Sandwich Management

Sergej Gričar
Barbara Rodica
Štefan Bojnec

Založba Univerze na Primorskem

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Barbara Rodica
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Sergej Gričar, Barbara Rodica, Štefan Bojnec

Reviewers
Vojko Potočan
Zlatko Nedelko

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Introduction

The Scope of the Problem

The concept of the research monograph *Sandwich Management* is the introduction to the market of the business ideas for introducing the nexus academia-industry into the target market. The research monograph in a conceptual way through academia-industry relathionship (three different approaches) with a support of the realised project concerning the expected outcomes.

The conceptual and innovative characteristic of the project is the direct, unified and comprehensive operation of the group. This action avoids seperating the project groups into technologists, programmers and economists. The former are features of the project groups in the existing company practices. The project connects operations of individuals formed into a small group. Within these groups, they conduct team research concerning: food technology, programming and other fields. The acquired knowledge is used in a comprehensive implementation of the offered service in the market.

Today's consumer behaviour is increasingly rational, including purchase decisions. Yet this behaviour is also increasingly complex. Therefore, companies must adapt their services in accordance with consumer needs. Data from the most innovative countries in the world demonstrate that innovation within services are crucial for the development and success of a country's economy. The innovation capacity of small entrepreneurship in the services sector dealt with perspectives concerning the importance of services. Companies' needs and opportunities are to introduce innovative services. The latter to become more competitive on the market and to

achieve benefits. Innovation capacity of small entrepreneurship in the services sector has also been introduced within the monograph. As part of latter, we presented the transmission of student knowledge gained through study processes into an immediate work environment through the development of innovative services (Bartunek and Rynes 2014). The case study has been developed as a mobile application that allows the user to choose a particular catering service in a way that is interesting to them. We stressed the importance of different factors, such as: the speed of service, time saving and the choice of service.

The *originality* of the research is evident from the tripartite project introduced as part of the following monograph. The monograph consists of all the characteristics made in the project. The *relevance* for the scientific monograph theme is as follows: i) The knowledge foundation for research and innovation policies are involved in the project, addressing the policy implications of related analyses/projects, ii) Emerging themes and topics are concerned, such as: innovation and research policies to satisfy human needs, the role of the public element in Private-Public Partnerships and the financing of innovation and research processes.

The Purpose and Objectives of the Research

As part of our research, the *definitions* were considered in various factors and concepts. The latter include: globalization, academia-industry nexus management, service sector and category of companies, a business plan, venture capital, creativity and invention. Such notions are essential for a broader understanding of the presented contents. The concept of research *Sandwich Management,* is the preparation of a business idea for introducing the mobile application into a target market. The conceptual and innovative characteristic of the project is a direct, unified and comprehensive operation of the group. This action avoids separating teams into chefs, laboratory researchers, people who work in business informatics etc. Research was conducted regarding: nutrition, business, small or medium sized enterprises (SME) and other fields. The acquired knowledge is used in a comprehensive implementation of the offered service on the relevant market.

The objective of the research was directed primarily towards developing a computer and mobile application that enables a service or product to be ordered in a fast and efficient manner in order to satisfy human needs. One of the objectives was also to plan a fast service, in particular where the consumer is offered a new product from our selection of available recipes. This fast service regards both delivery as well as the ordering process. We

wanted to develop an application that enables the customer to access the product without excessive use of typing.

The *aim* of professional training on the project is to transfer knowledge amongst entrepreneurs, students and higher education institutions (Heinonen 2015). As a result, this enabled the formation of future expert staff in the work environment. The main purpose of the research is to transfer theoretical knowledge obtained whilst studying directly to the work environment. The latter is done whilst simultaneously developing the product and service. Students can use their gained theoretical knowledge when solving practical problems, developing professional skills and acquiring competences in the research field and scientific expertise.

The Research Question, Assumptions and Limitations

The *research question* of the survey is how effectively we could introduce academia-industry nexus supported by Government Actions.

The relevant *theoretical frameworks* used are as follows: i) Innovative business idea, SME and academia-industry management nexus, ii) Food technology, cooking technology and catering, iii) Mechanical treatment of food, iv) Heat treatment of food, v) Food safety, vi) Catering, vii) Development of computing, viii) Project planning, ix) SWOT analysis and questioner, x) Forms of business enterprise – sole trader and ltd.

The description of *empirical materials* used for cooking technology and programming are as follows: i) My garden, ii) HACCP, iii) Recipe/standard for sandwich, iv) Calculations of energy and nutritional values and the selling prices of our sandwiches, v) Web application, vi) Qualitative analyses (sensory evaluation, econometric results). There are no limitations seen in the research where all asspects are taken under consideration.

Methods

We used three *methodological approaches* in the research assignment. We have studied scientific and expert literature that covers theoretical knowledge regarding the nature of the survey. We defined the activities of the research based on the findings of these studies. The project assignment has been performed using different methods distinctive of interdisciplinary and multidisciplinary projects. All methods are introduced in section four.

The set of activities were carried out using several methods typical of scientific research and professional work. The research also includes scientific methods of sensory analysis, the survey method, the comparison method and the method of describing and summarising. For the quantitative

definition of the project assignment, we have incorporated the methods of descriptive statistics and econometric analysis (Bhaskar 2008; Cabantous and Gond 2014).

Contribution to the Science

Expected outcomes while living in a time of COOL society (Gričar and Rodica 2016). Consumers are increasingly aware of goods and services that can be purchased via internet applications. The research results are shown in the form of test applications for an online ordering service or product. There is also a test application on the website. The practicality for the economy is unlimited and topical. Due to the added value for the end consumer, which emphasizes the speed of an order and delivery in real-time, the application is useful for all segments of the economy that sell services/products to the final consumer. Cooperation with the company will accelerate development of catering technology and computer programming. The high rate of consumption increase the welfare of citizens and (re)increase in gross domestic product. Consumers will only benefit from relevant and personalized offers. Ordering a service/product online is a fast track solution in which we avoid excessive clicking and is intended for a modern consumer. The economy provides faster access to the final consumer, who is now behind in a non-competitive and rigid physical environment of brick and mortar retail. Most services in the retail trade are carried out in large enterprises.

Scientific and policy advances that are likely to be achieved are part of private-public partnerships (academia-industry nexus management). It is a feasible factor that affects innovations in a student's transition into the job market. The results reveal exercises to exchange expertise and experience, helping industry to become more competitive, whilst offering students better employability and career prospects. The knowledge foundation is the Slovene Human Resources Development and Scholarship Fund related to theoretical policy of innovation and researches, whenever the project addressed/perform the policy implications.

Academia-Industry Nexus Management

Higher education institutions are going through turbulent times (European Commission 2014). Never before have the expectations of their potential contributions (Selsky and Parker 2005), conceptualization (Molly, Ployhart, and Wright 2011), teaching methods and syllabus (Cabantous and Gond 2014; Myers, Hill, and Harwood 2005) been so high. Simultaneously, doubts concerning the quality and execution of higher education institutions have never been so critically evaluated or universal (European Commission 2014; Lee 2014). Three different approaches would be required to study of the academia management (Bansal et al. 2012; Bartunek and Rynes 2014; Mawdsley and Somaya 2016; Selsky and Parker 2005).

First, students and academicians can achieve from itself, e.g. from internationalization (Biloslavo and Panjek 2011) and mobility (Mawdsley and Somaya 2016; Flander 2011) in academia. In the recent study Gričar (2016) introduces prospects of students and staff mobility and consequences of internationalization bases on semi-structured interviews. The results demonstrated slight differences between student perspectives and members of staff. The new paradigm in the European Union (EU) is that students who went abroad will be employable and employers in Europe want them (Li and Lowe 2016). Alternatively, students studying at higher education institution in their home country will gain lower skills and may be forced to search for jobs without the specified skills. Moreover, differences are also evident between language and culture determinates which generates the ability to understand the path to broader thinking (Gričar 2016).

Second, academicians should be inter-sectorial mobile (Choi and Tang 2016). As modern science is all about team effort, inter-sectorial collabora-

tion (Selsky and Parker 2005) should be rewarded as it is stated in European Commission (2006). Internal academic and career appraisal systems or performance indicators are essential to encourage researcher mobility, say the experts (Mawdsley and Somaya 2016). After all, good marks now mean better career prospects later. Collaboration can be one of the criteria taken into account when appraising institutions and academicians, too. Prizes and awards are another way of repaying the more upwardly-mobile scientists for individual excellence (European Commission 2006).

Provide incentives for inter-sectorial (also related to international) mobility through internal academic appraisal systems, or better working and salary conditions. However, inter-sector mobility shouldn't be enforced (Selsky and Parker 2005). Criteria for appraising inter-sectorial mobility should be linked to the benefit for the host institution, the researchers' group, or the individual academicians. Example of criteria: co-publications with the business executive partner (publications are important for industry reputation), list of contacts, launching of cooperation projects, commercialisation, and start-up or spin-off experience even for failures (Lee 2014).

Third, academia – industry (management) nexus (McInerney 2015). The recent literature concerning the aforementioned nexus (Bansal et al. 2012; Bartunek and Rynes 2014; Mendoza 2014) starts with a brief overview of the historical developments leading to the knowledge economy. Subsequently this section offers a critical review of the literature primarily published on academia – industry management nexus. European higher education institutions have developed into a complex academic environment in which individuals and organisations increasingly compete for material, human and symbolic resources (Mendoza 2014; Lee 2014).

Further Mendoza (2014) investigate industry – academia linkages with particular attention to conceptualizations for future investigations. Higher education struggles to balance its public mission with market pressures to remain competitive, because while competition spurs institutions towards efficiencies, too much drives mission out of their decision making (Bartunek and Rynes 2014; Slaughter, Archerd, and Campbell 2004).

The boosters argue that academia – industry management nexus are useful to transfer academic research to society and aid academia by having social-relevant impact (Roessner et al. 2013; Philips et al. 2015). Boosters worry that these nexus dwindle basic academic work, knowledge for the purpose of knowledge, and free deliverables of findings (Slaughter, Archerd, and Campbell 2004). More recently, in our recent study we have adopted intermediate positions around notations of complementarity

and differentiated boundaries supported in the literature by Szelenyi and Bresonis (2014). Moreover, there is a surveys explain the investigation the knowledge flows among and between project managers and project management office members (academicians), using a mixed-methods approach (Müller et al. 2013).

The academia – industry nexus is somehow one of the most captivating, productive, and important network in the whole of business discovery and development, even if at times this alliance is not always harmonious (Molly, Ployhart, and Wright 2011). The latter is example from the natural sciences (Sanchez-Serrano 2011). The impact of academic findings has governed every aspect of business development, from the initial identification of targets to the understanding of economic and knowledge pathways of students, academicians and business executives. It may therefore be surprising that despite the great productivity of the academia–industry relationship, interaction between academia and industry in recent years has been under attack (Sanchez-Serrano 2011; Bansal et al. 2012). The authors explores these important issues in this paper and launch a case study to improve this and next nexuses, while ever since the beginning back in the middle- to late-1800s, the business has had an extremely close nexus with academia (Sanchez-Serrano 2011).

Without the chemical, physiological, and biological academic discoveries that took place in Europe throughout the 18th and 19th centuries, the pharmaceutical industry would never have come into existence. In the time of services there is a need for co-productive academia – industry nexus in the service economy for innovations and for higher gross domestic product (GDP). The later appertain even colossally for developed and East European countries (Mihók et al. 2015).

Slovenia should take a path of Western countries (Mihók et al. 2015) while launching the benefits for innovations and higher GDP (Juselius 2009). Since the industry's early years, when universities in France, Britain, and particularly Germany, followed by universities in the United States, provided the industry with an massive prosperity of expertise, brainchild, and innovation that were translated by industry into products and more recent into services. The impact of academic discoveries has enormous influence (Sanchez-Serrano 2011).

Scientific collaboration between academia and industry has a long history in the United States and abroad reported by Haller (2014). The ethical pitfalls of scientists of patents dealing directly with industry stimulated much public discussion, with a resultant of repercussion demoralizing collaboration as studied by Haller (2014). This evolution is discussed, and

recent developments with models of possible productive collaboration and rules are engaged.

Some other authors analyse also another aspects of nexuses to academia. Kamitan et al. (2013) analyses government-industry-academia collaboration in Japan from the view point of compatibility and motivating factors to collaborate among partners. The strategic motivation is not directly related to government-industry-academia collaboration outcomes, but rather it is the leadership of government leadership that is important for the results.

Saguy´s (2013) percept to academia – industry nexus is innovation. A review of the literature (Misterek and Lewicka 2014; Saguy 2013) exposes that innovation may be defined in many various ways, including its narrow technological aspect and its wider capture considering organizational and process changes in companies. Innovation is the application of a new idea/invention, technology, model, or process to a product or service that satisfies a specific consumer/customer need and can be replicated at an economical cost (Heinonen 2015). Innovation creates value and plays a vital role in growth and social well-being (Saguy 2013). Innovation contributes to economic growth (Karasek and Dermol 2015).

The motivation of the monograph is to induct increasing academia – industry collaboration in economy and management (McInerney 2015). Both for perspective life's of voters and citizens of EU.

Inovation in SME

In a dynamic environment companies constantly strive for ways to differentiate themselves from their competitors. Regardless of the size of an individual region or country, innovativeness in enterprises is of great importance to the development and success of the economy. We introduce the literature overview of the nature of strategies and competencies that are neded for the successful of small and medium enterprises – SMEs (defined in Chapter 5.1) in service sector. The list of key factors that are said to determine the success and failures of the small-enterprises segment is long. It depend of their ability to produce a high quality output for special markets and also their flexibility associated with a lean organization that allows them to provide quick and efficient service. »Popular opinion attributes the success of small firms to quick decision-making, simple administrative structures, and flexible operations« (Baldwin and Gellatly 2003, 107). Nedelko and Potočan (2011) claim that management innovativeness is important in all organizations, especially in current economic conditions. It is demonstrated that innovation is the key to success. Innovation activity is recognized for creating such opportunities. We explore the scope, breadth and depth of innovation in small enterprises.

The importance of service sector has grown, in terms of both employment and productivity. It is now the main source of employment in all of the European Union (EU) countries. Services are key for growth. They are the driving force of the European economy. In 2011, almost 70 % of the workers in the EU carried out their functions within the service sector and in last five years number is growing. »Services account for over two-

thirds of the EU gross GDP and create nine out of 10 jobs in the economy« (Fernández Corugedo and Pérez Ruiz 2014, 3).

From our view it is important to point out that sevice sector can not be looked at or in isolation from other sectors. Interaction between them is important and drive both growth and development. The services sector consists of a very disparate group of subsectors, with varying productivity performance and very different mechanisms for enhancing output per employee. The study of Uppenberg and Strauss (2010) points to three key ingredients in services sector productivity expansion: tangible fixed investment, intangible capital and services sector innovation. »A third element is that services sector innovation, in contrast to that in manufacturing, draws less on in-house knowledge creation in the form of research and development (R&D). Services industries tend to innovate in interaction with customers, suppliers and competitors. There is also substantial scope for productivity improvements by adopting best practice, both within and between certain service industries. The lower level of in-house knowledge creation partially reflects smaller average firm size in services industries« (Uppenberg and Strauss 2010, 4). The companies need to combine technological and nontechnological innovations to achieve market success and better meet the customers' needs. Service innovation is often intangible, less visible and thus difficult to define, to conceptualise and measure, pointed out some scholars (Uppenberg and Strauss 2010; Stare 2013).

Although services are important, they are not yet delivering full potential. Reflecting the emphasis on the services sector in the EU2020 strategy, this study highlights some key features of the services sector in the EU, including productivity and innovation in market services. One important observation is that the services sector accounts for as much as threequarters of cross-country differences in economic growth across individual EU countries (Uppenberg and Strauss 2010).

Innovation and Innovation policy

When we are talking about change/improvement, and this can take several forms – we are talking about innovation. Innovation differentiate enterprise from their competitors and can contributes in several ways. Innovations influence important on success and failure in the organizational context in which they are created and implemented. Innovation is about knowledge – creating new possibilities through combining different knowledge sests. »Innovation is the commeecialization of knowledge, either in the form of new or improved products, processes, or some combination thereof« (Baldwin and Gellatly 2003, 2). Important dimension

to change is the degree of novelty involved. The degrees from novelty are running from minor, incremental improvements right through to radical changes which transform the way we think about and use them. Although innovation sometimes involves a discontinuous shift – something completely new or a response to dramatically changed conditions, innovation is rarely new on the global market. Innovations are in the most of times incremental.

Schumpeter (1934) defined innovation as the introduction of new elements or a new combination of elements in the production or delivery of manufactured and service products. His concept of innovation embraces different areas of innovation activity.

In the last three decades, theoretical approaches to innovation theory have gradually evolved in the direction of recognising the important role of services. The third edition of the »Oslo Manual« (OECD 2005) provides a revised definition of innovation which is better tailored to its role in service industries. Specifically, it has been obvious for some time that innovation in services is more geared towards organisational changes than towards the development of new products and processes. The revised Oslo Manual broadens the definition of innovation to mean the implementation of a new or significantly improved product (good), or process, a new marketing method, or a new organisational method in business practices, workplace organisation or external relations.

Service innovation (coming from either services or manufacturing sectors) can boost entrepreneurial dynamism, by closing the gap between scientific innovation and market requirements, and facilitating a cross-sectoral fertilization which ultimately contributes to GDP growth and jobs (European Commission 2012). As stresed out by Stare (2013) service innovation has a lower R&D intensity in the traditional meaning of the term for technological innovation. Service innovation is usually less formalised and rarely carried out in research and development departments; it is incremental rather (progressive, small innovation) than radical (significant) and consequently less visible.

The importance of the service sector in national economies should not be overlooked. In terms of employment in the non-financial business sector, services is the largest sector in the EU28 »Service innovation appears to be in accordance with Schumpetrian definition of innovation as service innovations do create new possibilities for further added value, and also stretch beyond the mere technological product and process innovation« (Rajkovič 2011, 29).

Innovation helps individual small enterprise in service to maintain their competitive edge. Innovatioans also contributing to expansion of capacity and also generating additional capital investments productivity, technological advancement, employment, and growth (Stam and Stel 2011). Todays academic researches are given much more importance to the agents that interact in the process of innovation than to other factors. These has led to a convergence of several academic researchers such as Freeman (1987), Nelson and Winter (1982), Rosenberg (1982), and Lundvall (1988), followed by the discussion of the dynamics of innovation at the regional and national level. Companies of all sizes nowadays, seek to innovate in order to gain competitive advantages, which in turn, create economic flows and dynamics that support labor and also the creation of new companies, affecting what has been called the »National Innovation System« (NIS).

Two features of the enterprises environment have a major influnce on its innovation strategy, national system of innovation in which the netreprise is embedded and market position compared to competing firm (Tidd, Bessant, and Pavitt 2005). The approach of national innovative ability stresses the importance of specific qualities of enterprises, their innovation orientation and the perception of potential partners that cooperate with them. National innovative ability depends on the common innovation infrastructure, the innovation environment of an individual country within a cluster and the quality of the connections between these two building blocks (Furman, Porter, and Stern 2002). Thus institutional factors are of exceptional importance for innovativeness, as they provide the possibility of applying scientific and research achievements to the entire economy through a suitable entrepreneurial infrastructure. NIS is an open system and is in constant interaction with the environment (Rodica, Starc, and Konda 2014).

The NIS includes five groups of organisations as follows: companies, research institutions, universities, organisations which promote scientific-technological progress and the state. If innovation is every useful thing, the aforementioned elements should be complemented by invention-innovation processes that are not part of R&D, the structure of economic and non-economic activities besides industry, including innovation in the scope of the government, the prevailing culture, ethics, and values rather than just knowledge (education and training) (Mulej and Ženko 2004). The success of the NIS depends on the operation of individual institutions and especially the development of relationships and connections or a network of connections within the whole innovation system (Rodica, Starc, and Konda 2014).

Innovation Strategies and Performance in Small Enterprises

Innovation is a core process in entreprise, within an enterprise associated with renewal – with refreshing what it offers the world and how it creates and delivers that offering. Tidd, Bessant, and Pavitt (2005) represent innovation process with: searching – scanning the environment for, and processing relevant signals about, threats and opportunities for change; selecting – deciding which of these signals to respond to; implementing – translating the idea into something new, acquiring the knowledge resources to enable the innovation, executing the project, launching the innovation and managing the process, sustaining adoption and use; learning – enterprises have the opportunity to learn from progressing through this cycle. Two features of the enterprise environment have a major influence on its innovation strategy: first, the national system of innovation in which the enterprise is embedded and second, its market position compared to competing firms (Tidd, Bessant, and Pavitt 2005, 131). There is important to emphasize that the national system of innovation partly defines enterprise range of choices dealing with opportunities and threats. Also are the innovation-based opportunities and threats connected with enterprise market position. The main factors that influence local demands for innovation are: local buyers' tastes, private investment activities, public investment activities, input prices, local natural resources (Tidd, Bessant, and Pavitt 2005).

The concepts of innovation, introducing solid arrangement as concept »six sigma« comes to the fore design strategy. It introduces innovation by focusing on the customer. The new gurus of innovation focused on the so-called micro-innovation (Mulej et al. 2009).

