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THE REAL SITUATION OF PRESENCE AND REASONS FOR NON-IMPLEMENTATION OF STANDARDS IN RESTAURANTS IN NOVI SAD

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Abstract
This paper will deal with the analysis of the real presence and quality of implementation of legally mandatory standards such as HACCP, and others like GMP standards, in restaurants in the territory of the city of Novi Sad, including the presence and quality of standardized operating procedures, standardized recipes of gastronomic products and nutritional value when declaring products to guests. The aim of the paper is to prove the hypothesis that most restaurants still do not have adequate implementation of standards, although some such as HACCP have been mandatory since 2011, as well as to uncover the real reasons for this. The key data were collected from the primary data source, ie. from the field, from a sample of 250 restaurants operating in the wider territory of Novi Sad. All the previous ones aim to get a realistic picture of the state of the profession and the quality of the standardization of services, as well as to identify key problems, opportunities and potential solutions. In addition to the above, a large amount of literature related to this issue was analysed so that the results themselves could be compared and a temporal and spatial parallel within the profession could be drawn.

Kew words: *HACCP, SOP, GMP, Standards, Gastronomy*

Introduction

If we plan to grow the HoReCa sector at Balkan in 21st century, we have to first solve foundations of hospitality, and that are: Food Safety and Business operation Standards.

HACCP and ISO22000, as most famous standard, is globally recognized as the basis of a good any Food Management Systems (FMS). HACCP was jointly developed by Pillsbury Organization and NASA in 1960's with an objective to provide food products for astronaut consumption in space. It is a management tool used to ensure food safety. HACCP is a very useful commercial business tool that be used to improve the quality of food product; ensure safety of food products and reduce the risk of food poisoning. It is an internationally recognized methodology for preventing food safety hazards. The goal for HACCP is to develop a system, which is built on preventing problems before they occur.

Standardization is one of the main factors that will ensure social development of the region. This also applies to the standardization of the gastronomic products (dishes) as well as all operational procedures of restaurants. But to what extend are restaurants realistically abiding to the legal regulations in the field of Food Safety and how many of them have successfully implemented and maintained HACCP and FMS systems.

Regardless of the fact that some of these standards have existed over half a century, in Serbia, HACCP has been mandatory since 2011, but inside information as fellow professional give totally different intuition, that we still don't follow GMP, even though majority of professionals know that they should do it. The Problem is multidimensional and requires participation and good will from few different parties involved:

- Restaurant owners (as investors)
- Restaurant chefs (as operators)
- Government bodies (as regulators & controllers)

- Dedicated specialized employees or contractors (as specielized freelance experts)

The goal of this scientific paper is to conduct confidential database of realistic situation on the HoReCa market, to prove/disprove initial hypotheses and to find potential further solutions to these problems.

First Section: Literary research & analysis

The term ‘‘Hazard analysis and critical control point (HACCP)’’ was first introduced in the European Directive 93/43/CE (1993). In the last two decades, the HACCP technique has been progressively been recognized as a cost-effective procedure for ensuring food safety. Today, this methodology is internationally accepted as an effective tool to deal with safety hazards which may arise in the food production process. Indeed, since the adoption of the Codex Alimentarius ‘‘Guidelines for the application of the hazard analysis and critical control point (HACCP) systems’’ and its subsequent revision ‘‘hazard analysis and critical control point system and guidelines for its application’’ (Codex, 1997), the application of its seven principles has become mandatory requisites in the food worldwide production chain, in order to prevent the occurrence of food safety hazards to final customers.

According to research conducted by Noronha (2004), the implementation of HACCP in Portuguese food industry became compulsory in 1998 with the publication of the decree-law 67/98 that transpose to Portuguese law the European Council Directive 43/93/EEC. This shows that other countries (in this case Portugal) have introduced the regulatory necessity for HACCP implementation at least decade earlier then Serbia.

In 2007, data available from the EU indicate that about 90% of the European Union’s food industry is made up of small or medium-sized enterprises (SMEs). In 2023, the food and drink industry within the European Union is overwhelmingly composed of small and medium-sized enterprises (SMEs). According to Food Drink Europe, SMEs constitute 99% of the sector, highlighting the crucial role these enterprises play in the industry. This significant proportion underscores the importance of supporting SMEs to ensure the sustainability and growth of the EU's food industry. Given their dominance, SMEs are integral not only to the economic framework but also to employment within the sector, providing numerous jobs and contributing substantially to the industries overall productivity and innovation (Food Drink Europe, 2023).

According to Mortimore (2001), HACCP can be defined as a ‘‘common-sense’’ approach to food safety management, whose implementation is quite demanding. To this extent, it has to be stressed how its practical roll out requires a mix of managerial, organizational and technical resources to cope with the technical barriers it presents (Panisello & Quantick, 2001).

As Kumar and authors state in their research, HACCP system truly puts the responsibility for producing safe food in the hands of industry, including not only management but also individuals who handle food products, rather than relying on inspection only after food has been prepared. This is why staff training is such an important part of the HACCP implementation process.

The aim of survey, which was conducted by Kokkinakis and colleagues. was to evaluate the changes in the microbiological quality of locally produced/packed food following implementation of HACCP systems in a company preparing prepacked sandwiches. The results show the positive effects that a HACCP system, introduced in an ice cream factory, had on the microbiological quality of the final product and the total quality/hygiene management.

It is widely recognized how the practical application of HACCP can be hindered by lack of time, expertise, training, motivation, commitment and funding, being these issues particularly true in SMEs.

Hazard Analysis Critical Control Point (HACCP) is a system of food safety management that in the last few decades has become an increasing part of national government and international strategy to reduce the prevalence of food borne disease. Yet despite wide dissemination and scientific support of its principles, successful HACCP implementation has been limited. There has been very little in-depth consideration of the reasons behind this. Insights into the small business owners’ experiences with

HACCP provide an understanding of the barriers in general which pointed out that external factors linked to the control of their HACCP system impinge upon their motivation to develop it.

Based on the research conducted by Taylor and Taylor (2004), it is apparent that the initial presentation of HACCP is important in its impact on subsequent knowledge (understanding and awareness), attitude (motivation, outcome expectancy, self-efficacy and regulation) and in turn behavior (external, guideline and environmental factors, competence and cueing mechanism). The way people understand and form attitudes towards HACCP will be based initially on their first introduction to it, and work needs to be done on making such introductions accessible, relevant and positive, with HACCP conveyed as an important and necessary tool in combating food borne disease.

