Croatian Development Bank) and, further expansion of the distribution network with commercial bank loans.

BANKO also had an offer from VC capital for the expansion of the branch office network, which, however, has not been accepted due to unfavourable conditions.

BANKO will strengthen the position on the compressor market with licensing partners, but will



also renew its attempts to attract (foreign) venture capital.

#### Future milestones in the development of BANKO

The innovative vane machine can be used as: (i) working machine – a pneumatic tool, an internal combustion engine, a starter for large diesel engines, (ii) driving machine – a compressor, an expander for hydrogen fuel cells, a pump, a compressor for pre-compression of air in internal combustion engines (supercharger).

The licensing of IPR for various applications of the vane machine is in process with selected licensing partners. BANKO has undertaken a technical study for compressors with Zagreb University based on the experience with pneumatic grinders that proved at least 30% better efficiency rate then all competitors worldwide.

In addition, it is currently working on a prototype of the vane compressor that will be finished by end of 2013. Compressed air systems consume 4.2% of all electrical energy worldwide; an enhanced efficiency of 30% equals to 230 TWh.

BANKO has evolved as a team, as they are combining their development experience with defined milestones and integrating it in project oriented, investor ready proposal using its wide spread network of scientific advisors from 3 different universities (Split, Zagreb and Belgrade), network of suppliers (e.g. Đuro Đaković, Topling ...) and creating OCR thermo power plant. Within that project BANKO has opportunity to prove itself as system integrator in energy efficiency field by using its patent protected technology. In that sense BANKO is already cashing their knowledge and gaining references, while their two other set of products are raising its market share.

#### Comments, observations and lessons

BANKO has a clear understanding of its markets and related needs. Apparently they have a clear understanding and strategy how to enter international / global markets. They are particularly willing and confident that they have a strong growth potential – and they are planning for it.

BANKO is benefitting from knowledge institutions such as the Universities of Zagreb and Split. Their own knowledge is to large extent carefully managed – the regular granting of international patents can be seen as an indication.

It is also clear, that BICRO has supported, even enabled the growth phase of BANKO by providing funds that would have not been available on the market. The loan from BICRO was more a soft loan and without it BANKO most probably could not have achieved its development.

The next funding step, however, could and should be done by the private sector - the banking system. The first option would be mezzanine funds, which is, however, not available in Croatia. BANKO has also considered an application at EBRD (European Development Bank) for a loan of 3 MEUR. EBRD has refused, as they do not provide loans below 5 MEUR. BANKO has therefore decided to go for the next 1-2 years with loans, provided by HAMAG (Croatian guaranty agency) with collaterals, and then negotiate again with private equity funds or with the EBRD.

BANKO is currently 30-40 employees, with about 3 MEUR turnover (2013). In fact, this is a critical size as they have to implement a number of (support) functions which are in the same order of magnitude as if they would have five times more employees, which is planned for 2016 ff. Accordingly, BANKO has to surpass this critical size. One strategy, which is currently under



development is the the separation between production and sales. Production will remain in Croatia.

BANKO, as it is now, is facing a big challenge in developing and implementing an internationalisation / expansion strategy and related funding. In this regard, BANKO is the most demanding client of BICRO.







Creator and Founder of FOMO, Shai Schechter

#### An online digital photograph sharing application, FOMO, United Kingdom -<u>www.fomo.fm</u>

This case study was authored by Ann Mulhaney, John Williams, David Heffer and Jennie Shorley, The Centre for Enterprise at Manchester Metropolitan University



#### Summary

The Centre for Enterprise based at Manchester Metropolitan University (MMU) specialises in working with start-ups and SMEs, supporting them to grow and innovate. This case study presents a highly innovative start-up company with whom we have had the pleasure to work, Surreal Tech Limited . Its creator and founder, Shai Schechter, studied for his degree in Manchester and took part in MMU's Enterprise Champion project, which supports start-ups across the North West of England.

Surreal Tech Limited has created FOMO an online digital photograph sharing application, which is being developed and marketed in-house by the small-sized business, currently consisting of only one employee. The uniqueness of the product, launched in an otherwise crowded App Marketplace shows real innovation, leading to rapid growth in the use of the product.

The structure of this paper consists of two main elements. The first part will focus on innovation in the United Kingdom, the country where the product was developed, with specific reference to the Manchester region, where start-up support was provided for the company. It will analyse the innovative capacity and position of the British economy, compared to other countries in the European Union. We will then analyse FOMO itself, with a focus on its characteristics and its history, the innovativeness of the company and its product and exploring the reasons for its initial success.

#### **Learning Objectives**

The learning objectives of this case study are to enable understanding of:

1. The UK "innovation system", including the context of innovation performance across the country

2. The Manchester context of innovation and the economy – and its opportunities for innovative entrepreneurs

3. One example of an innovative start-up, and how this entrepreneur has worked with the university to realise his vision

4. One entrepreneur's idea development and drive to solve a problem through innovation

5. The choice of Business Model options available and the benefits and challenges of each

6. Possible sources of competitive advantage for a start-up



# 1. Analysis of the innovativeness of the region and country of the company's location

# 1.1 International comparative analysis of the innovation economy in the United Kingdom

The Global Innovation Index 2014 ranks countries and economies by their innovation environments and outputs. Out of 143 economies around the world, the United Kingdom ranked second, behind Switzerland, recognising the high levels of innovation seen here in comparison to other countries/economies in the world.

Rank	Country	Score	Value	Percentage Rank	Score View	
1	Switzerland	64.8	-	1.00		
2	United Kingdom	62.4	20	0.99		H
3	Sweden	62.3	28	0.99		
4	Finland	60.7	-	0.98		
5	Netherlands	60.6	5%	0.97		
6	United States of America	60.1	23	0.96		
7	Singapore	59.2	-	0.96		
8	Denmark	57.5	28	0.95		
9	Luxembourg	56.9		0.94		
10	Hong Kong (China)	56.8		0.94		
11	Ireland	56.7	28	0.93		
12	Canada	56.1	-	0.92		
13	Germany	56.0	74	0.92		
14	Norway	55.6	23	0.91		
15	Israel	55.5		0.90		

#### The Global Innovation Index 2014, Rankings, Page XXIV.

Whilst the United Kingdom has always ranked fairly highly in previous years, it has ranked particularly highly over the previous 3 years rising from 10th place in 2011, 5th in 2012 and 3rd in 2013, to its current position. This shows that the United Kingdom has always been an innovative economy in which businesses can prosper, however the innovativeness of it has improved even further in recent years and continues to do so.



#### Lifelong Learning Programme



#### The Global Innovation Index 2014, Chapter 1, Nurturing New Sources of Growth by Developing the Human Factor in Innovation, Main Findings, Figure 2: Movement in the top 10 of the GII, Page 9.

The Innovation Union Scoreboard 2014 compared the innovation performance of the 28 EU member states with the United Kingdom ranking 8th overall, fairing highly in International scientific co-publications, Innovative SMEs collaborating with others and new doctorate graduates. This acknowledges that the economy of the United Kingdom as an innovative environment, particularly for SMEs, when compared to other EU nations.





# Innovation Union Scoreboard 2014, Member States' Innovation performance, Figure 3: EU Member States' Innovation performance, Page 11.

The UK Department for Business Innovation & Skills produced an Annual Innovation Report 2012, which assessed the latest available evidence on the innovation performance of the UK, and looked at the contribution of business, government and higher education to innovative activities in the country. We present excerpts from that report here, in order to provide the United Kingdom innovation context.

Innovation is vital to a healthy, competitive economy and is one of the principal drivers of growth. Innovative economies are more productive and grow faster. Nesta's latest Innovation Index shows that between 2000 and 2009, 27 per cent of UK labour productivity growth was directly attributable to private investment in innovation.

The UK has one of the leading research bases, outstanding R&D capability, high levels of overseas investment and considerable international collaboration. According to the World Economic Forum, the UK ranks second in the world for university-industry collaboration, behind Switzerland but ahead of the US. The UK is still performing well in most key areas. We have clear and acknowledged strengths, such as the performance of our world leading research base, and compared to other countries the overall level of innovation investment in the UK remains strong. We are committed to building on these strengths.

This year's analysis shows that in terms of innovation inputs:

- In terms of traditional forms of innovation metrics, such as R&D as a proportion of GDP, the UK still trails behind most of our main competitors
- On the other hand, the UK stands among the top performing countries when all intangible investment is taken into account. Despite a nominal fall in investment, investment as a share of value added in the UK private sector increased by 1.5 per cent
- Spending on innovation held up reasonably well in the UK as we entered recession
- The UK provides a favourable environment for innovation
- The proportion of the UK labour force that is trained in science and technology has increased over time, and the UK has a high proportion of engineering and doctoral graduates in comparison to other countries
- The UK is a highly attractive destination for foreign direct investment, with an exceptionally high share of UK business R&D funded from abroad.
- Looking at outputs and efficiency we see a promising picture, with the UK proving to be a strong innovator with a healthy innovation ecosystem
- We have a particularly strong reputation for high quality research, with a 14 per cent share of the world's most highly-cited scientific papers
- The UK performs well on international collaboration and international investment measures, with the highest proportion of R&D funded from abroad amongst the OECD countries at 16 per cent of total R&D
- The UK is number one in the OECD's ease of entrepreneurship index; and UK innovative firms are far more likely to be active in foreign markets than their counterparts in France, Italy or Sweden



# **1.2 Analysis of the innovative capacity and innovative position of the economy in Manchester and the United Kingdom**

The Centre for Enterprise at MMU is a partner in the European funded Inter-regional Co-operation (INTERREG) SMART Europe Project, which has enabled a review of the Manchester innovation economy, undertaken by peers from across Europe. We present excerpts from that report here, to give the Manchester innovation context:

The Manchester region has a long history of innovation. The rise of industrial Manchester was indeed a result of this innovative approach. The Corridor is a visual representation of the MCR academic related infrastructures including two Universities (University of Manchester and Manchester Metropolitan University), along with public and privately owned Hubs, Incubators and Science Parks. In other words, there is an abundance of infrastructures to support the creation of new ventures. The production of knowledge is strongly related with its potential exploitation. Specifically, great importance is attributed to grapheme related research focusing on potential commercial exploitation. Additional and equally important areas for research that are directly linked with the exploitation of business opportunities are the health, energy, biotechnology, microelectronics, robotics, industrial engineering and chemicals sectors. At the Greater Manchester (GM) level, the University of Bolton and University of Salford along with other peripheral Colleges contribute their share in the strong HE industry of the area.

GM ,and especially the city of Manchester, are considered the second city after London, taking account a number of parameters. Specifically, GM has been known for its:

- International and national connectivity
- Large, vibrant, dynamic city
- Access to world-leading assets across the North
- Meritocratic academic environment
- Optimum size for incubating and testing new ideas
- Stronger, more stable governance than any other UK city
- Diverse, growing but still stable & accessible population
- Low cost base for business/housing
- Entrepreneurial opportunities

The Greater Manchester region has strong innovation anchors i.e. Manchester Science Park, Media City and the universities. The universities offer a wide base of knowledge and skilful workforce for the region's current needs as well as for the future. There is a good culture of cooperation between companies and the universities, e.g. some entrepreneurs sit on advisory boards for the universities.

In the Greater Manchester region there seems to be a real innovative and creative environment. This is not only due to having several universities and a large media sector, but also due to multiculturalism and open attitude of the city. The city is big enough for creativity and innovations to feed themselves and to further develop.

A wide range of different services and service providers to help create and boost companies exist in the region, including e.g. incubators, science parks and business angels.



Manchester has proven its potential to be "the second city" in the UK after the capital. With real creative, innovative, multicultural and vibrant environment it has and can still further increase to attract domestic and international investments and business. With reasonable prices of housing and available commercial space the city itself and the surrounding areas are an attractive option for business, employees and families compared to the capital.

#### 2. General characteristics of FOMO

FOMO is an online digital photograph sharing app, created and founded by Shai Schechter of Surreal Tech Limited. Shai started his entrepreneurial journey at the age of four, when his interest in computers led him to develop his first computer programme. This initial interest continued, and at the age of nine he set up his first business developing websites for businesses, initially in the UK then overseas to US businesses. The company was founded in partnership with his elder brother to ensure clients took their business model seriously. Initially this business developed basic static websites but allowed Shai to develop and evolve his skill set and build more sophisticated and complex sites. After leaving school, Shai enrolled at the University of Manchester to study a Bachelor of Science in Computing and Electronics, graduating with first class honours.