Opportunities for innovation in small firms are strongly influenced by the »system of innovation in which they are embedded« (Tidd, Bessant, and Pavitt 2005, 161). The frequency of innovation in enterprises with fewer than 100 employees is much lower than in larger. Tidd, Bessant, and Pavitt (2005) also believe that it is important to know that smaller enterprises make less frequent use of outside sources of knowledge. Opportunities for innovation in small enterprises are strongly influenced by the innovativeness of their suppliers. Innovative SMEs have limited resources and relative lack of non-core expertise. SMEs tend to engage in various forms of cooperation to accelerate growth. Innovative SMEs must develop adequate intellectual property (IP) management strategies drawing from these categories: formal, registered intellectual property protection; alternative strategies including secrecy; and hybrid strategies (Brant and Lohse 2013).

Most enterprises in the service sector are relatively small. A company's strategy may often require investing most resources in current lines. But

sufficient resources should also be invested in patterns that ensure intermediate and long-term growth; provide defenses against possible government, labor, competitive, or activist challenges; and generate needed organizational, technical, and external relations flexibilities to handle unforeseen opportunities or threats.

On average in the EU28, around threequarters of service value added are generated by firms with less than 250 employees. Because of the heterogeneity of service industrie, it is difficult to generalise too much about their innovative process. Some services are more innovative than others. As they find out in European Cluster Observatory, clustering in services is highly correlated with GDP per capita (clusters in business services, financial services and information technology). External sourcing of new knowledge is important for all and especially for small enterprises. An important element in supporting services sector innovation is cluster formation which foster knowledge transfers and spillovers. Problem with assessing innovation in services, especially in small enterprises is, that it includes a very heterogenous group of activities. Knowledge Intensive Services (KIS) are the services with high levels of technological opportunity which on the Eurostat rank stand at the core of, such as computer services, telecommunications, transport and R&D and engineering services (Uppenberg and Strauss 2010). Knowledge-intensive business services (KIBS) are able to provide advanced technological knowledge directly to other industrial sectors, and indirectly to the whole economy. The knowledge generated by the KIBS stems from interactive learning with a diverse set of economic actors, and the same actors can benefit collectively of such knowledge. Authors of European Cluster Observatory research observe that it is evident that wealthy regions typically support disproportionally high concentrations of KIBS employment (European Cluster Observatory 2009).

The results of the study of Bhaskaran (2006) indicate that incremental innovation offers substantial competitive advantages to small and medium-size enterprises. The result shows that incremental innovations can be adopted and operationalized rapidly by entrepreneurs with different cultural backgrounds and skills, and that small and medium-size enterprise that focus on sales and marketing innovations are profitable and are able to compete successfully with large businesses.

The Innovation Paradigm

The last century was dominated by the paradigm of closed innovations. Traditional business strategy is guided with defensible positions against the forces of competition and power in the value chain, implying the im-

portance of constructing barriers. This means that developers developed inventive ideas within the scope of their own research abilities and knowledge without outside help. They mostly used internal resources and greatly protected and shielded their knowledge and intellectual property from the external environment. They did not promoting value creation through openness. This is often connected with the availability of personnel, high implementation costs of innovating and other factors that could present a great problem to small and medium-sized enterprises. In the case of the closed model of innovation enterprises base their operation on the supposition that the innovation process is controlled by the enterprise itself and that it is self-sufficient. Toward the end of the 20th century, though, a number of factors combined to erode the underpinnings of closed innovation. As an upgrade a new method of innovation is being presented, called open innovations. It is based on the supposition that enterprises must open up their business operations in order to achieve greater innovativeness, and together with external partners take advantage of internal and external ideas, technologies and resources. In model of open innovation, enterprises commercialize external (as well as internal) ideas by deploying outside (as well as in-house) pathways to the market. It must be ascertained with which entities from the organisational environment the enterprises are connecting and in what way (Rodica, Starc, and Konda 2014, 703–13).

The concept of open innovation shows that the understanding of the importance of knowledge outside a company is changing. Open innovation has been variously described as a process, a set of interfirm relationships, and a cognitive paradigm. As originally explained by Henry Chesbrough (2003): »Open Innovation is a paradigm that assumes that firms can and should use external ideas as well as internal ideas, and internal and external paths to market, as the firms look to advance their technology. Open Innovation combines internal and external ideas into architectures and systems whose requirements are defined by a business model.« Chesbrough (2011) defines (more recent) open innovation as the use of purpose-specific inflows and outflows of knowledge to accelerate internal innovations, and expand the market for external use of innovations. This paradigm assumes that enterprises can and should use external ideas as well as internal ideas and also internal and external paths to market, as they look to advance their technology. Chesbrough (2011) distinguish between two facets to open innovation: One is the »outside in« aspect, where external ideas and technologies are brought into the enterprises own innovation process. This is the most commonly recognized feature of open innovation. The other, less commonly recognized aspect is the »inside out« part, where un- and

under-utilized ideas and technologies in the firm are allowed to go outside to be incorporated into others' innovation processes.

The closed model of innovation is linear and rigid, whereas process mostly moves from the organisation outwards. The open model has several directions of movement due to the connections with the environment – enterprises commercialize external – internal ideas by deploying outside – in-house pathways to the market. The processes in the open model of innovation are more complex and dynamic. They can commercialize internal ideas through channels outside of their current businesses in order to generate value for the organization.

According to Lee et al. (2010), SMEs primarily use external sources as the way to access marketing and sales channels. The concept of open innovation is important for them because they have the necessary flexibility and specific knowledge, but they lack adequate capacities to manage innovation resources.

Open innovation also has its pitfalls. The key is to manage intellectual property. An enterprise must manage intellectual property independently, protect it appropriately, and precisely define the method of cooperation with external partners in its contracts. Vrande, Jong, and Vanhaverbeke (2009) in survey drawing on a database collected from 605 innovative SMEs in the Netherlands. They find out that medium-sized enterprises are on average more heavily involved in open innovation than their smaller counter parts. SMEs can overcome their liability of smallness by opening up their innovation process (Keupp and Gassmann 2007). External technology commercialization can also be a core competence of such rapidly growing SMEs. As an appropriate way of solving the problem of limitations, Lee et al. (2010) propose an active role of an intermediary. SMEs can and should implement external ideas in the same way as internal ones because the central idea in the background of the open innovation concept is that companies cannot rely on their own research in the world where knowledge is so widely spread. This is the reason that enterprises should buy and licence processes and inventions, such as patents of other companies (Chesbrough 2011).

Managing Innovation in Small Enterprises

Innovation initiatives have become extremely important for companies seeking higher competitiveness. In this sense, the first step in order to start innovation management initiatives is to diagnose the current company's situation and to benchmark it with best-practice companies in the market. The logical sequence would be to propose action plans in order to achieve

higher outcomes, followed by the implementation phase. Managers need to think carefully about how innovation fits into their strategy and structure their technology, skills, resources, and organizational commitments accordingly. No single approach works well for all situations.

In innovative small enterprises the successful management of innovation is connected with different factors. There are important the following factors: need orientation, experts, long time horizons, low early costs, multiple approaches, flexibility and quickness, incentives, availability of capital. For innovative working and behavior of organization must management create and maintain appropriate conditions (Nedelko and Potočan, 2013). Innovations/innovative working in SMEs is connected with managerial personal value. Nedelko and Potočan (2011, 129) »conclude that organisation members' personal values have an important role in organisation members perceptions about innovative working/innovations«.

Uriona, Dias, and Varvakis (2009) in survey analysed small high-technology enterprises with variables measured in Organization for innovation. The Benchstar measures four key practice processes: organization for innovation, competitive intelligence, product development and monitoring. Organization for innovation is related with different managerial styles that are used in the company. Variables which are adapted from IEL/SC (2006) were: vision, mission and goals sharing, leadership style, external involvement, working flexibility, workers involvement, human resource development, internal involvement, innovative environment, and relationship with suppliers, client focus, relationship with universities and research centers, R&D infrastructure.

Brant and Lohse (2013) considers that governments can support innovative SMEs to achieve their potential through a range of measures, including actions to facilitate access to financing, remove regulatory and tax burdens, and improve the formal intellectual property system (IP system). Actions to improve the formal IP system include those aimed at enhancing patent quality, and reducing costs and pendency. Brant and Lohse (2013, p. 17) have indicated of Goverments Actions to improve the formal IP system and to make it more accessible to smaller enterprises can support innovative SMEs in more effectively capturing the value of their intellectual assets. Governments can:

– take steps to improve patent quality, which can increase legal certainty and help to ensure that intellectual property rights (IPRs) can be used to signal value to potential investors, partners, and competitors;

- ensure that IPRs are available and enforceable at reasonable cost, including by reducing official fees for patent filing, prosecution, and maintenance by SMEs;
- facilitate patent filing and prosecution by SMEs, including by providing for expedited review of applications from SMEs;
- institute outreach and training programs for SME business leaders, in order to raise awareness about the importance of sound intellectual property management, improve SMEs' intellectual asset management, and increase opportunities for them to engage with intellectual property officials;
- consider enacting policies that support the provision of insurance for SMEs to offset the costs associated with defending their intellectual property positions in litigation, which represents a significant risk for smaller firms; and
- enact modern trade secrets laws to bolster the protection afforded by resource-effective secrecy strategies, which are often the default protection mode adopted by innovative SMEs.

Determinants of the Project (and Research)

Senior lecturer Dr. Sergej Gričar introduced to the students and staff to the Slovene Human Resources Development and Scholarship Fund, *The creative path towards practical knowledge (project PKP)*. During his presentation, Dr. Gričar introduced the aim of the project and the possibilities for co-operation with the economy supported by Goverments Actions. He stipulated that students, staff and SMEs would gain practical knowledge, experience and competences through being included in the project. Also, it was indicated how the project would function in direct partnership with the institutions of higher education and the economy. This latter statement was written by students of the higher education program of Business and Management 2013/14. The project also presented a chance to develop our own business ideas in the field of natural sciences. This aspect encouraged us to consider co-operations on this project. With great interest we, began planning a business idea of product development. The preliminary planning of the project was based on searching for ideas and brainstorming development possibilities and the later upgrade of the product. Whilst developing the idea, we planned to connect and work with the Slovene company REPA, Gašper Repanšek s.p., Rudnik 13, 1235 Radomlje (REPA). We forwarded a draft of the project development and its goals, which we named *Development of a mobile application for ordering a service and a recipe/standard for a sandwich with a mobile application* to the fund. The represented project was approved by the fund in March 2014.

What is special about the project is the development of interdisciplinarity and multidisciplinarity in the fields of numerous expertises. This co-operation included gaining various types of knowledge in fields such as:

food technology, cooking, computer programming, internet use, econometrics, market research and computer networking.

The project was developed by the following Slovene students of the Faculty of Business, Management and Informatics in Novo Mesto in Slovenia: Kristjan Longar, Patricija Kastelec, Barbara Kiren, Monika Jakše and Karmen Kek, in co-operation with the economy through the company REPA. The REPA representative involved was the working mentor, Mr Gašper Repanšek. The pedagogical mentors were two lecturers from the SBM: Dr. Barbara Rodica and the co-ordinator, Dr. Sergej Gričar.

Project Purpose, Project Objectives and the Research Question

We live in times of a COOL society (Gričar and Rodica 2016). Consumers are more aware of the new possible means of acquiring goods. Nowadays, transactions can be completed almost instantly using an internet application. Consquentially, companies are aware that it is necessary to develop relevant services that are adapted to the modern consumer. They have to be able to offer unique contents in comparison to their competitors. Due to different implementations they represent an added and compelling value. With development of the mobile application, we wanted to incorporate the contemporary characteristics of ordering goods or services over the internet.

The objective of the project was directed primarily towards developing a computer and mobile application that would enable a service or product to be ordered in a fast and efficient manner. The objective was also aimed at planning a fast service, in particular where the consumer is offered a new product from our available recipes. This fast service reagards both delivery as well as ordering. We wanted to develop an application which would enable the customer to access the product without excessive typing.

According to classification system of education and training (KLASIUS), the project is defined within the following fields: P-4828-Use of internet and computer networks; P-4812-Computer programming and programming languages; P-5419-Food industry other; 3419-Wholesale (trade) and retail (other); 3412-Econometrics, 5412-Cookery, 5419-Food industry other; 3423-Market research.

The *research question* of the project is

> *'how to effectively produce a sandwich according to individual wishes of the buyer'.*

We have also analysed numerous other questions. We were interested in how the final price is influenced by the »home delivery, workplace

delivery or delivery to a social site« of the sandwich. We have been establishing which sandwich ingredients are healthy and how to follow modern trends of a healthy diet. We have considered the following: our product (development of an application and service) will be based upon the findings that a healthy diet means eating five times a day and the dishes are made with foods from the local environment. For the development of the product we will use ingredients with complex carbohydrates, low-fat ingredients and ingredients with essential amino acids. With fats, we will pay attention to their composition. We also wanted to find out more about who our target clients are, who would show interest in buying a sandwich, prepared according to their own wishes and the avaialble ingredients. Six health-friendly ingredients allow the preparation of four hundred variable sandwiches.

The *aim* of professional training on the project is to transfer knowledge amongst entrepreneurs, students and institutions of higher education. As a result, the formation of future expert staff in the working environment is enabled. The *main purpose* of the project is to transfer theoretical knowledge acquired in the study process, directly to the working environment alongside the development of the product and service. Students can use the gained theoretical knowledge when resolving a practical problem, developing professional skills, acquiring competences in the research field and scientific expertise.

The project *objectives* were divided into those that refer to the theoretical and empirical parts of the project assignment. We pursued the following objectives in the theoretical section: reviewing relevant home and foreign literature, as well as examining and critically evaluating the existing services that resemble our project.

We aim to introduce a new service into the market, one with high added value in comparison to the competition. Consumers who buy or order using the online application will save time which they would otherwise spend on the service provider site. Also, bottlenecks such as: ordering, paying and delivery are partially dismissed through ordering online. Time saving is enabled by online payments and personal delivery to the desired location specified by the buyer.

Competences, Expertise and Skills Acquired Through Involvement in the Project

The project assignment helps to acquire knowledge and qualifications for the use of scientific and expert methods when resolving problems. The project develops students' abilities to communicate within a profession and

the interdisciplinary team. It also teaches students to be professionally critical and responsible, innovative and independent in decision making, leadership skills and influencing the formation of the students' profiles. The students acquired the following competences, expertise and skills through their involvement in the project:

- capability of verifying the problem and its analysis, as well as foreseeing the operational solutions in the culinary and marketing sense;
- capability of controlling standard development methods and procedures in the quantitative research and culinary;
- capability of verifying the problem and its analysis, and foreseeing the operational solutions in the technological sense;
- capability of mastering standard development methods and procedures;
- capability of using the acquired theoretical knowledge in practise;
- knowledge and understanding of social systems in the working environment;
- use of professional secondary language in the written form;
- co-operation and teamwork competency;
- understanding developments of the national economy;
- incorporation of citizens into the business environment and the social impact of technologies on the environment;
- capability of understanding and using modern theories from the field of techniques and natural sciences;
- capability of statistical understanding of technical problems and the use of mathematics with their resolving;
- capability of interdisciplinary connections of economics and business knowledge with techniques and natural sciences;
- understanding of institutional frameworks of work and legislation;
- capability of organising and leading a department or a group;
- active and critical monitoring of the development of new methods of using computer and mobile applications;
- ods of using culinary mechanical and thermal technologies.

All students, the working mentor and the pedagogical mentors have been actively involved in the research. Students have been acquainted with the working process of the virtual organisation and how important the precision and simplicity of the computer and mobile application is for the consumer. Students have been familiarised with market research and its

importance in the service they wanted to develop. The needs of consumers have been defined with the help from the working and pedagogical mentors. Students have been acquainted with working procedures for successful project comprehension.

Working Methods

The overview of theoretical starting points is followed in the next chapter by the empirical section and divided into more subchapters. The chapters follow one another systematically. This is executed according to the testing and weighing of ideas, the presentation of results, their meaning and implications in the project regarding the studied service and its problems. Although the stress focuses on the methodological steps, the core of the project assignment is the applicative transfer of knowledge amongst the economy, the students and the institution for higher education within the set activities of the project. These are:

- the pedagogical mentors actively direct the students towards achieving the set objectives of the project;
- the pedagogical mentors actively direct the students towards the purpose of the project;
- the working mentor actively participates in the implementation process of the project;
- the working mentor introduces the students with the virtual sale – advantages, disadvantages, opportunities and competences;
- the working mentor actively introduces the students with the working process and guides them towards the parts of the project that are connected to the research in the project;
- the students develop the project and form it together with the mentors;
- the students keep a progress timeline/report on the project and of the status of the project in the time when the project implementation is in progress;
- the students acquaint themselves with virtual organisation and availability in the market;
- the students prepare the final report alongside the pedagogical mentors. This report contains information regarding who, when and how they have contributed to the realisation of the project;
- the working mentor and co-ordinator prepares the final report on the performed project and gives an opinion about the status of the project for further work;

– in the final phase of the project the working mentor evaluates whether the process is capable of competing on the market. The working mentor also specifies the intellectual property amongst the students and the company.

The set activities were carried out with several methods that are typical of scientific research and professional work. In the field of food technology and cooking, we used methods of: mechanical and thermal treatment of foods, methods of food safety, planting and production of primary foods. When defining the computer programming and programming language that we used: the working methods in the computer room, modelling, computer-aided planning and the basic methods for working with files. The project also includes the scientific methods of sensory analysis, the survey method, the comparison method and the method of describing and summarising. For the quantitative definition of the project assignment, we have also incorporated the methods of descriptive statistics and econometric analysis.

Review of Theoretical Starting Points for Project

Business Idea and SME

In our project task we consider various factors, including: globalization, the service sector, category of companies, a business plan, venture capital, creativity, invention, etc. Such notions are essential for broader understanding of the presented contents.

Globalization has increased pressure on companies because of competitiveness amongst the companies in processing and other sectors. The latter applies especially to countries with high labour costs, strict environmental rules and high tax rates. Moreover, because of the use of sophisticated technology, the productivity increased while the development of the information technology enabled openings in the market for new products. The latter results in a revolution amongst updates in production processes, at the same time it enables rapid growth of the service sector (Žakelj 2004). The data taken from Eurostat indicates that for Slovenia in 2011, 8.6 % of all employees worked in agriculture, 31.7 % in production and construction, 35.8% in market service activities, whilst 24 % worked in non-market service activities (Gričar 2014).

The European statistical office, Eurostat, noted that in 2011 almost 70 % of all employed people in the EU worked in the service sector. The percentage of employees working in the service sector has increased by 8 % compared to 2000. When looking at the data for Slovenia, slightly less than 56 % of all employed people worked in the service sector. In 2014, the number of people who worked in market service activities such as: the trading of goods, transport, financial activities etc., was around 31 %. While 23 %

of people were employed in non-market service activities, such as: public administration, education and health care etc (Gričar 2014).

The EU ranks companies into categories of either small or medium sized companies through the following criteria: number of employees, yearly revenue, balance sheet total. A company is classed as a small company when the number of employees is less than ten people, yearly revenue doesn't exceed 700,000 euros and the total on the balance sheet isn't more than 350,000 euros (Casadesus-Masanell and Ricart 2011; SORS 2014).

There is no business opportunity and entrepreneurial activity without an idea. An idea is usually perceived as a solution intended for potential customer problems. Before the official opening of a company, a prudent person would test their idea on the target clientele. Through this approach, the fundamental information that is gained can either confirm or refute a hypothesis if the market needs what is offered (Glas 1999).

The notion 'entrepreneurship' cannot be described pricesly with one single definition. Pšeničny et al. (2000) describes entrepreneurship as a set of activities by an individual or group who produce, by managing different resources, a product or service identified as a business opportunity. When the market or customer identify the latter as being worth buying, the service or product sold enables the generation of revenue (Pšeničny et al. 2000).

Until recently, the presentation of a business idea in a business plan played a crucial role when searching for financial support. Approaches have changed, especially when we have an idea which can expand considerably in a short period of time. Modern approaches to present and evaluate potential business ideas are done with the help of a business model canvas (BMC). This approach is called *Lean start Up*. We also have tools to identify our added values of service/product for targeted customers via Value Preposition Canvas (VPC). Both models are squared templates where we insert what each square is requesting. Subsequently, we should be able to successfully present our idea through answering basic questions regarding: how the revenue will be generated? Who our targeted customers are? What are our expenses? How will we advertise ourselves? The template serves all those who haven't developed their sustainable business model and are searching for the right one through testing on the market with a focus on customer needs (Osterwalder et al. 2014).

As previously mentioned, until recently business plans were the sole means of finding funding. BMC represented a radical change when it came to the presentation of our business idea. More than ¾ of all start-ups never make it as a sustainable business able to repeatedly generate revenue. Un-

fortunately, not even a BMC can prevent all business ideas from failing. However, it is a useful tool for those who believe that they have something to offer others. The *Lean Start-Up* method gives advantages to experimenting with detailed planning and praises our own intuition because of our limitations when it comes to resources and time. When we have something to show to our customers, only after that we can talk about MVP, which stands for 'minimum viable product' and is usually still in the testing phase (Casadesus-Masanell and Ricart 2011).

Big firms often finance their operations with help from banks. A start-up's source of financing however is achieved with help from venture capitalists. The latter take big risks and expect high returns in case the relevant start-up manages to succeed and become profitable. Big funds with enormous capitals don't put all their hopes on one start-up, but rather invest in lots of different startups and make a diversification of their investment. Standard expectancy is that only one out of hundred startups will become profitable on a long term basis. Facebook, Twitter and Google are well known examples of successful companies who started with funding by venture capitalists. These companies were formerly micro-companies, which over time grew to small, medium sized and are now internationally acclaimed. When collecting money from venture funds, it is the pitching that is a fundamental factor as to how much money will be acquired. Without being confident in our business idea, nobody will be confident in us and therefore won't be prepared to help financially (Osterwalder et al. 2014).

