

Nutrition Management: Use of New Methodologies in the Development of Competencies for Dietetic Practice

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Abstract: - In the field of nutrition management, new methodologies are currently being used for the knowledge of dietetics, which allows nutritionists to prepare for optimal performance, facing the reality of populations with dietary needs. The general objective was to determine the influence of the use of new methodologies in the development of competencies for dietetic practice in clients of a Peruvian company in the area of nutrition. A hypothetical deductive method with a quantitative approach, non-experimental design, cross-sectional scope, and explanatory level was followed. The study sample consisted of 260 nutritionist clients. The technique used was the survey and the instrument was a questionnaire. In general, it is concluded that there is a significant influence between the use of new methodologies and the development of competencies for dietetic practice in nutrition clients since the Chi-square contrast statistic obtained a value of 146.539 and a high level of significance of $0.000 < 0.05$. The goodness of fit of the models was also identified with a high significance level of $0.001 < 0.05$, a Nagelkerke's pseudo-R² with a significant value of 0.625, and parameter estimation with a Wald value of 44.357 and a significance level of $0.000 < 0.05$. Finally, it is concluded that by managing new methodologies through processes, with agile and continuous improvement methodologies, competencies for the dietetic practice of clients in the area of nutrition are developed.

Key-Words: - New methodologies, continuous improvement, management by process, dietetic practice, competencies.

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1 Introduction

Over the last century, throughout the world, various methodologies and working tools have been proposed in the fields of nutrition work, with the firm purpose of optimizing the preparation of diets and the planning of menus. The so-called food exchange lists are among these working methodologies used in dietetic practice. Their adaptation, use, and adequacy have constituted, during the last 60 years, a working tool used by nutrition professionals in Europe, North America, and South America, [1].

Currently, in the field of nutrition, the improvement of competency management in dietetic practice requires that to maintain quality standards and improve professional practice it is necessary to have active methodologies that guarantee care based on scientific evidence. Therefore, the benefits of

improving competencies redound in the work environment when performing their role and designing methodological processes to deal with patients, [2]. Therefore, innovation should be actively promoted and managed as an inherent part of the competencies in dietetic practice to continue advancing in the development of health according to the needs of the population in the near future, [3].

"The concept of professional competencies is linked to the knowing (knowledge) that we need to do (skills), to be able to do (aptitudes) and to want to do (attitudes), which is the necessary emotional aspect that allows the attainment of knowledge", [4]. In this sense, all professions in the world seek to provide society with professionals who have a deep knowledge of their specialty and who are also co-responsible for their training, which they must carry out with social responsibility for their actions, [5].

In Peru, [6], states that since the beginning of her teaching work, she maintained a particular focus on the food exchange system and its variants around the world since she found many differences in the methodology of the American Diabetes Association (ADA) and its use in the country, moreover, due to differences in the nutritional value of the food groups most consumed by Peruvians, because of the great biodiversity, food culture, and varied gastronomy. For this reason, a methodology specific to Peru was necessary.

The "Food Guidelines for the Peruvian Population", [7], were published by through the Ministry of Health (MINSA), which is one of the tools with regulatory-technical support used as a reference for the preparation of the new methodology "List of Peruvian Food Exchanges." Likewise, the Peruvian Table of Food Composition was used, (6).

Exchanging one food for another of the same group is a skill developed based on standardized knowledge of the nutrient and energy content of foods in determined portions. Therefore, the effort to adapt the natural environment and methodological processes to the needs and interests of patients has implied a succession of changes that, in the authentic process of society, creates the need to develop learning competencies through new methodologies, [8].

The management of competencies in dietetic practice in the country by using new methodologies has become transcendent in the current nutrition community in Peru. Therefore, given the current circumstances of the population, there is a need for qualified professionals who develop competencies in dietetic practice, which allow them to transcend through new scientific methodologies to use their knowledge in the development of coherent proposals and improve their work performance to meet the various needs and requirements of their work environment, [9].

Within this framework, the general objective of this study was to determine the influence of the use of new methodologies in the development of competencies for the dietetic practice of clients in a Peruvian company in the area of nutrition.