The authors state that emphasis on documentation needs to be lessened (paperwork should be at its minimum), both in presentation and actual practice. Training, both for managers and staff, needs to be made available, affordable and effective. Also, the need for customization of HACCP for small businesses has been pointed out, because these companies have a different profile and different needs to larger ones, and this has to be addressed. They require more specific help and guidance, and an application of the principles of HACCP which suits their needs in particular. Ultimately, it is apparent that HACCP barriers exist at knowledge, attitude and behavioral levels, and so a 'quick-fix' solution aimed only at one of these is not going to work.

Authors, also point out that more research needs to be conducted in the future, and new methods such as the qualitative psychological approach.

From analyzing the narrative interviews, it can be seen that there are a number of barriers to successful HACCP implementation for small businesses. Interestingly, while the analysis led to the creation of five main themes or group of reasons, within the scope of these five it is also possible to draw out evidence in support of the eleven barriers using the Gilling-Taylor 'Awareness to Adherence' Model which also expands upon how it might work in practice, and demonstrates further how the barriers are working at knowledge, attitude and behavioral levels to prevent successful HACCP implementation.

Reason group 1: The difficulty of HACCP - When they heard about HACCP for the first time, each of the interviewees had found it difficult to take in and understand.

Reason group 2: The burden of HACCP - One of the main complaints that emerged from the interviews was of HACCP as a burden. David described it as a 'massive job', and commented that in small businesses in particular this was a problem because they didn't have the staff or the time to deal with it. Chris too found the most negative thing about HACCP was 'the time and effort' involved, and more than that actually 'finding the time'. The majority of interviewed subjects said: "it's a lot, there's a lot of written work to be done . . . we could do with having or employing one full person to do that job, you know. It's the time. It's not rocket science." Also, They repeatedly mention how busy their staff are in relation to the carrying out, documenting and training of HACCP, and in this way creates the impression of it as a burden to them and their companies. This paper also suggests that small businesses do not have the time or the money to implement HACCP as successfully as they would like.

Reason group 3: HACCP as unnecessary - While most of the business owners said that they believed there were certain benefits to implementing HACCP, in terms of food safety the impression they gave was that they did not think it was necessary. HACCP itself they described in terms of documentation only, and they asserted that there is nothing wrong with what they are doing anyway, that they are already producing safe food, and that they haven't had any problems without HACCP.

Reason group 4: Staff problems with HACCP - The majority of interviewed subjects stated that staff do not understand or appreciate the importance of HACCP. They also pointed out numerous situations where their staff has made mistakes or failed to do something related to food safety and treated HACCP

as a 'joke', a 'waste of time'. They stressed how difficult it is to get the staff involved with HACCP, and moreover that staff motivation is 'biggest problem' in terms of successful implementation. Some of the subjects had bad impression of HACCP consultants from their experience with the food technologists who was not at all thorough in his checks and had the impression that they were not really interested in HACCP any more than as something 'tick off'.

Also, Noronha's research (2004) stated that a major problem in the implementation of HACCP is the fact the HACCP is often confused with the implementation of basic hygiene measures, which small business owners don't deem necessary to control and as basic knowledge, but when it comes to it the staff often doesn't abide by it.

Reason group 5: HACCP is not being controlled enough - The idea that HACCP is not thoroughly checked was also brought up by some interview subjects who complained about it not being 'strictly controlled'. They seemed to be unhappy about these both because they would have liked more help, and also because it made the effort gone to in doing things properly unrecognized and unrewarded. Involvement with external enforcement should then reinforce these messages, reward positive efforts, and not make HACCP seem just a 'tick in the box' form.

Similar to that, Noronha's research (2004) showed that similar to other countries the implementation of HACCP in small companies has been hindered by several reasons:

- lack of technical expertise,
- lack of government commitment,
- lack of customer and business demand,
- financial constraints,
- human resource constraints,
- lack of expertise and/or technical support,
- inadequate infrastructure and facilities and
- lack of technical information in local language.

Bas., et al. (2007) concluded that lack of prerequisite programs (92.2%) was the key barrier identified for all food businesses. While lack of knowledge about HACCP (83.5%), lack of time (88.7%), staff turnover (80.9%), lack of employee motivation (83.5%), complicated terminology (87.0%) and lack of personnel training (91.3) was the other most common barriers in food businesses.

Molnar and Pal (2020) concluded in their research that providing a comprehensive knowledge of the HACCP system is significant for food industry, especially focusing on how to compile HACCP manuals. So they conducted the research and practical guideline on how hospitality professionals can compile their own HACCP manuals and which parts and elements it should contain.

Based on the results of the research conducted by Ms. Roganović in the territory of the city of Novi Sad, as many as 71.1% of respondents stated that they do not regularly record temperatures in storage chambers (refrigerators, stocks, and freezers), while only 28.9% of them stated the opposite. In professional kitchens, and above all in those kitchens where the HACCP standard has been implemented, there are records of temperatures in storage chambers that must be filled in once a day, which is not often the case in practice. In situations where there is a large volume of work in the kitchen, a smaller number of employees than the it is required, records are filled when there is excess free time or before the end of the month, especially when the employees do not have the habit of keeping regular records.. Also, at the end of both the first and second shifts, 44.6% of the respondents stated that the work unit of the kitchen block are not cleaned and disinfected, which is quite disappointing data, and 55.4% stated the opposite. The data related to the question about controlling the central temperature of heat-treated food during cooking, which is not at all surprising, shows that as many as 79.5% of respondents agree with the statement that they do not control the central temperature of heat-treated

food, and only 20.5% of respondents stated the opposite. All this shows that restaurants to a greater extent do not adhere to the legally prescribed parameters and control measures intended to ensure food safety, even if they state that they have implemented HACCP.

The interviewees in the study conducted by Albandary and Moran (2020) mentioned that Kelsius provided FoodCheck training to all users. The managers reported that the length of the training session was two hours per site, and that they seemed content with that. However, two other managers expressed that they were not happy that, and that more time should have been allocated. One of them, who manages 19 units, claimed that the time was too little for each individual group, and the other felt that it was the greatest weakness of the FoodCheck installation process. The feedback from these managers suggests that Kelsius should examine their training program and extend it. The training session time should be longer in order to implement HACCP correctly. Alternatively, they could consider providing video sessions for users to watch again and again, and this will be beneficial particularly for those who do not have local agents.