Removal from traditional methods of developing business ideas, which are still present in most business schools, do not satisfy today's needs for a rapid business environment. BMC serves as a fresh means to specify the intention of our business idea. Sandwich management was developed on modern directives with help from BMC. Our business ideas provide solutions regarding lunch at work. They enable cutsomers to use their free time efficiently and offer them a unique opportunity to request a sandwich with customised ingredients. The latter benefactors can be achieved with help of a web based application. Due to the lean approach that we used throughout the project we avoided making a long questioner. Instead we made a short and simple questioner with the most important questions concerning our business idea and customer needs. The questioner was distributed in the region where we initially meant to start our business. Indicating gender was not a factor of the research as its significance within modern and developed countries is becoming obsolete (Stanojević 2014). Questions for the questioner had been prepared researching literature on the topic of BMC and VPC (Osterwalder and Pigneur 2010; Osterwalder et al. 2014).

From these sources we established answers about relevant customer needs and expectations.

A significant drawback concerning the mass production of product or service is the fall in the price we charge. Usually, this is the only customer motive for buying that we are left with. An example of this can be seen within large scale shopping chains and their own branded products. It's not important anymore what you buy, but what you buy for the cheapest price. If you want to increase the price on this kind of product or service, you have to add 'added value'. With reference to the latter, there is a hidden exclusivity demonstrated within Figure 1 below. The added value of the product or service is a newly produced (increased) value of this specific product or service.

The equation shows the subtraction between the sold value of a product or service and its purchased value of ingredients, materials and other inputs. Added value which were analysed in the project team and detailed described in chapter six (Gričar 2014):

- customer is satisfied within arranged time and you add a gift;
- exceeding customer expectations;
- management of after sales services;
- in cases of reclamation we try to empathize with the customer's grievance.

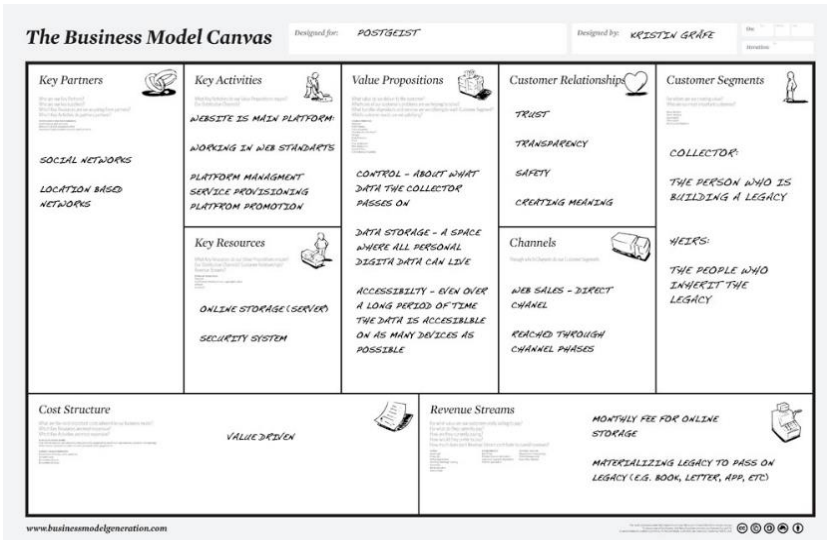


Figure 1: Business plan Business Model Canvas.
Source: http://blogs-images.forbes.com/tedgreenwald/files/2012/01/business_model_canvas_poster-02.jpg.

Hereinafter, we will use concepts of innovation and creativity which are increasingly used or replace previous notions of entrepreneurship, such as: science, research and development. New ideas have been used for the developmental process of SME. Planning methods such as research and development are reserved for enterprises. Some of them are more conservative, stereotypical, and sluggish; whilst others are more inclined to something new. The encouragement can come out of a person's inner body, partly from the environment where the person lives and works.

Figure 2: Uniqueness and added value.
Source: Gričar 2016.

Pompe (2011) stresses that a creative clime is an atmosphere of positive relationships towards ideas, new perspectives and solutions by all co-workers in the company where they work. It is also a willingness to listen to other people's opinions and allow them to express their ideas and concerns. A creative clime would allow co-workers to communicate without hesitation, fear of failure, criticism or mockery. Modern creative climes allow employees an opportunity to learn from and acknowledge their failures, as well as form the means to reach their goals. Regarding entrepreneurship, creativity is key to the development of new products, services and processes which innovate upgrades in the traditional methods of a company.

Creativity (Figure 3) means novelty and change of what we are currently doing. But it also enables the modification of what we believe in, that our set goals can be reached and at some point exceeded. Creativity in entrepreneurship isn't individual thinking, but is linked to the culture of teams and their relationship towards progressive thinking. In these cases we refer to innovative culture. Creativity is the key for human development. Every solution is supposed to bring new quality, whilst the latter

should raise the previous one and take the business as well as brand, product, company and employee to a higher level. This is fundamental for entrepreneurship. In a modern company, everyone is expected to be creative, from the C-suite level to the cleaning personnel. Creativity isn't only the domain of few chosen workers, but is an urgency to which everyone is entitled. Essentially, if everybody contributes – better and more creative solutions can be found.

Figure 3: Performed creativity on projects' task.
Source: Own source.

Figure 3 represents path of *Sandwich Management*. Detailed description of this path presents in chapter six. The essence of creativity lays in pursuit of difference, in favour of changes for novelties. As Walt Disney said (in Pompe 2011, 41), »We keep moving forward, opening new doors, and doing new things, because we're curious and curiosity keeps leading us down new paths.« Genuine innovation is:

– playful;
– naughty;

- without brakes and prejudices;
- full of thinking and merging;
- fast;
- ambitious;
- thrilling.

Innovation is inspired by other impulses, such as laziness and propensity towards comfort (Pompe 2011).

Creativity in the business world is an activity of entrepreneurship manifested innovation (Pompe 2011):

- exploring new and different opportunities;
- updating products/services, processes, organization, communications;
- presentation of problems in a different way;
- discovering problems before they occur;
- solving business problems in a different way;
- disposal of ideas about something so far unknown;
- seeing things that no one else can see, even if they are obvious.

Pompe (2011) argues, that creation is everything manifested by a creative person. Creation is a painting, a song, a book, a composition, a picture, and a movie. Included as part of this term creations, we also consider aspects, which are not of a commercial nature, such as: industrial design, graphical design, advertising scripts and slogans, etc.

Invention is the creation of something that so far wasn't known or used. Invention is subject, process or technique which represents novelty and is made by a human. Computers, wireless, the bicycle, telephone, tire, electricity are such inventions. Under specified circumstances an invention can be protected by law against fraudulent replication (Pompe 2011).

Invention and possible innovation also reflect the purpose of our project task. Invention is a new idea that is prosperous and useful for solving problems in future. It is the result of research work and may refer to a new product, service, process or system. Both the protection and marketing of intellectual property is plausible, but only if it is technically feasible and functional. Potential innovation is what has not yet given any confirmed benefits according to the users/market. It is the results of research and development that appears in the form of a prototype or successfully implemented trial production. Both before and after starting the commercialization of the product, we have an option to protect intellectual property with a patent (Pompe 2011).

Innovation (Figure 4) is a beneficial novelty that is confirmed by end customers. It enables new, bigger efficiencies in the form of higher qualities (lower costs, raise of companies' reputation) and to limit the competition. It is a result of research and development processes that are needed to complete a business approach if we want to release it on the market. Innovation can be defined as a series of technological, industrial and commercial advancements. It is also the result of successfully managing new ideas that transform entrepreneurship into changes which efficiently use resources (Pompe 2011). Innovation is the result of a process beginning with ideas and ending with innovation. This process is called life cycle of innovation. Entrepreneurship, where individual work groups formulate new ideas, is a possible solution for controversial bureaucratic structures. Innovation is intellectual property.

Figure 4: Lifecycle of innovation.
Source: Gričar 2016.

Food Technology, and Cooking Technology

In order to maintain life, grow and regenerate cells and energy (for basic metabolism), a human body requires certain substances that are found in food. These substances are available in various quantities depending on the different types of plant and animal based food. These elements are called nutrients and are divided into basic and protective forms. Proteins, carbohydrates and fats are considered basic nutrients, vitamins and minerals are considered protective. In order to remain healthy and function efficiently, a human body needs to receive a certain quantity and correct ratio of nutrients. Food with suitable ingredients that fulfil the requirements needed for our body are called balanced. Foods can also be processed mechanically or thermally to make them ready for consumption. Through processing foods we can get numerous dishes. The following factors are the result of processing:

- water;
- oxygen destroys delicate vitamins (A, D, E, C, B1, and K).

Some foods become edible or easier to digest due to biochemical changes, resulting from the acidification of: cabbage, beets, milk, mature or smoked cheese. Science relating to food preparation is called 'technology of processed foods' (Levstek and Grum 2002).

Mechanical Treatment of Food

Food is everything that can be used for human consumption. Food ingredients can be used through mechanical and thermal processing according to the recipe/standards, providing they are in date. Foods that have reached their expiration date must be removed immediately and placed into an organic waste unit. Foods prepared with a combination of ingredients are known as dishes. Effective administration is important to remain the traceability of food (Stražiščar, Baler, and Gričar 2012). When we start to prepare meat, vegetables and fruits, we need to consider the following points:

- wash quickly – if possible wash the whole item;
- sliced foods should not be left in water or exposed to oxygen;
- protect foods from direct sunlight;
- do not blanch food unecessarily;
- do not waste the water from soaked legumes or dried vegetables and fruits, instead cook those foods in their own water;
- be precise when cleaning or peeling; vegetable scraps can be used for cooking soups, fondues or sauces.

The dry cleaning of food is a process where we remove all the unwanted contaminants, such as sifting the flour. We remove useless parts: trimming wilted and woody leaves or cutting off bent and crumpled parts of fruits. Using water wash away the dirt, parasites, insects and other harmful micro-organisms. For washing we use only clean tap water. Food should be put on plates to be decorated or given shape. When peeling we remove all the hard skin that contains a lot of vitamins and minerals, which is why we try and peel food as thinly as possible. We remove spots, stalks and flies with the tip of the knife. For example, due to their shape onions should be cut into slices. Pickles, hard boiled eggs or peppers should be cut the same way when needed for decoration. Bread, cheese and meat products are also cut into slices. Specific food types vary in the size of the slices they will be cut in to. Raw, cooked or baked meat should always be cut against the grain to maintain the shape of the slice. Herbs, onion or garlic should be chopped finely. Anything that has been finely chopped will oxidize quickly and lose a lot of flavour with the evaporation of fragrant oils. Leafy vegetables, especially green lettuce, should be cut or torn into pieces. We mostly knead dough and sometimes minced meat, we can do this with our hands or various machines that have a kneading hook. All the ingredients connect and stick together with the process of kneading where the dough gets softer. Gluten in flour distributes evenly into the dough to

bind all the ingredients and coagulates during baking to give the dough its shape (Levstek and Grum 2002).

Fruit and vegetables are eaten mostly raw. Vitamins, minerals, fruit acids and aromatic substances enrich cooked food that do not have a lot of those substances. Beside lettuce there are other delicious salads, with grated carrot or celery for example. We add a little salt and enrich the taste with chopped chives, celery, garlic, onion and various aromatic herbs. In some vegetable dishes we can also add nuts or sprouts. Because of the tenderness, raw food needs to be chewed more which is good for the teeth and secretion of the salivary glands. Due to all the aromatic substances, digestive organs start to secrete more digestive juices creating good conditions for the digestion of food. Raw food has a higher volume than the same quantity of cooked food. For preparation of raw food we have to use ripe fruit and fresh vegetables (Levstek and Grum 2002). Most diseases originate from the human diet or from the individual humans. With a healthy diet we protect our health and at the same time prevent the risk factors for chronic non-communicable diseases and for diseases themselves. In Slovenia, we do not eat enough complex carbohydrates, fruit, vegetables and fibre. It is important to eat regular small meals – every morning, midday, evening and at least two snacks in between meals (Bojnec and Gričar 2014). For all of these we need healthy and safe local food related to *Sandwich Management* in chapter six.

Heat Treatment of Food

When heating food, processing or cooking we count all those thermal mechanic-physical processes that make food edible. Heat causes various chemical and physical changes, cooked food is easier to digest than raw and some of it becomes edible once cooked. Heat loosens the indigestible fibre and makes better use of many nutrients. During cooking the food develops new fragrances and some extractive substances, e.g. in beef broth. Muscle fibres and connective tissue in meat softens. Heat destroys harmful germs and parasites and also some of the heat-sensitive vitamins and minerals. Foods can be cooked in many ways – in water, in water below the boiling point, in a water bath, using steam or pressure. In the latter, the provider of the heat is water or water vapour. Water eliminates different soluble substances, such as: vitamins, minerals, acids and fragrances. The higher the water contents, the stronger the secretion. Therefore, this method of cooking is not recommended for fruit and vegetables because they contain a lot of vitamins and minerals. Heating increases the secretion, however, it can also be reduced by putting food in boiling water. We can also add salt and sug-

ar for less secretion. Cooking in the water bath is similar to cooking in water below the boiling point, only in this case we put the container of food or half-prepared dish into a bigger pot with hot water. The water has to be 70°C–100°C and the dish heated indirectly. In the water bath we cook the dishes that are likely to burn or cannot tolerate high temperatures, for example, when pasteurizing food (Levstek and Grum 2002).

A physical chemical change during cooking is the coagulation of proteins. During this process, the surface of meat becomes greyish. The starch in the food initially swells, then shrinks while it binds a lot of water. Sugar and salt are also melted. Fat is partially melted or dissolved. Vegetables shrink because of bursting cell membranes and loose cellulose. The water in which the food is cooked forms a specific taste and colour typical for the food that is being cooked. During the latter process there are also flavouring substances developed that also slightly evaporate. In addition, water-soluble vitamins and mineral are excreted into the water, whilst heat-sensitive vitamins are degraded (Levstek and Grum 2002).

Food Safety

Food does not have a permanent nutritional value and quality. At some point they start to change and eventually spoil. Such deterioration is caused by enzymes, micro-organisms, chemical and physical impacts, mechanical damage, animal pests and contaminants. For the same reasons, dishes are prone to changing faster than singular foods. Ferments and enzymes operate in all animal and plant sourced foods. In dead organisms they can cause harmful, but also sometimes beneficial changes. Sometimes food develops an unpleasant smell, change taste, colour, consistency and overall appearance. They also gradually become less edible and the nutritional values lower (Levstek and Grum 2002). Enzyme activity is at its strongest between 20°C and 60°C (Stražiščar, Baler, and Gričar 2012), which is why food should be stored at under 8°C. The process of fermentation depends on the active acidity of an environment, referred to as the 'PH level' (hydrogen ion concentration). Enzyme activity is useful for aging meat and cheese, tree ripened fruits and for coffee fermentation (Gričar 1999; Raspor 2002; Levstek, and Grum 2002; Stražiščar, Baler, and Gričar 2012).

Micro-organisms cause important changes in foods and dishes. They are divided into bacterias, yeasts and molds (Stražiščar, Baler, and Gričar 2012). Bacterias are the smallest micro-organisms, they reproduce quickly as well as decompose and spoil food. The most dangerous bacterias are decomposing proteins, they form strong toxins that can be fatal for humans even in small amounts. This type of bacteria also causes inflation of

meat cans and other cans that contain proteins, for example, canned peas or beans. Harmful bacterias in dishes are partially destroyed if they are boiled before re-order. Yeasts cause alcoholic fermentation where sugar decomposes into alcohol and carbonic acid. Yeasts are useful for fermentation, beer preparation and rising dough. However, they are harmful when they cause unwanted alcoholic fermentation, for example, in fruit juices and other stored foods. There are several types of mold. On the surface of foods and dishes molds can appear: white, grey, brown, black or green mold that all have an individual smell. Mold occurs on old meat, dishes, potato, butter, cheese, fruit, jams, jellies, fruit juices and syrups. It also attacks the walls and shelves of food warehouses and stores. Moldy foods or dishes must not be eaten. Some types of mold can cause cancer. Moldy food is also harmful for animals. For growth and reproduction all micro-organisms need: water, adequate heat, oxygen and a host location. Their function and reproduction can be limited or prevented by physical and chemical operations (Levstek and Grum 2002; Gričar 1999; Stražiščar, Baler, and Gričar 2012; Raspor 2002).

Some chemicals effect food in two main ways. Some substances added to food or dishes reduce nutritional value. For example, soda destroys vitamins in vegetables and beans, and oxygen causes decomposition of vitamins C and B_1, as well as fat rancidity. Certain chemical substances, such as: various fertilizers, cleaners, copper or zinc kitchen utensils, unsuitable plastic or metal container, alkalis and acids reduce the original taste of food (Gričar 1999; Raspor 2002; Levstek and Grum 2002; Stražiščar, Baler, and Gričar 2012).

Light, air, moisture, heat and cold are all physical impacts detrimental to the taste of exposed food. Light dissolves fats and vitamins, moisture and heat foster the development of micro-organisms (Figure 5), heat destroys vitamins and cold causes the freezing of food. Thawed foods spoil faster than fresh. Mechanical damage is caused at harvesting, storage and transport. Pressure and jolts can bruise, crush or damage the outer protective layer of food. Damaged areas are susceptible to micro-organisms and often the food starts to rot in that area (Levstek and Grum 2002; Gričar 1999; Stražiščar, Baler, and Gričar 2012; Raspor 2002).

Damage to food caused by pests is increasing on an annual basis. The most common pests are: mice, rats, bugs, moths, flies and mites. The use of conventional insecticides is limited in food stores as they are dangerous to humans. This is why pests should be prevented by using the correct storage facilities. Both ventilation and appropriate storage temperatures for food should be maintained to encouarge high quality products. Pests are also

dangerous for humans, flies, rats and birds can transfer various diseases. Dirt reduces the value of food and also creates conditions for the development of micro-organisms and insects. The following precautions can be taken to avoid the latter: clean pantries, basements and cupboards where food or cooked dishes are stored (Stražiščar, Baler, and Gričar, 2012).

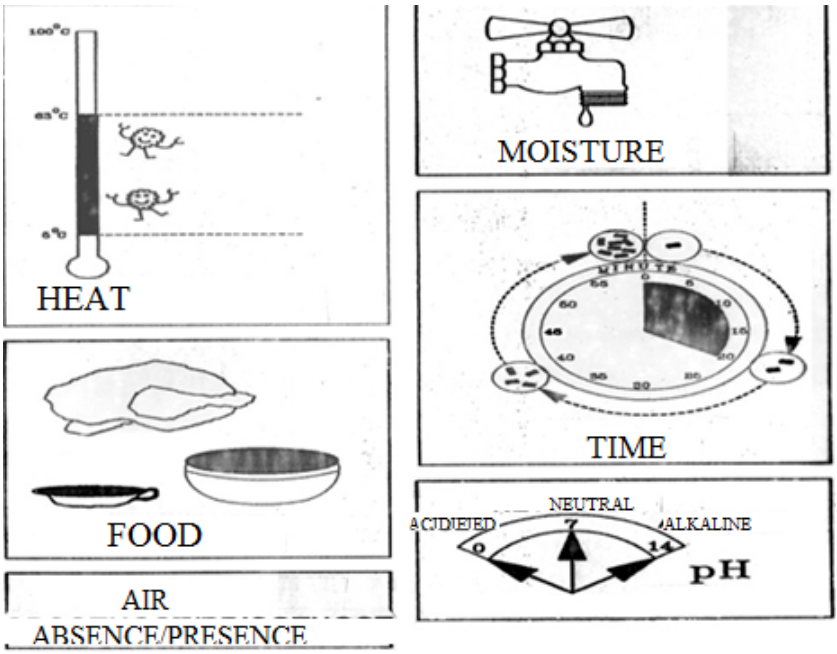


Figure 5: Conditions for the growth of bacteria.
Source: Stražiščar, Baler, and Gričar 2012.

In 2001 the Slovenia food industry established a new standard that controls the aforementioned threats. Standard development in the United States (US) of America are called Hazard Analysis Critical Control Points (HACCP). HACCP is a tool designed for the executives of food industries, it provides a structured approach to controlling and providing healthy foods. Traditionally this is provided by stringent inspections and classic health control procedures. This monitoring is not only conducted regarding the finished product, but on each individual phase of the process from purchase to sale. Despite this, the need for testing the final products still remain, mainly for verification and validation of the effectiveness of the HACCP system (Repanšek 2014).

Repanšek (2014) states that the HACCP system focuses on risk analysis and critical control points (CCP) and should be part of manager's de-

cision work. This tool provides the management of the company with a cost-effective, ongoing program for providing healthy food. Its application systematically evaluates all phases of purchasing, manufacturing, sales and determining critical points for the adequacy of the food product or service.

Requirements and measures for food hygiene are necessary to ensure that food is safe and healthy for consumption. Food hygiene should be closely followed during: production, preparation, handling, processing, packaging, storage, transportation, distribution and sales. Aspects that should be considered for accompanying hygiene programs are (Repanšek 2014):

- sanitary technical conditions which determine a suitable location for a catering facility, adequate internal equipment, proximity to public water and sewerage, ensuring the proper temperature of refrigerators and freezers;
- water supply – temporary catering facilities need to have a connection to the public system of drinkable water must be available (if not bottled water);
- pests control and protection; we want to prevent pests from entering the workspace. We need to take regulated precautions, in the case of infestation to call an authorised organisation immediately;
- cleaning – we have a cleaning plan that consists of cleaning instructions and record sheet;
- management of wastes – we have special space for separating organic and non-organic waste;
- personal hygiene and health – only healthy personnel who have been educated and abide by food hygiene and work procedures can participate in preparation.