2 Theoretical Background

A study in Colombia, [10], argues that, in the absence of a methodology for the pediatric population in their country, the need to create a new methodology for this population arose. Their objective was to design a food exchange list for use in pediatrics, preschool, and school children. A

cross-sectional descriptive study was carried out. It was possible to design a reliable methodology, a versatile tool that allows the design of a varied diet through the food exchange system, for use in pediatrics and in a practical way. Moreover, this tool can also be useful for parents, teachers, and institutions, which will have a positive impact on public health in the long term.

In a study in the Philippines, conducted by, [11], titled Updating of the Philippine Food Exchange Lists for Meal Planning, the objective was to revise the diet calculation and improve the visual layout of the portions of the food exchange list. It was a prospective cross-sectional study. It evaluated the technical content, physical attributes of the manual, understanding of the methodology, usefulness, and replication in households. It was concluded that the improvement of the design and appearance of the manual was achieved through the calculation of the diet in portions, the use of color codes by food groups, photos of the food portions, and a list of foods with their respective nutritional composition.

In a study in Ecuador, developed by, [12], entitled Methodological proposals for the development of local exchange lists, the objective was to propose a methodology for the design of exchange lists for local consumption. In addition, normative materials were used to support the development of this methodology, including food guides and the food composition table. It was concluded that the methodological proposal allows for obtaining homogeneous and different food groups among those that could be later used in exchange lists adapted to different pathologies or needs and with foods that could be obtained locally.

A study in Spain, [5], argues that the training of specialists in health care occupational fields is intended to provide society with professionals who have in-depth knowledge in the occupational field of their profession. Their objective was to plan resident training according to their competency profile. This study is based on a descriptive methodological approach, concluding that learning in medical residents should be carried out through the work they develop in different labor contexts. These methodologies should be selected according to the key professional activities of each profession, which should be worked on daily through the practice in the field of work.

In a study in Mexico, by, [13], called Relationship between Competencies and job performance of nutrition interns, the objective was to analyze the incidence of competencies in the job performance of nutrition interns. This research has a quantitative, non-experimental, cross-sectional, and

explanatory approach, concluding that the results show an inadequate application of the competency-based approach. Therefore, a revision of the educational model to enhance the impact is suggested.

A study in Cuba, conducted by, [14], called Work outcomes of the Group for the Study of Health Competences, aimed to inform the scientific community about the work outcomes and scientific contributions of the Group for the Study of Health Competences during 2015-2016. This is a qualitative, descriptive study of the scientific activity developed by the Group for the Study of Health Competences, which concludes that the Group has carried out a commendable work of technological development, prospective, proactive, and strategic projection in multiple spheres of Biomedical Sciences, with very positive results in its scientific production to develop and improve the approach to health competences in Cuba in the face of the current global reality.

In a study in Peru by, [15], the objective was to design and validate a Peruvian food exchange list (FEL) for preparing diet plans and menus for the Peruvian population. The study was descriptive, quantitative, and cross-sectional, concluding that it was possible to design and validate the Peruvian food exchange list (FEL), which is a tool that simplifies the nutritional calculation of food served in portions and allows the professional nutritionist to prepare and plan diets efficiently, within an adequate margin of error, making it a new reliable and safe methodology to be used for dietary treatment at all stages of health condition, according to the pathology of the patients.

The first food exchange guide for Peru was published by, [7], with a methodology aimed at the healthy population. It only included 118 foods and was published online through the Peruvian Ministry of Health. However, given the biodiversity of foods and the diverse food customs of the country, it is necessary to have a new educational tool incorporating many more foods. Therefore, [6], created the Peruvian Food Exchange List, a methodology with a new approach covering all states of health and facing the current reality of the country, allowing the development of competencies in the field of dietetics of the Peruvian nutritionist.

In a study in Peru called Active Methodologies, An Important Educational Tool in Collaborative Learning in First-Year Students in their Professional Medical Career, conducted by, [16], the objective was to demonstrate how active methodologies influence students' collaborative learning. This study has a non-experimental, cross-sectional design and

descriptive and correlational level and concludes that active methodologies are related to information and communication technologies in the collaborative learning of first-year students in their professional medical career at a private university.