Results have strongly suggested that digital systems enable information to be reported in an easier way, and hence it is easier for managers to analyze data and detect any issues related to food safety. Two managers selected the reporting method as the main advantage of the FoodCheck system. FoodCheck has evidently helped in enhancing traceability in the system, making it much easier than with the paper-based system. Additionally, with these electronic reports, it is possible for all managers to monitor any site at any time, without needing to visit the site. As a part of this research, one objective was to determine if software-based HACCP can assist in auditing or not. However, the manager who manages 115 sites felt that there were not any significant differences between FoodCheck and a traditional paper-based system as regards auditing opposed to managers of slammer restaurants. As for the financial benefit of applying FoodCheck the results in this study are not conclusive. Smaller restaurants stated that implementation of such system saves them money, while large companies stated that there is no benefits of applying it and refers to the system as a quite expensive on a larger scale.

Sözen and Hecer reported from literature that the barriers of HACCP in catering, foodservice and retail industries is due to many factors; one of which is a lack of training.

Wilcock., *et al*. noted results revealed in a study that suggested that the main reason for workers not applying HACCP rules was a lack of training. These authors also found that workers deem record keeping as a labour-intensive task in a paper-based HACCP system, which requires a great deal of time to implement.

However, FoodCheck replaced all paper-based documents, electronically. In addition to eliminating paperwork through FoodCheck, it also enables greater accuracy of information and an easy way to store documents, as conveyed by all managers in their interviews.

Bas., et al. (2007) in year 2007 found that in a paper-based HACCP system, only 16.5% of organizations were taking and recording temperatures. 76.5% of managers claimed that the volume of paper required was a major barrier to implementing FSMS. The same study, also found that the cost required for implementing an HACCP system was the main factor for not adopting it.

A lack of understanding of HACCP was identified as one of the main barriers to its implementation 63.5% reported that they did not really know what HACCP was while 23.5% reported that it was too complicated. Only 33.0% of managers said they had a food safety management system. About 31% of the employees in food businesses had received basic food hygiene training. The majority of managers (91.3%) identified improved customer confidence as a benefit of implementing a food safety management system, and prevention of food poisoning (76.5%).This study, besides being one of most influential in field of Food Safety, concluded that food safety practices implemented in food businesses in Turkey in 2007 were as follows:

- Daily taking and recording food temperature upon receiving: **10.4%** of companies
- Daily taking and recording refrigerator/freezer temperature: **7%** of companies
- Daily taking and recording end-point temperatures of all cooked foods: **16.5%** of companies
- Daily taking and recording temperature of food on the serving line: **11.3%** of companies
- Periodically checking concentration of sanitizing solutions: **28.7%** of companies
- Periodically taking and recording dish machine temperature: **43.5%** of companies
- Has developed food storage procedures: **20%** of companies
- Has developed personnel hygiene procedures: **20.9%** of companies
- Has developed cleaning and disinfestation procedures: **20.9%** of companies
- Send food product samples to a laboratory for bacterial testing: **29.6%** of companies
- Take swabs of food production equipment and counters to determine bacterial count: **33.9%** of companies

The high percentage (92.2%) of managers agreed with the statement relating to the need for more checks by the authorities. Its successful implementation, however, requires an understanding of its principles and commitment to it through all levels in the workforce. However, the findings of this study indicated that most of managerial staff and basic food handlers have not received basic food hygiene training.
Lack of prerequisite programs and inadequate physical conditions of facility were also identified as the other main barriers. Developing and implementing written standard operating procedures in food businesses are one of the first steps to build effective HACCP and other food safety systems in Turkey. The practical implementation of hazard analysis and critical control point (HACCP) and in particular the definition of the critical control points (CCPs) in the food industry is usually a complex structured task. Paper conducted by Bertolini et al. (2007) addresses the issues of how quality/safety managers can objectively and automatically implement the first and second principles of hazard analysis in the application of HACCP, which is the identification of risk priorities and of the related CCPs, by means of a structured, quantitative and qualitative methodology. Although use of specific software systems to analyze/compare the different risks which may stem from production processes could be a valid support tool to make the development of an HACCP system in a SME makes it easier and more effective, still they lack of effectiveness in defining a straightforward and ‘‘automated’’ path for hazard assessment.

In research conducted by Maldonado et al. (2005) 160 Federal Inspection Type (TIF) enterprises were surveyed, with a 58% response rate. Only 18% of the TIF enterprises interviewed had totally adopted HACCP, while 20% did not have an interest in adoption. Implementation of HACCP has been to meet requests from international markets and very specific domestic niches.
The norm and prior adoption of ISO 9000 had a direct influence on the implementation of HACCP.
The results show that investment in new equipment and microbiological tests of products accounted for most of the implementation and operational costs, respectively.
The main benefit reported was reduction in microbial counts, while staff training was reported as a significant problem.
Small businesses, that do not take the necessary measures to implement the HACCP system will slowly be left out from the market, including the domestic market.
Most notably, 71% responded that staff time spent in system documentation was greater than expected, while 59% underestimated the cost of external consultants.
71% and 65% of respondents, respectively said that their costs were the same or lower than expected for managerial changes and structural changes in their companies.
From the four cost items showed in the study, product testing was indicated by 70.6% of respondents as the cost item of major importance in HACCP operating, and in second place, staff training with 23.5% of the respondents.
Costs of production had changed as a direct result of HACCP implementation. Seventy-one percent answered that their total costs of production had increased, but for 6% these costs had decreased, with the rest of the respondents (23%) indicated no change in their costs.

On the other hand, 35.3% indicated that managerial/supervisory time was irrelevant as cost item in operating HACCP.