Whilst at university, Shai undertook several extra-curricula activities, including organising social and charity events, which sparked his interest in integrating technology and group events. Student events are generally focused on fun, frivolity, and social networking, which Shai used to business advantage, for example, utilising the principle of the stock market to influence beverage prices for the evening. He devised a computer programme to link with the till sales and display on big screens around the venue 'current prices' of beverages. Popular drinks saw price rises and vice versa for drinks with fewer or no sales. As probably predictable with students with limited budgets, as unpopular drinks' prices dropped, sales began to rise, as students preferred the 'bargain' as opposed to their 'favourite' drink. The event was hugely popular, selling out all tickets and raising several thousand pounds for charity.

This involvement in running student events gave Shai key insights and experiences that led to the creation of FOMO. With the rise in mobile technology, smart phones and social media in particular, Shai saw a gap in the market. Individuals were taking photographs at events and then sharing these via media such as Facebook, Flickr or Instagram. Shai explored the concept of developing an app that would allow individuals to share (and store) photographs that were accessible to all attendees of an event. After graduating from university, Shai had several job offers, but was keen to follow his own innovative ideas through to a business, and in particular, a Photo Sharing App. Whilst working as an IT consultant during the day, Shai developed the photosharing app in the evenings, involving long hours of design, development and testing of the product. Although there were no major set up costs, the main input was Shai's time. Once the prototype was usable, Shai initially shared the app with friends and family to seek feedback. Eventually the app was at a stage of 'minimal viable product' and Shai decided to launch the app to the public. He took a conscious decision to initially not fully automate the online process so that he was able to engage by phone with customers to fully understand their needs and issues in navigating the process.

The business is now generating regular income streams, and although Shai still works part time as an IT Consultant, this is not a necessity. The business has grown to this point with no financial investment on marketing the product. Shai's strategy is to grow the business steadily to develop the app further, based on the needs and feedback of customers.



#### 3. Innovation activity of FOMO



FOMO is an app for Iphone and Android, as well as a website, which allows a person to create an event, and invite their guests. Cards are provided by the business to be distributed at the event, emailed to guests beforehand or to be sent via social media. Guests only need to tap their phone on to the card to join the event. Once people have joined the event, they can access the photos uploaded by all the other guests at the same event, rather than relying on people to individually share, distribute or send them to other guests manually, which often does not happen. It is a big effort to take time to log in to a computer, upload all the photos and create a zip folder to send to others, especially when people are busy or away.

Shai drew inspiration after attending a friend's wedding. After the event, the bride sent a message on Facebook to guests requesting them to send any photos, but received only a limited response. In general, guests at weddings may take hundreds of photos of the day, which the bride and groom never get to see.

Now, FOMO allows couples who are getting married to capture every moment of their wedding by collecting their guests photos from the day, into one album, which all guests can access. Shai soon realised that were many similar situations where more than one person would be taking photos at the same event, but that other parties might never see. Not only weddings, but parties, birthdays, holidays and other important occasions, where multiple people take photos and then request to see each other's.

The product was only recently launched in Spring 2014, and is currently growing rapidly and indeed is already profitable. At this stage, growth has been achieved by word-of-mouth referrals alone. Originally, the only way to create an event was by communicating with the business directly, but this logically evolved into people personally creating their own events.

The current primary use of the product is for weddings, but it also used for lots of other events like holidays, school events such as parents evenings and trips, engagements, christenings and Bar Mitzvahs. This was not intentional, as initially the creator wanted to see how the market decided to



utilise the product, and right now, that seems to be at weddings as a way of combining all the photos taken and making them accessible to others. However, the app has obvious uses for any event where people are taking photos.



#### 4. Example of innovation introduced by FOMO

- Although it is hard to protect the IP of software products, Shai has registered the trademark for the business and encrypts the programme to minimise the risk of the idea being copied. From the range of business models available, Shai primarily opted for an innovative, revenue-based model. Clients are able to choose from three packages:
- Package One (FOMO Basic) lowest price allows customers to invite unlimited guests to share unlimited photos for an event.
- Package Two (FOMO Deluxe) medium price aimed at the wedding market includes the basic package plus: 200 unique, personalised invitation cards and App expertly designed to match the event. 10% of sales of this package also go to charity
- Package Three (FOMO Ultimate) highest price aimed at corporate events includes the Deluxe package plus: live, moderated slideshow streamed to your event and an embedded album into your own website. Again 10% of sales of this package also go to charity.

This business model meant pricing was clear and concise, giving three distinct options to customers based on their needs. With no hidden costs or charges, and a charitable incentive to those who wanted to use the higher priced options, FOMO provides clear and honestly priced packages to its customer base.





# 5. Sources of FOMO's competitive advantages; enterprises advice to other firms on how to be innovative

Shai attended the Business Boot Camp, part of the MMU Enterprise Champion Programme delivered by the Centre for Enterprise, and this two-day intensive course gave Shai space to focus on the commercialisation of his idea. He was inspired by other entrepreneurs he met, as well as finding the course to be highly practical, and he learned things that could be immediately applied. Although Shai had already started the company by the time he attended, he had not yet launched the product, and was working 100-hour weeks to build the product. He valued the support he had available to him by starting up in Manchester's innovative economy. He found the sessions about branding and pitching your ideas to other people particularly useful, as the course leaders were business people who were actually working in the fields they were teaching. It was valuable to be able to speak to and learn from them, and hear what they had to say.

We asked Shai what advice he would give to others thinking of starting a business, he said "just do it, get advice and all the necessary support to ensure you test your idea but overall just give it a go!"

When Shai tells people about his company, he often hears that he is brave to start a business but Shai does not see it as brave, but more as following his ambition. He does not see this as a major risk but more a challenge, where the risks can be managed. Shai advocates that if you are thinking of starting a business, do it as soon as possible as it is definitely cheaper to start a company than ever before.

With tech companies especially, it is easy to compare it to the big Facebook, Instagram or Snapchat success stories, but in reality, success should not be defined based on these comparisons. Shai feels that it should be more about your own happiness and it becomes much


more reasonable to define success on 1 customer, then 10, then 100, rather than looking at businesses that already have a huge customer base.

Shai says the perceived risk of starting a business is a cultural perception in the UK, and that there is an opposite view in the US, where early failure of business is considered a learning process and therefore a positive step. Shai's advice is to look for the worst-case scenario of what could happen, and move forward to managing the risk.

Shai feels that it is a huge advantage if you have the technical skills in the field you are entering. His advice is to either work on these particular skills or look to collaborate with someone who possesses them. If you have any kind of technology involved in your idea, it is not impossible to do it by outsourcing all the software development, but it is very difficult to do it that way, or find people who are technically able, ensuring they have the skills you need. Starting with someone who has those skills is important, or you will need to learn the skills yourself. There are very good programmes out there at the moment, even to obtain a basic understanding of the field, and it is important to utilise them if you need to.

Shai acknowledges that whilst the product is innovative, he does not consider himself an innovator. He simplifies his own innovation process as identifying a problem, in this case the time consuming process of sharing photos (which relied on the active participation of other guests), and the creation of an app to resolve this problem. It is not just about having innovative ideas, but building the courage to create a product or service to act on them, implementing technology and software to help you do it. Rather than just needing a good idea, you require the determination to make the idea a reality. This can be difficult if people believe it is not possible, but FOMO have the attitude of doing everything to ensure they make ideas happen.

# 6. Prospects for the future

The next step for FOMO in terms of product development is to reduce any manual input required for processing an order, to fully automate the app. Marketing so far has also been primarily by word-of-mouth so investment in marketing is definitely needed, primarily using social media. Although Shai did investigate funding streams, the business has so far been self-funded and it was not necessary to go down either the loan or business angel route. He is currently working on building a feedback loop into the application, so that despite it eventually being fully automated, he will still be able to utilise vital customer feedback to ensure the continued success of the product. Presently, Shai will work full-time on FOMO, and although the product and business are still in their early stages, Shai is very optimistic about the potential of further growth as the business continues to develop.

For software applications, it is very hard to protect the IP of the product, so Shai has registered the trademark for the business and encrypts the programme to minimise the risk of the idea being replicated by others. Shai is currently the sole employee of the company with no immediate plans to take on any extra staff. However, he remains optimistic that the company will have to expand at some point in the future, and with business growing at its current rate, additional employees will eventually be inevitable. He has other ideas in the pipeline, and with experience in software consultancy, if he is not working on more of his innovative ideas in future, he plans to be working on other people's ideas for them, by giving them advice on how best to implement them.



## 7. Learning outcomes and advice for entrepreneurs

- The Manchester economy, and the United Kingdom as a whole, is globally recognised as an innovative environment, which encourages the start-up and growth of SMEs.
- The innovativeness of the economy means vital support is available to SMEs to provide advice and support in idea exploration, business establishment and expansion, which should be utilised by entrepreneurs.

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# Preserving Croatian tradition of Slavonian speciality Kulin

This case study was authored by Prof. Marina Dabić and Ivana Šporčić, Faculty of Economics and Business, University of Zagreb

Key words: food production, IPR, internationalization, CSR



# Summary

This case study aims to illustrate a sustainable company doing business in the highly competitive and open European market. Developing and preserving endemic personal identity associated with tradition and geographical origin through sustainable business, high ecology standards and autochthon branding will contribute to diversity and high quality portfolio goods. With continuous market research and stakeholder cooperation, entrepreneurs have the task of developing quality as the most important factor in long term market success. Internationalization helps make innovations more authentic and quality marks demonstrate this authenticity, including the Protected Designation of Origin (PDO), Protected Geographical Indication (PGI), and Traditional Speciality Guaranteed (TSG).

This case study demonstrates a successful Croatian entrepreneur, which encompasses these values. Galović Kulin has undertaken a successful marketing mix involving market segmentation, internationalization, corporate social responsibility and intellectual property rights. Smaller firms, typically SMEs more often become global when, pursuing niche market strategies (relatively narrow or specialized target market that cross many national borders) by targeting specialized foreign markets.

As demonstrated, CSR is increasingly important to the competitiveness of enterprises. It accumulates benefits in terms of risk control, cost reduction, capital distribution, customer relationships, human resource management, and innovation capacity.

The case also stresses the importance of intellectual property rights regarding their ability to protect intellectual creation, uniqueness and innovation. Intellectual property rights give the business opportunity to acquire benefits from efforts which otherwise might be not be justly exploited.

# Learning objectives

This case demonstrates how small and medium entrepreneurs deal with:

- complexities of internationalization in a highly competitive global market
- use innovative, adaptable, and faster approach in fulfilling market niche
- tend to benefit from private knowledge that they cultivate through their knowledge networks and international social capital
- seek prospects through market diversification
- follow up new ideas about products, services, and business methods
- gain flexibility in the sourcing of products
- confront global competitors effectively
- use stakeholder approach and feedback as potentially rewarding relationship
- help promote objective and tangible dimensions of Croatian that is Slavonian culture, European diversity as well as cultural aspect of doing business
- emphasizes the importance of creating clusters of producers as the only success strategy in the EU market



- increase social influence through employment and environmental protection
- use of intellectual property rights protection in protecting unique products
- corporate social responsibility as tool in managing long-term success

# **1.1. INTRODUCTION**

According to the Croatian National Bureau of Statistics, food products cover more than 20% of total manufacturing. Including meat and meat products, the food industry involves nine subsectors, 1499 enterprises and 47000 workers which comprise one fifth of all manufacturing employment.

Being the second largest subsector, meat and meat products employs 17,7% industry work force and produces 15% of all manufacturing making more than €42 million of profit.

Since entering the European Union has increased competition and significant consolidation of industry has taken place. Nevertheless, SMEs are still the dominant form of doing business. According to the Croatian Chamber of Commerce ratio of large enterprises is less than 2%, which is only one point below the European Union average.

## 1.2. ABOUT THE COMPANY

What motivates a successful attorney at law employed in a government owned company switch to unstable entrepreneurial environment? Well, Mr. Galović did not have this dilemma- he saw a unique opportunity to preserve the Croatian tradition of producing home-made Slavonian specialty-Kulin. Kulin is a type of paprika-flavored salami produced from pork meat of the first category, also known as kulen.

## 1.2.1. SHORT HISTORY

Mr. Galović founded his company Kulin d.o.o. in 2002. In that time he was just a regular person trying to promote his beloved Slavonia and its well-known salami kulin and to make a living. Today he is a very successful businessman, selling a well-known brand which is respected and accepted not only in Croatia but also in foreign countries. The story about his success serves as an example to all potential entrepreneurs. Kulin d.o.o. is registered as a meat processing and preserving company.

