

A STUDY OF NECESSARY EDUCATIONAL NEEDS TO IMPROVE FOOD SERVICE QUALITY: A CASE STUDY IN SHARM EL- SHEIKH RESORTS

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Received 21 March 2021; Revised 06 September 2021; Accepted 08 September 2021

ABSTRACT

The purpose of current research is to provide a better understanding of food service quality technologies, applied research and technical literacy needs to benefit from it. The summary of research is provided in the subject areas identified by QAAHE (2000): food safety management, food quality management and product development; equipment and facility layout/design; operational planning and modeling; as well as market and consumer related aspects.

A questionnaire has been developed among representative sample of resorts executives in Sharm El-Sheikh. Simple percentage, mean, T-test and ANOVA were used for data analysis. Respondents display the main factors related to development of food service quality in hospitality industry. The research results can be used as a source of competency-building by practitioners and educators. Also; the study identifies the developing and integrate the conceptual links between the scientific fundamentals of food service operations and industry practices.

Keywords: Educational Needs, Food Quality, Hospitality Services

INTRODUCTION

Food services contribute to the competitiveness of a country as a tourism destination (Dwyer et al., 2013 and Ratchford 2014). Modern tourism and hospitality organizations are facing formidable challenges: consumers demand higher quality of food and safety, owners increased efficiency. Food services experience the additional pressure from increased food prices, operating and labor costs, narrow profit margins, distribution channel problems and the burden of regulatory requirements. Historically, institutional caterers were the first to experiment with centralized food production to achieve economies of scale.

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Hospitals, aged care institutions, army and prisons provide services in many respects similar to those in hotels (Bourke and Bates, 2015).

Fundamentally, food production is the only manufacturing function in hospitality (Jones and Lockwood, 2015); it is the most complex operation with multiple inputs, which are technological and operational in nature. Food service technologies are grounded in the principles of chemistry, biology, microbiology, engineering and mathematics, the disciplines with well-established theory and high degree of academic vigor (Jones, 2015, Buhaly and Bordi, 2016).

The multi-disciplinary nature of food services is recognized by Quality Assurance Agency for Higher Education (QAAHE); an independent body founded in 1997 in the UK by Lord Dearing. QAAHE developed benchmark statements to safeguard the public interest in sound standards of tertiary qualifications. Food production, facility planning and design, food safety, quality assurance, food science and microbiology, operations management and service marketing are identified by QAAHE (2018) as typical subject areas for hospitality honors degrees. The paper will proceed as follows: First, the relevant studies in the subject areas listed in QAAHE statement are described. Second, the educational pathways and potential practical difficulties in applying them are suggested.

Surprisingly few studies support the effectiveness of the multi-million-dollar investment in food services systems in operational terms (Xie, 2018 and Rodgers, 2019). In practice, the operational outcomes of “hard” technologies are masked by the productivity gains from information technologies –the programs on administration, long-term planning, monitoring operations with sensors/activators (Martens and Nicolai, 2019) as well as menu management (Johnson and Chambers, 2019; Mibey and Williams, 2020).

LITERATURE OF REVIEW

Meeting the Important Requirements

Managers in hospitality industry are routinely faced with the practical difficulties and numerous technical barriers in HACCP implementation; they also need to critically assess the HACCP-based policies, develop standard procedures, and link HACCP with ISO 9000 and total quality management (Snyder, 2015 and Lawn, 2016).

There are two major streams of research in this field: first, the studies on-time/temperature of cooking/storage and effectiveness of natural antimicrobials using microbiological techniques as reviewed by Rybka-Rodgers (2017); second, the studies on risk assessment based on probability estimation using statistical tools and modeling. The latter includes a relatively new area of research, the predictive microbiology, which has a potential of removing the subjectivity in food safety risk management. Commercial computer programs such as Food Micro-Model and Pathogen Modeling Program can be used for estimating the microbial status of a product after a temperature abuse episode, selecting CCPs (critical control points), developing specifications for processing parameters and the limits for acceptable microbial loads (Miles and Ross, 2018). This requires from managers a certain level of competency in the field of microbiology. According to Rybka (2018) and Rosset (2019) the practical difficulties in institutional sector are: Limited expertise in food safety and preservation,

Difficulties in temperature measurement and equipment calibration, Unevenness of temperature distribution, Possible breakdowns in operations, Staff resistance to work in low temperature environment.