In previously conducted research on related topic (Gašparovski, 2019), it was concluded that standardized recipe is a form in which all information that is important for a gastronomic product (dish) can be expressed in detail, in a generally accepted manner in the field of gastronomy. A standardized recipe is a recipe that has already been tried several times, adapted and retested for use in a specific food industry and found to consistently produce the same quality of results and quantities each time the exact procedures are used with the same type of equipment and the same quantity and quality of ingredients. Practice in hospitality market has shown that standard recipes are crucial for maintaining quality from preparation to presentation of traditional and contemporary cuisine and its sustainability in many ways. Since the high turnover rate of employees represents a big risk in small hospitality companies, standardized recipes make it possible to provide the same quality of food and presentation (including the way of serving) in the event of a change in kitchen staff. Therefore, the development of standardized recipes is crucial for the sustainability of food and gastronomic culture (Aydoğdu & Mızrak, 2017). The same authors also stated (Aydoğdu & Mızrak, 2017) that standardization is one of the main factors that will ensure social development of the region. This also applies to the standardization of the gastronomic product. It is believed that standardized recipes will contribute to businesses in terms of quality service, sustainability and efficiency. It is believed that standardized recipes will have a protective effect on businesses against risk factors that can arise in many different areas, from cost assessments, menu creation, kitchen staff turnover to product supply due to seasonal changes. Unlike amateur recipes, standardized recipes are adapted to the needs of each individual kitchens and the systematization of culinary processes, but at the same time maintaining the standards of quality and reliability of the final product. The preparation of well-written and accurate standardized recipes is one of the basic duties of a professional chef in all forms of catering, as it involves much more than the names of ingredients and general preparation steps. Standardized recipes determine total recipe yields, portion sizes, food costs, allergen information, critical control points of the HACCP system, sensory standardization, storage and serving procedures, information for serving gastronomic products and set standards for temperature and time of heat treatment. They should be recorded in a consistent, clear, and easily understandable form and should be readily available to all staff members.

As already defined and confirmed in the previous paper (Gašparovski, et al., 2020) the advantages of using standardized recipes in the daily business of gastronomy workers are multiple and are reflected in the provision of numerous benefits. The following stand out as the most important among them:

- Constant food quality,
- Predictability of yield,
- Predictability of costs,
- Continuous nutritional content,
- Food cost and waste control,
- Efficiency of procurement and preparation procedures,
- Control of inventory and work procedures,
- Control of used work,
- Increased self-confidence among employees i
- Reduces risks and costs.

Second Section: Methodology and research area

As part of the research methodology, survey techniques based on questionnaire, field data collection, analysis of the market, interviews and other scientific methods were used. When analyzing the literature, an analysis method was used that was combined with graphical methods adapted to the topic of the work. Also, after collection and analysis, all data were statistically processed in order to draw an objective statement about their results. The conducted survey research was realized on the basis of one online questionnaire, collecting data on market state and demand. The collection of data based on the

created survey questionnaire was carried out in the period from January to May of 2024, in which 250 survey questionnaires were filled in by market representatives/restaurant establishments. The interview was used as an applied scientific method aims to collect qualitative data. The form of the conducted interview was a physical interaction between the interviewer and the respondent, up to 30 minutes in length and with a more flexible structure based on survey questions and their look on the topic. Interviewing was conducted in parallel with the survey research in the period from January to May of 2024. The respondents were workers of higher hierarchical positions in the aforementioned catering establishments (chefs de cuisine, managers or owners). All qualitative answers were recorded by the author of the paper and based on the processing of the data, the average attitude of the majority of respondents in relation to the questions was established. After literary, research and field data collection about implementation of different food standards in the restaurants were used, there followed a phase of detailed statistical processing of all collected data. Statistical data processing was performed with the help of Microsoft Office Excel Developer tool, Expert choice and Google forms statistics program. Also, using the previously mentioned software, graphic presentations of pre-processed data were also achieved.

The area of research of the conducted paper is oriented to the wider territory of the city of Novi Sad, as a sample of optimal size and adequate relevance for the representation of the state of the hospitality market of Serbia. Novi Sad has around 400 restaurants, and we have surveyed 250 of them. For the sample to be as reliable as possible, it would be great if continuation of this research would be conducted in Belgrade area, because then it would cover over 70% of Serbian restaurants.

The area of research represents an ideal location for investigation from a unique cultural aspect, which is distinctly multicultural.

Third Section: Initial hypotheses and research results

Only after the implementation of the previously described phase did the stage of the scientific process come to, in which the results are analyzed and conclusions drawn, and then the conclusions in relation to the initial set of hypotheses, which were:

- H_1: More than 80% of restaurants in the wider territory of Novi Sad do not have a HACCP system at all or do not have an adequately implemented one.
- H_{1a}: The reasons why restaurants do not have an adequately implemented HACCP system are the same as in foreign literary sources, and our local market does not differ from global industry problems and standards.
- H_{1b}: The reasons why restaurants do not have an adequately implemented HACCP system have not changed compared to the beginning of the 20th century when it was more widely accepted by the industry.
- H_2: More than 80% of restaurants in the wider territory of Novi Sad do not have an adequately conducted standardized recipes (if they have them at all).
- H_{2a}: The reasons why restaurants do not have an adequate standardized recipes (if they have them at all) are: lack of competency/knowledge, negligence, and lack of time.
- H_3: More than 80% of restaurants in the wider territory of Novi Sad do not have a written detailed SOP guidebook at all or do not use even it if they have it.
- H_{3a}: The reasons why restaurants do not have correctly implemented SOP guidebooks (if they have them at all) are: lack of competency/knowledge, negligence, retroactive perspective and lack of time.
- H_4: More than 80% of restaurants in the wider territory of Novi Sad do not have adequate declaration for dishes/food they serve (nutritional and energy declaration is missing from the menus).
- H_{4a}: The reasons why restaurants do not have an adequate declaration (if they have them at all) are: lack of competency/knowledge, negligence, cost.

- H_5: Most restaurants are very interested and ready to pay a person outside the restaurant who would manage and update all previous standards for them (implementation and control of GMP, GHP, HACCP, standardizing and updating SR, prepared nutritional analysis for dishes and menu) and occasionally came to the restaurant for monitoring.

In the figure below, it can be seen that 54% of the restaurants had admitted that they don't have correctly implemented or maintained HACCP standard system, and the remaining 46% ensured as that they have everything up to date and correctly implemented. This research showed that from that 46% of restaurants that said yes, have on average only 17% adequacy of found documentation, shown in Figure 3. That goes to show that 231 (92,4%) surveyed restaurants doesn't have adequate HACCP documents and only six restaurants have every document correctly constructed and relevant to the real situation in the establishment. With these devastating results it can be concluded that hypothesis H_1 was proven.