Accompanying hygiene programs are inextricably connected with the HACCP system. They manage general risk factors and allow the HACCP system to focus on more important risk factors. Biological risk factors include bacteria, viruses or parasites in food. Chemical risk factors can be cleansers, disinfectants or pesticides. Physical risk factors are foreign objects in food, for example: a nail, a screw, a toothpick, glass or plexiglass. Risk analysis is comprised of the identification of risks that need to be controlled to ensure food safety. Defining the CCP is a step in the production or the transportation of food with the establishment of preventive or controlled measures that help to reduce, eliminate or avoid the risk factors involved with food. The critical control points can be: the raw materials, components, location, procedures, methods of work or phases in the food

trade and production. Examples of CCP in food preparation are the temperatures or times of: heat treatment, cooling, acquisition of finished potentially hazardous foods that will not be heat-treated anymore (Stražiščar, Baler, and Gričar 2012). CCP can be defined as a predetermined value that we should not exceed. The latter ensures CCP effective control over the potential risk factors. It is recommended that the parameters are quick and easy to measure. If the critical limits are exceeded, the CCP is no longer under control and a potential health risk may manifest. Critical control values are mostly based on the temperature (Table 1) and time, rarely on the water and Ph level of food.

Monitoring is a planned sequence of observations or measurements to assess whether a CCP is under control. It is also the production of an accurate record for future verification. Documented results are part of the mandatory data proving that food production is conducted safe. For monitoring we use physical measurements, visual measurements and the visual evaluation of colour and smell for monitoring all the check points from the HACCP plan. For each CCP we need to know the person responsible for the proper implementation and archiving of what is monitored. Correction is any procedure that must be performed when monitoring results that indicate the CCP is not under control. Correctional procedures have to include instructions on how to establish a normal working situation and how to document it.

Verification is an activity that verifies the effectiveness of the HACCP system. Verification helps us to confirm the correct selection of CCP, effectiveness of monitoring and relevance of the corrective processes. We perform this with periodic reviews of record procedures and interviews with employees, the latter is to determine whether the system is operating according to the HACCP plan.

Table 1: Temperature goals at storage of cooled and frozen foods.

Food	Temperature
Food in refrigerator (sensitive)	+8 °C (allowed to +10 °C)
Other food (insensitive)	no specific requirements
Frozen food	- 18 °C (allowed to – 15 °C)

Source: Own source 2014.

Documentation is organised storage of documents concerning information related to the internal control of healthy food. The key HACCP document, called the HACCP Plan is a document based on the seven principles of the HACCP system. This information determines procedures that need to be taken into account to ensure the appropriate control of

risk factors. The previous is essential when ensuring food safety in the production process, depending on the type of activity. The director and all the employees are expected to work in accordance with the HACCP plan. Employees are responsible for identifying and documenting every problem concerning food safety and also for implementing its corrections. Knowledge of the HACCP plan should be checked by written examinations. As part of the daily evaluations, employees should work in accordance with what is specified as good practice.

Training is led the head of the HACCP group (Table 2) and the outer member. At the training

facility where employees receive knowledge of HACCP, participants become acquainted with the basis for the HACCP system and with the process of work that has to be applied at the plant to ensure wholesome food. A key emphasis is placed on good hygiene practises. Refresher courses for good hygiene practise are carried out once a year. The HACCP plan describes every step from: the supplying, ordering, collecting, storage, cooling, pre-preparation, and serving and delivery.

Table 2: Inside members of HACCP group.

	Name	Position	Function in HACCP plan
1.	Name and surname	Manager - head	Person responsible
2.	Name and surname	Employee	Member
3.	Name and surname	Employee	Member
4.	Name and surname	Employee	Member

Source: Own source, 2014.

Catering

Catering (catering industry, hotels and restaurants) consists of a diverse range of activities, namely because it meets the needs of two basic groups of consumers. The first group of consumer services is catering for tourists or people outside the place of residence. The second group includes residents or permanent residents who are seeking catering services outside their households, i.e. engaged in providing services. The service economy is when a product development model is not a product, but a service. Catering services are usually implemented in the hospitality industry and are intended to meet the needs of people around vacation apartments. The development of catering is linked to the development of the whole economy, especially in the world economy, which allows goods, transport and tourism to be traded (Gričar and Bojnec 2009). Services offer food catering services in order to meet people's need for food. It consists of preparing and serving different kinds of ingredients and dishes (hot, cold, desserts).

All services have a provisions supply so that they do not merely retail food and drink, but ensure that it is well prepared before serving to guests in hotels and restaurants. Nowadays, the popularity of eating in restaurants reflects the phenomenonal growth of the international restaurant economy. People that are mobile consume food and drink in restaurants regardless of whether they are part of global restaurant chains or local restaurants. This latter statement also applies to managers who use catering services for efficient ambience to achieve the most important agreements (Gričar and Bojnec 2009).

A recipe contains all the ingredients used in specific dishes. All dishes that are sold must be labelled with the name of present food allergens, as well as the price per unit (serving). With beverages and drinks this is indicated per liter. Packaging must also state the title of the product. The latter reference is made only if the name of the dish and the provider are not the same. The name of a product must demonstrate traceability of equivalent sales of the product named on the account. Dishes with an expired shelf life may not be sold under any circumstances, for example: for free distribution or for pets. Dishes that have expired, shall be immediately removed from the kitchen and placed in organic waste containers (Stražiščar, Baler, and Gričar 2012).

Development of Computing

Technology has encouraged progress in numerous fields within the last decade, in particular to the field of computing. As a result, computers and computer programs are being upgraded annually. The internet is one of the main technical progresses available to us that generates quicker fluxes of information. There has been an explosion of use in the last decade as increasing numbers of people have started using the internet. The internet has changed the manner of our work, of shopping, performances of bank services and other aspects of our daily life. Nowadays, many people cannot imagine life without the internet. The internet is being used internationally for both domestic and business purposes. This phenomenon poses the question 'what makes something such as the internet so influential, to expand at this phenomenal rate of growth?'

A computer net is the interconnection of various independent computers. Through this net of electric wires and connections, computers are now able to exchange data and information around the world instantly. Autonomy means independence, that one's computer does not need the support of others for basic activities (Murko 2003). Murko (2003) lists that the internet has a fine connection amongst thousands of networks, millions of

computers and other devices across the globe. Grubelnik (2000) says that, 'the internet is a world network of computer nets'. The internet is becoming the epicenter for new information, making enormous amounts of data accessible to users. Different kinds of information are accessible through these networks, from commercials, to academic, state and personal. The introduction of the internet has made networking possible through its immediate access to various kinds of information: educational, business, statistical, legal, professional and financial through:

- the receiving and sending of electronic mail, short text messages, memos, offers, price benefits, adverts;
- data on our activity, services or products become instantly available to users across the globe, business people, institutions, friends and potential customers;
- data bases from anywhere in the world can be accessed at the click of a button, enabling us the ability to educate ourselves despite distances. Through this we also save precious money and time;
- the invention of the internet could not have occured without software support.

Computer programming is an activity focused on creating new computer programs or their components based on the foundation of certain rules. Programming and the application of abstract algorithms are only one phase of many in the development of software. Computer programs are written with a source code of a certain programming language. A programmer can give themselves an advantage by using suitable developmental tools (Shaun 2014).

Sandwich Management

Project Planning

An introductory meeting was set up in December 2013 by conceptual leader. He presented the concept of an interdisciplinary project business idea under the public tender for co-financing project Sandwich Management. With help from a group of students, co-ordinator, academic mentor, and mentor from the company Repa who formed a work group named: Sandwich Management. The project group was composed of four students. The latter has withdrawn from participation due to gaining employed in June 2014. One student's position was taken by another student, who was new to the project.

The project lasted between March and September 2014. We divided the tasks according to the different topics. Gained knowledge, experiences and findings were constantly presented to all the team members. Where necessary, we also corrected and complemented these findings at our monthly meetings. Our work was supervised and co-ordinated throughout the project with help from mentors and other experts, with whom we have co-operated to make sure that all the tasks were executed.

Students gained new knowledge, competences and skills from various unknown areas. One of the students was working on the economic area, calculating nutritional values of sandwiches and their ingredients. He was also crucial in the baking of baguettes. Another student was also participated in the early stages of the baking. Her work tasks included: sending notifications to all our members concerning tasks to be done until an agreed date, writing records from meetings, preparing a brochure for the agricultural fair *Agra* and the preparation of the final edition of the brochure.

One of the students' tasks included: preparation of the HACCP plan (including all the necessary forms) and making a brochure for the agricultural fair *Agra*. One of the students worked on the financial area, while another one worked on programing the web application and our web site. The student designed the conceptual scheme of the project Sandwich Management and was the conceptual leader for the project. He also prepared the indicative work plan with help from our academic mentor. The latter was later supplemented with data regarding task assignments on the project.

We used a closed Facebook (FB) group as an innovative help tool for communication amongst team members when making the brochure. To showcase the communication (European Commission 2012) in our group, we are presenting breakdowns of the project on subchapters of interdisciplinarity and multidisciplinarity.

We identified communication channels for reporting and communicating about the tasks related to the project. We assessed the progress made on the tasks we were assigned on a weekly basis. Moreover, we agreed to publish our work on the Cloud storage based solution, Google Drive. The latter is convenient as it enables the modification of documents that are used regularly. We all had full access to a Google Drive PKP Sandwich group and its files (European Commission 2012). Mentors were monitoring the students' progress on the project through the use of internal Google Drive files. An additional advantage of having mentors was the broad knowledge of inter/multidiscipline areas that they offer. During the project, we paid specific attention to how we could communicate more with the public, as well as with potential stakeholders also emphasized by the European commission (European Commission 2012). We identified the following points for circulating the information to interested recipients:

- public FB group;
- the project's online store;
- round table;
- European researcher's night at the last Friday in September each year;
- the presentation of the project at 52. Agricultural fair AGRA in Gornja Radgona;
- the publication of articles in municipal newspapers *Suhokranjske Novice* and *Naši Koraki;*
- the publication of the project on portal startaj.si;
- the publication of the project on the faculty's website;
- the publication of the project in the regional newspaper *Dolenjski List*;

– public access to selected documents in Google Drive;
– in depth descriptions of the project in our brochure;
– translation of the project into English and as an e-publication.

SWOT analysis and questioner

Project members conducted a SWOT analysis commonly used in the preliminary stage of a project. The acronym 'SWOT' stands for »Strengths, weaknesses, opportunities and threats«. 'Strengths' and 'weaknesses' refer to the analysis of the company's internal environment. Alternatively, 'opportunities' and 'threats' present influences to a company's external environment.

The SWOT analysis was conducted with help from all the students at one of our first working meetings. As a result of the large number of ideas that were generated throughout the meeting, we gained new perspectives concerning the manner in which the project could be executed. Once we had compiled a large collection of ideas and opinions, further solutions for our weaknesses and threats became apparent. For a successful workshop it was crucial that all members were present, that everyone had a chance to express opinions on how the project should proceed. As part of this holistic brainstorming, it was essential that each contributor was appreciated equally and that we generated a supportive environment where innovations could occur.

We used a technique called »brainstorming« (Pompe 2011), where we discussed our strengths, opportunities as well threats and weaknesses for *Sandwich Management* if SME introduce the concept. Following this, we then tried to find solutions for what issues we found (Table 3).

Our main advantage with the project was the size of our company. A small company allowed us to be more flexible with business, especially when it comes to adapting to customer and market needs. Another advantage to having a small company was our quick reaction time for customer needs, quality of food and delivery options at lunchtime. One of our competitive advantages was the option for product customization when making a sandwich with customer selected ingredients.

An example of possible weakness is the price of the final product. This latter point is the consequence of using high quality ingredients rather than competitive ones (Crosby 1979). We stated previously that delivery is a possible advantage; but it could also be a disadvantage due to the disperse population of Novo Mesto, creating additional unexpected costs. Our last identified weakness is an inadequate knowledge of the food and processing industry essential for the project.

In our external environment, a solution could be made through an option for people to pay via the internet. In correlation, we could also expand our offer with an additional option for breakfast. Since we are new, we can also build useful brand awareness for our products amongst customers.

We paid special attention to potential hazards from external environments, ignoring them could lead to a negative impact on our company's business. Included in 'threats' we stipulated: an annual supplies of staples, competition with similar offers, saturation of the market and internet illiteracy of our target customers.

Table 3: Project SWOT analysis.

STRENGTHS	WEAKNESSES
Size Flexibility Time saving solutions Nutritious meals Several versions of final product Quality Food delivery from 9:00–12:00 Ordering – web and mobile applications Ingredients have local origin Product is made within time of request Small space Open on Sundays and holidays	Inexperience Location in NM: no town centre Lack of knowledge in food industry No business model Supply of staples Price Small number of customers Knowledge of HACCP system No computer operating system for ordering and delivery
OPPORTUNITIES	**THREATS**
Product testing Delivery system testing Testing of products on bigger markets Expending of assortment Special offer for breakfast Setting up our own processes Franchise Option for paying via web solutions Marketing through the internet Graphic outlook of store Graphic outlook of packaging Unique uniforms for workers Building on brand awareness	Constantly supplying staples Competition with similar offers Saturation of market with similar products Competition who also has all day delivery Change in customer needs and expectations Hackers attack on our web site Rise of VAT Price of staples outside of the summer period

Source: Own source 2014.

One of our project tasks was to conduct online interviews (Figure 6). The answers we collected were crucial to our understanding of customer needs and market expectations. Our aim was to find out whether a sandwich is appealing enough for people to eat on their lunch break. The questionnaire was formulated using both open and closed style questions.

The initial aim of the questionnaire was to reveal market needs and customer eating habits during lunch time. Through evaluating our results we were interested to see: how many meals our participants eat per day, how many times per week do they eat cold lunch, how important for them is to have ingredients of local origin (regardless of the product's final price). We avoided asking what kind of ingredients they would prefer to see in most common sandwiches. Instead, we will offer them an option to customize the product. Respondents were offered the following ingredients to choose from: cheese, spread, salami, ham or vegetables. An online questionnaire was distributed in June 2014 amongst high school pupils from Novo Mesto (n = 405). The questionnaire was accessible for 10 days.

1. Gender
2. Age
3. Level of education
4. How many minutes do you take for lunch at workplace?
    a. I do not eat at workplace
    b. Up to 15 minutes
    c. Up to 30 minutes
    d. Up to 45 minutes
    e. Up to 1 hour or more
5. How many times per week do you eat cold lunch?
6. How many meals do you eat per day?
7. What is your daily average expense for lunch?
8. How many times per month do you use a delivery of food?
9. Is Slovenian origin of food important to you?
10. Would you favour in environmentally friendly packacing?

Figure 6: Questions as part of online survey.
Source: Own source 2014.

The survey results indicate that most high school pupils in Novo Mesto eat cold lunches at faculty. The majority, however, would also like to see additional offers forming locally. The data we obtained helped us make decisions regarding which type of sandwich we should offer to customers. We concluded that products should comprise of locally grown vegetables. Additionally, a web based application was developed to give customers the option to make their sandwich in a preferred way.

Financial Perspective for the Business Idea

Renting of Business Space

Financially we identified the costs of renting our premises. We conducted interviews with authorized representatives of the banks; here we discussed financing options for our company to carry out the project on the market. Through analysing our obtained information, it was easier to plan the financial possibilities of carrying out the project. During the project we investigated prices and other terms and conditions of leasing business space. With regards to leasing a business space, we found that there were no pre-equipped bakeries. We found only one bakery in Novo Mesto that may suit our needs. On the door of this bakery there is a sign stating (rent is 300 euros per month with costs. Costs are monthly between 50–100 euros). We have produced a sketch of the business space for rent, which is shown in the figure below.

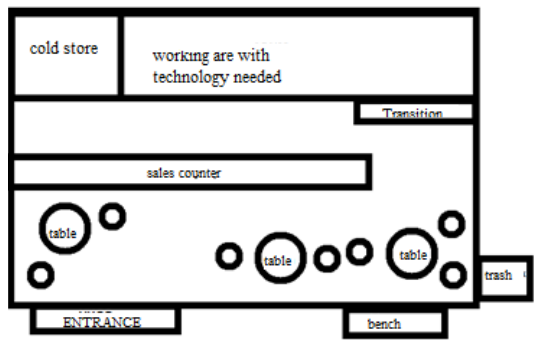


Figure 7: Study of business space for rent.
Source: Own source 2014.

Business spaces in Novo Mesto broadcast;

- Nepremičnine.net for 10 euros /m²;
- Salamon web page, where there was no offer;
- Square meter property: business space costs are between 400–1100 euros per month;
- Laren nepremičnine, where there was no offer;
- Bolha web page: business space emitted between 300–1500 euros per month.

Discussions with the Banks

As part of the project, we were also interested in how to obtain funds for starting our business idea. We have also studied the financing sources of

the banks. We obtained information from the following companies: NLB, Delavska hranilnica, Hranilnica Lon, A banka, NKBM, Hypo-Alpe Adria banka, Banka Koper, Raiffeisen banka.

At each bank the authorised representatives were all asked the same questions. They were asked to briefly describe their banking conditions for customers looking to gain credit. For instance, as a »d. o. o./s. p.« company we should request for a minor credit which would enable us to start our business. We were also interested in what kind of documentation we would have to submit together with our request for credit: whether we need a guarantor, the highest/lowest loan we could request, types of repayment plans, what is the interest rate and the return period and whether we have to be an existing customer of the bank. The banks mentioned all provided us with similar answers, that »all applications for gaining credit are addressed individually. For financing a company they need full annual financial statements of the AJPES (Agency of the Republic of Slovenia for Public Legal Records and Related Services), as well as a short business plan and balance sheet data. In the case of financing a micro-enterprise, it is not necessary for the client to be an existing customer of the bank. We could choose between the short (up to one year) and long-term (up to 8 years) financing period. The interest rate is linked to a three month EURIBOR with a fixed premium of 4,50 % or more (depending on the credit assessment and the volume of business with the bank). The amount of credit that we would be allowed would vary from the minimum amount and up to EUR 250.000,00. The banks address each financing offer individually and adapt it to the wishes of the client and to financial statements of the business operation of the company.«

It is difficult to obtain certain information as all credit requests for legal persons are addressed individually, with a business and a financing plan prepared in advance. We have been given information stating that the amount of credit for legal persons depends on the return period. However, each credit is determined individually according to financial conditions of the individual. The banks have also provided information stressing that it is difficult for them to present us with their conditions for gaining credit. The banks request that a business plan has already been thoroughly prepared in advance. As we were not initially aware of this requirement, a business plan has not been developed within our project.

Forms of Business Enterprise – Sole Trader and Ltd

A limited liability company is a business whose share capital consists of basic input associates and the value of their underlying investments are differ-

ent. The company may establish one or more natural or legal persons who become the creation of its associates. The number of associates is limited to fifty (Puharič 2004). Based on their basic inputs, the shareholder gets their appropriate share of the capital. The company is established via an agreement signed by all the associates and must be made in the form of notarial record (Mežnar 2000). Our form of business is d.o.o., which comprises of the associates of a company together with its inputs serving as a guarantee in the case of business failure (Figure 8).

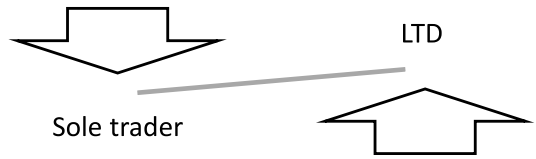


Figure 8: Form of enterprise in project.
Source: Own source 2014.

A sole proprietor is a person on the market who gained independent employment as their exclusive activity. Nevertheless, a sole proprietor is also an economic entity without legal personality. It is important for our project that an entrepreneur is guaranteeing for their acts with owned assets in case of business failure.

Interdisciplinarity of Project – Technology of Cooking

My garden

As part of the preparation process for our project we decided to produce our own vegetables for the sandwiches. We grew vegetables which were then used in the final product. Prior to planting and growing our vegetables, we consulted expert knowledge regarding the field of gardening. The concept of producing our own home-made vegetables was carried out successfully. The plants have then been grown with all the necessary cultivation. We have taken care of the plants on a daily basis. During the growing process we considered the agreement about not adding pesticides or other sprays. The base elements were water (mostly rainwater) and the household compost that we used prior to the start of planting. In the summer 2014 has not been favourable for the growth of plants. Our tomatoes were the most affected as they became contaminated by mould.

Planning a vegetable garden can be just as exciting as growing vegetables. A modern kitchen garden plot grows produce, such as: vegetables, fruits and herbs. Vegetables are traditionally grown in straight rows, on a large square or rectangular plot. There needs to be ample space between the rows for the gardener to walk along. The plot is divided into small beds that are separated by these small paths. Before we start buying or planting seedlings we have to make sure that the soil is of suitable condition. In order for the plants to flourish, they need a well prepared bed to provide them with the necessary food, water and protection (Marshall Bradley and Courtier 2006). Marshall Bradley and Courtier (2006) also state that plants utilize light and air in order to grow into an edible form, but for this they

also need supplements. They require water and food in the form of different mineral substances. They also need space where they can grow roots. For the majority of plants they can extract these from the soil. Home-made compost is the fundamental source of organic materials for the majority of gardens. In this way it enables an easy whilst useful means to dispose of the waste plant material. Compost consists of partly decomposed plants mixed with animal waste. Under suitable conditions, the components decompose creating a dark, brittle and moist substance with an earthy odour.