Moreover, Panisello and Quantick (2020) referred to that the technical barriers in tourism are: Small company size, Problems associated with the fact that HACCP approach was originally developed for food manufacturers, Lack of coordination between industry and enforcement authorities, Lack of leadership from management, Persistence of old habits and attitudes, Lack of staff time, Absence of staff motivation and supervision, Problems related to paperwork, Lack of proper equipment and incorrect layout, The small size of the majority of hospitality companies makes a position of a food service technologist or food “hygienist” recommended by MacLaurin (2020) cost prohibitive, which means that managers themselves need to have the technical knowledge. In practice, one-quarter of food service managers in healthcare sector did not have any formal qualifications (Mibey and Williams, 2020) and the main reason for not implementing HACCP was the “lack of knowledge” (Covalli and Salay, 2020). Not realizing that the source of contamination were the kitchen workers themselves (Torres and Skillicorn, 2020). Food service products continue to be one of the major sources of food poisoning (Lee et al., 2020 and Milford, 2021).

Food Quality Management

Raw materials and product design (recipe and preparation method) affect the quality of the final product. Raw material specifications of restaurant chains and other large hospitality organizations have a variety of technical parameters. Seo and Shanklin (2019) recommended the development of purchasing specifications to improve the tenderness of meat and the texture of vegetables for a retirement care organization. The poor quality of meals produced in large quantities (Johnson and Chambers, 2019) could stem from the inherent limitations of bulk food production as well as the lack of an operator’s expertise in product development. Typical studies in this field compare the effects of different food service systems on the product sensory attributes (Armstrong, 2019; Jelenikova et al., 2019). Extended storage and reheating can affect another important food quality attribute and the nutritional value.

Processing in food services is mild enough not to cause significant reduction in macronutrients (Williams, 2019; Tansey et al., 2019; Lassen et al., 2019). Restaurant chains already follow nutritional trends and are promoting healthy offerings on their menus. However, the so-called “functional meals” or meals with additional health-improving ingredients offer a more radical solution and an opportunity to pharmaceutical and food industries (Schellekens et al., 2019 and Rodgers, 2020).

Fundamentally, food quality is reduced by microbial spoilage and chemical/physical deterioration during storage. The shelf-life recommended by the industry codes is based on food safety criteria rather than quality considerations (Armstrong, 2019; Rybka et al., 2020 and Gi-Tae et al., 2021).

Equipment and Packaging Design

Equipment represents a major capital investment in food services, for example technological and operational significance. Equipment design affects food safety and quality as well as energy consumption; equipment layout is linked

to sanitation, productivity and capital costs. The studies in this field range from simple temperature profiling to computer-based simulations (Bourke and Bates, 2015 and Bryant, 2016).

Typically, different heating methods (convection, radiation, conduction, induction, etc.) are evaluated and the quality of the final product is used as a main criterion (Van Son, 2017). The geometrical design of a unit, the loading of the product and its shape affect the heat penetration. The improved ways of temperature measurement/recording and equipment “cleanability” supporting HACCP and GMP (good manufacturing practices); comparisons of energy use between the systems (Thomas and Brown, 2017; Verboven et al., 2018). The food service sector has a significant impact on future packaging developments (Brody, 2018). Packaging material suppliers have developed technologies to deliver LSL (Long Shelf-Life). Generally, the research on equipment and packaging leads to better control of processing/storage conditions and, consequently, to higher operational efficiency and food quality (Dobias et al., 2019).

Operational Efficiencies

Operational efficiencies drive the application of “hard” or equipment-based technologies. Generic operations management concepts such as productivity, capacity and bottlenecks, master production scheduling, benchmarking and supply chain management are applicable to food services. The mathematics/statistics used in this field ranges from the relatively simple empirical formulas estimating the number of “meal equivalents” or equipment capacity, for example, to such sophisticated techniques as data-envelopment analysis or simulation models (Reynolds, 2019).

Food service facility design is based on the principles of space efficiency, flexibility, product flow, food safety (sanitation) and ergonomics. Managers in conjunction with food service consultants develop concepts for the design of a new facility, equipment specifications and layout, staff training and allocation. It is the least studied area and the objective quantitative approaches to the evaluation of a layout are lacking.