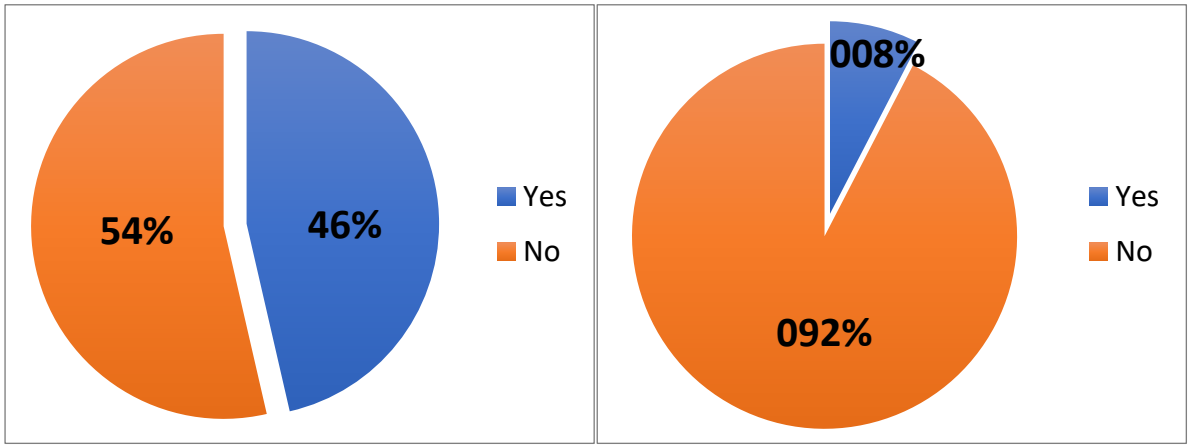

Figure 19. Restaurant responses (left) vs. real situation (right) about implementation of HACCP in restaurants.

With hypothesis H_1 proven next two subhypothesis have to be addressed. Firstly, to which extent do restaurant actually implemented these standards, and secondly, what are the reasons why restaurants don't implement and maintain HACCP standards. Results can be seen in Figures 2 and 3.

As showed in Figure 2, conducted market research is pointing out that 4 most significant reasons why restaurants don't implement HACCP are lack of knowledge about HACCP (63%), lack of time (76.3%), lack of technical expertise (76.3%), and lack of government control and motivation (25.4%). Another significant reason is inadequate infrastructure and facilities but that is not good enough reason by itself if business owners consciously chooses such inadequate establishment when starting a food service company. Other less significant reasons are financial constraints (13%), negligence (4.39%) and untimeliness of newly opened restaurants (2.63%). Based on this results strong correlation can be drawn between reasons provided by different authors (Bertolini, Noronha, Bas, etc.) in different parts of world (Portugal, Mexico, Crete, Parma, etc.) and reasons provided by restaurants in Novi Sad, Serbia, in the year of 2024.

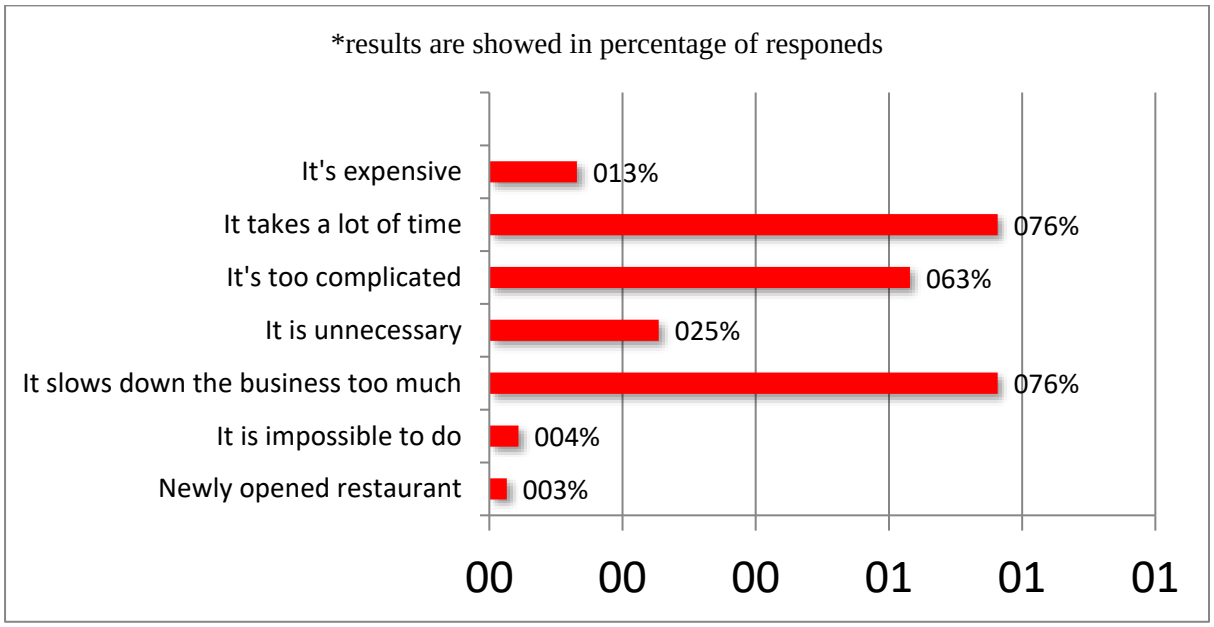

Figure 20. Realistic reasons why restaurants don't implement HACCP standards.