Mr. Galović recalls that a lot of idealism was necessary to present his unique product to the world. When he first decided to enter the food production industry, he faced several issues. First of all, he wanted a product that is authentic, organic and unique. A product that will be produced in a way he remembers his ancestors did it. With that in mind he went to the Faculty of Food Technology and Biotechnology in Zagreb to engage prominent experts in this particular area. There he came to one of his many obstacles; he did not receive the expert support he hoped since all the experts unanimously said that the only way to succeed is to use preservatives. What might discourage some, Mr. Galovic perceived as an even higher incentive for reaching his objective. Now, he is a vice-president and promoter of the oriGIn- Organization for an International Geographical Indications Network.

Mr. Galovic often says his life philosophy is that kulin represents a part of Croatian and Slavonian cultural identity just like champagne, cognac and prosciutto represents the cultures of some other



regions and nations. That is probably the reason he calls his stores galleries and his factories ateliers. In fact, in 1997 he organized an exhibition of his unique products in the renowned Croatian museum Mimara.

Kulin d.o.o. is the only company that produces Slavonian home-made kulin. Although he has no direct competition Mr. Galović is not satisfied with the existing situation. He believes that more people in Croatia should be engaged in preserving the tradition and he emphasizes the importance of creating clusters of producers as the only success strategy in the EU market.

As we already mentioned, the company currently employs ten people, six of which are women and four are male. Moreover, he works with eight suppliers and the total number of people working in the period from November 1st and 28th February of next year amounts to 25.



Picture 1: The King of Kulin - Tomislav Galović holding his unique product

# **1.3. INTELLECTUAL PROPERTY RIGHTS IN CROATIA**

The World Trade Organization says the definition of intellectual property is: "Intellectual property rights are the rights given to persons over the creations of their minds. They usually give the creator an exclusive right over the use of his/her creation for a certain period of time<sup>1</sup>." People have developed a system of legal protection of material property due to continuous risk of material goods to be destroyed or lost.

Intellectual property rights are customarily divided into two main areas:

• Copyright is the exclusive right of authors to dispose of their literary, scientific or artistic



works, and works covering other fields of creativity; related rights relate similarly to the rights of performers, the producers of phonograms and broadcasting organizations (literary works, written works, oral works, computer programs, musical works, dramatic or dramatic-musical works, choreographic works and works of pantomime, works of visual art, works of applied art, photographic works, cinematographic works, translations, adaptations, arrangements and other alterations of works, collections of copyright work, data or other materials; performances, phonograms, broadcasts)

 Industrial property comprises the rights by which manufacturers protect from competitors their business interests, their position on the market and their investments in research, development and promotion (patents, trademarks, industrial designs, geographical indications and designations of origin, topographies of semiconductor products)

In the case of Galović kulin we have examples of protected trademark, protected industrial design of the packaging and protected geographical origin



Picture 2: Protected Trademark

Combining his knowledge about Intellectual Property Rights (hereafter referred as IPR) and his entrepreneurial spirit, he didn't have to think twice before submitting the Application for Right Approvement to use the Protected Sign of Product Origin (copyright) to the Croatian Chamber of Commerce. On March 27th 1997, the Croatian Chamber of Commerce approved the proposal to the State Administration for Intellectual Properties on recording the sign of origin into the Register of Protected Signs of Origins. This act is recognized as the first Croatian Protected Geographical origin in history. However, it took eight years to protect Kulin Galović as protected geographical origin from the first idea to the final protection. Aside from the name and trademark, original packaging is also under the protection of industrial design since 2005.



Lifelong Learning Programme



Picture 3: Protected industrial design of the packaging

# **1.4. CORPORATE SOCIAL RESPONSIBILITY**

Mr. Galović believes that corporate social responsibility is an integrative part of every authentic product. In the past, farmers did not use environmentally damaging additives, they did not pollute the environment and it is only logical that a company that strives to replicate traditional ways does everything as it was done decades ago. CSR is implemented in every sphere of his business with the main objective of keeping farmers where they belong, to preserve rural development and traditional values.

## 1.4.1. WORK AND EMPLOYMENT PROCESS

Kulin d.o.o. has ten full-time employees and works with eight different suppliers throughout its value proposition. Each of those suppliers is from another village because Mr. Galović is determined to reduce the possible jealousy and conflict among the neighbors. These villages are small, and many of his suppliers become extremely wealthy by working for him. Since this part of Croatia has high unemployment rate and is characterized by poverty, Galović's contribution is immense. Mr. Galović proudly mentions his business relationship with a lady named Liza who started working with him as small range farmer with only one pig and now, 10 years later, she is breeding more than 100 pigs.

Mr. Galović is extremely engaged in communication with his suppliers. He believes that building a strong relationship is a key to attain a quality product. He selects his suppliers by their reputation and offers them two year probation. If they manage to meet all the requirements set, they sign a 10 year contract with Kulin d.o.o. Mr. Galović sees his suppliers as a part of his family. He visits them on regular basis, often unannounced and is always kind to the children of the families.

Furthermore, every employee must be familiar with every step of the production. In that way they become more informed and enthusiastic about the product and more valuable to the entire production process.



### **1.4.2. ENVIRONMENTAL PROTECTION**

Kulin d.o.o uses all natural Slavonian ingredients. Pigs are fed only by barley, oats, wheat, grass and clover that are organically produced i.e. breeders grow their own food and in that way they cultivate the soil. Mr Galović tells an interesting story about his friend - a famous Croatian writer who is also a vegetarian. Mr Galović offered him a piece of kulen with the explanation that animals are fed solely with herbs and that the product is vegetarian friendly.



Picture 4: Slavonski domaći kulin (Slavonian home-made kulin)

He emphasizes that his original recipe is only 1/10 of a great product and therefore one has to take care of every single step of production with extreme precaution. Breed, feeding process, weight, age, air control and the temperature of filling are crucial but there is always more and there is always space for improvement. After the slaughtering bones and meat are immediately separated and put into different boxes. That's why Kulin d.o.o production plant is called Atelier- it is completely clean and free of waste and it depicts Mr. Galović's commitment and strive for perfection. One of the main postulates for great product is impeccable hygiene within production facilities. Mr. Galović stresses out that thereof he pays more to the slaughterhouse; however this is one of the reasons why his brands and his products do not come cheap.

Mr Galović pays attention to health protection in general. That is why he spent more than 17 000 HRK in one month on testing for trichinella.





### Picture 5: Galović Atelier

### **1.4.3. IMPORTANCE OF STAKEHOLDER FEEDBACK**

The business strategy has been formulated according to feedback from customers. If customers are not satisfied with the quality of product- Mr. Galović explains that this situation, although not often, might occur since the products do not contain any type of preservative- it is immediately reported to the production department. He defines brand as a bond of quality product and emotional attachment. Following this premise, during Easter (or any other holiday) he prepares ham for his most loyal customers completely free of charge. Consumers perceive "Galović" kulin as being tasty, high quality, locally produced, with an excellent flavor, and a premium product, with an authentic recipe, certified quality and good design.

Mr. Galović is a sole owner of Kulin d.o.o, but says that he does not act like a boss. He fulfills every task needed- from mere delivery to organization of internationally sponsored events. When it comes to advertising, his philosophy is that word of mouth is the best way to promote the brand. Mr. Galović tells the anecdote: This one time, a man from Brussels called me and asked if I could send him five kilos of Kulen since his friend from Greece tried it and became so fascinated that he wanted it under any conditions. The modest entrepreneur says that now this man from Greece might tell about the product to someone else and you never know how far the story will go. Mr. Galović strongly believes that in order for SME's to engage more in CSR activities, the entire mentality of nationals has to change. This implies the change of legal and economic surroundings – both governmental and corporate.

# 1.5. INTERNATIONALIZATION

### 1.5.1. PROCESS OF INTERNATIONALIZATION

On the 1st of July 2013 Croatia entered the European Union. Mr Galović adjusted his business activities with European regulations and from the first day Croatia entered the EU he began to export his product. This was an enormous change from "illegal" transportation of ten kilos of kulen



in the trunk of his car to a golf tournament in Slovenia in order to treat his friends and partners. Now, it does not matter if he sends them to Zagreb or London- the conditions are the same for every location. Furthermore, only three months since the Croatia became a member of EU, Galović has sold more than 600 kilos of kulen for the price of 600 HRK (60 GBP) per kilo. The product is sold through several luxurious food retail stores in London. He is confident in a bright future. The next step in the internationalization process is orientation on markets which are already familiar with the product i.e. countries such as Austria and Germany with a large Croatian population. This reduces the cost of advertising and promotion. Mr. Galović often expresses that it is his obligation to promote his love for Slavonia and he uses every opportunity on his travels through Europe to talk about Slavonia and its products. Even the established British magazine, focused on interior design, entertaining, and gardening, House & Garden, February edition recognized the quality of the product.



#### Picture 6: Article in House & Garden about kulin

The process of internalization of Kulin d.o.o. was a matter of opportunity- particularly Croatia entering the EU. The scale of internationalization is low since the production range is low and although the first phase of internationalization was a success, Mr. Galović says that he does not consider himself nor the company experienced, but states that he sees the time and place to grow



and develop further. In fact, in two years' time he predicts a production increase of 50%. He reckons that his unique, premium product, his strong brand, his marketing skills, production process, strong local networks and efficiently used resources are a key to this successful international development.

Recently Kulin d.o.o. signed a contract for business cooperation with the PBZ- Croatian bankwhich will offer favorable loans to Kulin d.o.o. suppliers. This is an exporting project that enables new hiring in the company itself and on farms.

Mr. Galović does not plan to export his product overseas. Not because he believes that demand is not high enough, it is quite opposite in fact, demand is so high that it is hard to satisfy it even within the Croatian borders. Some might ask: But why can't the company increase production? Well, as previously mentioned, the production process lasts for only six months a year. If this process was to be prolonged the quality of product will inevitably fall and the tradition will be lost. However, Mr. Galović suggests the formation of clusters- pig breeders, distributers, producers- all in one union because the success of individuals in a huge market is hard or even impossible to achieve. Synergy and knowledge are definitely the key.



Picture 7: Kulin and label displayed in the gallery





Picture 8: Store in Vlaška 178, Zagreb, Croatia

# **1.6. INTERNATIONALIZATION AND CSR**

In short, CSR has a vital role in the internationalization process of the Kulin d.o.o. The core of the company's product is the uniqueness of the production process and engagement of all parties. We have decided to separate the CSR activities:

- Labor and employment practices: Kulin d.o.o employs Slavonian farmers, educates them on their tasks and responsibilities and supports them in every stage of the production and development.
- Environmental issues: Kulin d.o.o does not pollute. Animals are fed with all natural plants that suppliers grow on their own. In addition, all the waste is disposed in slaughterhouses under the EU health regulations.
- Stakeholder engagement: all suppliers are equal participants in decisions that concern breeding, and customers wishes and suggestions are always taken into consideration
- Ethical behavior: Kulin d.o.o. signs 10 year contracts with his suppliers providing them with 300 000 HRK at the end of the breeding phase (six month period).

All activities listed above contribute to the quality of the company's product. In other words CSR is



of essential importance to the company and without it, Kulin d.o.o. would not be able to export at all. Moreover, the product is authentic, using only Slavonian produce- garlic, salt etc. and no imported input is necessary for product development. Mr. Galović says: Bad grapes do not make a good wine, neither does Hungarian imported aitchbone make a good Slavonian kulin.

In order to further embrace the internationalization process, Kulin d.o.o decided to produce the packaging labels in English and Swedish. Also, the company decided to modify the existing protected name Slavonski domaći kulin to only kulin since the previous name was too long and too complicated for foreigners to pronounce. Our hearty entrepreneur perceives this as an entirely new brand and entirely new possibility for growth.

<sup>1</sup><u>http://www.wto.org/english/tratop\_e/trips\_e/intel1\_e.htm</u>





# Innovation in the medical devices industry - case study of RAVIMED Ltd., Poland

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# Summary

This paper was prepared at the Warsaw School of Economics in the framework of Stimulating Learning for Idea-to-Market (SLIM) Project, which is a two-year EU-funded project implemented in 2012–14 under the Lifelong Learning Programme (Leonardo Da Vinci – Transfer of Innovation). It presents a case study of a Polish innovative company, Medical Devices Manufacturer RAVIMED Ltd., which provides single use medical products, medicinal products, individual anti-chemical protection agent, and laboratory services, in particular connected with testing innovative drugs. All products sold by RAVIMED were developed in house by this medium-sized company, which is fully equipped, with own laboratories specializing in chemical, toxicological and microbiological testing, as well as testing different types of drugs offered in the European Union. Moreover, RAVIMED cooperates with many partners, in particular scientific units, and undertakes testing as a subcontractor for them in the framework of different scientific projects. The uniqueness of this company is proved by the fact that it is the sole producer of containers for blood collection, storage, and preparation in Poland and Central Eastern Europe.

