

# FACTORS AFFECTING THE CULINARY ARTS PROGRAM DEVELOPMENT FOR PREPARING PROFESSIONAL CHEFS IN THE FOOD SERVICE INDUSTRY IN THAILAND

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## Abstract

This study aims to investigate the key factors influencing the development of culinary arts programs in Thailand, considering the instructional and learning competencies of professional chefs. This quantitative study examines the causal relationships between the key competencies and the development of culinary arts programs.

The findings indicate that the competency of a professional chef has a positive effect on their instructional competency, while the instructional competency also has an effect on learning competency; these three key factors were found to be influential variables affecting the development of a culinary arts program. The results will be applied as a guideline for culinary arts program development in Thailand. The study also contributes new knowledge, skills, competency standards, implementation, and evaluation for the success of the chef profession, which is limited in the food service industry, particularly in the context of Thailand.

Keywords: Culinary arts, program development, chef competency, food service industry

## 1. INTRODUCTION

There are many culinary arts schools in Thailand, both in public and private institutes, which offer culinary arts programs for individuals and young students. Some private cooking schools, however, have relatively high tuition fees but are very well accepted in the food service industry. This is so because private cooking schools require higher teaching qualifications from their new

culinary instructors; for example, they should have a certain number of years of practical teaching experience and attain a face-to-face culinary art learning which is a powerful educational approach (Verstegen et al., 2016); they should also be members of professional affiliations with some industry-academic research projects for the improvement of their practical teaching skills for the students in the culinary arts program (Lin & Chang, 2010).

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Unfortunately, in Thailand there are insufficient culinary arts programs offered in public tertiary schools to prepare students to be professional chefs. Although some public cooking institutes offer a variety of fundamental cooking programs that match the current trend of high cooking skills (Altavilla et al., 2019), they are not designed for preparing individuals for careers as professional chefs. However, at present, most of the public cooking institutes or universities have limited qualified professional chef educators (Sherman, 2015) who are able to develop culinary arts programs to help prepare students for careers as professional chefs in the food and service industry in Thailand. This issue is critical as it has very limited exposure in literature and practice. The development of culinary arts programs is also urgently needed in order to serve the needs of both current culinary arts students and the food service industry in Thailand (Roche, 2012). Therefore, it is believed that the current study will not only provide culinary arts students and academic institutes with an opportunity in learning and teaching for the career preparation of professional chefs, but it will also assist in the development and improvement of culinary arts programs as an international cuisine program.

### 1.1 Research Question

According to the introduction described earlier, this study aims to determine an answer to the research question of *how do the key underlying components of a professional chef's competency, instruction, and learning, impact the overall achievement of the development of a culinary arts program for preparing professional chefs for the food service industry in Thailand?*

### 1.2 Research Objective

Based on the research question, the research objective is *to investigate the impacts of the three key competency components on overall culinary arts program*

*development for preparing professional chefs for the food service industry in Thailand.*

## 2. LITERATURE REVIEW

### 2.1. Culinary Arts Program Development in Thailand

Based on the literature review, culinary arts program development is discussed in the context of the following four main factors:

#### 2.1.1 Professional Chef Competency Factors Related to Culinary Arts Program Development

McClelland (1970) has defined professional competency as a feature which is hidden inside a person, motivating the person to produce the best results and work in a highly responsible manner. Boyatzis (1982) remarks that professional competencies can refer to a person's underlying traits, such as their character, motivation, social role, self-image, or skills. These features are possibly considered as the body of knowledge that a person requires in order to perform his or her job professionally, and to achieve a performance above their current level of competency. The three customized competencies and qualifications for the development of food service providers or professional chefs comprise of *personal competency, academic competency and technical competency* (ETA, 2016). These competencies have impacts on culinary arts program success (Shani et al., 2013) and lead to a professional chef's outstanding performance in the food service industry in Thailand (Koku, 2015).

#### 2.1.2 Instructional Competency

Most chef instructors are commonly known as cooks with limited basic knowledge, or fundamental inquisitiveness about culinary arts history, food science, and technology (Hegarty, 2004). In contrast, the purpose of general culinary arts institutes is to provide skilled personnel to the food service industry (Hegarty, 2004; Kaplan, 2011).