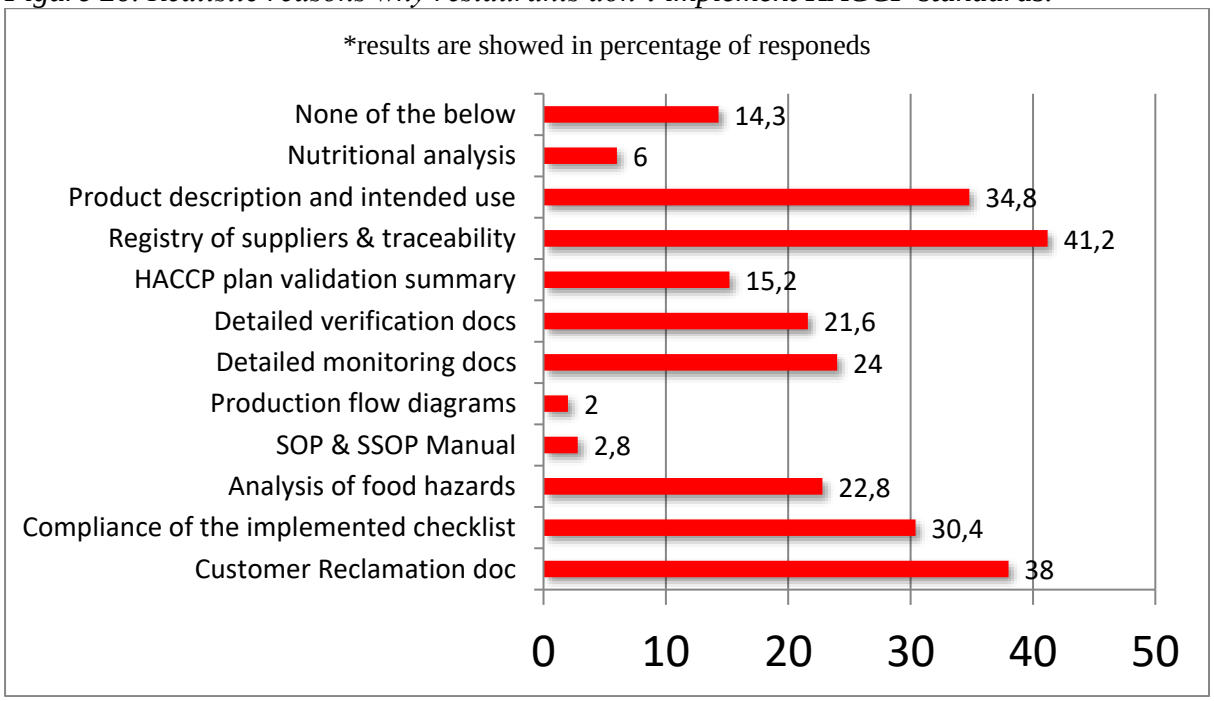

Figure 21. Extent to which restaurants have implemented the HACCP.

It is important to state that only 2.8% of restaurants have SOP manuals, and 2/3 of them are not constructed for the purpose of practical implementation as reminder and educational tool for newly recruited employees. This is devastating data, because this and SR standards are the best ways to reduce costs of high turnover in restaurant industry. Now, let's discuss the results of realistic presence of standardized recipes (SR) in restaurants of Novi Sad. With these primary results we can see that 68.4% restaurants admits that they don't even have SR documentation. As it can be seen in the Figure 4, only 31,6% of restaurants said they have SR documentation, with majority don't even understanding what it is, which can be easily seen from the qualitative interviews with the chefs and managers who though that standardized recipes were just regular everyday recipes which we all are familiar with. Another troublesome data is that from that 31.6% restaurants, those who have SR, on average there is present

37.8% adequacy of documentation, which brings down the number of restaurants who have correctly implemented SR standards to neglectful 11.9%.

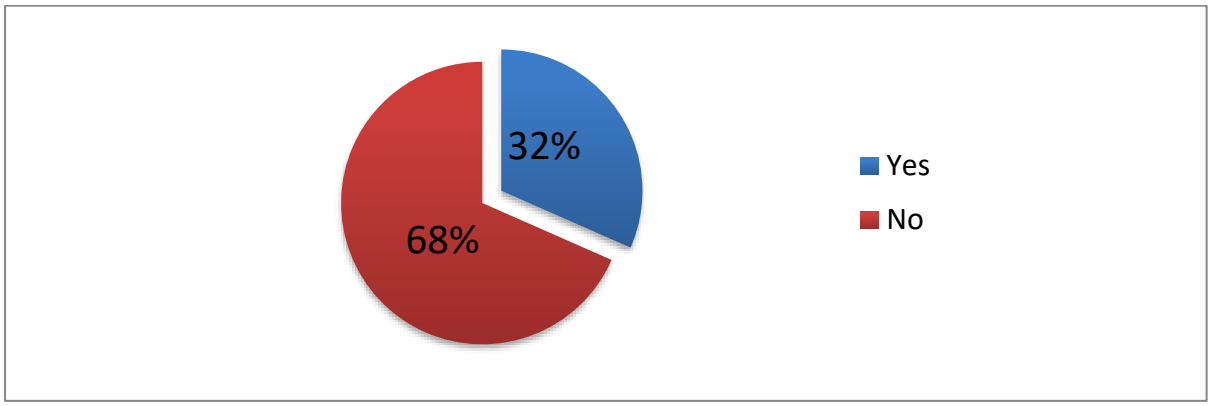

Figure 22. The real presence of standardized recipes in restaurants

When it comes to the elements of SR standards, we can see in Figure 5 that none of the 250 restaurant had 23.8% of SR element present, which is almost one quarter of the documentation.