The structure of the paper consists of 2 main elements. The first part focuses on the innovativeness of Poland, which is the country of RAVIMED's location. It contains the analysis of innovative capacity and innovative position of the economy in Poland, as well as it compares the level of Polish innovativeness with other countries in the European Union. This part is a starting point for a more detailed analysis of RAVIMED, with focus on main characteristics of this company, its history, sources of innovations, main partners, key innovative products and reasons for the success on the market.

# Learning objectives

The learning objectives of this case study are to enable entrepreneurs to understand the importance of:

- the level of innovativeness of the economy, and the characteristics of the national innovation system in which an enterprise is embedded, resulting in different types of opportunities and barriers for firms' innovation activities,
- finding niche markets, which the company may enter with new types of products,
- internationalization of firms' activities and expansion into foreign markets,
- engaging in a direct debate with representatives of political institutions and having a direct bottom-up feedback on economic policies, for example through the European Parliament of Enterprises (EPE),
- possessing high quality human capital (qualified R&D staff) and adequate infrastructure for innovation activity, like laboratories and research facilities,
- using Intellectual Property Rights (IPR) to protect own inventions,
- maintaining perseverance in times of crisis and not abandoning the key mission of the company,
- penetrating the market in order to gather information on the preferences of the customers; developing new ideas in the potentially valuable directions, and careful analysis of competitors' activities and offerings,
- specific characteristics of the sector, in which an enterprise is operating, like safety



regulations,

- openness to cooperation and transparent policy toward partners,
- finding reliable suppliers and other type of cooperators from supporting industries (for example offering labeling system, etc.),
- innovation-friendly organizational culture of the company, promoting creativity and trust in the relations with firm's employees.

# 1. Analysis of the innovativeness of the country of company's location

# 1.1 Analysis of innovative capacity and innovative position of the economy in Poland

According to a number of economic theories, including the new theory of growth, the new economic geography, or the concept of knowledge-based economy, innovativeness is one of the key factors of competitiveness. Innovations are typically considered as an element of characteristics of an enterprise<sup>1</sup>. However, different companies are deeply rooted in national and regional systems of innovation that greatly influences firms' innovation performance. Therefore, this subchapter presents the innovativeness of the Polish economy from the macroeconomic perspective, as the starting point for the detailed analysis conducted at the microeconomic level, from the point of view of a specific firm – RAVIMED.

Innovativeness of the economy is usually defined as "the ability of a given economy to create innovation, where ex ante is the potential to create innovations and ex post is the total effect of innovative activities of enterprises functioning in the economy in a given period of time"<sup>2</sup>. The implications of this definition are the two concepts:

1. capacity to innovate, denoting the extent to which a given country is capable of creating and commercializing new ideas,

2. innovative position, meaning the effect of the creativity of a nation combined with financial resources in a given economic and institutional environment<sup>3</sup>.

The data on indicators showing capacity to innovate of Polish economy are presented in table 1.



#### Table 1. Innovative capacity of the economy in Poland in chosen years of 1995-2012 period

	Year	1995	2000	2005	2010	2011	2012
1	GERD as a percentage of GDP	0.63	0.64	0.57	0.74	0.76	0.90
2	BERD as a percentage of GDP	0.24	0.23	0.18	0.20	0.23	0.33
3	HERD as a percentage of GDP	0.17	0.20	0.18	0.27	0.27	0.31
4	GOVERD as a percentage of GDP	0.22	0.21	0.21	0.26	0.26	0.25
5	Industry -financed GERD as a						
	percentage of GDP	0.23	0.19	0.19	0.18	0.22	0.29
6	Government -financed GERD as a						
	percentage of GDP	0.38	0.43	0.33	0.45	0.43	0.46
7	Percentage of GERD financed by						
	industry	35.96	29.51	33.35	24.41	28.12	32.30
8	Percentage of GERD financed by						
	government	60.24	66.55	57.71	60.93	55.80	51.33
9	Percentage of GERD financed by						
	other national sources	2.11	2.12	3.19	2.83	2.69	3.02
10	Percentage of GERD financed by						
	abroad	1.69	1.82	5.74	11.82	13.39	13.35
11	Population with tertiary education	no	9.2	9.6	13 .9	19 .4	20 .3
	attainment	data					
12	Human Resources in Science and		26 .7	32 .0	36 .9	37 .5	38 .3
	Technology as % of total	no					
	employment	data					
13	Total R&D personnel per thousand						
	labour force	4.90	4.56	4.47	4.78	4.95	5.23

Source: Indicators 1-10 and 13: Organization for Economic Co-operation and Development, OECD: OECD.Stat; Indicators 11, 12 – Eurostat Statistics Database.

Explanation:

- GERD: Gross domestic expenditure on research and development (R&D)
- HERD: Higher Education expenditure on research and development (R&D)
- BERD: Business Enterprise Sector expenditure on research and development (R&D)
- GOVERD: Government intramural expenditure on research and development (R&D)

One of the biggest weaknesses of the Polish National Innovation System is the low level of R&D expenditures and their unfavourable structure. In 2012, the share of expenditures on Research



and Development in the total GDP (GERD ratio) was 0.9%. It positions Poland as one of the lowest spenders on R&D in the EU, for which the average was 1.97%, and it is very far from the strategy "Europe 2020" target of 3%. The low level of expenditures on R&D in Poland is associated with high risk and uncertainty and with high costs of Research and Development, as well as internal factors in companies – risk-awareness and scarcity of financial resources. Unfavourable structure of expenditures means that the majority of R&D spending in Poland is financed by government (51.33% in 2012), whereas it is recognized that public spending on R&D is usually less effective then private spending, as R&D works financed from public sources are less usable in commercial terms and translate rather poorly into implementation of innovations. Meanwhile, developed countries are generally characterized by the reverse structure, in which most of R&D expenditures comes from private enterprise sector (in 2012 in Poland, only 32,3% of GERD was financed by industry). The data showing innovative position of Polish economy is presented in table 2.

	Year	1995	2000	2005	2010	2011	2012
1	Total patent applications (direct and	3860	7303	6583	3430	4123	4657
	PCT national phase entries)						
2	Total trademark applications	20109	28207	21654	18251	18195	17023
3	Total design applications	-	1687	1895	1755	1579	1377
4	Total utility model applications	2163	1330	644	945	1003	997
5	Exports of high technology products	no	no				
	as a share of total exports	data	data	4	6	5.1	5.9
6	Employment in technology and						
	knowledge-intensive sectors. Share	no	no				
	of total employment (%)	data	data	2.8	2.7	2.7	2.9

 Table 2. Innovative position of the economy in Poland in chosen years of 1995-2010 period

Based on data from: for Indicators 1-4: WIPO (World Intellectual Property Organization) IP Statistics Data Center; for Indicators 5,6: Eurostat (European Statistical Office) Statistics Database.

It is difficult to identify a stable upward or downward trend in Poland when analyzing indicators connected with the innovative position of the economy. Most of the attention is paid to indicators related to intellectual property (IP), which in the modern economy is becoming one of the key factors influencing technical advancement of enterprises. The number of total patent applications increased from 1995 to 2000, then it was decreasing over the next decade and finally it went up from 4123 in 2010 to 4657 in 2012. The number of total trademark applications increased from 1995 to 2000 and then, it has been decreasing to 17023 in 2012.

Various theories of foreign trade, in particular classical and neoclassical theories, predict that the economy specializes in the production and export of products, in which it has a comparative advantage. Exports of high technology products as a share of total exports in Poland has been increasing up to 5.9% of the total export but it is still far below the EU average equal to 15.6%. This



comparison indicates that the Polish economy does not have comparative advantage in high-tech sectors. Similarly, the share of employment in technology and knowledge-intensive sectors in total employment has been slightly increasing from 2.8% in 2005 to 2.9% in 2012, but it is low in comparison to 3.8% in the whole European Union.

# **1.2 International comparative analysis of the innovativeness of the economy in Poland**

One of the most important sources of information about the innovativeness of EU countries is the Innovation Union Scoreboard (IUS), which uses a Summary Innovation Index (SII) consisting of 24 indicators covering all three stages of the innovation process by classifying these indicators into three groups: enablers, firm activities, and outputs. Depending on the level of innovation in the economy, individual economies are classified into four groups: innovation leaders, innovation followers, moderate innovators, and modest innovators. In 2014, Poland with an SII of 0.279 (compared with the EU average of 0.554) was classified at the lowest position among moderate innovators, as shown in Figure 1.



#### Figure 1: EU Member States' innovation performance

Source: European Commission, Enterprise and Industry, Innovation Union Scoreboard 2014, European Union, Publications Office, Belgium 2014, p. 11.

The Summary Innovation Index (SII) is a summary index that includes various indicators of different aspects of the innovation process. A more detailed assessment of Poland's innovativeness against the background of the EU average can be made by analyzing individual SII indicators, which are presented in Figure 2.



# Figure 2: The values of individual indicators in Summary Innovation Index (SII) for Poland in relation to the EU27=100



Based on: European Commission, Enterprise and Industry, Innovation Union Scoreboard 2014, European Union, Publications Office, Belgium 2014, p. 63.



The data in Figure 2 show that Poland has a relative advantage in relation to the EU average in terms of the percentage of people with higher education in the 30-34 age group (109% of the EU average), and the percentage of those in the 20-24 age group who have at least a secondary-level education (112% of the EU average). The high values of these two indicators mean that Poland achieved the best results for the human resources dimension. This is important because more intense education and efforts to release social capital are crucial for innovation in Poland<sup>4</sup>. Poland's largest advantage over the EU average is noted for non-R&D innovation expenditure as a percentage of sales (182% of the EU average). This indicator includes investment in equipment and machinery and the acquisition of patents and licenses, which means that this indicator is a measure of the diffusion of new production technologies and ideas<sup>5</sup>. The high level of this measure reflects the nature of Poland's National Innovation System (NIS), which is classified among so-called catching-up NISs, which, in turn, are part of the bigger group of developing innovation systems. This system is largely based on technological imitation, and the absorption of knowledge and innovation from external sources—rather than reliance on the results of domestic R&D—is still the basis of innovation<sup>6</sup>. Although countries representing catching up innovation systems are characterized by below average innovative capacity in international rankings, in the last decade they are gaining momentum and catching up with global averages.

In conclusion, there are many barriers for innovation activities of firms, especially small and medium enterprises, in Poland, like lack of financial capital, low level of development of infrastructure for innovation and weak interactions between science and business. However, there is also growing potential for innovative undertakings, especially the high quality of human capital and entrepreneurial creativity. Different firms take advantage of increasing potential of the National Innovation System in Poland, successfully commercializing their ideas and launching new products to the market. One of the most interesting examples is RAVIMED Ltd., presented in the next subchapters.

# 2. General characteristics of the RAVIMED Ltd., Medical Devices Manufacturer

Medical Devices Manufacturer RAVIMED Ltd. was founded in 1991, when the company received its first permissions and certifications for its products. RAVIMED provides single use medical devices, medicinal products, individual anti-chemical protection sets, and laboratory services, in particular connected with testing innovative drugs. The list of products offered by this company is presented in Annex 1. It is worth to mention that RAVIMED is the sole manufacturer of the sets of containers for blood collection, storage, and preparation in Poland and Central Eastern Europe. It is located at 54 Polna Str., 05-119 Łajski, Poland (about 25 km north of Warsaw), as presented in map 1.





Map 1: Location of RAVIMED Ltd.

Source of the map: www.map-of-poland.co.uk/large-physical-poland-map.htm [accessed: 2014-05-19]

In 1991, RAVIMED started its operation in the Polish market, but today it is a highly internationalized company. The company has been exporting its products since the mid-1990s, starting its international expansion first to former Soviet Union countries, then to Middle East African countries and finally serving foreign markets all over the world. In 2014, RAVIMED employs about 100 people. Detailed information on employment and financial income of the company in previous years is presented in tables 3 and 4.

Table 3: Employment data for RA	<b>AVIMED</b> <i>Ltd. in</i> 2010-2013
---------------------------------	--

Year	Employment			
	Total	Women	Men	
2010	103	85	18	
2011	98	81	17	
2012	97	79	18	
2013	99	80	19	



Based on information received from RAVIMED Ltd.

#### Table 4: Financial data for RAVIMED Ltd. (in PLN) Image: state state

	2011	2012	2013
Net revenues from sales and equivalent	10 380 986,04	11 379 198,85	13 668 946,39
Other operating income	724 278,13	312 496,47	69 283,84
Financial income	270 952,63	15 911,53	12 264,83
Total	11 376 216,80	11 707 606,85	13 750 495,06

Based on information received from RAVIMED Ltd.