The current issue challenging most Thai

chef instructors in Thailand, is the lack of a mutual understanding and collaboration in program development. This is because teaching and learning in the culinary arts are of similar value in the Thai education system (Tularam & Hulsman, 2015). Student development will be reinforced if they learn more effective technical methods from professional chef instructors. Such a practical system could help learning to be more up-to-date (Hirsh-Pasek et al., 2015; Wegerif et al., 2015).

For vigorous educational methods, this encourages chef instructors to develop higher professional capacities, focusing on teaching and learning activities and classroom curriculum, continuously increasing the effectiveness of their teaching and learning to meet the career objectives of both academia and businesses (Colace et al., 2014). In order to assess this achievement and to create effective teaching and learning, it is crucial to continuously construct new knowledge (Ambrus, 2014; Ambrus & Krisztina, 2016; Pedaste et al., 2015) and develop new pedagogy for future professional chefs. A dynamic teaching assessment method is an imperative tool for the development of a culinary arts program, and should inevitably be considered.

### 2.1.3 Learning Competency

As mentioned in the educational and instructional assessment sections, learning competency is directly related to both educational and instructional achievements. This is because the achievements of culinary arts students reflect the achievements of their chef instructors and their culinary arts educational program. This indicates that the assessment of student learning outcomes can support educational improvement, learning, and responsibility (Hatfield, 2001; Kirkpatrick & Kirkpatrick, 2006; Stufflebeam, 2001; Suskie, 2009). However, the assessment of culinary arts student learning outcomes (Holzweiss et al., 2014) is not yet currently recognized as a specific concrete indicator in Thailand. Student-centered assessment is a learning

methodology that can be a crucial assessment tool for instructors to increase the performance of the student learning process and knowledge creation (Razmerita et al., 2014). This learning assessment method should also encompass student-centered assessment, in order to improve students' knowledge and skills in culinary arts education in Thailand (McMurtry, 2013). The assessment tool allows both instructors and culinary arts students to evaluate what and how they should learn, and prepares them with the knowledge-involvement skills of innovative individuals (Henry & Chiara, 2015; Chen et al., 2018), for their growth as professional chefs, and for their success in the future. Furthermore, on-going practice will provide the skills that will raise students to the ability level of professional chefs which is necessary for their profession and which can lead to future success (Ko, 2012). Therefore, learning competency is one crucial component that will impact program development in Thailand.

From the rationalization of the three interrelated achievement assessment procedures, it is obvious that the professional chef competency factors, instructional competency assessment, and learning competency assessment process sections, have a constructive association to each other which permits culinary arts students to engage, through culinary arts program development, with new knowledge of culinary arts and professional skills development, corresponding to the needs of the food service industry in Thailand (Porter et al., 2012).

### *Culinary Arts Program Development with the Hypothesis Model of the Study in Thailand*

This section is an important part of the study that focuses on, and shows the proposed initial conceptual framework of the development of a culinary arts program, which is related to various factors correlating to the *professional chef competency*, considered as a latent variable among the three main competencies, and incorporating

the observed variables of *academic competency, personal competency, workplace competency, and technical competency. Instructional competency*, which was also measured as a latent variable, and similarly comprises one of three core competencies (Hu, 2010) is served by various observed variables, such as *professional chef discipline, professional chef skills, instructional capabilities, food safety, and hazard management*, acts as the orientation to a diverse pedagogical approach and interaction models. The third *learning competency* is a clarifying latent variable that similarly contributes one of the three main observed variables, which incorporates *hygiene and sanitation, modern cooking skills, culinary arts knowledge perception, and practical skills and techniques*, and is an important factor in the implementation of self- learning assessment and success in the

culinary arts program. It is absolutely necessary to take in account all the factors mentioned as an imperative indicator with the potential to affect, impact and influence the *total culinary arts program development* which is measured as the last key element, and incorporates *culinary arts program implementation, professional chef competency achievement, professional chef standards, and culinary arts career path and growth*, among others. The overall key factors can possibly be used as an effective determining factor affecting the development of the culinary arts program for preparing “Professional chefs” for the food service industry in Thailand (Han et al., 2016).