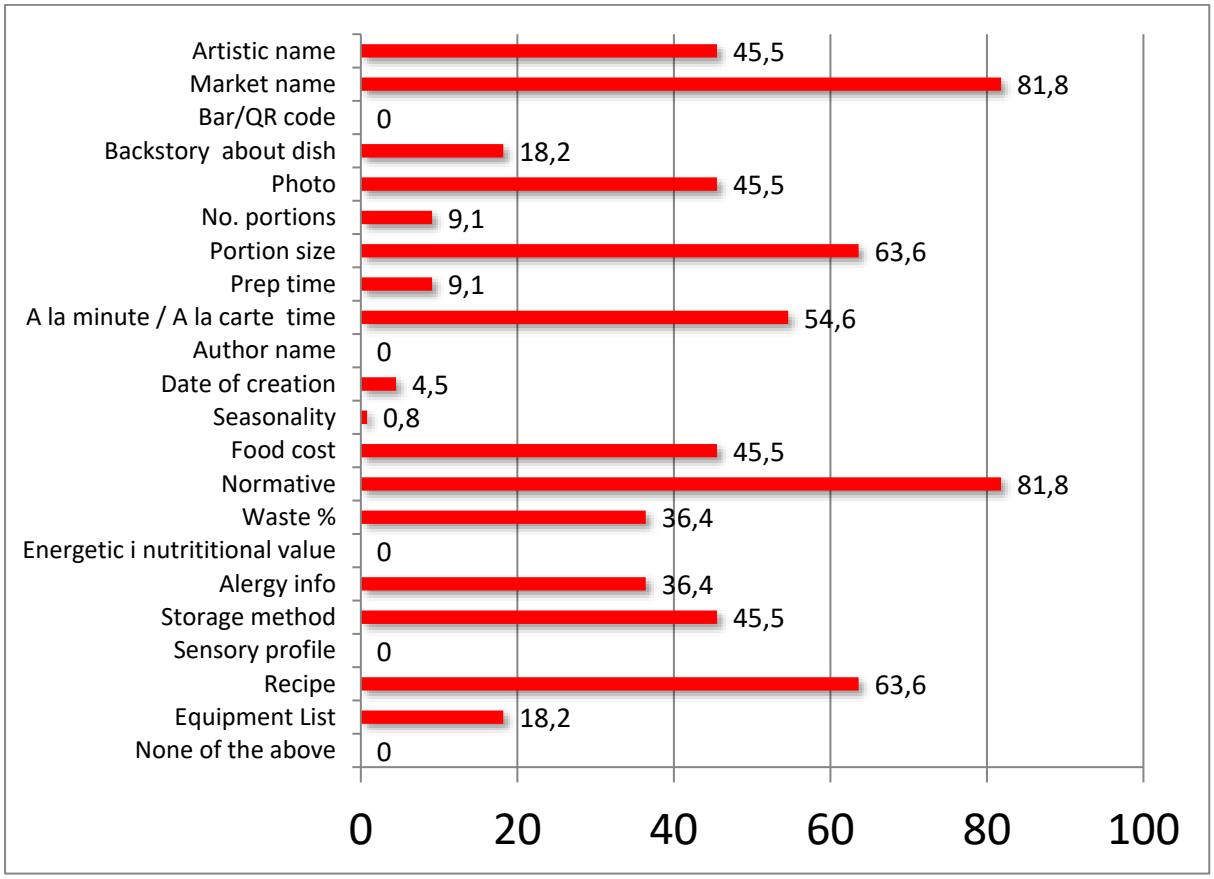

Figure 23. Realistic picture of present elements in standardized recipes. Results are in shown in %.

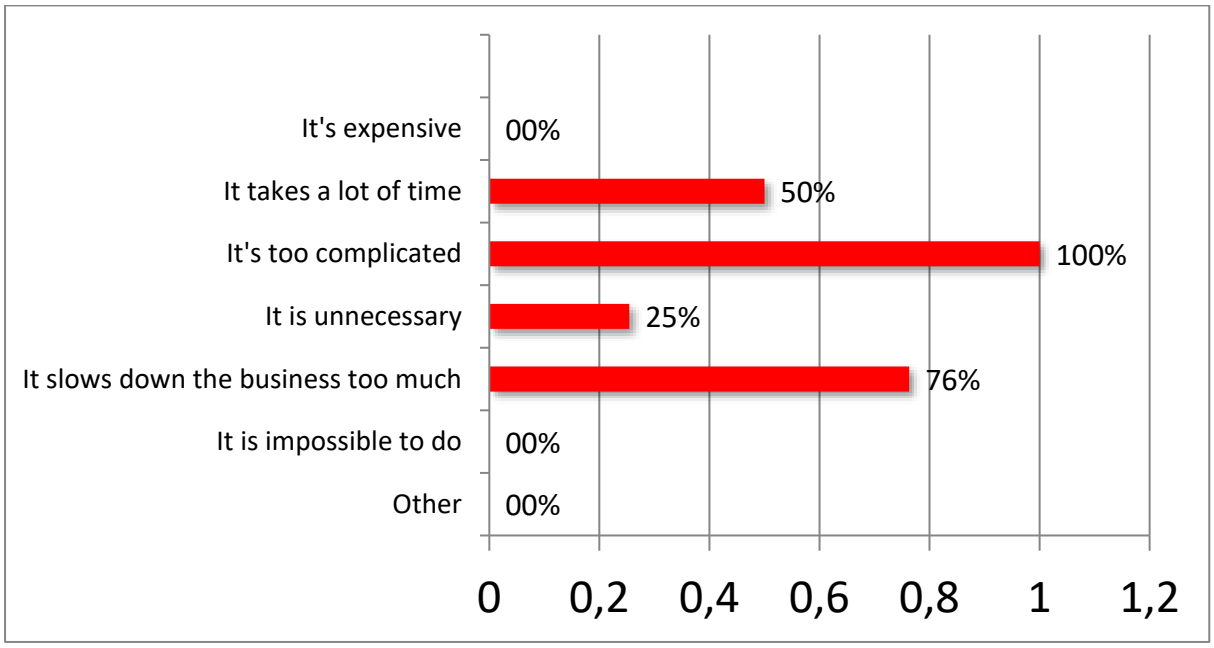

Figure 24. Realistic reasons why restaurants don't implement SR standards. Results are in shown in %.

In Figure 6. it is represented the real reasons why restaurants don't have adequately implemented SR standards, with 3 most significant being lack of competency/knowledge, negligence, and lack of time From the Figure 5 we can conclude that elements of standardized recipes which are the biggest pain points and areas for future improvement are digitalization and adequate registration of documents via QR code and/or unique ID number, information about author of the dish and date of creation, seasonality of the dish, energetic and nutritional value and detailed quantitative sensory profile of the dish.

From another question which was asked at the interview, 13% restaurant representatives said that they had nutritional value for all dishes, but from Figure 5 we can see that they didn't include it in SR standard where it should be present.

In the interview, restaurant owners and managers were asked to rate on Likert scale (from 1 to 5, in order of least to most significant, respectively) how much would it mean to them to have a trained and competent person outside the restaurant who would manage and update all previous standards for them (setting and control of GMP, GHP, HACCP, SR, prepare nutritional analysis for dishes and menu and/ or prepared declarations for meals) and occasionally came to the restaurant for monitoring purposes. The results were very obvious as it can be seen from Figure 7, the results are almost unanimous with 85% of restaurants saying it "We absolutely need that" and even 1 restaurant having outside person for it.