RAVIMED Ltd. has two buildings:

- production-office building of usable area of about 2,100 m2,
- production-storage building of usable area of about 970 m2.

Both buildings are suitable for the production of medical devices and pharmaceutical and laboratory work and research. Production takes place in areas with high air purity class in a controlled environment. The purified air at a constant temperature for the entire zone of manufacturing laboratory is supplied by highly efficient central air conditioning.

#### Map 2. Buildings of RAVIMED Ltd.





Source: Ravimed Ltd.

RAVIMED Ltd. is a member of the European Parliament of Enterprises (EPE) since 2010. The objective of EPE is to bring companies and Institutions face-to-face for one day, in order to enhance mutual understanding. It represents a unique opportunity for businesses to have a direct debate with high representatives of the EU institutions and to provide them with a direct bottom-up feedback on EU policies<sup>7</sup>.

RAVIMED Ltd. offers following groups of products:

1. Blood bags,

2. Toxic Warfare Agents (TWA) protection:

- IZAS-05 individual Set of auto-injectors
- IPP-95 individual decontamination set

3. Germicides:

- Cha-ha preparation for disinfection
- preparations basing on silver colloid
- 4. Laboratory service:
  - UE certified laboratory for pharmacokinetical tests

5. Diet supplements.

# 3. Innovation activity of the RAVIMED Ltd., Medical Devices Manufacturer

RAVIMED's long-standing experience and its modern scientific research laboratories are the base for the constant development and study of advanced products and medical technologies. Since 2010, there has been R&D department employing 13 people working simultaneously on several projects characterized by different degree of complexity. The company uses Intellectual Property Rights (IPR) to protect its inventions and currently possesses 7 patents.

Historically, the first type of products offered by RAVIMED were blood bags, which in the beginning of the 1990s were not used in Poland (bottles were used instead) and were known only as a product used by Western European and American blood centers. RAVIMED's introduction ofblood bags to the Polish market may therefore be treated as "new to the market" product innovation. As Mr. Roman Raszewski, the General Director of RAVIMED, points out:

"The key reason for the success of that product in the beginning of the 1990s was the fact that it was domestic product and customers wanted to support Polish companies, whereas quality issues played a secondary role at that time. RAVIMED started cooperation with suppliers of materials and components, which were located in Poland. In the begging, blood collection bags were produced with use of hand machines. Next years, step by step the quality of the products has been improved, which was also induced by competition with 5 big companies which entered on Polish market, mostly from the USA and Japan. Twice, RAVIMED was proposed to be taken



over by American and French firms, but the management took it as an information that the firm is developing in a good direction and rejected these offers, which were in fact quite lucrative from the financial point of view<sup>8</sup>".

There were ups and downs in the process of business development, for example in 1998 RAVIMED was badly affected by the financial crisis in Russia, which was especially painful for companies running activities deeply involved in post-Soviet Union countries, mainly Russia and Ukraine. This was taken as an impulse for diversification of product portfolio. In the second part of the 1990s, RAVIMED started cooperation with Polish Military Institutes and developed a special auto-injector that may be used by humans being exposed to the toxic chemical warfare agents, like soman, sarin and VX gases. It is a very unique product, which is offered by only 2 companies in the world. One of them is RAVIMED, which is an official NATO supplier and which supplies armies in different countries, for example Poland, the Netherlands, Czech Republic, Slovakia, Slovenia, the United Kingdom, and Australia. It also provides auto-injectors to the United Nations chemical weapons inspectors. According to Mr. Roman Raszewski, the General Director of RAVIMED, "the company now is not afraid of competing with any other firm in the world as it is sure that it offers the products that are of the best quality<sup>9</sup>".

RAVIMED has its own research laboratories:

- for pharmacokinetic studies,
- physico-chemical laboratory,
- microbiological laboratory,
- toxicological laboratory,
- mechanical engineering laboratory.

Some of the rooms are designed to test products and technological improvements and for the development of the principles of mass production of new products. All production, and R&D activity meets the requirements of ISO 9001:2009 PN\_EN and BS EN ISO 13485:2005 - Quality management systems – Requirements with extensions for Medical Devices Nr JM-2/4/2013.

All technologies used in RAVIMED were developed in house by the company itself. The company is fully equipped, with own laboratories specializing in chemical, toxicological and microbiological testing, as well as testing of different types of drugs offered in the European Union. In the innovation process in RAVIMED, the most important elements are:

1. searching and gathering information from the market, connected with customers' needs, new ideas, necessary modifications of the products or question and problems that need to be answered. This falls in line with user-driven innovation (UDI) and open innovation concepts,

2. development of ideas in the directions that the company itself foresees as potentially valuable,

3. analysis of competitors' market and R&D activities.

Innovating is a permanent process for RAVIMED and the company introduces 1-2 new products and 2-3 main modification of existing products each year. Because of the specificity of the market of medical devices, a the most difficult element in introducing new product to the market is certification as it must be proved that the product is totally safe for users, which is subject to many regulations. The process of certification is costly, which makes the financial barrier the most



important obstacle in innovation activity for RAVIMED. One of the most important sources to overcome this barrier is money from European Union funds. RAVIMED has participated in about 15 projects co-financed by European funds. In fact, this company took part in the first Polish project realized in the framework of EU programmes. This project was not very successful, mainly because of lack of knowledge on valuation of innovation at that time, but it was a great source of experience for the next projects.

According to Mr. Roman Raszewski, the General Director of RAVIMED:

"The positive aspect is that the rules connected with legal requirements for medical devices are similar in the European Union and the USA, and all other countries all over the world follow these rules. It means that if RAVIMED certifies its products in the European Union, usually they may be sold to all countries in the world market. However, the problem in Poland is insufficient knowledge of public administration dealing with certification process and biurocratic, and long-lasting procedures. It looks like Polish government does not believe that Poland may be a good place to innovate and to launch new, disruptive innovations to the market<sup>10</sup>."

- One of the most important element in RAVIMED's innovation strategy is its openness to cooperation and transparent policy towards its partners. It results in partnerships with many institutes and university departments in Poland and other European countries, like:
- Military Institute of Hygiene and Epidemiology (Poland, Warsaw),
- Military Institute of Chemistry and Radiology (Poland, Warsaw),
- Institute of Industrial Chemistry (Poland, Warsaw),
- Military Institute of Medicine (Poland, Warsaw),
- Military University of Technology (Poland, Warsaw),
- Technical University Wrocław Institute of Biomedical Engineering and Measurement,
- University of Life Sciences in Lublin, Microbiology Department,
- University of Warmia and Mazury, Olsztyn Pharmacology and Toxicology Department,
- Mossakowski Medical Research Centre Polish Academy of Sciences (Poland, Warsaw),
- Polish Cord Blood Bank S.A.,
- FamiCord Europe,
- Maria Skłodowska-Curie Oncology Institute Tissue engineering lab, Molecular oncology and translational department,
- Academy of Medical Sciences of Ukraine Institute of Blood Pathology and Transfusion Medicine – Lvov (Ukraine),
- Institute of Transplantation of Organs and Tissues, Academy of Medical Sciences Moscow (Russia) Institute of Hematology and Blood,
- Transfusion Minsk (Belarus).

RAVIMED performs tests as a subcontractor for some of the above mentioned partner organizations, in the framework of different scientific projects. The examples of projects developed in cooperation with scientific units, financed from external financial sources, are:



1. two projects financed by the State Committee for Scientific Research (KBN) before 2002:

- project in cooperation with Faculty of Environmental Engineering in the Warsaw University of Technology, project chaired by prof. dr hab. inż. Marek Nawalny,
- project in cooperation with the Medical University of Warsaw, project chaired by prof. dr hab. med. Wiesław Wiktor Jędrzejczak,
- project in cooperation with Military Institute of Chemistry and Radiometry in 2003,

2. project nr OR 00003605 realized in the framework of consortium in 2008/2010,

3. project nr OR 00004208 realized in the framework of consortium in 2009-2011.

From the other hand, the examples of projects developed in cooperation with scientific units, financed from RAVIMED's own financial sources, are:

1. project in cooperation with Industrial Chemistry Research Institute, resulting in Patent P-370 157;

2. project in cooperation with Chemical Division in the Technical University of Wrocław, 2007-2009,

3. project started in 2009 in cooperation with Industrial Chemistry Research Institute.

An important group of customers for RAVIMED is not only individual customers and firms, but Ministries of Health in different countries, as most of the products are sold by the public procurement system. Numerous awards and honours testify to Ravimed's efficient collaboration. The highest quality of production is confirmed by Quality Control Certificates ISO 9001, dealing with the requirements that organizations must fulfill, and ISO 13845, which requires a quality management system to demonstrate its ability to provide medical devices and related services that consistently meet customer requirements and regulatory requirements applicable to medical devices and related services. RAVIMED was the first Polish private, medical devices manufacturer using a CE mark indicating the compliance of a product with EU legislation, after being audited by a Dutch company KEMA. The high quality of the products is also verified by GOST certificates, which refer to a set of technical standards maintained by the Euro-Asian Council for Standardization, Metrology and Certification (EASC), a regional standards organization operating under the auspices of the Commonwealth of Independent States (CIS). In June 2003, RAVIMED received a Silver Medal awarded by the Academy of Polish Success for Production and Export of Quality Medical Equipment. In 1999, RAVIMED was also honored with the prestigious "Economic Award of the President of the Polish Republic" for the Best Small Business in Poland.

# 4. Example of innovation introduced by the RAVIMED Ltd.

One of the most important group of RAVIMED product innovations of are the RAVIMED container sets, which are designed for safe and effective blood collection, its further processing and storage. The simplicity of servicing combined with the highest quality of performance facilitates efficient work and optimal use of blood components. An extremely sharp needle was designed with the patient's comfort in mind. A broad selection of container configurations enable adjusting the sets for all the needs of the modern Blood Service. There are different types of container sets that are presented in the pictures:







3. triple sets:



### 4. quadrable sets:





5. cord blood bags:



Source: RAVIMED LTD.

One of RAVIMED's process innovations was to introduce improvements to its labeling system. In 2006, RAVIMED started cooperation with the global barcode, labelling and AIDC specialist SATO, to fulfill its demand for labels that meet the most rigorous requirements necessary for use in the medical equipment and healthcare industry. SATO is a global barcode and RFID technology company that focuses on data collection and label printing solutions. It focuses on retail, industrial, healthcare, transportation, logistics and government sectors. Solutions offered by SATO enable businesses to identify, track and manage people, products and assets<sup>11</sup>. Before choosing SATO, RAVIMED had experienced a number of issues with the labels provided by a previous supplier. Usually, these labels are used for blood bags that are designed to resist steam sterilization up to 120°C and freezing down to -140°C. The old labels were unable to sufficiently withstand these necessary pressures, becoming stiff and harder to read once they had been removed from freezer units. Another problem was also experienced with one label supplier whereby the paint from the labels was incompatible with the polyvinyl chloride (PVC) of the blood bags<sup>12</sup>.

In this situation, RAVIMED started cooperation with SATO, mainly due to the organization's extensive experience of producing high quality and versatile labels for the healthcare industry. After testing a number of materials, RAVIMED settled upon a synthetic paper and strong glue SE label. The SATO label was able to effectively withstand the necessary temperature changes experienced by blood bags yet still remain readable. Assured of the quality and capability of SATO's labels, RAVIMED moved to integrate the new labels across its whole range of blood bags. After the integration of SATO's labels into its production process, RAVIMED also successfully applied to have SATO included into its CE documentation as a long term supplier of labels<sup>13</sup>. The



data on the amount of SATO sales to RAVIMED is presented in table 5.

	-		
Year	Amount (PLN)		
2006	20 644,32		
2007	506 269,54		
2008	263 889,10		
2009	279 811,28		
2010	97 557,73		
2011	224 650,84		
2012	134 223,10		
2013	306 418,69		

#### Table 5: Sales amount of SATO to RAVIMES in 2006-2013

Based on: PREZI online presentation, http://prezi.com/4wy-6scxctgm/success-story/ [accessed: 2014-05-16]

The benefits associated with choosing SATO as its label supplier were stated by Mr Kamil Konon, Director of Marketing and Sales in RAVIMED:

"We are extremely pleased with level of service and the excellent labeling solution SATO has provided for our applications. SATO's product is without doubt the best performing labels on the market and despite being made of the highest grade materials they are very fairly priced. SATO understands our specific requirements and production needs perfectly, and has consistently helped us ensure a continuous quality of supply, improving our product immensely<sup>14</sup>".