Consumer and Market Studies

In developed countries, dining out and take away food represents more than 30 percent of the budget spent on food (Creed and Pierson, 2016). Food service operators are taking advantage of the latest trends such as the “ready meal solutions” in retail sector and the general increase in popularity of non-processed foods (Hauben, 2017). CPUs owned by airlines, hotel chains, health and age care institutions are deriving additional revenue by supplying the retail sector with prepared meals. Unlike take away food, packaged meals produced in bulk offer consistency, nutritional information and brand differentiation (Sheard, 2017). Customers valuing uncontaminated foods for ethical (Vegetarian), environmental (organic), religious (kosher, halal) or medical (allergen-free) reasons represent niche markets for LSL (Long Shelf-Life) technologies (Redmond et al., 2018).

The process of collecting and analyzing information for marketing and behavioral studies is facilitated by the developments in data-mining systems and collecting/analyzing customer feedback online (Moskowitz, 2018). Operators need to know the customers’ attitudes towards the industrial methods used in meal preparation. The older generations’ xenophobic tendencies, for example, can

result in lower acceptance of cook-chill/freeze meals. However, the strong suspicion regarding the use of novel technologies in food preparation tends to diminish over time and changing life-style. The analysis of the “techno-phobia” index by Creed (2019) showed that younger consumers and those with higher social status were more receptive.

Research in marketing also contributes to new product development. Conjoint analysis (Skipnes et al., 2019 and Moskowitz, 2020) provides an impact measure of each element in the product design (size, fat content, grill marks, price, flavor, ethnicity, etc) and identifies the specific part(s) of the concept driving the ratings. The combination of market research and sensory evaluation techniques (Gray et al., 2020) offer the consumer-oriented approach to product development in food services.

Aim and Objectives

The aim of this study is to measure and evaluate the importance of integrate the conceptual links between the scientific fundamentals of food service operations and industry practices. In order to accomplish this task the following objectives were set:

- To review the applied research in food services and the technical literacy needed to interpret and benefit from it.
- To investigate food quality management, Efficiencies through extended shelf-life.
- To evaluate equipment and packaging design, consumer and market studies and Implications for educators.
- To study the educational needs to improve the food service.

METHODOLOGY

Research Design and Sample

A cross sectional survey design utilizing questionnaires was selected to fulfill the research objectives. The population was five and four stars resorts in Sharm El-Sheikh city were approached. Only 13 five and four stars resorts agreed to participate were sampled.

Instrument

A questionnaire was designed and directed to resorts' executives. A questionnaire consisted of two parts; the first one includes general questions about Quality of food service. The respondents were asked in the second part to identify attitudes rewards some practices. The respondents were asked to determine their Opinions. Also they asked to give any suggestions can make to improve the quality of service.

The Sample and Data Analysis

In this investigation, the target population included the executives of resorts. The questionnaires were optically scanned and were entered the SPSS version 15.0. Data were analyzed with descriptive and inferential statistic. Simple percentage, mean, t-test and ANOVA were used for data analysis. One hundred question list forms were distributed and data were collected from 55 valid forms.

The obtained results of the investigation were gathered, tabulated, and analyzed based on scientific methods of analysis. Results were expressed as percentages or mean, standard deviation (SD) and standard error (SE). Comparison between categorical data [n (%)] was done using Chi square test. Comparison between the mean values of different groups was done using ANOVA with post hoc using Least Significant Difference (LSD) test. SPSS computerized statistical program (version 13 windows) was used for data analysis. P value less than 0.05 was considered significant; less than 0.01 was considered highly significant and less than 0.001 was considered extremely significant.

RESULTS AND DISCUSSION

The results illustrated that the respondents mentioned that they can measure the quality of food service via guest comment represent 16.4%), and customer complaints box (10.9%), but the majority of respondents referred to that both of them (72.7%). Hence, the study revealed that, the highest percentage of methods can measure the results of was found in both of methods $p < 0.001$ vs. all.

The results in **Table 1** indicate that the regular maintenance represent the highest percent (67.3%), while (25.5%) of all respondents mentioned daily cleanliness, and the percentage of applied the equipment information answers equal with Training the employee on the equipment usage, when both answers represent (3.6%) of all respondents.