A shovel is needed for the majority of the digging; some people, however, prefer to use forks if the soil is heavy. Stainless steel shovels are expensive, but they have a longer life span and make the work easier as the soil slips off the blade. When turning over a shovel full of soil, we place one hand low on the handle, near the blade, so that the amount of leverage is increased. In order to prevent the digging from becoming too strenuous, the shovel should not be overloaded (Marshall Bradley and Courtier 2006).

When gardening, it is exciting to observe how the bag of dry, deformed seeds turn into strong, healthy plants. It is important to remember that plants are at their most vulnerable when young, meaning this is when they require the most care. The seed contains a plant embryo in its dormant state, as well as a sufficient amount of energy for the young plant until it can draw food by itself. A lot of vegetable crops grow and mature in the place where they were planted, but some are then transplanted when the plants are still young. It is crucial that young plants are transplanted as soon as they are ready; any hesitation of this will reduce the amount and quality of the crops (Marshall Bradley and Courtier 2006). Marshall Bradley and Courtier (2006) also state that after plants have been planned, planted and sowed, there is a great pleasure in observing your own vegetable garden flourish.

When growing our plants, we followed the guideline that 'all plants need water for successful growth and that rain water alone is not always enough'. We also took into consideration that seedlings need to be watered regularly in order to grow efficiently. One of the advantages of growing your own vegetables is that you can pull them out when they are ripe and full of nutritious substances. We also agree with Marshall Bradley and Courtier who claim that collecting crops is one of the most rewarding aspects of growing vegetables. Since it was not always possible to use the collected crops immediately, we also considered the correct methods of storage and in this way slowed down the quality deterioration, but at the same time took care of the safety of the collected crops.

Freshly harvested salad is a prerequisite for a perfectly prepared basis for sandwiches. We planted a mixture of crisp salad and Romanic salad. Hopefully, we will enjoy the crispy, sweet salad for six months. Most of the vegetables grow slowly, but the radish grows much quicker meaning that we harvest them only three weeks after sowing. Initially we planted too many tomatoes. We planted them early to medium late to yield the sweetest possible results. As a plant, peppers are can be decorative due to their colour. Long, smooth and slim cucumbers have been grown beneath shelter. For the growth of our cucumbers, peppers and tomatoes, sunny weather and regulated watering was needed. As mentioned previously, summer 2014 was not ideal for our garden. Nevertheless, the harvest was sufficient for sensory analyses of the sandwiches.

HACCP

From the data presented in the 2014 survey (Gričar and Bojnec 2014), it is evident that food poisoning in 2011 was on the rise. Every year on average in Slovenia, there are 19,183 inhabitants diagnosed with food poisoning. To improve this situation, compulsory education regarding healthy cooking should be conducted earlier in a child's life. The observed data concerning safe food and knowledge for a healthy diet demonstrates why it is important to introduce the HACCP system into our project.

All the members of the project team completed HACCP training before starting the project. Training was carried out at the Chamber of Commerce in Novo Mesto, Slovenia. For the purpose of further material training and the application of the HACCP system, we worked alongside a mentor to guide the further production pathway for the HACCP plan. In order to establish the HACCP system, HACCP guidelines should be considered to provide a basic strategy for the internal control on the principles of the HACCP system. As the project deals with the production, processing and preparation of food, we took into account the Act on Health Suitability of Foodstuffs. For a HACCP guideline, we used European regulations on food hygiene EC 825/2004 to prepare the products and materials that come into contact with foodstuffs. The following paragraphs briefly outline these guidelines. General hygiene technical conditions are defined as:

– a temporary catering facility and preparation room is located in the surrounding area. This is arranged in a way that traffic dust,

smoke, odors and other contaminants do not come into contact with food;
– the facility is near a connection to the public water supply and sewerage;
– all angles are made with special rounded surfaces so that there are no sharp edges, which also helps to facilitate cleaning;
– the walls and floors are made from materials that are easy to clean with water;
– any mechanical damage to the floors, walls or ceiling are regularly checked and corrected;
– building furniture is made of materials that are easy to clean and if necessary disinfect;
– appropriate temperatures for storing food are provided with several refrigerators and freezers;
– facilities and main equipment are defined as:
– a temporary catering facility equipped with the correct apparatus for fast food preparation and other equipment;
– all work surfaces are made of washable materials;
– the preparation room is connected to the public supply of drinking water.

Pests (insects, rodents, birds) transmit different pathogens from contaminated areas to food and work surfaces. Prevention of pests into the workspace is essential; such precautions can include nets on the windows and ensuring outside doors are closed properly. In the event of incursion, checks known as 'authorized oraganization' must be carried out. In order to prevent pests, companies must abide by certain measures, such as ensuring that their organic waste is collected in sealed plastic barrels. Other wastes should be stored in a separately enclosed area intended only for waste collection. The preparation facility is cleaned and the trash removed every day after work. The waste collecting company that we have worked with is called Snaga. Wastes remaining from the work process are collected in plastic baskets. Tight plastic bags should always be installed inside the waste bins for single use only. These plastic bags are removed immediately from the bins once full, or after the completion of each procedure. At the end of the working day debris is removed by the contracted company. In order to collect scraps of wasted food, it should be gathered in special plastic barrels.

Methods for cleaning, a cleaning list and cleaning devices are processed in a separate registrar. For the proper use of cleaning agents a user should refer to the manufacturer's instructions. Cleansers are not to be

poured into unlabelled containers. Cleaning accessories are to be used only for their intended purpose. The cleaning plan consists of cleaning instructions and record sheets. Instructions for cleaning include:

- what is to clean;
- how to clean;
- when cleaned;
- who is cleaning;
- person responsible;
- the correction procedure.

Record sheets for cleaning include:

- list, equipment, premises and other areas that need to be cleaned;
- the frequency of cleaning for individual devices, equipment, premises and other areas.

Employees who work with food are responsible for microbiological safety. The latter is achieved through good personal hygiene. For example, workers should keep their work environment clean and tidy as well as ensuring that they wear clean protective clothing and footwear. The most common way of transmitting micro-organisms to food is by touching it with unwashed hands. Epidemiological data suggests that a large proportion of infections and food poisoning occurs due to the employees mishandling and contaminating the food. Furthermore, the preparation of food should only be conducted by healthy people who are educated in the field of food hygiene and respect the correct preparation procedures. Employees working with food should follow the subsequent rules:

- they must practice a high degree of personal cleanliness whilst working: keep tidy, wash their hands regularly, clean and trim their nails, wear clean clothing and footwear;
- consistent hand washing;
- damage to the hands (scratches, burns, cuts) should be covered with waterproof plasters;
- know the basic rules of hygiene when working with food and take them into account.

Dressing appropriately for work is mandatory and should be kept separate from civil clothing. This consists of: trousers (girls can wear a skirt), t-shirt, apron and cap. In the workplace, we are not allowed to arrange or touch hair as it can contaminate the food within dirt and micro-organisms.

One of the most common ways of transmitting micro-organisms to food is by people touching the food with unwashed hands. Washing the hands properly will remove dirt and temporarily acquired micro-organisms on the surface of the skin which will ensure food safety. The procedure is as follows: wet hands with hot water, apply soap to hands and wash them for at least ten seconds. Wash all surfaces: hands, fingers, spaces between fingers (especially the thumbs, backs of the hands and wrists). Once hands have been lathered and scrubbed, rinse and wipe them with a single use paper towel. To avoid contamination hands must be washed regularly and meticulously. In particular hands should be washed:

- before starting work;
- after any job in an unclean area (eg. a warehouse), or after coming into contact with dirty objects, such as packaging materials;
- after using the toilet;
- after replacing garbage bags or any other waste management;
- after cleaning the rooms or areas;
- after each interruption of work (eg. for a cigarette break);
- after arriving from other areas of the workplace;
- after wiping your nose, coughing or sneezing in your hand and after touching the skin of the face or scalp.

Chewing and smoking in the workplace is not allowed as it increases the risk of transferring germs to your lips, mouth and to the food. In conjunction, chewing and smoking in front of guests is inappropriate and distasteful. Eating whilst at work is also not permitted, except on a lunch break at a specified location.

Disease bacteria can be transferred to food by humans or via the institution. People who carry a virus can transmit the bacteria even before they know that they are sick. This mode of transmission can be prevented by good hygiene practices, especially through proper handwashing after using the toilet. Bacteria and viruses that cause foodborne diseases are largely excreted in the faeces and sometimes urine. A person also excretes microbes from facial orifices.

Fresh cuts and wounds should be well protected with a waterproof plaster. The cuisine establishment must always be equipped with easily accessible first aid kits.

When employees sign a contract of employment, they sign a declaration in which they commit to report a disease and if necessary pass a medical examination. Employees who have: ulcerated skin sores, an irritated throat, diarrhea, vomiting or have a fever, should not work with food. At

the same time, employees must inform their supervisor of any recovered infectious diseases. All visitors, fitters and maintenance personnel must be clean before entering the factory premises (instructions at the entrance). In cases of health problems (infections and diarrhea) they should not come into contact with food.

In accordance with the Rules of Health Requirements, people working in the manufacturing and distribution of food sign a legal form before coming into contact with products. Once the form is signed they have committed to the leader of the HACCP group or to their supervisor to note any issues about their health status that are important to prevent the spread of infectious diseases through food.

For the purposes of the project we have created HACCP system forms. Each form has its own identification number and a brief description of what it does. Employees who have completed the forms are held responsible for their own actions and for ensuring proper conduct during work. The frequency of compliance depends on the form. Forms are separated into two groups depending on the section which is supervised:

– forms in the context of the accompanying sanitary programs, rev. SPH (in terms of cleaning equipment and facilities, as well as the health status of employees);
– forms within the HACCP system, rev. HACCP (control temperature, thermometers, employee training, recall of food).

The basic principles of the HACCP system and HACCP plan for the project are available on several websites. At this point, we present descriptive forms.

Obr.HACCP.1 – Check the operation of thermometers. It is necessary to check the operation of all thermometers at least twice a year. This verification process is performed using a reference thermometer, an accredited laboratory for metrology check these instruments annually. A thermometer used to verify the operation should not deviate by more than +/– 1 °C, otherwise it is necessary to carry out corrective action.

Obr.HACCP.3 – Internal education. As part of the annual plan for educating employees about coming into contact with food, the person responsible should enter the intended dates and topics of education.

Obr.HACCP.4 – Education of employees. It has to be completed by employees who are involved in the educational part of the annual plan of education. The responsible person has to verify and validate the form.

Obr.HACCP.7 – Temperature control. This form is used for all types of temperature control devices or facilities. When writing down actual temperature, it is mandatory that the person responsible reads from a display on the temperature control device. It is forbidden to write in the form an approximate temperature or to falsify the results. There must be signed corrective procedures in cases of irregularities or other inadequacy. The temperature should be recorded to one decimal place (eg. + 1.7 °C).

Obr.HACCP.12 – recall of food. We have to fill out the form in cases of recalling food at any stage of the process. In the event that the food stays on the premises, it must be stored in a designated space with accurate labels stating when the food was withdrawn from sale. Employees need to enter: the date when the food was withdrawn, the amount, the reason and their signature. The checks are the responsibility of the person in charge.

Calculations of Energy, Nutrional Values and the Selling Prices of our Sandwiches

We made a spreadsheet illustrating energy values for each sandwich. This process aligned us with legal requirements when marking nutritional values for our dishes. Using this spreadsheet we were able to make further calculations on the nutritional values for one unit of our product and the following nutrients: protein, carbohydrates and fat. Because we now know all the energy values of our product, this also helps us when making the sandwiches, promoting them and enabling our customers to know what they are eating and how much they will consume with one unit of a chosen sandwich.

Table 4: SI international system of measurement units for energy (energy value of ingredients).

Name	Symbol	Quantity	Equivalent	SI base unit
Joule	J	energy, work, heat	$N \cdot m$	$kg \cdot m^2 \cdot s^{-2}$

Source: Own source 2014 (after SI standardization of measurement units).

ingredients	flour	oil	sugar	electricity	yeast	milk	salt				
€/kg	0,850	2,550	0,990	0,250	0,210	0,780	0,780				
factor	1,000	0,010	0,006	1,000	1,000	0,300	0,006				
per one kg of flour	0,850	0,026	0,006	0,250	0,210	0,234	0,005	1,580	0,23 €	1 bagel (white, corn)	
									0,59 €	1 bagel (buckwheat with nuts)	
									0,37 €	1 bagel (kamut)	

Figure 9: Cost calculation of baguette.
Source: Own source 2014.

Prior to producing the spreadsheet, we collected data regarding energy values and other nutrional values for each food that was used to prepare

a final dish. Regarding the amount of ingredients used for one unit of our product, we used an appropriate factor and got adequate nutrient and energy values. All the ingredients and calculated values were summed, ultimately we produced the sum of individual ingredients in the final product. The same processes was carried out for the other ingredients, such as the spreads. This was a slightly less complex calculation process, but time consuming due to the amount of ingredients we used. In the last phase of calculating energy and nutritional values, we made a new spreadsheet based on the recipes for the sandwiches, all the ingredients and their quantities. Through the mathematical operation of summing, we got the sum for energy value in one unit of the dish and its nutritional values as well. The latter are presented in the recipe for every single sandwich. Often people are still confused when labeling the energy values of food. This is because it's a mainstream belief that labeling should be written in kilo calories, which is wrong. We avoided this common mistake and only used measurements that are approved by law. The SI international system of measurement markings (showed in Table 4) states that a 'Joule' is the unit for power and work. The approved measure for calculating energy is a Joule (J) and is usually marked in a thousandth part of a unit, thus called KiloJoule (kJ). The unit results from the equation of work, where one J performs with the force of one Newton (N) when it moves from the starting point of force in distance of 1 meter (m) in a direction of force. The unit J is named after English physicist James Prescott Joule.

	pumpkin	carrots	onion	green pepper	sugar	salt	olive oil	eggs	vinegar	red pepper		vegetable spread
€/kg	0,68	0,95	1,20	2,44	0,99	0,78	16,32	0,22	0,79	2,59		
factor	0,18	0,24	0,12	0,11	0,00	0,00	0,01	1,00	0,05	0,11		
€ sum	0,12	0,23	0,14	0,27	0,00	0,00	0,08	0,22	0,04	0,28	1,39 €	.=730g
											0,11 €	.=60g
	chickpeas	garlic	lemon	black pepper	sunflower seeds	onion	olive oil	salt		chickpeas spread		
€/kg	1,590	7,690	1,850	1,570	6,4750	1,200	16,320	0,780				
factor	1,666	0,010	0,200	0,048	0,003	0,120	0,005	0,003				
€ sum	2,649	0,077	0,370	0,075	0,020	0,144	0,082	0,002	3,42 €	.=668g		
									0,31 €	.=60g		
	tuna	butter	fresh cheese	corn	olive oil	salt	milk	lemon		tuna spread		
€/kg	21,84	7,96	3,24	4,02	16,32	0,78	0,74	1,85				
factor	0,13	0,02	0,035	0,1	0,005	0,003	0,05	0,015				
€ sum	2,8392	0,1592	0,1134	0,402	0,0816	0,0023	0,037	0,0278	3,66 €	.=368g		
									0,60 €	.=60g		

Figure 10: Cost calculation of spreads.
Source: Own source 2014.

One of the most important administrative responsibilities of every restaurant is the pricing of its products. The prices of restaurant services directly effect a bigger or smaller volume of sales and consequently on lower or higher income, revenue and profit. Successful pricing is the goal of every catering company. The method for calculating prices is *calculated price I* or *narrowed calculative price*, which concerns indirect costs of every product (Figure 11, Figure 12) or service. For simple dishes, indirect costs equal to the purchase value of the dish. Alternatively, for the calculations of composed dishes we separate between calculations for an individual dish and joint calculations. For calculations of a single dish we calculate direct costs for one portion.

When calculating the costs of composed dishes with regards to the dish, firstly we calculate all direct costs (Figure 9) for the entire volume of the prepared dish. Only after that do we calculate the calculative price for each single portion. There are three basic models for setting up price, and even then there are variations. These methods are ways of pricing the cost, method of pricing the mark-up and the method of pricing relative to our competition.

Sandwich	production price	index of mark-up 170	value added tax of 9.5 %	web page price	web page price minus value added tax	food cost	revenue
Tuna sandwich	1,31	2,23	2,44	2,50	2,28	57,38	42,62
Veggie Sandwich	1,30	2,21	2,42	2,50	2,28	56,94	43,06
Barbara's Sandwich	1,60	2,72	2,98	3,00	2,74	58,40	41,60
Sandwich Classic	1,37	2,33	2,55	2,60	2,37	57,70	42,30
Sandwich Vegetable Ham	1,45	2,47	2,70	2,70	2,47	58,81	41,19
Corn sandwich	0,72	1,22	1,34	1,60	1,46	49,28	50,73
Sandwich Kamut	1,73	2,94	3,22	3,30	3,01	57,40	42,60
Fitness Sandwich	1,85	3,15	3,44	3,50	3,20	57,88	42,12

Figure 11: Calculation of sandwiches – calculative price I and method of margin/mark-up. Source: Own source 2014.

Calculation of direct costs are presented in the pictures above and below. The numbers in the tables indicate calculations of cost of baguettes, spreads, and sandwiches. The method of mark-up (or margin) is based on

identifying the direct and indirect costs of single products or services. Pricing the products or services result from the market conditions.

When pricing it is also important to take into account market demand. For the basis we take direct costs, if done in this way the method is called 'method of margin on direct costs' (Figure 12), which is the same as 'tapered calculative price'. Achieved margin is meant for covering indirect costs and profit (Mihalič 2003).

Tuna sandwich	corn baguette	tuna spread	lettuce	tomato	cheese	eggs	**Figure 13**		
€/kg	1,1	9,83	1,59	2,69	6,79	0,22			
factor	0,21	0,06	0,02	0,037	0,07	0,5			
€ sum	0,23	0,59	0,03	0,10	0,48	0,11	1,54		
Veggie Sandwich	buckwheat baguette	chickpeas spread	corn	cucumbers	tomato	tofu	**Figure 14**		
€/kg	2,81	5	4,02	0,68	2,69	6,79			
factor	0,21	0,06	0,01	0,03	0,037	0,07			
€ sum	0,59	0,30	0,04	0,02	0,10	0,48	1,53		
Barbara's Sandwich	buckwheat baguette	butter	lettuce	cheese	chicken breasts salami	pickle	**Figure 15**		
€/kg	2,81	7,96	1,59	6,79	8,52	2,37			
factor	0,21	0,01	0,02	0,07	0,055	0,1			
€ sum	0,59	0,08	0,03	0,48	0,47	0,24	1,88		
Sandwich Classic	white baguette	vegetable spread	lettuce	ham	cheese	tomato	eggs	**Figure 16**	
€/kg	1,1	1,83	1,59	7,67	9,14	2,69	0,22		
factor	0,21	0,06	0,02	0,05	0,07	0,037	0,5		
€ sum	0,23	0,11	0,03	0,38	0,64	0,10	0,11	1,61	
Sandwich Vegetable Ham	white baguette	chickpeas spread	lettuce	tomato	ham	cheese	cucumbers	**Figure 17**	
€/kg	1,1	5	1,59	2,69	7,67	9,14	0,68		
factor	0,21	0,06	0,02	0,037	0,05	0,07	0,03		
€ sum	0,23	0,30	0,03	0,10	0,38	0,64	0,02	1,71	
Corn sandwich	corn baguette	chickpeas spread	corn	cucumbers	tomato	tofu	**Figure 18**		
€/kg	1,1	5	4,02	0,68	2,69	5,3			
factor	0,21	0,06	0,01	0,03	0,037	0,03			
€ sum	0,23	0,30	0,04	0,02	0,10	0,16	0,85		
Sandwich Kamut	kamut baguette	butter	cucumbers	salami	cheese	eggs	lettuce	tomato	**Figure 19**
€/kg	1,76	7,96	0,68	13,88	9,14	0,22	1,59	2,69	
factor	0,21	0,01	0,03	0,05	0,07	0,5	0,02	0,037	
€ sum	0,37	0,08	0,02	0,69	0,64	0,11	0,03	0,10	2,04
Fitness Sandwich	corn baguette	tuna spread	corn	lettuce	chicken breasts salami	pickles	cheese	eggs	**Figure 20**
€/kg	1,1	9,83	4,02	1,59	8,52	2,37	6,79	0,22	
factor	0,21	0,06	0,01	0,02	0,055	0,1	0,07	0,5	
€ sum	0,23	0,59	0,04	0,03	0,47	0,24	0,48	0,11	2,18

Figure 12: Cost calculation of sandwiches.
Source: Own source 2014.

For this project we used the latter method, this was because the method based on competitors (described below) isn't interesting. We are better

than competitors, have better service and higher quality of products. Catering companies who use 'level of margin' differentiate after individual types of products and services. This is often because of their experience that they know what level of margin they should calculate into a specific type of product or service. However, since this method of pricing is based on market conditions, companies often approach the calculation for the level of margin retrograde.

Besides the aforementioned method, there is also a highly used method relative to competitors. The latter contrasts the method of cost plus which only takes into account the cost aspects, while the method of pricing with respect to competitors is more market oriented.

Prices are formed depending on market conditions, whilst costs are adapted to the circumstances. Companies that use this kind method of pricing need to have influence on the costs of their business, if they want to profit. The danger of this method is that a restaurant which lowers their costs also lowers the assortment and quality of service. This can lead to a fall in demand and have negative effects on the success of business. The strength of this method lies in market orientation. The demand of services in restaurants is price elastic, enabling the management to take this into account (Mihalič 2003).