A study in Peru conducted by, [17], whose objective was to determine the level of relationship between a competency management model, was a quantitative and applied research study, its level is descriptive, where certain aspects of the study variable are measured, the design is field research, non-experimental, with the application of surveys. The result was that there is a high positive correlation of 0.622, with a significance level of 0.001 between Competency Management (X) and Labor Climate (Y) of workers in a consulting and outsourcing services company. In conclusion, Competency Management and Labor Climate are significantly related.

For the theoretical support of the variables, these have been approached through international and national backgrounds from scientific articles that present the theories of the New Methodologies (Peruvian Food Exchange List) and Development of Competencies (in dietetic practice) variables. As no study addressing them from this approach has been found, they have been approached independently.

This study is new as a field of study of these two variables. In that sense, food exchange lists are being developed, updated, and refocused worldwide. New methodologies are born from different fields, such as, for example, the one applied to children from birth to preschool, school, and the following stages. The influence of the use of these methodologies in the development of competencies for dietetic practice, which in Peru have been managed by a Peruvian company in the area of nutrition, has been evaluated in this study.

Therefore, this research seeks to highlight the study of new methodologies as the creation of a new and practical tool for nutritionists in Peru that simplifies their processes in dietetic practice and leads them to the innovation and job performance required by the current changes of the new world order. This is the Peruvian Food Exchange List. Therefore, this study has the firm purpose of generating a new foundation for the management of organizations that commercialize knowledge, which, besides generating resources, contribute, through organized processes and carrying out new knowledge, to the improvement of professional competencies for better job performance in their respective fields of action every day.

New Methodologies

New methodologies are innovations understood as a set of processes in all sciences that seek to create value for people and are applied in various organizational systems, [18].

Management by Processes

Management is the set of processes that are executed on one or more resources for the creation of new methodologies in organizations through a systemic and continuous cycle determined by planning, organization, direction, and control, [19]. It is also the set of services provided by people within organizations. It is associated with the term Management and, in particular, how to manage organizations, productive and service companies, [20]. In this line, the implementation of processes in organizations allows the analysis and evaluation of quality management to establish the basic characteristics of their products and services. Thus, a process implies how the work is performed within the company, in contrast to a vision focused on the product to be made. Likewise, management by processes is a system whose main elements are: key processes, coordination, control of their operation, and management of their improvement. These must be focused on each of the fundamental axes that organizations propose within their structure, [21]. The main objective of process management is to deliver projects on time, respecting previous agreements and agreements, as well as the agreed quality, within the planned budget. In other words, the achievement of process management is perceived as the accurate planning of the project at the beginning and its subsequent execution according to this plan, [22].

Agile Methodologies

They are "those that allow adapting the way of working to the conditions and objectives of the project, achieving flexibility and immediacy in the response to adapt the project and its development to the specific circumstances of the environment", [23]. They are the structured methods and tools used to implement the agile mindset in all aspects of life, allowing you to create, innovate and respond to the change demanded by today's work environment, [24]. On the other hand, the term Agile Methodologies is used to define business development methods that emerge as alternatives to replace other methodologies considered excessively heavy and rigid due to their normative nature and the enormous, detailed planning before their development, [25]. Agile methodologies have been very useful as support for software development

projects, the goal is to achieve positive results, customer satisfaction, continuous improvement, profit growth in the market, product quality, innovation, and adaptability, [13].

One of the characteristics of agile methodologies, demanded by the current circumstances, is to have a platform that allows the organization of the different development resources and fast, flexible, and effective communication with the team or clients. Therefore, it is important to know how to use these new methodologies in the practice and at the corporate level. In addition, the use of these agile methodologies in project management and using the Scrum technique has been increasing in recent years, [23].