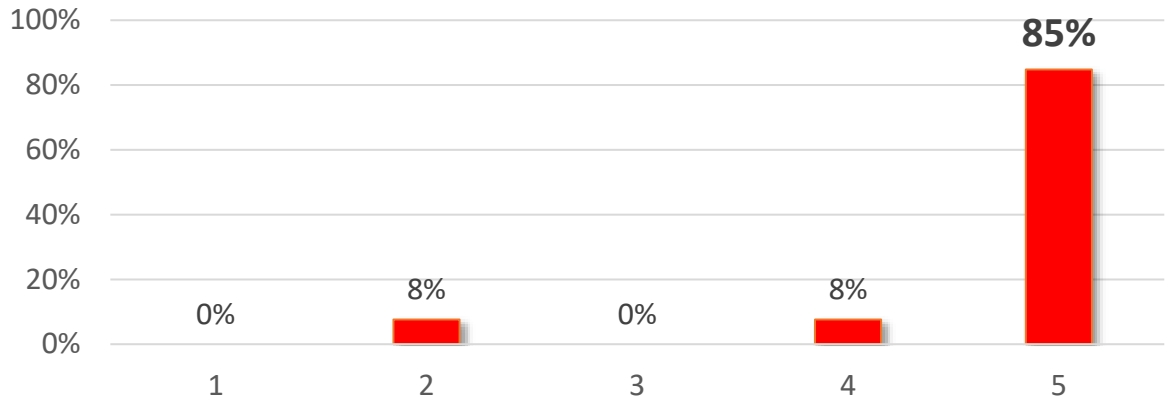

Figure 25. Restaurant need for outsource specialized services regarding implementation and maintenance of standards.

But when they were asked in the interview how much is their restaurant willing to pay for such a service (on a monthly basis) the results were contradictory to the previous statement for demand, with majority (69.2%) of them agreeing to amount up to 100€, and some of them (55.1%) to amount up to 200€.

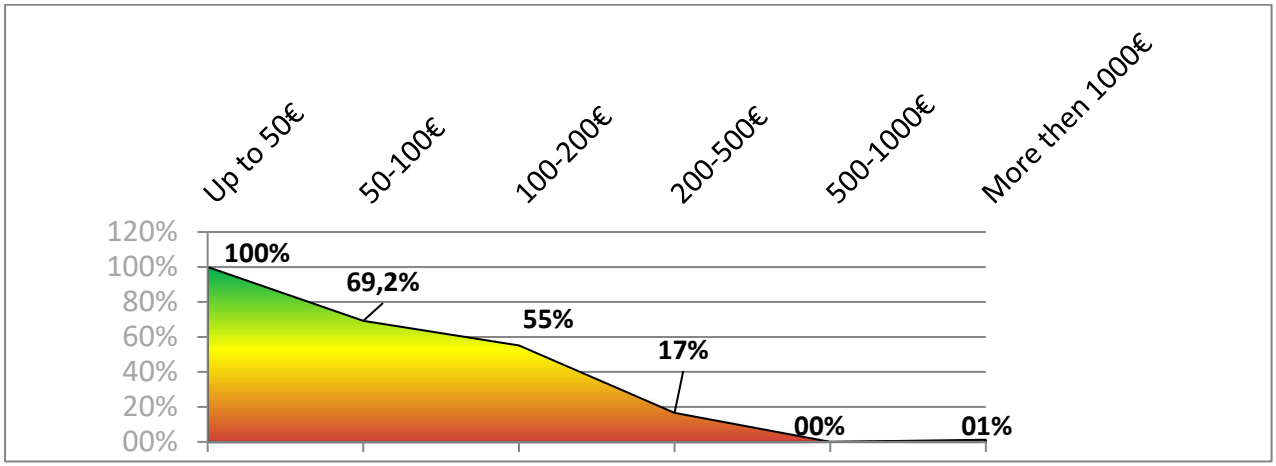

Figure 26. Realistic willingness to pay for expert outsource standard service, paid monthly.

Conclusion

In the previous section we had analyzed, discussed, verified and proven that majority (more than 80%) of restaurants in the wider territory of Novi Sad do not have all of previously mentioned food related standards or do not have it adequately implemented in the sense of its required elements, or correctness of the same. It was concluded that reasons why restaurants do not have an adequately implemented HACCP system are the in big correlation if not same as in foreign literary sources, and our local market does not differ from global industry problems and standards. The reasons why restaurants do not have an adequately implemented HACCP system have not changed compared to the end of the 20th century when it was more widely accepted by the industry.

More than 80% of restaurants in the wider territory of Novi Sad do not have adequately conducted standardized recipes (if they have them at all). The reasons for that are: lack of competency/technical expertise/knowledge/understanding, negligence, and lack of time.

Most local restaurants have the need for easier way to implement and maintain standard, preferably by outsourcing this portion of the work to expertized contractors who would do this for them.

Realistic situation in the restaurant industry is as troublesome as predicted with previously mentioned hypotheses, and we still don't have enough restaurants who implement GMP standard in their businesses. The situation is similar to global industry situation, with bigger deficit of implementation in Serbia, due to the larger lack of regular government controls and sanctions. Reasons of not implementation are the same.

Based on all previous data, few solutions can be proposed. Popularization of new specialized hospitality jobs complementary but needed to the restaurant business, such as: Quality Managers (standards), gastronomy consultants and gastro freelancers. This will be a opportunities for newer generations of professionals who are interested in working in hospitality sector but in a different manner. Next, our profession is in a dire need for better education about standards which is focused on practical implementation and outcomes. Also, wider adaptation of HACCP and other standard digitization and use of AI to speed up the process of drawing up, monitoring and verifying standards, as well as ways to automate it/make it less demanding for already overworked restaurant workforce.

One thing that we concluded from the interviews was that there is a urgent need for more frequent and stricter regulatory as well as not corrupted field control which monitors quality level of implementation of these standards in the restaurant establishments. This could be easily solved with construction of national public database with restaurant rang list with names of restaurants and number of acquired points / risk and quality level assessment. With previously listed solutions there would arise a lot of opportunities for future improvement of the industry, and the reason for the dedicated hard work of motivated individuals.

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