From the other side, Mr Brian Lang SATO, International Europe's Managing Director, commented:

"The success RAVIMED has experienced since choosing to use our labels for its blood bags demonstrates SATO's strength and depth of experience in providing innovative and versatile barcode and labeling solutions to the healthcare industry. We want to continue aiding companies who manufacture medical equipment and supplies, and are on hand to provide high quality labels and printing solutions capable of meeting the most stringent criteria for a wide range of healthcare applications<sup>15</sup>".

## 5. Sources of RAVIMED's competitive advantages; entrepreneur's advice to other firms how to be innovative

An important element in RAVIMED's strategy is being careful and strictly following all regulations, even if it is connected with some delays in launching new products to the market. The benefit from that is good reputation as reliable, trustworthy and responsible organization. Another important factor contributing to the success of RAVIMED is its internal culture of work. As Mr. Roman Raszewski, the General Director of RAVIMED, points out:



"There is trust in the relations with all employees, who share similar values as the management and are dedicated to maintain the highest quality standards of production. It is important for the management to let the people understand the idea of their work and to creatively contribute to what they are doing.<sup>16</sup>"

In some cases employees are the source of new ideas for product, process or organizational innovations. Of course, in the sector of medical devices any modification cannot be introduced by a single person, as it is subject to strict safety regulations. There is high stress on efficient exchange of information and knowledge in the company. A helpful tool in that process is special platform of communication, through which all decisions and information is quickly shared between different firm's levels and units.

According to the founder of RAVIMED, Mr Wiesław Raszewski, who introduced the reasons of the company' success during 1st European SMEs Week in 2009, what has helped most was *"goodwill, support and tolerance of the family"*, whereas the best thing about being an entrepreneur is *"mobilizing responsibility, having the feeling of independence, and the opportunities available for self-development without limits.*<sup>17</sup>"

He explains the inspiration to start up a business: *"I have always been interested in scientific research and putting results into practice. Due to the political and economic crisis in Poland in 1989, science stopped developing and opportunities for introducing new scientific research decreased. I was very familiar with the needs of the Polish Health Service and was already a specialist in toxicology and pharmacology. I started my business from scratch. I chose the area of PVC blood collection bags, mainly because they were offered only by Japanese and US companies.<sup>18</sup>"* 

Therefore, Mr Wiesław Raszewski explains the role model for starting up a business in the following words:

"I had no particular role model. I was strongly convinced that my inner nature, patience, ability to relate to other people and knowledge, combined with the support of all my family, would help me at the beginning of this business, which itself was also a natural extension of my previous medical and pharmaceutical interests.<sup>19</sup>"

The biggest challenge for RAVIMED so far was:

"Fighting with red tape and continually developing new products and services. We started with one medical device product: the PVC blood collection bag. Today we have five main fields of activity: medical devices, medicinal products, military auto injectors and decontamination kits, laboratory services, and research and development. All our products are developed and manufactured at RAVIMED.<sup>20</sup>"

Finally, Mr Wiesław Raszewski gives following advice for those considering starting a business:

"Be patient and aware of the consequences in your work. Treat people with respect and be transparent in all activities. Don't give up if you fail, don't fall into the trap of self-satisfaction, invest in development, and count every cent.<sup>21</sup>"



# 6. Prospects for future

The most important element in future competition in the market will be still the quality of the products. That is why it is the most important element of RAVIMED's long-term strategy. All the new products and technology will follow strict regulations, both internal and imposed by the public administration. RAVIMED hopes to contribute to early detection and treatment of diseases, taking care of the protection of the environment.

# 7. Learning outcomes and advice for entrepreneurs

1. The company is deeply rooted in the national innovation system and should build its innovation strategy on the strengths of that system, strongly trying to overcome the barriers for innovation activity existing in the country of location.

2. Building on the previous professional experiences of the company management, finding new markets and investment in R&D profit in new to the market product innovations, which are the sources of firms' competitive advantage on the market.

3. Important elements in the innovation process of the company are:

- searching and gathering information from the market, connected with customers' needs, new ideas, necessary modifications of the products or questions and problems that need to be answered, as explained by the concept of user driven innovation (UDI),
- development of ideas in the directions that the company itself foresees as potentially valuable,
- analysis of competitors' market and R&D activities.

4. Being careful and strictly following all regulations, even if it is connected with some delays in launching new products to the market, results in good reputation as reliable, trustworthy and responsible organization.

5. It is important to develop innovation-friendly organizational culture of an enterprise, including:

- trust in the relations with all employees sharing similar values as the management, so that
  people creatively contribute to the operations of an enterprise and are strongly dedicated
  to maintain the highest quality standards of production,
- treating employees as the potentially valuable sources of new ideas for product, process, marketing or organizational innovations,
- building system for efficient exchange of information and knowledge in the company, using for example special platform of communication, through which all decisions and information is quickly shared between different levels and organizational units of an enterprise.

<sup>1</sup>A.M. Kowalski, B. Michorowska, Innovativeness: Basic Definitions and Economic Interpretation. Methods for measuring innovation, in: M.A. Weresa (ed.), Innovation, Human Capital and Trade Competitiveness. How are They Connected and Why Do They Matter?, Springer, Washington, D.C. 2014, pp. 73-78.

<sup>2</sup>M.A. Weresa, Wpływ handle zagranicznego i bezpośrednich inwestycji zagranicznych na



innowacyjność polskiej gospodarki, SGH, Warszawa 2002, p. 14.

<sup>3</sup>M.A. Weresa, Systemy innowacyjne we współczesnej gospodarce światowej, Wyd. Naukowe PWN, Warszawa 2012, p. 32.

<sup>4</sup>T. Baczko, E. Krzywina, Application of knowledge-based economy as means to decrease Poland's development distance, "Studia Ekonomiczne", No 1-2, 2008, s. 81-89.

<sup>5</sup>H. Hollanders, S. Tarantola, Innovation Union Scoreboard 2010 – Methodology report, INNO Metrics 2011-2012 report, European Commission, DG Enterprise, Brussels 2011, p. 9.

<sup>6</sup>M.A. Weresa, Systemy innowacyjne we współczesnej gospodarce światowej, Wyd. Naukowe PWN, Warszawa 2012, p. 46.

<sup>7</sup>Website of the European Parliament of Enterprises (EPE), http://www.parliament-ofenterprises.eu/[accessed: 2014-04-13]

<sup>8</sup>Interwiew with Mr. Roman Raszewski, the General Director of RAVIMED, conducted by dr Małgorzata Lewandowska from the Warsaw School of Economics when preparing teaching materials for the "Ideas to Market" e-course in the framework of SLIM project.

<sup>9</sup> Ibidem.

<sup>10</sup>Interwiew with Mr. Roman Raszewski, the General Director of RAVIMED, conducted by Dr Małgorzata Lewandowska from the Warsaw School of Economics when preparing teaching materials for the "Ideas to Market" e-course in the framework of SLIM project.

<sup>11</sup>Website of SATO, http://www.satoeurope.com/[accessed: 2014-05-10]

<sup>12</sup>Website of PROLOG (Press Release Distribution), http://www.prlog.org/11546545-sato-in-poland-helps-ravimed-meet-the-highest-standard-in-medical-labelling.html [accessed: 2014-05-11]

<sup>13</sup>Website of Hospital Pharmacy Europe, http://www.hospitalpharmacyeurope.com/latestnews/european-medical-equipment-producer-upates-labelling-system [accessed: 2014-05-13]

<sup>14</sup>Website of PROLOG (Press Release Distribution), http://www.prlog.org/11546545-sato-in-poland-helps-ravimed-meet-the-highest-standard-in-medical-labelling.html [accessed: 2014-05-07]

<sup>15</sup>Website of Hospital Pharmacy Europe, http://www.hospitalpharmacyeurope.com/latestnews/european-medical-equipment-producer-upates-labelling-system [accessed: 2014-05-07]

<sup>16</sup>Interwiew with Mr. Roman Raszewski, the General Director of RAVIMED, conducted by dr Małgorzata Lewandowska from the Warsaw School of Economics when preparing teaching materials for the "Ideas to Market" e-course in the framework of SLIM project.

<sup>17</sup>European Commission Enterprise and Industry, The secret of success. Tips from European entrepreneurs, 1st European SMEs Week '09, Small Business, Big Ideas, Office for Official Publications of the European Communities, Luxembourg 2009, p.48-49.

<sup>18</sup> Ibidem.

<sup>19</sup>Ibidem.

<sup>20</sup> Ibidem.

<sup>21</sup> Ibidem.



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### Annex 1. Types of sets for blood collection, storage and preparation.

- 1. Container with 4% Sodium Citrate in 0,9% Sodium Chloride (150-600) ml
- 2. Container with 4 % Sodium Citrate solution (250-500) ml
- 3. Container with 12 % Sodium Chloride solution 50 ml
- 4. Container with 0,9 % Sodium Chloride solution (pH 7,0) 500 ml
- 5. Container with blood preservation solution with high glycerol concentration 400 ml
- 6. Container with blood preservation solution with low glycerol concentration 400 ml
- 7. Container with 3,5 % Sodium Chloride solution 300 ml
- 8. Container with 1,6 % Sodium Chloride solution 300 ml
- 9. Container with 46,7 % Sodium Citrate solution 50 ml
- 10. Container with 14,7 % Sodium Citrate solution 1000 ml
- 11. Container with ACD(A) solution (150-1000) ml


12. Single set with CPDA-1 or CPD (150-600) ml

13. Single transfer set with leukocyte reduction filter (150-600) ml

14. Double set with CPDA-1 or CPD (150-600)/(150-600) ml

15. Type "A" set for cord blood collection with CPDA-1 or CPD

16. Triple set with CPDA-1 or CPD (150-600)/(150-600)/(150-600) ml

17. Triple set with CPDA-1 or CPD with leukocyte reduction filter (150-600)/(150-600) ml

18. Triple set with CPDA-1 or CPD with platelet storage container (150-600)/(150-600) /(150-600) ml

19. Triple set with CPDA-1 or CPD with platelet storage container and leukocyte reduction filter (150-600)/

20. Triple set with CPD-SAGM (150-600)/(150-600)/(150-600) ml

21. Triple set with CPD-SAGM with leukocyte reduction filter (150-600)/(150-600)/(150-600)ml

22. Triple set with CPD-SAGM with platelet storage container (150-600)/(150-600)/(150-600)ml

23. Triple set with CPD-SAGM with platelet storage container and leukocyte reduction filter (150-600)/(150-600)ml

24. Triple Top-Bottom set with CPD-SAGM (150-600)/(150-600)/(150-600)ml

25. Triple Top-Bottom set with CPD-SAGM with platelet storage container (150-600)/(150-600)/(150-600)ml

26. Triple Top-Bottom set with CPD-SAGM with leukocyte reduction filter (150-600)/(150-600)/(150-600)ml

27. Triple Top-Bottom set with CPD-SAGM with platelet storage container and leukocyte reduction filter (150-

28. Quadruple set with CPDA-1 or CPD (150-600)/(150-600)/(150-600)/(150-600)ml

29. Quadruple set with CPDA-1 or CPD with platelet storage container (150-600)/(150-600)/(150-600)/(150-600)ml

30. Quadruple set with CPDA-1 or CPD with leukocyte reduction filter (150-600)/(150-600)/(150-600)/(150-600)ml

31. Quadruple set with CPDA-1 or CPD with platelet storage container and leukocyte reduction filter (150-600)/(150-600)/(150-600)/(150-600)ml

32. Quadruple set with CPD-SAGM (150-600)/(150-600)/(150-600)/(150-600)ml

33. Quadruple set with CPD-SAGM with platelet storage container (150-600)/(150-600)/(150-600)/(150-600)ml

34. Quadruple set with CPD-SAGM with leukocyte reduction filter (150-600)/(150-600)/(150-600)/(150-600)ml

35. Quadruple set with CPD-SAGM with platelet storage container and leukocyte reduction filter (150-600)/(150-600)/(150-600)/(150-600)ml

36. Quintuple set with CPDA-1 or CPD (150-600)/(150-600)/(150-600)/(150-600)/(150-600)/

37. Quintuple set with CPDA-1 or CPD with platelet storage container (150-600)/(150-60

38. Quintuple set with CPDA-1 or CPD with leukocyte reduction filter (150-600)/(150-60

39. Quintuple set with CPDA-1 or CPD with platelet storage container and leukocyte reduction filter (150-600)/(150-6

40. Quintuple set with CDP-SAGM (150-600)/(150

41. Quintuple set with CPD-SAGM with platelet storage container (150-600)/(1

42. Quintuple set with CPD-SAGM with leukocyte reduction filter (150-600)/(150-600)/(150-600)/(150-600)ml

43. Quintuple set with CPD-SAGM with platelet storage container and leukocyte reduction filter (150-600)/(150-600)/(150-600)/(150-600)/(150-600)ml