Recipe/Standard for Sandwich

The basic terms regarding cooking technology are 'recipe' and 'standard'. A recipe gives information about the type and quantity of ingredients, as well as the process for preparation. The first written recipes date back more than two millenniums. The oldest originate from India, China and ancient Greece. Often, these recipes only included a list of ingredients, lacking information about quantity, temperatures and times of preparation.

In this case, the word 'standard' can have various meanings. One such example is 'standard' as a reference for an individual country prescribing uniform regulation for sizes and quality of products. Alternatively, it can also refer to standards for management of quality, standards for consumer protection, standards for ingredients and food safety, standards for sport equipment, devices, props and standards for ensuring quality in career orientation or long-life learning. Throughout the project we used standards for ingredients and food safety.

Under the section 'recipes' we decided to create our own recipes for our sandwiches. After reading relevant literature about food technology and cooking, we wanted to set up directives for the preparation of the sandwiches. For one of our group meetings we brought carefully selected in-

gredients that we had identified as key ingredients in our sandwiches. We focused mainly on locally grown vegetables which were important ingredients for our products. Nevertheless, we didn't neglect the visual appearance of sandwiches and how they are constructed. The sequence we used was important as we wanted to follow standards set in the beginning of the project.

Tuna Sandwich

Corn baguette

Tuna spread

Sweet corn from can (2 small spoons)

A leaf of lettuce (needs to be salted)

Tomato (1/4)

Cheese (3 slices)

Egg (1/2)

Figure 13: Tuna sandwich.
Source: Own source 2014.

Calculation cost of the sandwich is 1,54 euros Figure 12). The decision of the calculation cost, e.i. production price is 85 % of calculation cost (Figure 11). This is a basic for the calculation of the final price with index of mark-up 170, and value added tax of 9.5 %. Therefore, the final price on our web page is 2,50 euros (Figure 11). The revenue for this sandwich is 42.62 %.

Process of preparation. We take a corn baguette (Figure 21) and cut it in half horizontally. The hard-boiled egg has to be cold and the shell must be removed. Lettuce and tomatoes have to be carefully cleaned first. After we clean the tomatoes, slice them into equal parts. Corn from a can has to be rinsed under cold water. On the underside of the baguette we spread the tuna spread and sprinkle it with corn. The next step is to place the leafs of lettuce and slices of tomato onto the tuna spread. On top of the tomato we put slices of cheese and sliced egg. The last step is to cover the sandwich with the other half of the baguette and place it into an environment friendly bag. Now the tuna sandwich is ready to be served (Figure 13).

We also formulated calculations for the energy (W) which is in 3830 kJ per portion or 897 kcal per 100 grams (g). We have calculated also nutritional values of the dish which are fat (F) 40g, carbohydrates (CH) 115g

and proteins (P) 41g. The guideline daily amount (GDA in %) per portion is F=51 %, CH= 48 %, and P=81 %.

Veggie Sandwich

Buckwheat baguette (1/2)

Chickpea spread

Corn (2 small spoons)

Fresh cucumber (4 slices, need to be salted)

Tomato (1/4)

Tofu (smoked, 2 pieces)

Figure 14: Veggie sandwich.
Source: Own source 2014.

Calculation cost of the sandwich is 1,53 euros (Figre 12). The decision of the calculation cost, e.i. production price is 85 % of calculation cost (Figure 11). This is a basic for the calculation of the final price with index of mark-up 170, and value added tax of 9.5 %. Therefore, the final price on our web page is 2,50 euros (Figure 11). The revenue for this sandwich is 43.06 %.

Preparation process. First we cut a buckwheat baguette (Figure 23) in half, clean the tomato and cucumber. The tomato should be sliced into equal parts and the cucumber must have the peel removed before slicing. We clean the sweet corn under cold water. We take smoked tofu out of the refrigerator and slice it horizontally into two pieces. The lower part of the baguette must be covered with chickpea spread and sweat corn (Figure 14). Next, on top of the corn place slices of salted cucumber and tomato. On top of this place the slices of smoked tofu. We cover the sandwich with the upper part of the baguette and serve.

For this sandwich we also calculated energy and nutritional values of the dish. W = 3929 kJ per portion or 941 kcal per 100g, F = 33g, CH = 119g and P = 40g. The GDA in % per portion is F = 44 %, CH = 47 %, and P = 81 %.

Barbara's Sandwich

Buckwheat baguette with walnuts

Butter (small packet)

Leaf of lettuce (has to be salted)

Cheese (3 slices)

Chicken breasts salami (4 slices)

Pickle (1 large)

Figure 15: Barbara's sandwich.
Source: Own source 2014.

Calculation cost of the sandwich is 1,88 euros (Figure 12). The decision of the calculation cost, e.i. production price is 85 % of calculation cost (Figure 11). This is a basic for the calculation of the final price with index of mark-up 170, and value added tax of 9.5 %. Therefore, the final price on our web page is 3,00 euros (Figure 11). The revenue for this sandwich is 41.60 %.

Preparation process. We cut a buckwheat baguette (Figure 23) in half and clean the salad. Pickles should be sliced into equal parts. The lower part of the baguette must be layered with butter and covered with lafette. On top of this we place the cheese, chicken breast and slices of pickle. We cover the sandwich with the upper part of the baguette and serve on a plate (Figure 15).

For this sandwich we calculated the energy and nutritional values of the dish. W = 4363 kJ per portion or 957 kcal per 100g, F = 41g, CH = 112g and P = 49g. The GDA in % per portion is F = 54 %, CH = 44 %, and P = 99 %.

Sandwich Classic

White baguette (1/2)

Vegetable spread

Leaf of lettuce (has to be salted)

Ham (4 slices)

Cheese Gauda (3 slices)

Tomato (1/4)

Egg (1/2)

Figure 16: Sandwich Classic.
Source: Own source 2014.

Calculation cost of the sandwich is 1,61 euros (Figure 12). The decision of the calculation cost, e.i. production price is 85 % of calculation cost (Figure 11). This is a basic for the calculation of the final price with index of mark-up 170, and value added tax of 9.5 %. Therefore, the final price on our web page is 2,60 euros (Figure 11). The revenue for this sandwich is 42.30 %.

Preparation process. We clean the lettuce and tomato, then slice into equal parts. At the same time boil the egg, remove the shell when it's solidified inside and slice it. Cut the baguette (Figure 22) in half horizontally. Layer the lower part of the baguette equally with vegetable spread, add the leaf of lettuce, slices of tomato and eggs on the spread. The next step is to put the slices of ham and cheese on top of the egg. The last step is to cover the filling with the upper part of the baguette (Figure 16).

For this sandwich we calculated both energy and nutritional values of the dish. W = 4257 kJ per portion or 891 kcal per 100g, F = 26g, CH = 121g and P = 44g. The GDA in % per portion is F = 33 %, CH = 48 %, and P = 89 %.

Sandwich Vegetable Ham

White baguette (1/2)

Chickpeas spread

Leaf of lettuce (has to be salted)

Tomato (1/4)

Ham (4 slices)

Cheese Gouda (3 slices)

Fresh cucumbers (4 slices, salted)

Figure 17: Sandwich Vegetable ham.
Source: Own source 2014.

Calculation cost of the sandwich is 1,71 euros (Figure 12). The decision of the calculation cost, e.i. production price is 85 % of calculation cost (Figure 11). This is a basic for the calculation of the final price with index of mark-up 170, and value added tax of 9.5 %. Therefore, the final price on our web page is 2,70 euros (Figure 11). The revenue for this sandwich is 41.19 %.

Preparation process. Take the baguette (Figure 22) and cut it in half horizontally. The tomato and lettuce have to be carefully cleaned before use. When cutting the tomato and cucumbers, make sure that the parts are equal. On the bottom part of baguette we spread the chickpeas spread and put the leaf of lettuce on top, which has to be salted. The next step is to put the slices of tomato and cucumber on top of the lettuce. We add ham and cheese as a final ingredients for the filling. Cover the sandwich with the upper part of the baguette (Figure 17).

For this sandwich we calculated both energy and nutritional values for the dish. W = 4088 kJ per portion or 856 kcal per 100g, F = 23g, CH = 123g and P = 41g. The GDA in % per portion is F = 29 %, CH = 49 %, and P = 84 %.

Corn Sandwich

Corn baguette (1/2)

Chickpeas spread

Sweet corn (2 spoons)

Fresh cucumber (4 slices, salted)

Tomato (1/4)

Tofu (smoked, 2 pieces)

Figure 18: Corn sandwich.
Source: Own source 2014.

Calculation cost of the sandwich is 0,85 euros (Figure 12). The decision of the calculation cost, e.i. production price is 85 % of calculation cost (Figure 11). This is a basic for the calculation of the final price with index of mark-up 170, and value added tax of 9.5 %. Therefore, the final price on our web page is 1,60 euros (Figure 11). The revenue for this sandwich is 50.73 %.

Preparation process. We wash the sweet corn, cucumber and tomato under cold water and slice them into equal parts. Slice the smoked tofu in half horizontally. Take the corn baguette (Figure 21), cut in half and spread the chickpeas spread on the lower part (Figure 18). Sprinkle the spread with sweet corn and put on the sliced cucumber. Next, add the slices of tomato which are followed by the smoked tofu. Close the sandwich with the upper part of the baguette.

For this sandwich we calculated the energy and nutritional values for the dish. W = 2832 kJ per portion or 790 kcal per 100g, F = 8g, CH = 119g and P = 19g. The GDA in % per portion is F = 10 %, CH = 47 %, and P = 39 %.

Kamut Sandwich

Kamut baguette (1/2)

Butter, Egg (1/2)

Fresh cucumber (4 slices)

Salami (6 pieces)

Cheese Gouda (3 slices)

Leaf of lettuce (has to be salted)

Tomato (1/4)

Figure 19: Sandwich Kamut.
Source: Own source 2014.

Calculation cost of the sandwich is 2,04 euros (Figure 12). The decision of the calculation cost, e.i. production price is 85 % of calculation cost (Figure 11). This is basic for the calculation of the final price with index of mark-up 170, and value added tax of 9.5 %. Therefore, the final price on our web page is 3,30 euros (Figure 11). The revenue for this sandwich is 42.60 %.

Preparation process. We cut kamut baguette in half horizontally. Wash the salad, cucumber and tomato under cold water. Slice the latter two into equal parts. In the meantime, boil the egg until it's hard inside. Peel the shell and slice into equal parts. Spread the lower part of baguette with butter and cover it with fresh slices of salted cucumber. On top of this, add the slices of salami followed by the cheese (Figure 19). Put the slices of egg and leaf of lettuce on top of the cheese. Close the sandwich with upper part of baguette.

For this sandwich we calculated energy and nutritional values of the dish. W = 4396 kJ per portion or 941 kcal per 100g, F = 47g, CH = 114g and P = 43g. The GDA in % per portion is F = 61 %, CH = 45 %, and P = 86 %.

Fitness Sandwich

Corn baguette (1/2)

Tuna spread, Sweet corn (2 spoons)

Leaf of lettuce (has to be salted)

Chicken breast salami (4 slices)

Pickles (1 bigger)

Cheese Edam (3 slices)

Egg (1/2)

Figure 20: Corn baguette for Fitness sandwich.
Source: Own source 2014.

Calculation cost of the sandwich is 2,20 euros (Figure 12). The decision of the calculation cost, e.i. production price is 85 % of calculation cost (Figure 11). This is basic for the calculation of the final price with index of mark-up 170, and value added tax of 9.5 %. Therefore, the final price on our web page is 3,50 euros (Figure 11). The revenue for this sandwich is 42.12 %.

Preparation process. Cut the corn baguette (Figure 20) in half. Wash the lettuce, sweet corn and pickles under cold water. Cut the latter in equal parts. Meanwhile, boil the egg until it is hard inside. Peel the shell from the egg and slice it into equal parts. Cover the lower part of the baguette with tuna spread and sprinkle with sweet corn. Put the lettuce and slices of pickle on top. Carefully, put the slices of egg into the sandwich. Cover the fillings with the top half of the baguette.

For this sandwich we calculated the energy and nutritional values of the dish. W = 4643 kJ per portion or 837 kcal per 100g, F = 41g, CH = 119g and P = 52g. The GDA in % per portion is F = 53 %, CH = 47 %, and P = 106 %.

Beside the offer of sandwiches, we were also considering upgrading the existing offer with some additional healthy products. We spoke about different salad dishes that would be made out of different vegetables and could be sold as an independent dish. This extra offer will be included in the following stages of the project. Currently our offer is only on sandwiches.

Baking Baguettes

The main ingredient of sandwiches that we wanted to stand out from the average was our baguettes. Regardless if it's about used recipe or visual appearance of baguettes, we were looking after what we weren't able to find on Slovenian market. Before we actually started baking, we tried to find as

much relevant information about baking bread products, ratios of flours to use, process of making dough and designing the latter into baguettes. We received extra help from one of our grandmothers who is very proficient in baking bread. In our first attempts we failed in the starting steps when preparing the yeast, which is crucial for the preparation of the dough.

Figure 21: Corn baguette.
Source: Own source 2014.

Figure 22: White baguette.
Source: Own source 2014.

When we succeeded in preparation of the yeast, other problems arose. These problems included the correct ration of different flours used to name only one of the problems. Corn (Figure 21), buckwheat (Figure 23) and kamuts dough were changing shape during the baking, whilst the white ones (Figure 22) were significantly higher and were softer after baking. After numerous attempts to make dough and bake the baguettes at a certain temperature for a certain time, a need for specified decription of working processes, quantities of selected ingredients used for one baguette arose. We wanted to maintain a certain level of quality, which was showcased by repeating the same taste and shape of certain baguettes.

Figure 23: Buckwheat baguette with walnuts.
Source: Own source 2014.

After a visit by Pekarna Grosuplje (Figure 24) we changed some of our recipes in order to adapt to the customers' taste. Experienced technologists have suggested that we give up with the usual style of baking. Instead we should try using a system called final baking. Instead of making the dough every time when we need fresh baguettes, we should bake a set amount of baguettes up to 60 %, wait until they cool down to room temperature and freeze them.

Figure 24: Visit from Pekarna Grosuplje.
Source: Own source 2014.

When there is need for a specific baguette, we would take the baguette out of the refrigerator, bake it, cool it down and offer it on our shelves. It's worth mentioning the complexity of the preparation processes which are maintained standards through longer periods of time, as well as innovativeness when it comes to what we have to offer to our customers.

Intedisciplinarity of the Project – Web Application

In the introduction we described why project Sandwich Management is so special for development of interdisciplinary and multidisciplinary of knowledge from different areas. More specifically, it is important for the development of mobile and web applications. To achieve this we used knowledge from areas of computing and computer networks. We are able to access web application through the internet. Smith and Bebak (2000) defined the internet as an enormous network of computers connected with each other. One of the most identified services available through using the internet is the worldwide web. The latter is designed for use by a broad public. The worldwide web is composed of text, graphics, multimedia and connections between files which build logical connections between the contents published. We shouldn't equate the worldwide web with a web browser, which is often mistaken for the internet. A web browser is only an internet based solution that enables us to find the information published on the worldwide web (Crumlish 1998). A web browser without an internet connection is useless and doesn't provide us with any information. When we are creating contents on the worldwide web, two main steps are mostly being used: the concept and creation of a web site as well as the publishing of a website. These listed steps have also been undertaken for the development of the mobile application of project Sandwich Management.

The needs of the project's IT part has been developed through the programming environment, Weebly, and can be accessed through web site www.weebly.com. Our web site consisted of the text, videos and pictures of products that we had on offer. The main web site consisted of six subpages:

- entrance page;
- sandwiches;
- make your own;
- questionare;
- contact;
- shopping bag.

The first subpage is an entrance page which always opens when the web application is accessed. The offical logo of our project is always displayed in the top left corner. Under the logo there is an interactive slideshow of pictures which presents our best offer of the week as well as other good deals offered to customers. The second subpage, Sandwiches, shows all the sandwiches that we currently have on offer. Sandwiches are presented using graphics of real pictures and also descriptions of the ingredients that can be found in that specific sandwich. At this point customers can modify their sandwich as much as they want. This includes different types of baguettes, spreads, meat and cheese products, as well as with other supplements. The third web page, Make your own, allows the customer to make their own sandwich with the ingredients of their choice.

The forth subpage asks us whether we want to fill out the questionare regarding their level of satisfaction with the web site. The fourth subpage, Contacts, includes information on the address and telephone number of the school where our business idea was temporarly registered. This subpage includes a graphical display map of our location. The sixth and final subpage leads us to a shopping bag where the customer can find all the chosen products we purchasing them.

To achieve an appealing web page, we decided to design our own logo for the project. The logo should be in vector format which enables us to customize it as much as need. We used a program called Gimp, which is an open source computer program available to download for free. Since our main business is selling sandwiches we all agreed on designing a logo which should resemble what we are actually doing, that's why the logo is a sandwich by itself (Figure 25). It is advisable when designing a logo to keep it as simple as possible but at the same time not to move away from the main message company wants to send into public.

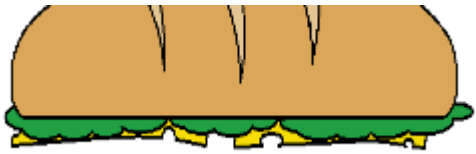


Figure 25: Initial logo
Source: Own source 2014.

With an intention to distinguish our company from competitors, we included in our logo a text as well which in written in English (Figure 26). Our logo is presenting a sandwich which may reminds us on graphics which are usually seen in cartoons. We avoided any kind of potential misleading of customers with a logo that might be a photo of a real sandwich taken from a website. The whole idea of using a cartoon logo is to engage the imagination of the customer concerning what we offer.

Figure 26: Final version of logo
Source: Own source 2014.

It is recommended by experts to only use one, or at most three different colors for a logo. The colours should be warm and associate with what the logo is trying to present. In our case we have used more than three colors, mainly because of the complexity of the final product and to give customers as much visualization as possible. The bottom and upper parts of the logo present a bread, while inside it shows: ham, cheese, lettuce, tomato and the text 'Sandwich'.

Before we start setting up our web page, it is recommended to clarify its main purpose. Our main goal is to sell the product through our web site and provide our customers with as much information about products as possible. The second step when building a web site was to allocate the application a web address which would stay the same until the end of our business. Since we used a free online tool, Weebly, the latter gave us a choice of web address between Pkpsandwich.com and also Weebly.com at the end of the web address. If we decided to remove the weebly word from our web address, we would have to rent our own domain.

Because of the simplicity of Weebly, we can modify the settings of the web page from devices such as tablets, smart phones and computers. This gives us the necessary mobility and fast reaction time when needed.

When it comes to designing subpages, we took into consideration what our customers would really like to see on a web page. Keeping this in mind, as well as what contents we would like to include, we formed a web page including six subpages. The first subpage is also called the entrance page and is the first graphical interaction with users. We decided to place a slideshow on to the entrance page which changes photos at three second intervals. The place for the first photo is reserved for new sandwich offers. This is how we would like to promote the product and increase sales. The second photo in the slideshow is the one hiding our sandwich of the week. This feature is intended to encourage our web page users to explore the latter and find the product that they like the most.

The third photo in the slideshow presents the best sandwich of the week. The message we want to send to web page users is that this was the most popular sandwich last week. The last photo in the slideshow showcases the best selling product that month. After finishing the slideshow, we started work on the remaining subpages. The initial decision of featuring already prepared sandwiches gave free space on our entrace page to Vegi, Barbarin and Klasik sandwich. For evoke a stronger image of how our sandwiches look, we also added real photos of them. The buyer can make a purchase on the entrance page by clicking on one of the sanwiches on the entrance page and adding it to the »Basket«. To avoid making the web page overly complex, we added the tab »Sestavi svojega« to the bottom of the page. Clicking on the latter redirects the user to a subpage where they can customize their own sandwich from the ingredients offered.

Due to the increasing popularity and dynamics of social networks, we decided to register ourselves on the world's biggest social network, Facebook. The newly opened Facebook page was connected with our web page in order to keep in touch with our customers on a daily basis. Customers can press the »Like« button to follow our Facebook page.

We believe that the customer is king and that their comments regarding our products, service or any other information is highly valued and welcome. This is why we decided to include the tab »Questionare«, here visitors are asked whether they would like to participate. If the customer answers 'Yes', they are asked several question about their opinion on the web page and sandwich offers available. On the last subpage, 'Kontakt' information concerning our location of the company and phone number can be found. Moreover, to make our location easier to locate, we added an online map displaying our location.

Projects' Interdisciplinarity – Qualitative Analyses

Sensory Evaluation

Every buyer is able to detect and grade characteristics while consuming prepared food. Sensory evaluation is the oldest way of testing the quality of a dish. We often evaluate ingredients when choosing or consuming them, even if this is not done consciously. We accept or reject food based on its impressions. Sensory evaluation consists of describing and grading the characteristics of dishes using our senses. The senses function as instruments for determining the quality or condition of the dish (Gričar 1999). The evaluation of sensory characteristic are affected by the following influences: personal preference, prejudice, medical condition, social, cultural, religious factors, climate conditions, general physical condition, education or culture connected with food. A healthy human has five available senses for evaluating and grading: smell, taste, hearing, sight and touch. The process of sensory evaluation functions when peripheral receptors react to external stimulus with electrical impulses transmitted through our nervous fibers into the central nervous system. Here the stimulus is registered (reception), recognized (perception) and evaluated.