Table 1: The suitable methods for the maintain equipment's.

The methods	Frequency	Percent	P value
Regular maintenance	37	67.3*	* $p < 0.01$ vs. all
Daily cleanliness	14	25.5 [#]	# $p < 0.05$ vs. applied & training
Applied the equipment's information	2	3.6	
Training the employee on the equipment usage	2	3.6	

$P < 0.05 = significant$; $p < 0.01 = highly significant$.

The conducted interviews pointed out that there is a highly significant between regular maintenance vs. all devices ($p < 0.01$) (**Table 2**). On the other hand there is a significant between Daily cleanliness and both devices "Applied the equipment information and Training the employee on the equipment usage" ($p < 0.05$).

Table 2: Effects of food service quality on guests' satisfaction.

The effects	Frequency	Percent	P value
Highly effective	54	98.2*	* $p < 0.001$ vs all
Effective	0	0	
Merely Effective	1	1.8	
Not Effective	0	0	

$p < 0.001 = \text{extremely significant.}$

Tabulated data revealed that the majority of answers were highly effective (98.2). while there is only (1.8%) of all respondents mentioned that merely effective. The study showed that the highly effective answer is a significantly high compared to all answers, $p < 0.001$. This assures that the effects of food service quality on guests' satisfaction.

The results illustrated that, in the attitude number one in **Table 3**, (85.5%) of the respondents ensured that most guests do not return to hotels, because suffering from the bad service, while (14.5%) mentioned that this point is not enough to effect on guest satisfaction. It is observed that there is an extremely different significant between the managers who agree and who don't agree " $p < 0.001$ ".

Table 3: Manager's attitudes towards some practices.

Attitudes	Agree	Not Agree	No Comment	P. value
1. Guests do not return to hotels suffering from the bad service.	47 (85.5%)	8 (14.5%)	0(0%)	< 0.001
2. We can put flyers to enhance service quality among guests	37 (67.3%)	18 (32.7%)	0(0%)	< 0.01
3. Promoting resorts as a healthy food service will improve marketing for it.	51 (92.7%)	4 (7.3%)	0(0%)	< 0.001
4. The main aim of resorts is profit away from training and healthy habits for employees	20 (36.4%)	35 (63.6%)	0(0%)	< 0.05
5. The food poisoning effects on the reputation of the hotel, whatever its strength in the market	42 (76.4%)	13 (23.6%)	0(0%)	< 0.001
6. It is important to develop staff educational programs.	55 (100%)	0 (0%)	0(0%)	< 0.001
7. Ministry of tourism should improve educational practices in resorts.	37(67.3%) *	10 (18.2%)	8 (14.5%)	* $p < 0.001$ vs all

$P < 0.05 = \text{Significant, } p < 0.01 = \text{highly significant, } P < 0.001 = \text{extremely significant.}$

In the attitude number two, (67.3%) of the respondents referred to that we can put flyers to enhance service quality among guests, rest (32.7%) stated that is not important to increase guest's awareness. The study indicated that there is a highly significant between the different manager's attitudes, $p < 0.01$.

On the other hand, the results showed that attitude number three referred to majority of the respondents (92.7%) ensured that promoting resorts as a healthy food service will improve marketing for it. But only rest (7.3%) stated that the promoting about healthy food service it isn't necessary to improve the marketing process in resorts. Further analysis of the profile of respondents in the investigated sample, indicated that the highest percentage was found in "agree" when compared with "not agree". There is an extremely significant between the different answers, $p < 0.001$. Answers of the collected questionnaires revealed that the attitude number four, (36.4%) only of the respondents referred to that The main aim of resorts is profit away from training and healthy habits for employees, while (63.6%) of them declared that the main aim for most resorts is profit only. Hence, the study showed that the percentage of managers who don't agree was higher than the percentage of agree, $p < 0.05$.