Consequently, the final framework, showing the research process for examining culinary arts program development is proposed as shown in Figure 1 below.

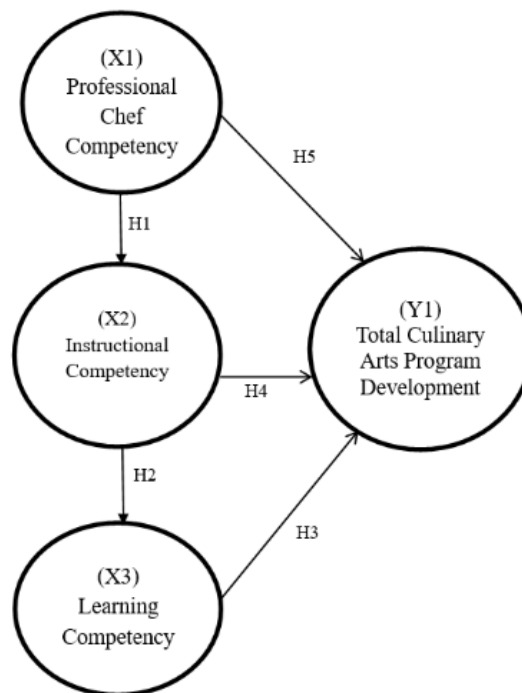


Figure 1: The proposed initial Conceptual Framework of the Culinary Arts Program Development including the Hypothesis Model of the Study in Thailand

The outcome variables initially proposed in the conceptual framework of the study, shown in fig. 1 above, required approval by experts. Consequently, the present study initially aimed to interview 20 professional chefs working in 10 luxury hotels in the northeastern region of Thailand. However, based on the selection criteria for key informants, only five key informants from five luxury hotels in the northeastern region of Thailand passed the selection criteria. The criteria stated that these professional chefs must be members of the board of directors of professional chefs, hotel management, or members of the academic committee in Thailand Chefs Association (TCA), as well as being affiliated with the World Association of Chefs' Societies (WACS). In addition, to be selected they were required to have over 10 years of experience and have participated as committee members in world-level culinary arts competitions with current membership of more than 70 countries. As a result, five key informants from five luxury hotels in the northeastern region of Thailand passed the selection criteria to be key informants for the in-depth interviews on professional chef competency. Before implementation, the program was required to be approved by the Office of the Higher Education Commission (OHEC) for quality assurance of the program, ensuring that it meets the national standards of the curriculum for tertiary education. Accordingly, the key outcome variables of the study can be described as follows:

### ***Independent Variable Measures***

According to the proposed initial conceptual framework of culinary arts program development in Thailand, three independent variables were used. These consisted of professional chef competency, instructional competency, and learning competency. Similar sets of quantitative data were measured using a questionnaire.

### ***Dependent Variable Measures***

The dependent variable of the study was total culinary arts program development, which consisted of the implementation of the

program, professional standards, effectiveness of the program, and learning and teaching achievement. The dependent variable measure used a questionnaire for data measurement. These key variables lead to the research hypotheses presented in the next section.

### ***Research Hypothesis***

Based on the linkages among the independent variables themselves and the dependent variable described in the conceptual framework, previous studies have shown that all the independent variables (*professional chef competency, instructional competency, learning competency*) are related to each other, and all of these independent variables are found to have an impact on the dependent variable (*total culinary arts program development*). Regarding the relationships among the independent variables themselves and their impacts or linkages to the dependent variable, the relevant outcome variables, as illustrated in Figure 1, have been used to establish the five hypotheses:

There is evidence that professional chef and instructional competencies are related to each other. They are also mutual forms of knowledge and attributes required to complete the job professionally. This is because professional chef competency is a component considered as a distinctive characteristic that instructors should have, in order to succeed in their work (Boam & Sparrow, 1992). Consequently, the following hypothesis is made regarding this relational outcome variable.

H1: Professional chef competency has a positive effect on instructional competency.