The following step is reflection and decision of this stimulus. In the central nervous system we have an integration of separated sensory information. Sensory receptors are detectors of physical and chemical changes in environment and organism. These specialized receptor cells also known as special receptor places which are usually responding only on one type of stimulus (the taste stimulus does not activate visual receptor). Under certain circumstances the receptor cells can react to other stimulus, but the feedback is worse (Gričar 1999). We opt for the most appropriate meth-

od of sensory evaluation based on what we choose to evaluate. The sensory procedures are divided into two big groups; the first being analytical tests. These tests are laboratorial assessments used for the evaluation of products. This is done in case of differences and similarities to identify sensory characteristics. The second group are affective tests completed by the public, known as acceptance tests. With these kind of tests we evaluate the quality, popularity or acceptance of products from the customer point of view. Moreover, we are trying to establish what the primary motivation is for a customer to select specific dishes over others.

Affective tests are carried out in different environments such as public spaces (schools, kindergartens, shops, streets, homes). Participants are usually in bigger groups from 10–100 participants. They are randomly selected without any specific background knowledge of evaluating dishes and are a representative pattern of defined population (group of consumers). We can use both of the described tests for those who do not have experience in evaluating dishes (giving points on the basis of personal reaction, comfort, discomfort at the time of testing). This kind of evaluation answers whether the customer recognizes the difference between the products. The question given has to be clear and similar to what we did in our survey:

- do you prefer our product over our competitors?;
- would you liek to see them changed?;
- can we change the ingredients without causing the negative decline from the market?.

People who come in the selection for carrying out degustation have to fulfil several requirements. They should have specific propensities or resistances toward specific ingredients. The evaluators need specific abilities to express their views appropriately, responsibly and reliably. They must also have good concentration, sensory memory and endurance. They have to be able to showcase their enthusiasm during group work, be capable of quick reactions and not be timid or too critical (Gričar 1999). One of the main impacts of globally standardized analyze is a health condition of evaluator. The influence of medicine occurs at high levels of nitride chloride (salt) when a person deals with high levels of blood pressure. Heart patients have significantly higher possibilities to detect a bitter taste. For all of the aforementioned, a physical condition or tiredness in the evaluator can play big role. Subsequently, you can see a presention for the contents of the affective test carried out during the project:

Sandwich (overall impression of dish):
SMELL (1–7 points)
7 – Perfectly expressed, typical smell
1 – Very badly expressed

FOREIGN ODORS (1–7 points)
1 – foreign odors are not present
7 – sample with highly present foreign odors

APPRANCE OF THE DISH (1–7 points)
7 – design typical for sandwich, no deformation of baguettes
1 – changed, unrecognized look, injured pepper, unstable spread

COLOR (1–7 points)
7 – color typical for sandwich with _____
1 – untypical pale color of pastry

Sandwich:

COLOR OF CROSS-SECTION (1–7 points)
7 – nice fresh and colorful color of stuffing
1 – darkened, grey color of stuffing

ASSEMBLY OF CROSS-SECTION (1–7 points)
7 – ingredients are evenly distributed
1 – meet product, cheese, vegetable, spread and supplements are not in equally allocated

ABC/ COMPACT/PERFORATENCE OF BAGUETTES (1–7 points)
7 – ABC baguettes with uniform holes in dough, crust is gold-yellow color without cracks
1 – compact baguettes with different holes in dough, pastry is low, crust isn't golden-yellow color (pale or brown) and also has cracks

STICKINESS OF PASTRY (1–7 points)
7 – the pastry is sticky
1 – without stickiness, easy to chew

GREASINESS (1–7 points)
7 – feeling of greasiness highly present
1 – feeling of greasiness is not present

FLAVOUR OF SPREAD (1–7 points)
7 – perfectly expressed flavor of spread
1 – untypica l and undesired flavor

AFTERTASTE OF SPREAD (1–7 points)
7 – pepper without external tastes
1 – pepper with highly present external tastes

Whole dish:

AFTERTASTE (1–7 points)
7 – sample without aftertaste
1 – sample with highly expressed aftertaste (sour, rancid, bitter)

FEELING IN MOUTH (1–7 points)
7 – without stickiness, greasiness
1 – inhomogeneous, sticky, untypical feeling for sample

SALTINESS (1–4–7 points)
7 – dish is too salty
4 – suitable saltiness
1 – insufficient saltiness

HARMONY OF FLAVOURS (1–7 points)
Between chewing the dish we are tasting and evaluating coherence of ingredients tastes and intensity of flavors of spices added

7 – Harmony of flavor and optimal spiciness
1 – Non-harmony of flavors, too weak or too strong spiciness

OVERALL IMPRESSION (1–7 points)
This sensory characteristic is evaluated on the end of sensory evaluation as a general acceptance of dish on the basis of previously conducted sensory evaluation. It is not an average of points achieved in previous sections.
7 – Excellent overall sensory impression of quality
1 – Extremely bad quality and complete unacceptability.

We presented values of grades given above in the table, seen below with parameters of descriptive statistics: minimum, maximum, arithmetical mean, standard deviation and co-efficient of variation. Arithmetic means a measure of middle values, which gives us information about middle values and shows the effects of this phenomenon on index. The variation interval as a measure of variability in the data with which we measure sizes of individual deviations from middle values is an interval within which can we find all values of in-

dex. The latter is determined with the smallest value (minimum) and the biggest value (maximum).

Table 5: Basic statistical parameters for sensory characteristic of sandwiches.

Characteristic (points)	N	M	min	max	SD	KV (%)
sandwich – overall impression of the dish						
Smell (1–7)	8	6.5	5	7	0.76	57
Foreign smells (1–7)	8	1.8	1	6	1.75	307
Look of the dish (1–7)	8	6.4	4	7	1.06	113
Color (1–7)	8	6.6	6	7	0.52	27
sandwich – filling and baguette						
Color of cross-section (1–7)	8	6.8	6	7	0.46	21
Structure of cross-section (1–7)	8	5.8	3	7	1.39	193
ABC/ baguette compaction, pitting (1–7)	8	6.4	5	7	0.74	55
Stickiness of pastries (1–7)	8	2.5	1	6	2.00	400
Grassiness (1–7)	8	2.8	1	7	2.43	593
Flavour of stuffing (1–7)	8	6.1	3	7	1.46	213
Aftertaste of stuffing (1–7)	8	5.6	1	7	2.07	427
whole dish						
Aftertaste (1–7)	8	6.5	5	7	0.76	57
Filling in mouth (1–7)	8	6.3	4	7	1.04	107
Saltiness (1–4–7)	8	4.3	3	7	1.16	136
Harmony of flavour (1–7)	8	6.4	5	7	0.74	55
Overall impression (1–7)	8	6.4	5	7	0.74	55

Note: N – number of treatments; M – average value; min – minimum value; max – maximum value; SD – standard deviation; CV (%) – coefficient of variability.
Source: Own source, 2014.

Often we use the square root of the variance as a measure of variability. The variance has the same unit of measurement as the data itself and is designated as a standard deviation. The variance is a mean square deviation from the arithmetic mean value. Standard deviation represents an absolute measure of variability. When we would like to eliminate the influence of the unit of measurement to express variability of data, we have to introduce new quantity known as 'coefficient of variation' (CV). The latter is defined as a ration between standard deviation and arithmetic mean.

This measure is an undefined number which represents variability of data in relation to their arithmetic mean and is a result of that relative measure of variability. In the table above we present basic statistical parameters of sensory analyses for three sandwiches. We were examining arithmetic mean, analysis of systemic impact and analysis of variability. To calculate arithmetic mean μ, we first have to add up all the values and after summing divide the sum with number of values. The sensory analysis had been conducted in September 2014, this was composed of taster students

and mentors who were participating in the project. CV in table 5 shows that the biggest deviation from the average is in foreign smells, cross-section cut, and stickiness of baguettes, grassiness and the aftertaste of stuffing. Eight questionnairs have been completed as a result of sensory evaluations. We are citing an explanation for each evaluation's parameters. Overall, the taste of our dishes have been rated at an average of 6.5, minimum 5, maximum 4 and CV is 57 %. Evaluators have graded this parameter similarly – good, up to the smell of dish being perfect – deviations are small. The overall impression concerning the external smells of our dishes rate at an average of 1.8, minimum 1, maximum 6 and coefficient of variation 307 %. Seven tasters have assessed this parameter very similar. One taster has evaluated the product as a sample with highly expressed foreign smells. The conclusion is as follows: deviations are big, but anyway we can follow the mean with a value of 1.8 which says that foreign smells aren't present. For the overall impression of our dishes appearance, they were rated at an average of 6.4, minimum 4, maximum 7 and CV 113 %.

Tasters have assessed this parameter very similar that is why there is no significant deviations. For the overall impression of dishes colour, they were rated at an average of 6,6, which puts this parameter in first place among other parameters observed. The colour was evaluated with a minimum of 6, a maximum of 7 and CV of 27 %. For the evaluation of the sandwich, we are assuming that tasters were evaluating opposite characteristics of the sandwich. This is due to its high CV which varies from 21 % up to 593 %. It would be reasonable to repeat this part of the sensory analysis and to see if mistakes have been found through the evaluation, or whether there were big problems with a quality of products. The colour of cross-section, softness/compaction/holes were among those parameters that were evaluated similarly. The average value of evaluated parameters was 6.4/6.8, minimum 5/6, maximum 7/7 and standard deviation of 0.74/0.46, written retrograde. From the average values of other parameter we can make a conclusion that sandwiches need modifications in order to improve the quality on parameters, such as: composition of cross-section, stickiness of baguettes, grassiness as well as flavour and an aftertaste of stuffing.

The grade of the overall dish is given as slightly more consistent calculations, even though here the CV is relatively high, especially for saltiness. Calculation of coefficient of variation shows us the value of 136 %. This means that we have to focus our attention when improving the dish for saltiness, because the taste in mouth is evaluated with CV of 107 %. We are assuming that both parameters are connected with each other and need further modifications. The mean value for the parameter of aftertaste

is 6.5 and CV is 57 %. Similar to aftertaste, the tasters evaluated that our sandwich were without significant foreign smells, which can also be seen in results: average value of 6.4 and CV of 55 %. In conclusion our dishes had a great flavour and optimal spiciness. This connection can also explain the relationship with parameter grassiness. Higher the value of grassiness translates into higher value of harmony of flavour. Fat is a factor which is causing higher levels of harmony and perception of taste in the mouth. For the completion of our sensory analysis, we evaluated parameters overall impressions. CV shows us a similar mentality between tasters because the CV is 55 %. Average value is 6.4, minimum is 5 and maximum is 7. The final conclusion is that product quality is not appropriate for selling on the market. Our goal is to sell a product which will have an average value of at least 6.7. CV is the next value which shows us whether a product is good enough for the market. The latter parameter should not be higher than 35 %. For further sensory analysis we recommend an evaluation of samples right after preparation, up to one hour after preparation. Samples should be stored in a cold place as well as the sample which is delivered on customers address. In the meantime, parameters have to be compared on all three stages. Factors of influence concerning changes in quality are identified at different conditions: product at condition zero, after one hour and at the time of delivery.

Econometric Analysis

With the data we had, we were tying to carry out basic econometrics methods where we had been trying to find connections between different economic variables. We also try to test the credibility of economic theories, quality of the latter and the effects of all types of government and business politics. One frequently used econometric application is analysing and forecasting movement of econometric variables, such as: inflation, economic growth, interest rate, unemployment and prices. During our project we encountered different methods that can be used for completing tasks during our evaluations of parameters inside econometrics. We found a method of regression analysis which we considered a simple regression when comparing only two variables. When three or more phenomenons were correlated we spoke of multiple regressions. To understand the exploring prices in catering, we paid attention to the development and nature of the catering business. The latter is in the tertiary sector of an economy and is intended for all groups of consumers, from domestic as well foreign groups. We decided that for the econometric analysis of price dynamics in catering, we had to stress that econometrics is part of an economic theory as a set

of mathematical economies, statistical economies and mathematical statistics. Mathematic statistics use a lot of data from economy (in the trade).

Table 6: Data for the purpose of econometric analysis.

Variable	Parameter	March	April	May	June	July	August	September
Work on the project	Company	11	12	11	14	20	28	28
	Person 1	37	35	38	40	41	43	36
	Person 2	33	34	42	39	34	41	37
	Person 3	0	0	0	32	28	32	39
	Person 4	7	33	33	34	33	30	33
	Coordinator	22	25	36	29	34	34	70
	Person 5	32	33	36	0	0	0	0
	Total of Hours	**142**	**172**	**196**	**188**	**190**	**208**	**243**
	Index	142	121	114	96	101	109	117
Prices in catering	Index	99,3	100,4	101,1	99,2	99,9	100,5	99,4
Input	Index	100,4	100,3	100,0	99,3	99,1	99,3	100,9

Source: Own source 2014; SORS 2014.

This data is often used by econometrics and is usually obtained through controlled empirical experiments. The latter result in uniqueness in terms of repetitions in economy. Similar to meteorologists, econometrics also cannot make empirical research from data obtained in controlled environments. This is usually why data obtained in an experiment is called »observed data«. Because of this we have two factors which transmit empirical models in econometrics. Firstly, observers of the model need experience in analysing of observed data. Secondly, for different obtained data and data analysis it is recommended that an observer engages in the nature of empirical models and a structure of date.

For further research we suggested analysing macro-ecomomic variables for longer periods. It would also make sense to use additional variables, such as: inflation or gross domestic product, the average monthly salary in Slovenia, general health conditions of people and prices of energy as an input II in catering. With these variables we would be able to find out the general state of people considered to be potential buyers or consumers of catering services (demand forecasting). In the table above we have presented solely obtained data for the hours spent on the project, price trends in catering as well as costs of food and non-alcoholic drinks as an input in catering for the duration of the project.

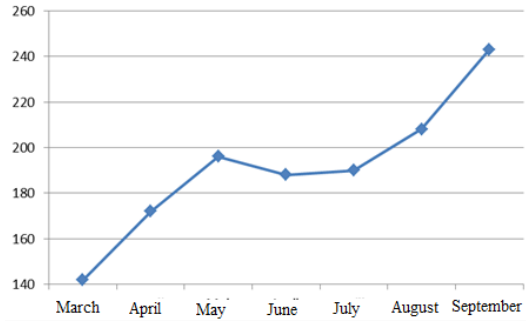


Figure 27: Graphical visualization of hours worked on the project
Source: Own source, 2014.

The highest activity of working hours on the project was between August and September (Table 6). From the figure above, it is evident to see that the peak of performed activities was accomplished between the months of August and September. The interesting fact is the working hours during June which dropped slightly following May. However, this decline was followed by a rise in June. This factor is a result of the school year, when students have their busiest exam period.

This was one of the determining factors which resulted in a sharp increase in working hours, confirmed participation on fair AGRA which presented additional motivation for extra work on the project during the last two months. In the picture below we see that the prices in catering are unstable and vary over time. For econometric analysis, variables »work on project« and »prices in catering« are not compatible. As an example for the project we conducted a regression between variables, even though this regression gives us distorted results. This latter point is due to not being allowed to include variables with a different order of integration within the regression analysis. Simple, bivariate regression analysis has been calculated in a program called JMulti, this was after using the method of 'ordinary least squares' (OLS). Through the regression analysis we would like to find out whether two variables function together in a cause and effect relationship. It is also essential for us to observe what kind of relationship these two variables are, or whether they are positive or negative.

From the equation below we can see that variables do not have a mutual statistically significant effect. None of the coefficient (alpha or beta) are statistically significant. The adjusted coefficient of determination is also extremely low.

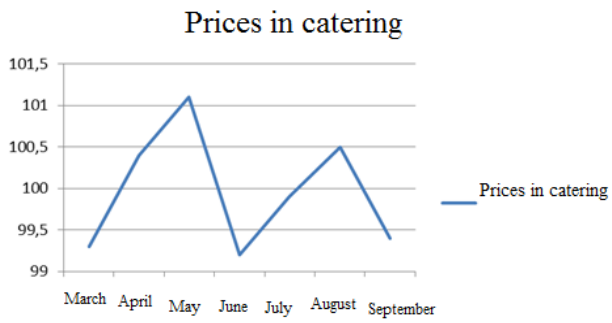


Figure 28: Graphical visualization of price trend in catering
Source: SORS, 2014.

Values of t-statistics measures are written under coefficient alpha and beta. The value of the adjusted CV is 0,008.

$$work\ on\ the\ project = \underset{-0,1}{-195,8_{\alpha}} + \underset{0,2}{3.9_{\beta}} \cdot prices\ in\ catering$$

Values t statistics are written under coefficient alpha and beta. The value of the adjusted CV is 0,008.

$$prices\ in\ catering = \underset{49,8}{99.6_{\alpha}} + \underset{0,2}{0.0_{\beta}} \cdot work\ on\ the\ project$$

Results of Project

We are living in a time of COOL society (Figure 29) (Gričar and Rodica 2016). Consumers are increasingly aware of the goods and services that can be obtained through internet applications. The project results are shown in the form of test applications for an online ordering service or product. There is also a test application for the web site. The practicality for the economy and management is unlimited and topical. Due to the added value for the end consumer, which emphasize the speed of an order and delivery in real-time, the application is useful for all segments of the economy that sell services/products to the final consumer. Cooperation with the company will accelerate the development of catering technology and computer programming. Only appropriately high consumption increases the welfare of the citizens and the (re) increase in GDP. Consumers will only benefit from the relevant and personalized offers. Ordering a service/product online is a fast track solution to avoid excessive clicking and is intended for the modern consumer. The economy provides faster access to the final consumer, who is now lagging behind in a non-competitive and rigid physical environment of retail. Most services in the retail trade are carried out in large enterprises.

Virtual competition does not know the customs, economic, national or other restrictions and physical borders between countries and leads to higher GDP countries. Below we show procedural progress on the project in the form of a table. From the table below, we see which tasks were abandoned and which were carried out as planned.

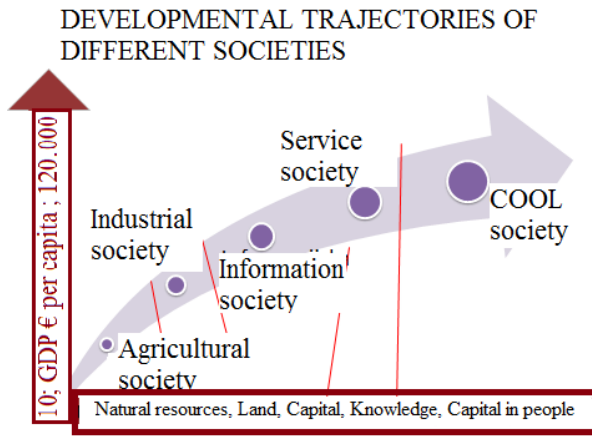


Figure 29: Developmental trajectories of different companies
Source: Gričar 2014; Bavec and Manzin 2011.

Table 7: Chronology of work on the project and completed tasks of the project.

Date	Tasks	Responsible person	Status
17.3. – 18.4.	SWOT analysis	EE	done
	CANVAS business model	EE	done
	value proposition CANVAS model	CE	done
	survey design	EE	done
	survey analysis	Students	coordinator
	clearly define the target customer and their needs	EE	done
	meeting with Bajnof, Catering High School	Student	done
19. 4. – 2.5.	define the main product and services	EE	done
	define the attributes of a web site (Startup Weekend)	INF	done
	begins with building a website	INF	done
	ideas on the start offer	CE	done
	explore the possibility of funding	Students	done
	clearly define the sales channel	EE	done
3.5. – 18.5.	draw the graphic design websites	INF	done
	ideas regarding the location of the store (rental costs)	EE	done
	HACCP in a »trailer«	Students	done
	identify the costs of producing main product / service	CE	done

Date	Tasks	Responsible person	Status
19.5. – 5.7.	developing main product (draw the recipes, exactly written procedures for the preparation of a unit set of dishes)	EE	done
	looking for solutions to the elimination of bottlenecks (transport to the customer, time of transport, delivery to a different address)	EE	done 3. 7.
	refine the recipe for bread products	Student	done + PG
	formulation of energy and nutrition	Student	done + OgH
	looking for partnership on ingredients; suppliers	Students	not searching
	perform tastings; market feedback	Student	done
6.7. – 27.7.	accurately identify operating procedures	Student	done
	review the good work practices from abroad in the transport of food to the final customer	EE	working mentor
	in Photoshop to prepare a graphic design shop	INF	logo done
	draw the graphic image of bags	INF	in the implementation
	examine the best way to pack dishes: (legislation)	Students	gave up
	solutions for system procurement / bottlenecks in receipt of orders (GPS)	INF	gave up
	Plan B: the collapse of websites: quality is free	INF	gave up
28.7. – 17.8.	preparation of the promotional material	CE	done
	what is the possibility of a virtual application	INF	done (web site)
	what is our opportunity to advertise	CE	gave up
	define the advertising costs, the result of: (a good voice reaches you in the ninth)	EE	internet
	help center for purchaser (on-line or phone)	Student	gave up
18.8. – 30.9.	analyzing the sales funnel / conversion on your site	INF	gave up
	expanding offer according to the customer	CE	3. theme item
	sales week at VŠUPNM	Student	done, october
	preparation of reports	CE	done
	production of brochure + A1	CE	done

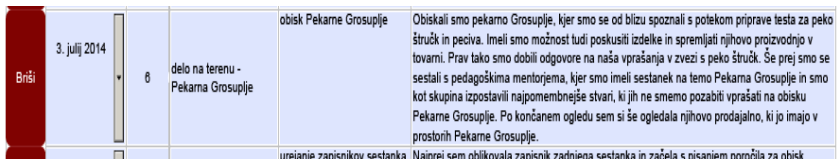
Comments: EE – team of economists, CE – the whole team, INF – informatics.
Source: Own source 2014; Crosby 1979; Slaughter, Archerd, and Campbell 2004.