Tabulated data revealed that (76.4%) of the respondents illustrated that the food poisoning affects the reputation of the hotel, whatever its strength in the market, but (23.6%) of them doesn't agree on this attitudes, depended on the hotel's image and his reputation in the market. it is observed that there is highly significant difference, $p < 0.001$. Statistical analysis in attitude number five has shown that mean all percentages represent (100%) referred to the agree answer. When all of the respondents mentioned that is important to develop staff educational programs. These assure that the importance of educational program and develop it inside the resorts. We can say there is no comparative between the answers, because there is an extremely significant difference between them, $p < 0.001$. The analysis clearly depict that, (67.3%) of the all respondents in attitude number six stated that ministry of tourism should improve educational practices in resorts, because there is not an actual role for this ministry in this attitude, while (18.2%) of them referred to that is not agree, rest the (14.5%) of the respondents revealed that "no comment". The highest percentage of answers was found in "agree" when compared with other answers. There is a highly significant vs. all, $p < 0.001$.

From the results shown **Table 4**, it could be noticed that the respondents stated that lack of the money and time items is very big problem hinder the training and educational program, and to that most of the resorts depending on the employee's experience. The obtained results revealed that most of the respondents referred to that the HACCP system is apply in their hotel, while only little mentioned that Food Safety risk management (FSRM) system is apply in their hotel.

From the answers presented in table 4, it could be seen that, secondary (high) school had the highest percentage which represents (78.1%) of all respondents. A further (14%) had a two-year diploma after high school. Some (6%) were university or higher institutes, a low percentage (1.9%) of respondents were without qualifications. The study also showed that there were nobody of the respondents had post graduate. Resort's employees who received university or higher institute education were less prominent than other education levels, $p <$

0.001. On the other hand, the study indicates that there is highly significant between the employees who had two-year diploma after high school and “university or higher institute”; “others, without qualifications”, $p < 0.001$.

Table 4: Education’s level of employees.

Education’s level	Percent	P value
Secondary (high) school	78.1*	* $p < 0.001$ vs all ** $p < 0.01$ vs university, post graduate & others
Two-year diploma after high school	14.0**	
University or higher institute	6.0	
Post graduate	0	
Others (without qualifications)	1.9	

$p < 0.01 =$ highly significant., $p < 0.001 =$ extremely significant.

Conclusions and Future Research Implications

Research on food services represents a large body of scientific knowledge supporting food safety (preservation principles and HACCP-related practices), food quality, equipment (design, layout and process control), facility design, operational management (benchmarking, food service system evaluation and modeling) and product-focused marketing. Technical literacy develops intellectual capabilities of graduates to operational efficiency from physical resources by applying a variety of hospitality quality service.

The concepts underpinning the studies reviewed in this paper are indicative of the scope and depth of the technical knowledge needed for understanding and benefiting from applied research available in the field. The practical classes on restaurant operations, which are praised as being industry-oriented and criticized as being craft-based (Cooper et al., 2019), can be conceptually strengthened with the well established fundamentals of science. The associations with the fundamentals of food production, food safety and quality management, product development, food commodities and purchasing, kitchen planning and equipment design should be made to improving the food service in hospitality industry. The advances in computer modeling and simulations can reduce the amount of physical resources needed, the laboratories from other departments can be utilized – food science, sensory, microbiology and engineering. Furthermore, food service equipment suppliers are often willing to provide their showrooms for educational purposes. Hospitality trade shows regularly held in major cities can be used as a “laboratory” to explore the latest trends in food service equipment and systems design. Fundamentally, operations include technologies and practices (Hudson, 2019); learning practices without an understanding of technologies limits graduates’ abilities to transfer objective principles of underlying systems across different hospitality sectors and to

innovate. Furthermore, scientific fundamentals support other critical areas of tourism and hospitality: facility management and design (engineering systems), housekeeping (equipment, chemistry of cleaning and infection control), spas and health tourism (human physiology), waste management (bio-degradation) and the wider role of technologies as contributors, creators, protectors and enhancers of tourism experience (Stipanuk, 2019).

In terms of future implications, it is suggested that more research work should come into sight to better assess the results of the current study and knowledge of necessary educational needs to improve the food service in Egypt. Additionally, future research work could be undertaken to identify the reasons for failing to develop the food service industry.

Recommendations

The study recommends that must be select the proper equipment and correct layout, also co-ordination between industry and enforcement authorities. Also the study recommends that avoiding the following: 1) Limited expertise in food safety and preservation. 2) Difficulties in temperature measurement and equipment calibration. 3) Unevenness of temperature distribution. 4) possible breakdowns in operations. 4) Staff resistance to work in low temperature environment. 5) The study recommends that applying training and educational courses for employees to learn how to develop a food service via Technologies.