Regarding the relationships between the components of instructional competency and learning competency, previous studies have clarified that assessment of learning outcomes in the culinary arts is dependent on the chef instructor's performance (Holzweiss et al., 2014). In other words, these two relevant variables work interchangeably and influence the perceptions of each other; learners must

acquire abilities through their education by the instructor, along with the awareness to apply this knowledge in their professional career for effective success (Fooladi et al., 2019; Marneros & Gibbs, 2015). Similarly, the competency model of the chef's learners' proficiency reflects the capabilities of the chef instructor reciprocally (Suhairom et al., 2014; Kirkpatrick & Kirkpatrick, 2006). Accordingly, the following hypothesis is made with regard to this relationship.

H2: Instructional competency has a positive effect on learning competency.

Lastly, regarding the relationships among the three key independent variables (professional chef competency, instructional competency, and learning competency) and total culinary arts program development, many studies have shown that these three key competencies are identified as imperative input variables for developing a culinary arts program. That is, all three of the key competencies are equally essential for the development of culinary arts programs in culinary arts institutes or culinary arts schools for effectively preparing professional chefs, and as such, development of culinary arts programs should draw on a balance of the foundational theory of all three key competencies (McMurtry, 2013). Thus, the following hypotheses can be made.

H3: Professional chef competency has a positive effect on total culinary arts program development. H4: Instructional competency has a positive effect on total culinary arts program development. H5: Learning competency has a positive effect on total culinary arts program development.

### **3. METHODOLOGY**

#### **3.1 Research Design**

The study used a quantitative approach to determine the causal relationships between the three key variables, professional chef competency, instructional competency, and learning competency, and their impacts on

culinary arts program development in Thailand from a holistic view. It is considered that a design for the current study founded on literature from western cultures but related to culinary arts program development might be appropriate for application in some Asian cultures, particularly Thailand. The main approaches used in this study comprise questionnaire design, data analysis, and sampling methods, all related to the research question, research objective and hypotheses. Two validity checks were accomplished in this study; these were content and construct validity. The validity was confirmed via IOC (Index of Item-Objective Congruence) of the questionnaire and was also approved by three external experts in the field of hospitality and tourism industry.

The given model underwent a procedure in which a group of content experts individually evaluated the list items based on the degree to which they measured a specific objective, to verify the accuracy of the contents (Ronna & Laurie, 2003).

#### **3.2 Questionnaire Design**

The questionnaire was constructed to obtain answers for the research question and to meet its objective. The questionnaire also helped prove the hypotheses of the study. It contained four major parts, each relevant to a single significant dimension. Questions consisted of analysis of the professional chef competency, which was measured from the professional chef competency concepts, and which operated as a key input variable for the principal professional skills applied in culinary arts program development. This was in turn customized from the concepts proposed by the Employment and Training Administration (ETA, 2016). Instructional competency is determined as the instructional skills of the prospective cooking instructors. Learning competency factors were imposed by the participants' responses toward the factors affecting the prospective professional chefs among the cooking learners, and was used as an output variable for the success of culinary

arts program development. Lastly, the culinary arts program development was measured from the participants viewpoint concerning reciprocal achievement concepts of the professional chefs, cooking instructors, and chef learners, to ensure coherence with the expected development of the culinary arts program in the food and service industry in Thailand using a 7-point scale for the questionnaire answers (Symonds, 1924).

### 3.3 Selections and Samples

In accordance with the sampling formula table suggested by Krejcie and Morgan (1970), approximately 400 responses were collected from Thai chefs selected by quota sampling from diverse styles and types among 10 luxury hotels in the Northeastern region of Thailand. The possible characteristics of the selected samples provided a wide choice from which to assess chefs' perceptions of the level of formal culinary education required for the initial improvement of factors affecting culinary arts program development, and subsequently for preparing "Professional chefs" for the food service industry in Thailand.

### 3.4 Data Collection

Initial contact, asking for permission to administer the survey questionnaire among 400 culinarians working in the kitchen department, was made via an introduction letter explaining the purpose of the questionnaire, in regards to providing a report summarizing the findings and analysis of their significance, and in contributing to future culinary arts program development in the food service industry in Thailand (Chaiya, 2016).