44. Sextuple set with CPDA-1 or CPD (150-600)/

45. Sextuple set with CPDA-1 or CPD with platelet storage container (150-600)/(150-600

46. Sextuple set with CPDA-1 or CPD with leukocyte reduction filter (150-600)/(150-600

47. Sextuple set with CPDA-1 or CPD with platelet storage container and leukocyte reduction filter (150-600)/(150-60

48. Sextuple set with CPD-SAGM (150-600)/(150-

49. Sextuple set with CPD-SAGM with platelet storage container (150-600)/(15

50. Sextuple set with CPD-SAGM with leukocyte reduction filter (150-600)/(10

51. Sextuple set with CPD-SAGM with platelet storage container and leukocyte reduction filter (150-600)/(1

52. Septuple set with CPDA-1 or CPD (150-600)/

53. Septuple set with CPDA-1 or CPD with platelet storage container (150-600)/(150-600

54. Septuple set with CPDA-1 or CPD with leukocyte reduction filter (150-600)/(150-600

55. Septuple set with CPDA-1 or CPD with platelet storage container and leukocyte reduction filter(150-600)/(150-600

56. Septuple set with CPD-SAGM (150-600)/(150-

57. Septuple set with CPD-SAGM with platelet storage container (150-600)/(10

58. Septuple set with CPD-SAGM with leukocyte reduction filter (150-600)/(10

59. Septuple set with CPD-SAGM with platelet storage container and leukocyte reduction filter(150-600)/(15

60. Double plasmapheresis set with CPD (150-600)/(150-600)/(150-600)/(150-600)ml

- 61. Transfer bags set (50-1000) ml
- 62. Transfer bags set (50-1000) ml for platelet storage
- 63. Double transfer bags set (150-600)/(150-600)ml
- 64. Triple transfer bags set(150-600)/(150-600)/(150-600) ml
- 65. Quadruple transfer bags set(150-600)/(150-600)/(150-600)/(150-600)ml
- 66. Quintuple transfer bags set (150-600)/(150

67. Quadruple set with CPD-SAGM with separation chamber and leukocyte reduction filter (150-600)/(150-600)/(150-600)ml

68. Double set with K3EDTA (150-600)/(150-600) ml

Based on information received from RAVIMED Ltd.

The case study on RAVIMED Ltd. is mostly based on the book chapter quoting Mr Wiesław Raszewski, founder of RAVIMED, interviews with Mr. Roman Raszewski, the General Director of RAVIMED, and information from the website of the company, http://ravimed.com.pl. The authors would like to thank the representatives of RAVIMED for their help, time and contribution to this case study.





# No oil surfin' for Surf'n'Fries: Oil-free fries conquering the global markets, Croatia

This case study was authored by Nataša Jakominić Marot, Ivana Klarin and Maja Skočanić, University of Rijeka



## Summary

This case study aims to present the successful story of the brand Surf'n'Fries developed by the company Mare Altum Ltd, based in Rijeka, Croatia. The concept of the brand is built around specialised shops offering high-quality French fries. The company has built an innovative business model, exploring a unique method of production and packaging for French fries, with a protected visual identity.

The company's two owners began their journey in 2008, when they established their first brand Surf'n'Fries, protecting the French fries packaging and continued their journey with Surf'n'Fries franchises in both Croatia and internationally. They have used professional legal support for the management of their innovative product. Altogether, the company's innovations are interlinked into Surf'n'Fries fries production, serving and packaging. The brand owes its uniqueness to the three innovations developed either within the company or in partnership with other specialised companies. The curved shape is given to French fry by using a specially designed knife, patented by one of the companies partners. It's unique shape allows for optimal frying and achieves the best taste for every single piece of potato.

Secondly, cut potatoes are fried oil-free in a specially designed oven, which circulates hot air, instead of deep-frying in hot oil. This process gives healthier fries without compromising on taste. The company's Swedish partner protected their specialised oven, which was developed jointly between the two organisations.

The third innovation of this brand is a specially designed multi-functional packaging, protected by the company itself, which allows the customer to hold French fries, 2 dips and a cup at the same time with a single hand, leaving the other hand free.

Surf'n'Fries success is based on enthusiasm, partnership along the supply chain and an innovative business model for a very common side dish, French fries.

## Learning outcomes

After reading the Surf'n'Fries case study, entrepreneurs will:

- understand the Croatian innovation context and potential barriers for the firm's innovation activities;
- be aware of the importance of innovating their businesses;
- be aware of the different, especially non-obvious, types of innovation, such as, e.g. organizational innovation;
- understand the benefits of innovation for strengthening the firm's position on domestic and foreign markets where it is already present;
- understand the benefits of innovation for accessing new markets;
- understand the importance of Intellectual Property Rights (IPR) protection.



## **Business context - Croatia**

In 2010, the contribution of the SME segment (including micro enterprises) to Croatian GDP was 51.6% and the share in employment 66.6% (Singer & Alpeza, 2011). The share of SMEs in Croatia is 99.5%, while large companies have a share of 0.5% in the total number of companies in Croatia. In the decade between 2001 and 2010, the number of SMEs increased by 71%, while the number of large companies diminished by 34% (Singer & Alpeza, 2011, p. 13). For this reason, in the same period, the number of employees in SMEs grew by 68%, while for the large enterprises it dropped by 21.6% (Singer & Alpeza, 2011, p. 15).

The Croatian Financial Agency (FINA) reports that on 31 December 2012, there were 96,774 companies in Croatia and out of that 12,410 were were exporters (12.8%) (FINA, 2012). When we look at the distributions of companies by size 92,501 were micro enterprises, 3,931 small- and mid-sized and 397 were large companies. In terms of exports, 10.9% of micro enterprises exported, 53.31% small and mid-sized and 55.41% large companies. In terms of export income, the share of micro enterprises in the total income from export was 9.6%, mid- and small sized 37.8% and for large companies 52.6%.

In other words, 95.6% of all Croatian companies earned only 9.6% of the total export income (Jakominić Marot, 2013).

## Mare Altum Ltd Rijeka and its brands

The company Mare Altum Ltd Rijeka was founded in 2008 in Rijeka, Croatia, by two friends and business partners. Andrija Čolak and Denis Polić, are the sole owners of the company, which operates in the restaurant sector, preparing and serving food.



Picture 1: Andrija Čolak and Denis Polić, owners of the company Mare Altum Ltd Rijeka

The company Mare Altum Ltd Rijeka developed the brand Surf'n'Fries which immediately became the fastest-growing Croatian franchise. Besides Surf'n'Fries, the company created another brand – Chill frozen yoghurt (Figure 1)





#### Figure1: Mare Altum brands

The Surf'n'Fries brand owes its uniqueness to several innovations (Čolak, 2014):

1. The shape of fries achieved by the specially designed knife,

2. Oil-free preparation method achieved by the specially designed oven which circulates hot air instead of oil,

3. Specially designed multi-functional packaging which allows holding French fries, 2 dips and a cup at the same time with a single hand.

Why and how the firm was founded is best explained by the company's two owners and founders:

"After years of experience in another industry, we decided to try something completely different. We remembered that once there was a place specialising in French fries which used to be very popular for generations of citizens."

"We came up with the idea of starting a chain of French fries bars. We knew of a chain in Canada called New York Fries, we sat on a plane to check how it worked. During that trip, we continued to the USA and tried out numerous French fries places and made up our idea of what we wanted or didn't want. We found the inspiration for our bar in New York, while the red and white tiles were inspired by original California diners from the 50's and hibiscus flowers from surfers' restaurants in Hawaii. Our designer put all the different parts together and created our visual identity."

"The name Surf'n'Fries may be confusing because what has surf got to do with French fries?! However, there is a logical rationale behind the name. We're both big surfing fans, in particular windsurf and kitesurf, and we spend most of our free time at sea."

"Because of our great passion for these sports and related lifestyle, we wanted to share the same feeling in our new business. The idea was to convey the feeling of freedom you experience while surfing through our visual identity and all other segments of business abiding to surf culture. We just wanted to bring surfing to the cities, to our place where people would come to feel good and get something delicious to eat." (translated from Bika official website, 2014)

First Surf'n'Fries shop opened in February 2009 in Rijeka and in December 2009 their first franchise opened in Zagreb. Since then, they have opened 40 stores worldwide, making Surf'n'Fries international brand.

The initial investment in the Surf'n'Fries project was around 300.000 EUR, while yearly turn-over



now reaches almost 4mEUR, with an incredible increase rate of several hundred percent per year. Surf'n'Fries is mainly financed from Mare Altum's own sources; they have never used loans to finance the franchise.

The total yearly turnover of the entire Surf'n'Fries network was around 30 million HRK in 2012 (Poslovni dnevnik, 2012) with constant increase. Compared to the first year, the sales have grown by 685 percent by mid 2013 (Transcriptvids, 2013). Figure 2 shows the company's steep profit increase in the period 2008-2011.



*Figure 2: Mare Altum Ltd profits increase, 2007-2011, in Millions HRK* Source: adapted from (Fininfo, 2014)

Mare Altum company's yearly profit is around 100 thousand HRK, most of which is invested back into the business (Transcriptvids, 2013).

#### The company's organisational structure around the Surf'n'Fries brand

The company has three employees in total, two owners and an administrator. Its business and growth are based on a particular franchising model which outsources most tasks. Basically, everything is outsourced, from the production of innovative packaging to potato delivery. The company relies on a network of well-planned and structured partnerships with franchisees and suppliers. Indirectly, the company employs over 200 people. In 2014, 40 Surf'n'Fries shops can be found in 7 European countries.

The company ensured quality partnerships with one of the biggest food producers in Croatia and used their network for the entire production-to-table cycle. Potato distribution from the place of production to the Surf'n'Fries shops is done using the distribution channels of one of the biggest regional food producer, Podravka. Procurement and distribution of chicken is done by another big regional company, Vindija. Such arrangements are mutually beneficial for both parties. The producer-distribution company benefits from the economies of scale and has a new source of income from their already existing distribution it performs for own needs. Surf'n'Fries network benefits from this partnership because it uses the existing production and distribution capacities of partners to lower its costs and minimise the organizational efforts for related processes.



The company itself owns only one Surf'n'Fries shop in Rijeka, while all others are based on franchising including micro-franchising for mobile Surf'n'Fries shops, all over the Croatian coastline, including one in Ljubljana with 3 additional to be opened in Montenegro soon. The first shop was opened in early 2009. By 2010 there were 20 franchises, 36 by 2012 located in 12 Croatian cities, including Ljubljana (Slovenia), Sarajevo and Mostar (Bosnia and Hercegovina) (Rak Šajn, 2012).



#### Figure 3: Surf'n'Fries shops in Europe

According to Mare Altum Ltd Rijeka data, McDonald's saw a decrease of 70% in fries sales while Surf'n'Fries rapidly grew (Čolak, 2014). In the first year, they sold an average of 1000 servings a day. It is a huge number given that the city of Rijeka where the first bar was opened has approximately 180.000 inhabitants together with the surroundings. Today, the network produces over 2.5 million servings of fries made out of 500 tons of potato per year (Transcriptvids, 2013). They originally had the plan to be an in-house company, i.e. to own their shops. Due to a large interest in the Surf'n'Fries shop in the first few months, the decision was made to proceed with commercialisation via franchising.

#### Market position of the Surf'n'Fries brand

The brand operates in the quick service restaurant (QSR) industry. Their primary competitors are almost non-existent as there are no specialised French fries brands. Their secondary competitors are McDonald's, Burger King and local fast food restaurants, while their tertiary competitors are pastry and other similar service places. The position of their products in the growth-share matrix or the BCG matrix helps understand the basis for the brand's growth. The BCG matrix was developed by the Boston Consulting Group and is often used as a tool to analyse the market position of both a company and its products. The matrix is divided in to four categories to analyse and plan a balanced product portfolio: cash cows, dogs, stars and question marks, depending on



the market share and market growth potential of a specific product. Figure 4 gives the BCG matrix for the most important products under the Surf'n'Fries brand. Figure 4 gives the BCG matrix for the most important products under the Surf'n'Fries brand.



## *Figure 4: BCG Matrix for the Surf'n'Fries brand* Source: Authors

The brand's *cash cow* product is the Surf'n'Fries dish. The company constantly proposes new cash cows, with the starts (the new limited time offer products) becoming cash cows if successful, while the others turn into dogs.