REFERENCES

- Armstrong, G.A. (2019). Sensory quality and consumer acceptance of souse vide products during storage. Third European Symposium on Vide, Katholieke Universities, Leuven, Belgium, pp. 233.
- Bourke, J.R. & Bates, E.J. (2015). Health concerns ‘drive’ foodservice packaging. *New Food* 5(3), 80-2.
- Brody, A.L. (2018). Foodservice drives packaging developments. *Food Technology* 56(10), 78-80-86.
- Bryant, K. (2016). Moveable feast. *Restaurant Business* 102(19), 38-41.
- Buhaly, M. & Bordi, P. (2016). Development and sensory evaluation of a high-protein, vitamin-fortified fruit roll-up for children with cystic fibrosis. *Foodservice Research International* 14, 243-56.
- Creed, P.G. (2019). The potential of foodservice systems for satisfying consumer needs. *Innovative Food Science & Emerging Technologies* 2, 219-77.
- Creed, P.G. & Pierson, B.J. (2016). Sous vide – past present and future. Third European Symposium on Sous Vide, Katholieke Universiteit, Leuven, Belgium, 379-394.
- Cooper, C., Shepherd, R. & Westlake, J. (2019). Tourism & Hospitality Education, The University of Surrey, Guildford, 60-1.
- Covalli, S.B. & Salay, E. (2020). Food quality and safety control activities in commercial foodservice in the cities of Campinal (Sp) and Porto Alegre (Rs). Brazil, *Foodservice Research International* 14, 223-39.
- Dobias, J., Voldrich, M., Marek, M., Cherovsry, M. & Chudackova, K. (2019). Active packaging – immobilization of preservatives on/in polymer packaging. Third European Symposium on Sous Vide, Katholieke Universiteit, Leuven Belgium, p. 69.
- Dwyer, L., Forsyth, P., Rao, P. & Valerio, P. (2013). How price competitive is Australian tourism?”, *Progress in Tourism and Hospitality Research, Proceedings of the Eighth Australian Tourism and Hospitality Research Conference, Queensland, Australia* 17-29.

- Gi-Tae, K., Koo, K.M., Paik, H.D., Lyu, E.S. & Lee, D.S. (2021). Sous vide processing of seasoned spinach soup. *Food Service Technology* 2(3), 131-138.
- Gray, J., Armstrong, G. & Farley, H. (2020). Opportunities and constraints in the functional food market. *Nutrition and Food Science* 33(5), 213-218.
- Hauben, K. (2017). Sous vide cooking: state of the art. Third European Symposium on Sous Vide, Katholieke Universiteit, Leuven Belgium, pp. 12-27.
- Hudson, B. (2019). Industrial cuisine revised. *Cornell Hotel and Restaurant Administration Quarterly* 38(3), 81-87.
- Jelenikova, J., Vanhoutte, H., Voldich, M. & Martens, T. (2019). Optimisation of pre-cooking and extension of shelf-life for sous vide cooked meat", Third European Symposium on Sous Vide, Katholieke Universiteit, Leuven, Belgium 267-280.
- Johnson, B. & Chambers, M. (2019). Foodservice benchmarking: practices, attitudes, and beliefs of foodservice directors. *Journal of the American Dietetic Association* 100, 175-80.
- Jones, P. (2015). Finding the hospitality industry? Or finding hospitality school of thought? *Journal of Hospitality, Leisure, Sport & Tourism Education* 3(1), 33-45.
- Jones, P. & Lockwood, A. (2015). *The Management of Hotel Operations*, Continuum, London.
- Kazarian, E.A. (1989), *Foodservice Facilities Planning*, Wiley, New York, NY 295-311.
- Lassen, A., Eriksen, H., Fall, M. & Hansen, K. (2019). Vitamin losses in vegetables processed by four different catering techniques. Third European Symposium on Sous Vide, Katholieke Universiteit, Leuven Belgium 297-306.
- Lawn, J. (2016). Innovation. *Food Management* 39(7), 30-42.
- Lee, D.S., Shin, D.H. & Yam, K.L. (2020). Improvement of temperature uniformity in microwave-related rice by optimising heat/hold cycle. *Food Service Technology* 2(2), 87-94.
- MacLaurin, T.L. (2020). Food safety in travel and tourism. *Journal of Travel Research* 39(3), 332-3.
- Martens, T. & Nicolai, B. (2019). Computer-integrated manufacture of sous vide products: the ALMA case study. In Chazala, S. (Ed.), *Sous Vide and Cook-Chill Processing for the Food Industry*, Aspen Publication, Gaithersburg, MD. pp. 111-30.
- Mibey, R. & Williams, P. (2020). Food services trends in New South Wales. *Food Service Technology* 2(2), 95-103.
- Milford, P. (2021). CDC report: some food-borne illnesses down; salmonella up. National Restaurant News. Available online at: www.findarticles.com/p/articles/mi_m3190
- Miles, D.W. & Ross, T. (2018). Identifying and quantifying risks in the food production chain. *Food Australia* 51(7), 298-303.
- Moskowitz, H.R. (2018). Creating new product concepts for foodservice: the role of conjoint measurement to identify promising features. *Food Service Technology* 1(1), 35-52.
- Panisello, P.J. & Quantick, P.C. (2020). Technical barriers to hazard analysis critical control point (HACCP). *Food Control* 12(3), 165-73.
- Quality Assurance Agency for Higher Education. (QAAHE) (2018). *Hospitality, Leisure, Sport and Tourism*, Quality Assurance Agency for Higher Education, Gloucester, pp. 4-13.
- Ratchford, B.T. (2014). Has the productivity of retail food stores really declined? *Journal of Retailing* 79, 171-82.
- Redmond, G.A., Gormley, T.R. & Butler, F. (2018). Using ready-meals as carriers for nutraceuticals. *Proceedings: New Functional Ingredients and Foods*, Copenhagen, Denmark, pp. 1-6.
- Reynolds, D. (2019). Hospitality-productivity assessment using data-envelopment analysis. *Cornell Hotel and Restaurant Administration Quarterly*, April, pp. 130-7.
- Rodgers, S. (2019). Value adding with functional meals. *Food Service Technology* 4(4), 149-58.