### 3.5 Data Analysis

The principal method used to analyze the data was via a statistical computer software for ANOVA analysis and Structural Equation Modeling (SEM) called *Mplus* editor 6.12. This section concisely defines the

approaches for the analyses of regularity, and the causal relationships between the determining and determined variables as proposed in the final conceptual framework of the study. This includes the hypotheses of the study that were determined to fulfill the research question and research objective of the study, and results of the examination of the SEM hypothesis testing, along with the construct validity check of related variables or key components in factors affecting the development of the culinary arts program for preparing professional chefs for the food service industry in Thailand.

## 4. RESULTS

As shown in Figure 2, the results of the confirmatory factor analysis (CFA) were primarily done to ensure the causal relationships between the independent and dependent variables shown in the structural equation modeling tests. The three variables of professional chef competency (X1), instructional competency (X2), and learning competency (X3) were taken as independent variables, while the last variable of culinary arts program development (Y1) was the dependent variable of the study. Within the CFA model, regarding the first latent variable (X1), the weight of the compositions of the observed variables are (X1.1) *personal competency*, (X1.2) *academic competency*, (X1.3) *workplace competency*, and (X1.4) *technical competency*, which combine to form the latent variable of (X1) *professional chef competency* with factor loading estimates of 0.858-0.916 (p-value=.000, p<.05). For the second latent variable (X2) *instructional competency*, the composite weights of the observed variables of (X2.1) *instructional capabilities*, (X2.2) *food safety and hazard management*, (X2.3) *professional chef skills*, and (X2.4) *professional chef disciplines* revealed factor loading estimates of 0.901-0.933 (p-value=.000, p<.05). Regarding the third latent variable of (X3) *learning competency*, the composites of (X3.1) *hygiene and sanitation*, (X3.2) *culinary arts knowledge perception*, (X3.3) *practical skills*

and techniques, and (X3.4) modern cooking skills indicated factor loading estimates of the observed variables of 0.940-0.954 (p-value=.000, p<.05). For the last latent variable of (Y1) total culinary arts program development, all four of the observed variables (Y1.1) culinary arts program implementation, (Y1.2) professional chef competency achievement, (Y1.3) professional chef standards, and (Y1.4) culinary art career path and growth had mutually composed factor loadings of 0.878-0.933 (p-value=.000, p<.05).

The final SEM model from the data of 400 culinarians (Figure 2), indicated that professional chef competency has a significant positive effect on instructional competency at 0.899 (p-value=.000, p< .01), while instructional competency also has a significant positive effect on learning competency at 0.859 (p-value=.000, p< .01).

The results shown in Figure 2 below, also

indicate that the path coefficients of professional chef competency, instructional competency, and learning competency to the total culinary arts program development are significant at 0.142 (p-value= .045, p<.05), 0.216 (p-value= .002, p<.05), and 0.598 (p-value= .000, p<.01) respectively.

For goodness of fit, the final SEM model of culinarians has a Chi-square value of 5.356 with 2 degrees of freedom (X2/df=2.678), p-value = 0.0687, CFI = 0.998, TLI = 0.994, SRMR= 0.006, and the RMSEA (root mean square error of approximation) = 0.065, indicating a good fit (Byrne, 2010) for the consideration of the possibilities of structural equation modeling analysis in the current study (Hair et al., 2003).

Therefore, the results of the quantitative data analysis in the hypothesis structure model as mentioned above (Figure 2) can be used to conclude the hypotheses of this research as shown in Table 1.