Surf'n'Fries franchise is one of most famous and fastest growing Croatian franchises (Erceg & Čičić, 2013). The history of franchising in Croatia starts with Diners Club International in 1969, continues with world's and national franchise mostly in the fields of fashion, confectionery production, hospitality and fast food. Today there are over 170 franchises in Croatia, 35 out of which are Croatian franchisers. shows franchising share by sectors in Croatia in 2013.





#### *Figure 5: Franchising share by sectors in Croatia in 2013, in percentage* Source: (Erceg & Čičić, 2013)

The Surf'n'Fries brand falls within the 14% of franchising share related to the Food industry.

While conducting their global market research, the founders realised that quick service restaurants and fast food sector already had established market leaders e.g. Kentucky Fried Chicken for fried chicken, Pizza Hut for pizza, McDonald's for hamburgers. These fast food brands all offered the same side dish of French fries, but there was no market leader specialising in fries' production. This was despite French fries being an established product throughout the sector. This was why Surf'n'Fries decided to specialise on this particular product, and pursue this niche market.





#### Figure 6: Surf'n'Fries positioning matrix

Surf'n'Fries brand strives to become a global leader in the French fries market, tackling the trends and health issues often associated with fast food production and consumption. The brand only uses organic potatoes, while fries are prepared using the Light fry cooking process without oil, using only hot air. This drastically reduces the fat content, makes oven cleaning easier and reduces the environmental impact of a portion of fries in comparison with the standard deep-frying production process.

#### Surf'n'Fries business model

The brand network is increased using two major franchising options, micro franchising and master franchise for specific countries. The company commercialises its mobile shops offering micro franchising to potential franchisees. Entrance into new markets is conditional on master franchise covering the whole country.

For countries currently not covered by master franchise, it is possible to request one. The terms and conditions related to Surf'n'Fries master franchise are (Surf'n'Fries Media Kit, 2014):

- Payment of Entry fee
- Royalty fee of 5% of the total price of a French fries portion (integrated into packaging price)



- Franchisee's obligation to launch a minimum of 10 stores in 5 years in prime locations (20.000 people/day)
- Minimum mandatory sale of 350 portions daily
- Minimum price per portion of 2 EUR for a big portion.

Companies interested in the franchise pay an initial fee after which their payment is linked to the obligation to purchase Surf'n'Fries branded packaging. Franchisees pay 5% of the serving price when ordering the packaging, as opposed to paying the royalties (percentage of the sales revenue), which is most common in franchising. By doing this, Mare Altum Ltd Rijeka ensures that their franchisees do not report false sales revenues and ensure equal standards in all stores, while the franchisees find the arrangement favourable because they do not have to deal with packaging purchase, which would be more expensive. The company never had any problem with selling franchises and have never been the ones to approach possible franchisees first. The interested businesses always approached them (Čolak, 2014). The success of the Surf'n'Fries franchises is as high as 70-80% (Čolak, 2014).

The quality of the franchise network is primarily maintained and assessed by mystery shopping, organised by the franchisor, which they consider to be the only effective and reliable method of assessment.

#### The brand's marketing strategy

Mare Altum Ltd Rijeka does not invest in classic advertising through newspapers, TV or radio, instead they introduced marketing innovation in their business. When opening their first Surf'n'Fries shop in Rijeka they used direct marketing, distributing flyers throughout the city centre, which entitiled the holder to two servings for the price one. The offer was valid only for a period stated. Franchisees can do their own marketing and Mare Altum take cares of the marketing for the whole brand, but not in specific locations. The company believes in trademark marketing because somebody else talking about the brand brings different credibility than when you yourself are talking about your product. They base their marketing on quality of ingredients and innovation in potato cuts, fries production method and sauces.

The company focuses on increasing their presence in social media, aiming to significantly increase their activity on Facebook and on on LinkedIn, where they publish brain games for their followers and in turn award prizes as a way of brand promotion.

The company likes to be considered as a socially responsible one through its use of top quality potatoes and oil, without trans fats as well as by achieving quality certificates, such as HAACP and HALAL. This is emphasized in their Media Kit (2014).

## Types of innovation and Intellectual Property Rights related to the brand

Surf'n'Fries is a franchise in French fries which started its innovation path from innovative modular packaging, first for fries and sauces only, then for soft drinks and finally for wings or nuggets. The company mainly aims for product innovation even though the company's success comes from a combination of mainly product innovation and organisational innovation. The company also introduced marketing innovation, as described in subsection on the brand's marketing strategy.



As already detailed, striving to reach product innovation has led to a new oil-free frying technology developed in cooperation with their Swedish partner and the new potato-cutting knife developed by another partner company. The company's business model presents organisational innovation as well. In terms of novelty, their innovation cannot be considered a radical innovation with fries being one of the most popular side dishes across the globe, but it is a typical example of incremental innovation which still offers great chances for an entrepreneurial venture.

The company's development of the Surf'n'Fries product led to other innovations which have not been mentioned in previous chapters because they are not covered by any form of intellectual property rights protection. The first one is mobile Surf'n'Fries shops which have been developed bearing in mind very important restrictions and requirements in which mobile shops need to work. These include sanitary conditions; salty sea water which may cause corrosion of internal and external surfaces; restricted space available for food storage and preparation as well as cleaning and maintenance of the shop itself; a lot of electricity required mainly for operating the oven, etc.

Secondly, they considered protecting the sauces created especially for their fries, e.g. the chocolate sauce.

However, the company has decided against the option of IPR protection for these innovations as both mobile shops and sauces can easily be copied even when covered by IP protection and pursuing the owners' rights would be too costly.

Mare Altum Ltd Rijeka developed the Surf'n'Fries brand presenting shop and mobile units for production and serving of their unique French fries. Surf'n'Fries holds copyrights on packaging which has entered the world's finals at Pro Carton competition in Vienna in 2008 and is presented in ArtPower book as one of the world's most innovative food package solutions (Alibaba.com Official Website, 2014). Photos of a Surf'n'Fries shop, mobile unit and packaging are given below.



Picture 2: Surf'n'Fries shop, packaging and mobile unit

The company's two owners protected the brand identity by trademark and packaging as industrial design by copyright. The packaging was protected with experts' support within a cross-border cooperation project named FROM IP TO BUSINESS: Developing environment for start-up companies -FIDES (Business Innovation Agency of Croatia, 2013). As their popularity grew, they faced many forms of Intellectual Property (IP) infringement but have, so far, been able to address them before having to pursue legal action.

In its development of the Surf'n'Fries product, Mare Altum company induced innovation within many of their partnering companies. One of the two most obvious examples is the potato producer which invented and later protected the shape of the knife used to cut potatoes into a specific shape.

The second example is of a Swedish oven producing company. After initial growth in sales and volume, Mare Altum company tried to source a technology which would help them differentiate from other fries offered on global markets. They were approached by a Swedish company which was developing an oil-free frying technology called Lightfry. Working together in fine-tuning the technology, they managed to perfect it. The process of fine-tuning the specialised oven lasted for a year. One oven produces a maximum of 9 portions of fries in 8 minutes, a lower number of portions requires less preparation time.



#### Picture3: Oil-free oven

The Surf'n'Fries shop in Rijeka now has 2 ovens, each working at 250°C. The price of fries per service is the same, but the profitability has increased (previously they spent 0.35 kn/0.05 EUR

per portion on oil). The self-cleaning function is integrated in the oven. Surf'n'Fries has the first mover advantage and will start introducing oil-free ovens throughout their entire chain.

Figure 7 below presents the advantages of Lightfry cooking process.



 When you use Lightfry you avoid many of the safety problems involved with the traditional deep fat fryer. Take, for example, the risk of burn injuries and fire. You are also spared unnecessary fryer vapour for staff and customers.



 A kitchen with Lightfry is easier to manage. Actual food preparation requires minimal effort by staff, while an automated integrated cleaning program keeps the oven clean. Moreover, less time is required for cleaning the coating left by grease vapour in your kitchen and in the kitchen extract ducts of the ventilation system.



 French fries boost sales and margins. For a long time, however, they have involved major investment and expense. Lightfry enables you to avoid several of these expenses. You are spared from having to purchase oil, dispose of used oil, and handling oil. You'll have no need to install sophisticated kitchen ventilation, as the air will no longer be full of deep fryer vapours. Nor will you need a fat separator when you use Lightfry.



 French fries prepared in Lightfry have the same crispiness, and the same texture, but more of the delicious potato flavour. You are spared the offputting taste of cooling fryer oil.



 Lightfry cooking process takes place without fryer oil. It results in equally delicious chicken nuggets, chilli cheese, french fries, mozzarella sticks, onion rings, and other finger food – now healthier with a much lower fat content.



 Major natural resources are required to produce fryer oil. A dilemma and an expense we help you to avoid in that no oil is used in the preparation. It is also more energy efficient, as we use a closed oven system – instead of an oil bath that has to be kept hot.

#### Figure 7: Advantages of Lightfry process

Source: adapted from Surf'n'Fries Media Kit, 2014

### Barriers to innovation and prospects for the future

Currently, one of the main barriers to the company's development is the lack of capital for entering other large markets (e.g. USA) because the company has almost reached its maximum potential with currently available funds.

They tried to approach Venture Capital and Private Equity funds in the USA. However, the company only possessed two out of the three things such funds are looking for: a proven track record (5 years high growth) and a trademark but they did not have the third one, a secret ingredient. Now they do, it is oil-free French fries which are equally tasty and thus aim at the same markets as the traditional fries.

Recently, they embarked on a joint venture in the USA in their effort of trying to gain this large market as well, gaining market share in the USA market being one of the company's big challenges for the future.

## Industrial design as one of the innovations introduced by the firm within the last 3 years

This innovation is related to product innovation and concerns the company's innovative packaging for fries. They spent approximately half a year working on the packaging design, collecting design proposals from all over the world. In the end, they selected Infografika, a company located in Istria, very close to the company's base. The packaging was made in the image of newspaper cones in which they used to serve French fries in a shop in Rijeka, in the 80's. The packaging was first made to only hold fries and two sauces, but then a cup holder was added and finally an add-on for chicken was designed.

The packaging was protected with experts' support within a cross-border cooperation project, From IP to Business: Developing environment for start-up companies (FIDES). The company used the project to achieve:

- protection of verbal or figurative Surf'n'Fries trademark and three-dimensional packaging trademark. Research of databases to determine the existence of earlier trade marks.
- protection of Surf'n'Fries and packaging trademarks for the Gulf Cooperation Council countries
- preparation of notice on protected packaging design
- enforcement support in packaging design protection

The packaging was protected for Croatia and Europe, while the protection for USA and Canada is currently in progress.

The packaging is presented in Picture 4.



Picture 4: Surf'n'Fries packaging

## Lessons learned

The road to brand development was not without obstacles and mistakes. At the beginning, they attempted to develop a partnership programme in smaller towns where they tried to establish partnerships with existing fast food restaurants. However, this idea was a failure because the restaurants did not respect the franchise rules, and in most cases, the quality level and turnover were not at the expected level.

In Turkey, they started a joint venture with a Turkish company. Unfortunately, the concept of a French fries shop does not seem to be adequate for the Turkish market. The Surf'n'Fries shop in Istanbul closed down due to constant political protests in the centre of the city where the shop was located, which caused the shop to be closed very frequently during working hours. Currently, there are other two shops in Turkey, but their turnover is not good. One of the reasons may be a very developed kebab culture in the country, where other fast food shops just cannot compete.

From the beginning they decided to use legal assistance for the Intellectual Property protection. However, the first law firm they hired did not have enough experience and they gave wrong advice. Due to their mistake, Mare Altum had to pay for IP protection twice, the second time they were assisted by another law firm with rich experience in IP issues.

## Conclusion

The main firm's competitive advantage is the owners' willingness to do something completely new, including the way they manage their ideas, relying on broad market research and the support of professionals. Customers' needs and the quality of their product is prioritised and is imperative when developing new products.

In spite of many different bureaucratic obstacles around different countries, they never give up on their plans. Having reliable business partners who want to develop and grow around joint business principles is as important as ensuring they provide the best quality product they can.

Their message to future entrepreneurs is to believe in themselves and their idea. Use expert help for the most important parts of your ideas development and especially ensure you protect your intellectual property. They encourage people to go for it, even without having planned all the details of a venture, as issues can be resolved along the way.

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The case study is based on interview with Mr. Andrija Čolak one of the owners of Mare Altum Ltd Rijeka, and information from the website of the company, <u>http://surfnfries.com/hr/</u>.

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