- Rodgers, S. (2019). Selecting a food service system: A review. *International Journal of Contemporary Hospitality Management* 17(2), 157-69.
- Rosset, P., Morelli, E., Noel, V. & Poumeyrol, G. (2019). Launch of a protocol for assessing the efficacy of industrial dishwashers. *Industries Alimentaries et Agricoles* 118(12), 16-18.
- Rybka, S. (2018). Developing a HACCP plan for extended shelf life cook-chill ready-to-eat meals. *Food Australia* 51(9), 430-433.
- Rybka, S., Kailasapathy, K., Bergan, J., Poniman, S., Mikhail, S., Gunasekera, C., Lin, Y. & Ferraris, J. (2020). Storage characteristics of selected cook-chill meals with an extended shelf-life. *Food Australia* 53(5), 191-195.
- Rybka-Rodgers, S. (2017). Improvement of food safety design of cook-chill foods. *Food Research International* 34, 449-55.
- Schellekens, M., Martens, T., Riberts, T.A., Mackey, B.M., Nicolai, B.M., van Impe, J.F. & Baerdermaker, J. (2019). Computer aided microbial safety design of food processes. *International Journal of Food Microbiology* 24(1), 1-9.
- Seo, S. & Shanklin, C. (2019). Assessing importance of food and service quality attributes of dining service in continuing care retirement community. Proceedings I-CHRIE Annual Conference, Philadelphia 295-300.
- Sheard, M.A. (2017). Marketing and technological competence: key to the development of the UK sous vide market. Third European Symposium on Sous Vide, Katholieke Universiteit, Leuven Belgium. 419-436.
- Skipnes, D., Bergslein, H., Rosnes, J.T., Vorre, A., Soyland, K. & Vidvei, J. (2019). Development of a sous vide production facility in Norway – Fjorkokken A.S. Third European Symposium on Sous Vide, Katholieke Universiteit, Leuven Belgium, pp. 438-453.
- Snyder, O.P. (2015). The application of HACCP for MAP and sous vide products”, in Fatber, J.M. and Dodds, K.L. (Eds), Principles of Modified-Atmosphere and Sous-Vide Product Packaging, Technomic Publishing Co. Inc., Lancaster Basel. 345-7.
- Stipanuk, D. (2019). Tourism and technology”, *Tourism Management*, August, 267-77.
- Tansey, F.S., Gormley, T.R., Bourke, P., O’Beirne, D. & Oliveira, J.C. (2019). Texture, quality and safety of sous vide/frozen foods. International Conference on Culinary Arts and Science, Orebro Sweden, 199-207.
- Thomas, C.J. & Brown, N.E. (2017). Use and cost of electricity for selected processes specific to a hospital cook-chill/freeze food-production system. *Journal of Foodservice Systems* 4(3), 159-69.
- Torres, R. & Skillicorn, P. (2020). Montezuma’s revenge—how sanitation concerns may injure Mexico’s tourism industry. *Cornell Hotel and Restaurant Administration Quarterly* 45(2), 132-44.
- Van Son, M. (2017). Oven technology: heat flux measurements as a tool for control. *New Food* 5(1), p. 51, 52, 55.
- Verboven, P., Scheerlinck, N., De Baerdemaeker, J. & Nicolai, B. (2018). Equipment considerations for sous vide food heating and cooling. Third European Symposium on Sous Vide, Katholieke Universiteit, Leuven Belgium, pp. 455-476.
- Williams, P. (2019). Vitamin retention in cook/chill and cook/hot-hold hospital food services. *Journal of the American Dietetic Association* 96, 490-498.
- Xie, G. (2018). Use of neural networks to predict roasting time and weight loss for beef joints. *Food Service Technology* 2(2), 35-52.