The main websites for the project are http://pkpsandwich.weebly.com/, https://www.facebook.com/pages/PKP-Sandwich/897335970282990 and http://pkp2.altervista.org/. The project was registered at a public tender. We have successfully completed and implemented most of the plans for the project and the majority of reported activities (Table 7). During the implementation period of the project, some of our originally planned activities were changed or abandoned. In the report, we would like to highlight those deviations and which were most significant.

We wish to emphasize that there are almost no substantive deviations. In the tender documents we provided, we will prepare bi-monthly briefings on the status of the project. These activities were not carried out in such a

manner, but we have upgraded and expanded them through regular meetings and workshops. Through these assemblies we examined the activities of the project and outlined new short-term activities that were consistent with the project plan. For a better overview we have shown an example of the records below.

Information on the project can be seen in the time tract below (Figure 30), for which we requested that students and tutors fill in on a regular basis. By the end stages of the project, we still do not have an active approach for securing intellectual property rights which may be protected by a patent. Types of rights include: patent, design and pattern, trademark and service mark, appellation of origin of goods, priority and fair justice. The legal basis has three laws: the Law on Industrial Property, Law on Copyright and Related Rights Act on the Protection of Topographies of Integrated Circuits. We are still to decide on which form of protection we will use.



Briši	3. julij 2014	6	delo na terenu - Pekarna Grosuplje	obisk Pekarne Grosuplje	Obiskali smo pekarno Grosuplje, kjer smo se od blizu spoznali s potekom priprave testa za peko štručk in peciva. Imeli smo možnost tudi poskusiti izdelke in spremljati njihovo proizvodnjo v tovarni. Prav tako smo dobili odgovore na naša vprašanja v zvezi s peko štručk. Še prej smo se sestali s pedagoškima mentorjema, kjer smo imeli sestanek na temo Pekarna Grosuplje in smo kot skupina izpostavili najpomembnejše stvari, ki jih ne smemo pozabiti vprašati na obisku Pekarne Grosuplje. Po končanem ogledu sem si še ogledala njihovo prodajalno, ki jo imajo v prostorih Pekarne Grosuplje.
				urejanje zapisnikov sestanka	Najprej sem oblikovala zapisnik zadnjega sestanka in začela s pisanjem poročila za obisk

Figure 30: Detail from time tract of project participants
Source: Own source 2014.

In tender documents, we wrote: »Work activities will be carried out throughout the duration of the project in a corporate environment. In the first phase of the project (this is the first month), students will be involved in the preparation of the project directly at the company. In the second phase, students will be virtually connected with the company (this is the second to the seventh month). Students are in a virtual connection in a similar task as the task of developing a new process in the project.« At this point, there was a maximum variation. Departure of students to the company were executed without delay. Students have actively joined the project and started activities for the transition from theory to practice in the third month and not the first. Following this, the students have carried out a number of activities in the company during the fourth to sixth month. The first, second and seventh month consisted of activities with the work mentor in place. The work mentor has arrived at the faculty to the workshop on the implementation of the project.

The achievements of the project were also observed in the Public Fund for Human Resources Development and scholarships awarded on the basis of timesheets for intermediate communication and active participation. They invited us to present our interesting project at the 52nd agri-food fair

AGRA in Gornja Radgona. In a short time we upgraded the activities of the project, the development in the field of food technology, cooking, computer programming, internet use, econometrics, market research and computer networks and successfully presented ourselves at the fair. Student and working mentor were our representatives at the fair AGRA recipes, baking loaves process, computer application and the overall provision of services. The visitors of the fair executed an order through the application and in this way acquainted with the content and operation offered by application.

An important part of the project is advertising. During the project we carried out a number of communications with stakeholders. During the project implementation, in addition to those already described activities, we also inform the public about the project via the media and otherwise:

- website of applicant SBM;
- publication of the article in Suhokranjske novice;
- publication of the article in Dolenjski list;
- publication of the article in Grosupeljski odmevi;
- publication of the article in Naši koraki;
- publication of the article in Finance.

We had numerous events and work which generated a lot of content. Since we couldn't include them all in the text, we decided that that content and events should be enclosed and presented in the Annexes. These include many pictures of the project, the workshop minutes of team members, additional photos from the fair AGRA in Gornja Radgona and many other events.

The desire of the team members is that a similar project is developed in the future, so we invite everyone to give their suggestions for the design of (new) project PKP or approach to project to the e-mail address sergej.gricar@guest.arnes si, or barbara.rodica@guest.arnes.si, or web site http://pkp2.altervista.org/. With any new project we want to upgrade the Web application extension to the mobile application, in particular, conceptual and innovative programming websites in the Internet environment.

In the current project, we would like to upgrade the project for usefulness of the economy. The project has already been signed up for an upgrade in the project of social entrepreneurship, by logging on SE SE Forum Accelerator Stockholm (Schiller and Almon-Bar 2013; Philips et al. 2015). The project also depends on the possibility that students are working on a project in the economy. For now, three students from the project

has already hired. The project PKP Sandwich will also be signed up to tender for awards for innovation Chamber of Commerce Dolenjska and Bela Krajina.

At the end of the project we had social meeting and at this meeting (below), all active members were asked to meet a survey on the topic of project. Of the nine expected responses we have received eight. Everyone agrees that would like to work again on the project.

Figure 31: Completion of the project at a social gathering
Source: Own source 2014.

The survey involved two males, one person who was not identified and five females. The average score on the question of efficiency of a project was 3.88, on a scale from 1 to 5, where 'one' means that during the project they did not gain any new knowledge (below average) and 'five' means that they gained exceptional skill (above average).

We have also assessed the other side of the efficiency. Score 'one' meant that it was working with SMEs below expectations and more was expected. Score 'five' meant that the work and mentoring SMEs were exceptional and that the mentor was always available. The average score was 4.13. In the next issue of whether the project has real potential for success in the market, the respondents responded with an average rating of 3.63. The evaluation assessed that 'one' suggested that it is impossible to carry out the project in the market under any circumstances, while the score of 'five' means that project is viable and capable of implementation on the market(s).

On the question, whether project has given you long term knowledge for further studies and work, respondents on average responded with an assessment of 4.0. Here, a score of 'five' means that the mentoring was exceptional and working mentor was always available. After assessing the teaching mentors, respondents gave an average 3.67 points on a scale of one to

five. On the scale 'five' means that the teaching mentors helped throughout the project, sometimes even too much.

Below are more subjective assessments by respondents following a series of orders on the responses received. The added stamp of receipt on the answers to the question, »what is your full and general opinion on the completion of the project.«

11/9/2014 12:50:07: »The project is very sustainable and efficiently oriented. I would like to be part of the next project. Time for a specific task was very short. Perhaps it would be good to have at the next project specifically familiar with different time commitments / terms at the outset of the project. Date of payment is undefined. Some parts are missing in the project, for example, management. The project should be more interdisciplinary.«

We believe that we need more similar projects, as this on. This is a good lesson for us. Staff and students were great. I hope that next project consists of similar. :).«

11/9/2014 13:25:36: »The project was a good one. At the end of the project we slightly run out of time. In human resources management, we had a small problem with one of the participants, but we have successfully solved. Education, training has been very solid.«

11/9/2014 13:26:58: »New knowledge; work discipline; brainstorming; We got a late payment of money; a great team; great mentors; new experience.«

11/9/2014 17:20:16: »7/10. Some of the originally planned tasks were not done, unfortunately. The project provides many links between SMEs and universities. Both organizations are delivering much-needed guidance with a sufficient degree of independence. It is important to mention that we were all well aware of who was part of the team, and what one should do (implementation of tasks).«

11/9/2014 17:38:04: »This is a great project. The best thing is teamwork, since I received the new knowledge that has helped me in my interview for student work. Time management was good because students could themselves rearrange work and we could work on project in free time. The management staff was super, super mentors and others who were involved in the project. I also did a good training education within the project, so I got a lot of useful knowledge. Money was a big incentive for the project, because we know that we will be rewarded.«

11/10/2014 20:50:16: »The main idea of the project was great. We saw a similar site and ideas, but I've never seen anything like it. I like the idea – selling sandwiches through the site and home delivery. But what I like the

most is that we have learned that nothing is as simple as it sounds. Like to learn how to play the guitar. At first, it sounds like a simple task, but when we actually started learning to play, step by step, we find that it is not easy. It was the same in the project. The idea sounded much easier. But when we started the project, it was not easy. It was so much detail, we did not even think. And some of the details that make the project even more fun. Since it was something to explore with new things to learn.«

11/12/2014 19:38:59: »The project was a good chance for all of the members to gain new knowledge. A disadvantage is very late payment of money. The project provides an opportunity to give a realistic picture«.

11/13/2014 20:41:00: »I'm not a member of the project team. But I followed with interest the development of ideas, team problem solving, initiative, innovation, students, self-sacrifice of both mentors at the faculty and mentor working in the company. In particular, I was interested in what the students gain. This practical experience, specific competences, knowledge and skills gained are today much needed for being potentially employable. Proof of this is that two student members of the team got a job immediately. Linking education and the economy through such projects is a great way of supporting and I hope that this kind of linking will happen more often.«

Conclusion

The foregoing study sheds the light on facing industry and academia nexus management in Slovenia. The content is summarize by the gap existing between the two mentioned sectors in economy and managers. A brief study for the situation of higher education institutions and related obstacles has been discussed. The status of industry has also had been discussed showing some data and the activity that need to be undertaken.

The future perspectives of academia – industry nexus management, the analysed case study has had introduced. In this co-funded model, the awareness and market needs feedback is used to create modern techniques capable of nexuses the two sectors to each other. Three sides has had included in the nexus – business executors and academicians. The later consists of students and teachers or researchers.

Finally, this academia – industry nexus management can have the opportunity to see the day light if it is applied on two tracks, the first track is based on syllabus development while the second track is based on making modern structural economic policy and innovative quality management strategy.

With the intention of effective implementation of the research, we have studied some scientific and craftsmanship literature: Business Idea, Academia-Industry Nexus Management, and Acting SME, Technology of Cooking, Technology of Food and Catering Industry, Mechanical Tooling Food, Feat Tooling Food, The Safety of Food, Catering Industry and Development of Computer Technology. Our activities after this were completed in chronological order including a production Swot analysis: business »canvas« model and questionnaire with which we wanted to

receive feedback from the market. The public's response towards our project was positive. The first activities were formed through brain storming ideas. This was duing the preliminary stages when we were deciding what we would like to offer our customers. Following this, we then formed and programmed our web page, as well as searched for financing options for our business idea. This was followed by a search for location and preparation of HACCP standards for technology of food and productions for making sandwiches.

As part of the project we were researching/ building a sandwich according to individual preferences of customers and how this process would affect the price for delivering the sandwich to the home, work or social place. We were looking for sandwich ingredients that are healthy and will follow modern trends in nutrition. This relates to eating five times a day and eating meals composed of locally sourced food. In preparing the recipes for our sandwiches, we decided to include components with complex carbohydrates, low-fat ingredients and constituents of the essential amino acids.

Our team must learn how to bake different types of baguettes, prepare the recipes for sandwiches (Tuna sandwich, Vega sandwich, Barbara sandwich, Classic sandwich, et al). For our sandwiches we prepared calculations of their energy levels, nutritional values and prices. More specifically, we were interested in finding our target customers and what ingredients they would prefer when ordering one of our sandwiches. Using a basis of interactively gained knowledge, members of the project team prepared recipes for sandwiches and a mobile application that allows customers to order sandwiches online. Presented innovation solution with online store provides SMEs a competitive services and also faster access to the final consumer.

Students, staff and SMEs included in the *Sandwich Management* research acquired various competencies, knowledge and skills. The research brings market potential to new services with high added value in relation to the competition. Consumers who decide to buy or order a sandwich over the internet will save time that would otherwise be spent on the site providing services. An advantage of the *Sandwich Management* research is how it avoids bottleneck ordering, payment and delivery. The weaknesses are partially limited by ordering online, paying online and the choice of delivery to a desired location chosen by the purchaser.

Additionally the innovation brings new knowledge to all connected to the present research and project. The gained knowledge is in use for every day life, teaching and work. With the dissemination and milestones at the

research period the additional specific skills gains to all, such as communicating skills which can be used in practical work environment and to subsequently introduced innovative ideas. With the inclusion of huge range of scientists, specific experts, students and public we extend our monograph to open innovations and other subjects. *Monograph Sandwich Management brings and introduce new management concepts in its theory and practice.*

Summary

This empirical approach defined new concept in academia-industry nexus. In the research we investigate academia-industry management and its inclusion to the innovation process. In the research we introduce several methodological steps, first literature overview, second the case study of Sandwich Management as a step of an academia-industry nexus management. In the case study developed as a project some other methodological steps were identified and used. There are different and several results of the project, which are presented in this empirical approach. First, academia-industry nexus reveal innovation capacities of SMEs. Second, in the present monograph steps of business idea are introduced and described. Third, the Sandwich Management is detailed sectioned from raw material to sensory analysis of completed product. At the end of the approach we introduce price sensitivity of the sandwiches and the econometric analysis.

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Reviews

I

Znanstvena monografija obravnava izbrano problematiko celovito, pri čemer avtorji uporabljajo ustrezna metodološka izhodišča za menedžersko obravnavo. Znanstvena monografija podaja nov pogled na sodelovanje med akademskim okoljem in realnim gospodarstvom pri razvoju inovativnosti v storitveni dejavnosti. Avtorji obravnavajo nove možnosti sodelovanja med deležniki procesa razvoja poslovne ideje v okviru predstavljene raziskave in projekta. Ocenjujem, da so ustrezno opredelili in predstavili teoretična izhodišča, in sicer področje, namen, cilje, raziskovalna vprašanja, predpostavke, omejitve, metode raziskovanja ter pričakovani znanstveni prispevek in izbrani raziskovalni problem.

Znanstvena monografija temelji na terenski in laboratorijski raziskavi. Temeljno raziskovalno vprašanje je ustrezno predstavljeno in opredeljeno. Celovita opredelitev raziskave avtorjem omogoča podrobnejšo analizo izbranih vidikov obravnavane problematike v posameznih poglavjih. Podrobno obravnavo izbranih vidikov nato dodatno nadgradijo z interdisciplinarno obravnavo inovativnosti v storitveni dejavnosti. Rezultati obravnave delnih vidikov ter interdisciplinarne obravnave celotne problematike omogočajo spoznanja, potrebna za doseganje zastavljenih ciljev znanstvene monografije.

Avtorji so uporabili niz uveljavljenih raziskovalnih metod, ki so jih dopolnili s specifičnimi metodami za potrebe obravnave posameznih vprašanj. Raziskovalno delo temelji na ustrezni uporabi izbranih temeljnih metod znanstveno raziskovalnega dela. Hkrati pa avtorji pri svojem delu uporabijo tudi specifične raziskovalne metode – npr. metodo senzorične

analize ter ekonometrije, ki jim omogočijo raziskavo specifičnih vidikov problematike – npr. raziskavo nutricionističnih hranilnih in energetskih vrednosti. Dodatno odliko dela predstavlja interdisciplinarna zasnova raziskovanja, saj avtorji zasnujejo in razvijejo specifično raziskavo za potrebe celovite preučitve sodobnega prehranjevanja. Jasno je opredeljen prispevek rezultatov raziskave k razvoju znanosti in prakse obravnavanega področja. Potek izvedene raziskave je primeren izbranemu problemu.

Znanstvena monografija vključuje deset vsebinskih poglavij in seznam literature. Poglavja so ustrezno oblikovana, potekajo po logičnem zaporedju in ustrezajo namenu monografije. V uvodnem poglavju avtorji predstavljajo izbrana izhodišča za delo. V naslednjih dveh poglavjih predstavljajo izhodišča za obravnavo sodelovanja in prenosa znanja med akademsko sfero in gospodarstvom ter inovativnosti malih in srednjih podjetij. Sledita poglavji, v katerih avtorji opredeljujejo izbrani pristop za projektno delo ter teoretična izhodišča za izvedbo svojega projekta. Osrednje področje obravnave monografije predstavljajo štiri poglavja, v katerih avtorji obravnavajo »sandwich management«. Najprej slednega predstavijo, sledijo interdisciplinarna obravnava tehnologije kuhanja, spletna aplikacija rešitve ter kakovostna obravnava projekta. Avtorji monografijo vsebinsko zaključijo s poglavjema, ki predstavljata temeljna spoznanja in rezultate projekta ter sklepne ugotovitve. Sledi še predstavitev uporabljene literature. Na podlagi navedenega ugotavljam, da je glede na namen, vsebino in sestavo poglavij naslov znanstvene monografije ustrezen.

Na temelju izvedenega recenzijskega postopka ugotavljam, da je znanstvena monografija primerna za (so)financiranje, saj ustrezno interdisciplinarno obravnava aktualno problematiko inovativnosti v prehranski storitveni dejavnosti. Njena vsebina dopolnjuje teoretična in aplikativna spoznanja s tega področja. Predstavlja tudi izhodišče za nadaljnje znanstveno raziskovanje in strokovno delo, predvsem na področjih menedžmenta prehranskega področja ter razvoja inovativnosti v storitveni dejavnosti. Pomembno je izpostaviti tudi, da je monografija v angleškem jeziku, kar bo omogočilo njeno uporabo v širšem okolju ter difuzijo njenih spoznanj v mednarodni znanstveni in strokovni javnosti.

Na temelju zgoraj navedenega menim, da bi predlagana znanstveneamonografija prispevala k razvoju znanosti in stroke, zato predlagam njeno objavo.

dr. Vojko Potočan

II

Znanstvena monografija na celovit, konsistenten in menedžersko obsegajoč ter metodološko ustrezen način obravnava aktualno tematiko sodobnega prehranjevanja po t. i. konceptu »od njive do vilice«. Vsebina monografija k obstoječi znanstveni literaturi v angleškem jeziku prispeva vpogled v to, kakšno je sodelovanje med akademskim okoljem in realnim gospodarstvom, pri čemer se osredotoča na aktualno problematiko inovativnosti v storitveni dejavnosti. Avtorji na pristen in inovativen ter hkrati zadostno celovit način prikažejo možnost sodelovanja med sektorji z razvito poslovno idejo, ki jo preko raziskave in projekta obravnavajo z znanstvenimi in strokovnimi metodami. Menim, da so avtorji ustrezno predstavili potrebna teoretična izhodišča, opisali problematiko ter izbrani raziskovalni problem.

Avtorji v znanstveni monografiji ustrezno predstavljajo tudi namen in cilje raziskave. Raziskava, ki je podlaga za znanstveno monografijo, delno nastaja v nadzorovanem okolju, t. i. v laboratoriju. Avtorji so tako opredelili ustrezno raziskovalno vprašanje raziskave in raziskovalno vprašanje empirične analize v laboratoriju. Temeljno raziskovalno vprašanje je ustrezno prikazano in pojasnjeno. Avtorji so dali še poseben poudarek analiziranju vseh parametrov, ki se pojavijo v raziskovalnem vprašanju, in jih prikazali v ločenih poglavjih ter podpoglavjih.

Ugotavljam, da so avtorji uporabili ustrezno raziskovalno metodologijo, tako tipične ter hkrati potrebne temeljne metode znanstveno- raziskovalnega dela. Poleg tradicionalnih metod so uporabili tudi metodo senzorične analize in posamezne elemente ekonometrije, kar jim je omogočilo celovitejša spoznanja na izbranem področju raziskovanja (npr. raziskovalna metoda nutricionističnih hranilnih in energetskih vrednosti sendviča). Tako lahko ugotovimo, da avtorji predstavljajo lastno zasnovano in razvito raziskavo na področju tematike sodobnega prehranjevanja ter v tem okviru povezovanja med akademsko in gospodarsko sfero. V monografiji je tudi jasno opredeljen znanstveni prispevek. Potek raziskave je primeren izbranemu problemu monografije.

Znanstvena monografija sestoji iz enajstih poglavji in seznama literature. Zasnova in potek poglavij sta smiselna in ustrezna namenu monografije. V uvodnem poglavju so predstavljena izhodišča za delo. V naslednjih treh poglavjih sledijo izhodišča za razumevanje okoliščin, v okviru katerih avtorji zasnujejo svoj pristop k delu. Sledi poglavje kjer avtorji povzamejo izhodišča za oblikovanje »projekta«. Temu sledijo poglavja z opredelitvijo »sandwich managementa«, predstavitvijo specifičnih ugotovitev s področja priprave hrane in nutricistike ter aplikacije projekta. V zadnjem

delu monografije si sledijo rezultati spoznanj uporabljenih metod, rezultati projekta ter sklepi. Zadnje poglavje je seznam literature. Glede na vsebino in sestavo poglavij ter namen menim, da je naslov znanstvene monografije ustrezen.

Na temelju izvedenega recenzijskega postopka lahko zaključim, da je znanstvena monografija zelo primerna za (so)financiranje, saj obravnava aktualno problematiko na inovativen in celovit način. Njena vsebina bo pomembno prispevala k obstoječim spoznanjem na tem področju. Ta monografija in predvsem uporabljen pristop predstavljata tudi pomembno izhodišče za nadaljnje delo, raziskovanje ter širšo uporabo tega pristopa v drugih primerih, kjer se bo razpravljalo o povezavi med akademsko in gospodarsko sfero. Pomembna prednost znanstvene monografije je tudi, da je zapisana v angleškem jeziku, kar bo omogočilo njen večji vpliv in diseminacijo spoznanj na globalni ravni.

Na temelju zgoraj navedenega menim, da bi predlagana znanstvena monografija pomembno prispevala k znanosti in stroki ter krepitvi sodelovanja med akademsko in gospodarsko sfero, zato jo predlagam v objavo.

dr. Zlatko Nedelko

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