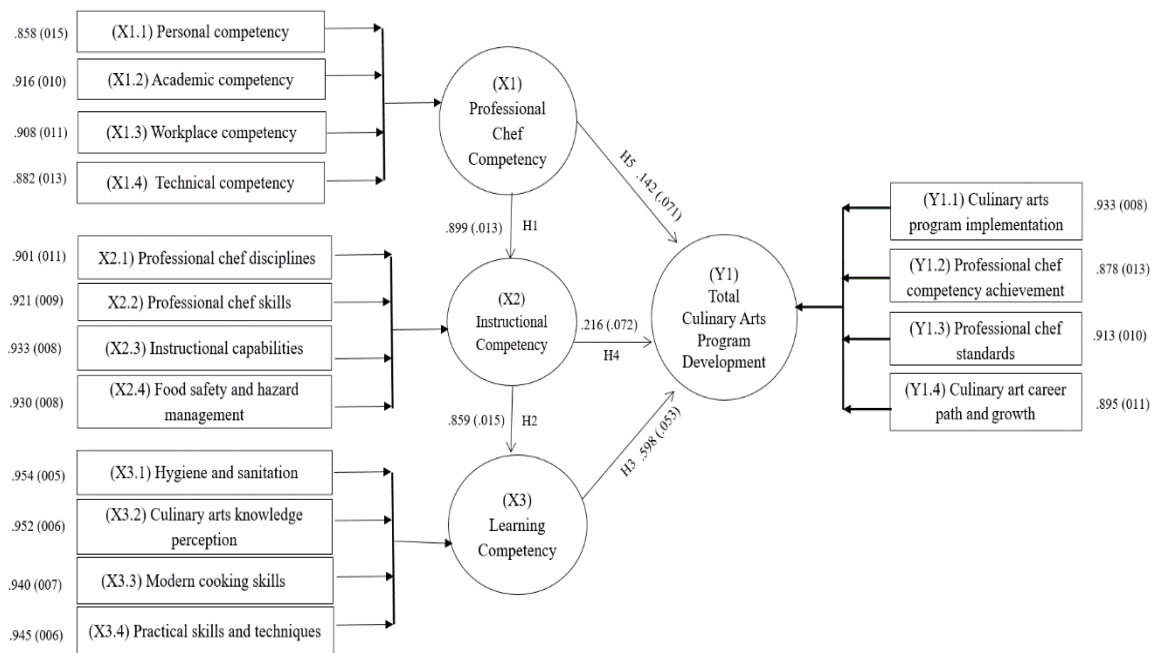


Figure 2: Final Conceptual Framework of Culinary Arts Program Development with Hypothesis Model



Table 1: Summary of hypothesis testing

Hypothesis	Estimates	p-value	Decision
<b>H1: Professional chef competency has a positive effect on instructional competency</b>	0.899	0.000	H <sub>1</sub> Supported
<b>H2: Instructional competency has a positive effect on learning competency</b>	0.859	0.000	H <sub>2</sub> Supported
<b>H3: Learning competency has a positive effect on total culinary arts program development</b>	0.598	0.000	H <sub>3</sub> Supported
<b>H4: Instructional competency has a positive effect on total culinary arts program development</b>	0.216	0.002	H <sub>4</sub> Supported
<b>H5: Professional chef competency has a positive effect on total culinary arts program development</b>	0.142	0.045	H <sub>5</sub> Supported

The current quantitative data reveals that professional chef competency has a positive effect on instructional competency, instructional competency has a positive effect on learning competency, and all three variables of professional chef competency, instructional competency, and learning competency have a mutually positive impact on total culinary arts program development.

Finally, the significant path coefficients of the final SEM testing model indicate that the overall statistical representation of all variables in the confirmation component model are appropriate for use in measuring the significance, relationships, and effects, between the independent and dependent variables and can be applied as a guideline and to specify the factors affecting culinary arts program development for preparing professional chefs for the food service industry in Thailand.

#### 4.1 Discussion

The evidence from the SEM hypothesis data indicates the following six insightful implications:

The research data highlights that personal chef competency, considered as a

combination of knowledge, skills, and attitudes (Tuparova et al., 2014) *plays an important role and relates to the performance of the chef instructors and vice versa. Evidentially, this can ensure that instructional competency is concerned with professional chef competency as an effective instructional factor which can provide a chef student with access to the status of professional chef in their culinary arts career in the future. The instructional competency directly affects the learning competency because the method of instruction and abilities of instructors affect students' learning outcomes* (Kirkpatrick & Kirkpatrick, 2006).

The quantitative data provide evidence of a relationship between the two variables. This suggests that the development of a competency model for chef learners' competence reflects the capabilities of the professional chef instructors in the same way (Suhairom et al., 2014). Regarding this result, the assessment of culinary arts students' learning outcomes is based on professional chef performance (Holzwciiss et al., 2014). Importantly, it was found that *the three competencies of professional chefs, learning, and instruction, consist of underlying*

*characteristics, such as individual knowledge, characters, and skills. These professional chef features work mutually and interchangeably to influence their perceptions in terms of the requirements and importance of the competencies, and their link to the subjects studied and taught in culinary arts programs in Thailand as well as the future career success of chef students* (Fooladi et al., 2019; Marneros & Gibbs, 2015).