الملخص العربي

دراسة الاحتياجات التعليمية اللازمة لتطوير جودة خدمة الأغذية دراسة حالة على منتجعات شرم الشيخ

إن الهدف من هذه الدراسة هو قياس ودراسة مدى أهمية إدماج الروابط المفاهيمية بين الأسس العلمية لعمليات الخدمات الغذائية و الجوانب العملية من خلال الممارسات الصناعية للوصول لتحقيق جودة خدمة الأغذية بالمنتجعات السياحية, وذلك من خلال التعرف على الاحتياجات اللازمة لتطوير هذه الخدمة ومحاولة تطبيقها. وأمثلة على هذه الاحتياجات مثل التي تدعم سلامة الأغذية (مبادئ وجودة الأغذية عن طريق بعض الأنظمة مثل الهاسب), والمعدات والأثاث (عن طريق الصيانة ومراقبة التصميم والتخطيط) ، والإدارة التنفيذية (عن طريق القياس والتقييم لنظام الخدمات الغذائية) , والتسويق (الذي يركز على المنتج وجودته), و محور الأهمية التقنية التي تطور القدرات الفكرية وتؤدي إلى الكفاءة التشغيلية وتطوير خدمة الأغذية. وقد تناولت الدراسة استعراض البحوث التطبيقية في مجال الأغذية و التحقيق في إدارة الجودة الغذائية من خلال زيادة الكفاءة التشغيلية و تقييم المعدات وكفاءتها وصيانتها و دراسة السوق والمستهلك وانعكاساتها على جودة الأغذية المقدمة. ووضحت الدراسة أن الإهتمام بجودة الخدمات الغذائية يكون بشكل عملي عن طريق تطبيق جودة وتكنولوجيا خدمة الإغذية وصيانة المعدات والأثاث ومتابعة الموظفين وتقديم ما يتوقعه العميل, وايضا بشكل علمي عن طريق التدريب المستمر للعاملين وعمل ندوات ومحاضرات علمية ومؤتمرات لتنمية مهاراتهم ولتطوير المنتج وجودة خدمة الأغذية المقدمة. وتوصي الدراسة بأنه يجب التنسيق بين المسؤولين بصناعة الفنادق والسلطات المنفذة للعمل على تطوير دائم لخدمة الأغذية بالمنتجعات السياحية بשרم الشيخ. كما توصي الدراسة بأنه يراعى خبرة الموظف عند الإختيار ومؤهله العلمي ودرائته بمجال سلامة الأغذية والمحافظة عليها. وتوصي أيضا الدراسة أن يتم تطبيق دورات تدريبية وندوات تعليمية مستمرة للعاملين والتعرف على أحدث الأنظمة التكنولوجية بمجال الأغذية للوصول للمستوى المطلوب من جودة خدمة الأغذية.