Insights derived from Hypothesis 4 are supported by the literature, particularly regarding the notion that professional chef competencies pertaining to the theory of *culinary arts program development must be in balance, as this balance of professional chef competency, instructional competency, and learning competency is necessary for culinary arts students in university level education to develop the practical skills required to be effective in the food and service industrial field* (Ruhanen, 2005). Competency is identified as an important input in the process of educating chef students, as well as developing a specific culinary arts program, which is especially relevant in Thailand (Fooladi et al., 2019). Some research also advocates that *instructional competency influences the achievement of culinary arts program development*. Similarly, the quantitative data reveals that the *performance of instructors has a crucial effect on professional chef students as these instructors act as role models to these future professionals* (Hamidi & Indrastuti, 2012).

The research data also identifies that the talent of an instructor in reference to learners' levels of understanding, learning methods, and self-actualization, is associated with effective instructors, and helps to encourage students to be professional chefs in the future (Rahman, 2012). For the last insightful implication, the existing literature suggests that *learning competency impacts the achievement of program development*. This is because the mode of learning and teaching in the culinary arts educational model in Thailand should focus on occupational preparation, thoroughly manifested in different ways across the various functions of

professional chefs (Billett, 2016). *Thailand's educational system must develop a specifically standardized curriculum for the delivery of subjects, especially in the culinary arts context* (Vargas-Sanchez & Lopez-Guzman, 2018).

The quantitative data proved the truth of theory regarding the relationship and the effect of the relationship between learning competency and total culinary arts program development, with a path coefficient of 0.598. Consequently, the *learning competency component was shown to be a substantial factor influencing culinary arts program development* in Thailand. Most importantly, the results help to specify the trustworthiness and value of the current study data in *contributing to total culinary arts program development*, particularly in terms of a new and effective teaching and learning approach which effectively prepares professional chefs, and in turn career growth in the food service industry in Thailand.

## 5. CONCLUSION AND RECOMMENDATIONS

The results of the study were concluded showing that the key independent variables, of professional chef, instructional, and learning factors, are significantly related to each other as underlying dimensions of the foundational standards of Thai culinary arts program development. Additionally, the three factors were found to be important variables influencing the success of program development in Thailand.

For this purpose, food service operators and educational institutions can use the results of the current study as a guideline for culinary arts operation, and management in the culinary arts field, particularly for planning the development of staff in the kitchen department by using professional standards of chef training, as well as for developing chef learners through a new trend of learning in culinary arts education with a key requirement for the professional chef competency components that were found to be important indicators of culinary arts

program development. It is essential for food service operators and culinary arts educators to implement professional chef competency in the professional chef development process as they are the keys of success for the achievement of future professional chefs, and to improve professional chef competencies and capabilities of cooking skills to meet international standards as qualified professional chefs in the food service industry in Thailand (Sauer, 2018).

### 5.1 Research Limitations

Data were collected from hotel cooks or culinarians working in the kitchen department of ten hotels in the northeast region. These cooks and other participants had different schedules of work, meaning that the time convenient for carrying out the questionnaires was very limited, and could lead to delays in data collection.

### 5.2 Further Study

Regarding the satisfaction of the previous results concerning culinary arts program development, which consisted of the three main key factors applied in this study, these could be utilized for further study in terms of implementations for management, and theoretical integration both for application in hotel organizations to determine their academic or business policies, rules and regulations, strategies for education and professional chef training attaining to kitchen departments, and for academic institutes who may use the results in the context of developing a specific culinary arts education program which makes use of training method development through internships or career training programs. Regarding the culinary arts program development, the author intends to conduct an agreement and form a Memorandum of Understanding (MOU) between a culinary arts education institute in accord with the culinary arts education institute of Thailand, in order to achieve the future self-development of Thai chefs and for Thai chef

students to meet the standard chef requirements to become future qualified professional chefs.

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