Based on the above, the methodology of the food exchange list is developed methodically, scientifically, and systemically and differs from others described internationally since it is established from the Peruvian reality, focusing mainly on identifying the needs of users, as well as on responding to these needs through the socialization (intelligence) of new knowledge, managing it and generating what will influence on solving the needs and/or problems to obtain a positive and lasting impact for society, [26].

Continuous Improvement

It is the systematic effort that makes it possible to search for and apply new ways of innovating at work, that is, to actively improve processes. This allows a learning process that provides a gradual accumulation of experiences, resulting in a continuous flow of innovations. Currently, the business world is in a permanent and accelerated change since the emergence of new purchasing and consumption habits in a globalized and competitive market that the economy demands. Therefore, companies must respond timely and agilely to the various situations that may arise in their environment. In this sense, a continuous improvement is an approach that, besides increasing productivity in each of the tasks or activities developed to improve the products or services provided to both clients and society, is based on the need to continuously review all their processes. Moreover, continuous improvement is the bridge through which the process of knowledge management to professionals has developed articulately employing a vast system of relationships and interactions of social character that guarantees the achievement of a dynamic of continuous improvements that are established in the subjects involved to create, develop and preserve the human talent, competent and motivated to perform with

relevance and impact to achieve the objectives of the organization. In addition, excellence is achieved through a methodical process of continuous improvement. This should be the permanent objective of organizations. An improvement in all fields: from the capabilities of intellectual capital and efficiency in the use of resources to the relationships between members of the organizations and society, and in everything that can be advanced and translated into a substantive increase in the quality of the product or service provided, [21], [27], [28], [29].

Competencies

Competencies are critical thinking understood as reflective, reasonable thinking that decides what to do or believe through dialogue and argumentation, confrontation, and debate. In this sense, competency-based training is understood as a teaching and learning process aimed at enabling people to acquire skills, knowledge, and abilities using procedures or attitudes and the necessary methodologies to improve their performance and achieve personal or organizational goals. It aims to determine and ascertain what capabilities and performance are conducive to producing excellent work. Competence is a combination of knowledge, skills, values and attitudes that are reflected in the habit of thinking and acting. In this sense, currently, due to the global crisis caused by SARS CoV2, the job skills requested by companies worldwide have emerged, [30], [31], [32], [33].

Job skills

The concept of job skills arises from the need to value not only the set of appropriate knowledge (knowing) and the skills and abilities (know-how) developed by a person but also to appreciate his or her ability to use and apply them to respond to situations in the work environment, solve problems and perform in the real world. It also implies a vision of the professional's conditions and dispositions with which he/she performs, i.e., the attitudinal and evaluative component (knowing to be) that influences the results of the action, providing the possibility of playing his/her role completely and recording his/her contribution in a specific work scenario. They help to identify the way human resources can develop within organizations, [13], [34], [35].

Knowledge Management Competencies

The core competencies of knowledge management are defined as the process of managing the whole set of articulated activities that enable professionals to

be trained in the most efficient use of technology, acquisition and incorporation of new methodologies, and the processes or ways in which they are produced and delivered to the market (process innovation). This process leads to an increase in knowledge that will contribute to an improvement in the innovation capabilities of professionals. In this line, the world consensus establishes that scientific activity is the only way to achieve the advancement of society. Therefore, it is of utmost importance to generate and disseminate scientific knowledge to improve competencies and ensure the development of competent personnel to meet the challenges since, nowadays, society demands competent professionals to perform in the working world through knowledge management. In addition, knowledge management in all organizations contributes to a permanent improvement of business processes, processes for operational decision making and strategic decision making, as well as the integral development of people and the community, with the support of information and communication technologies; to detect opportunities for improvement and add value to both their products and their customers, [36], [37], [38], [39].

In addition, the knowledge generated and managed in a Peruvian nutrition company is derived from the constant scientific and technical production in the form of scientific articles, books, monographs, training, consultancy, teaching materials, and inventions, which have been protected by law through different forms of intellectual property, such as invention patents and/or utility models. All this conglomerate of knowledge is made up of data and new sources of information, which through processing, analysis, and validation, have added value to become new knowledge, which, when socialized (intelligence), has responded to the needs of the users. This process has generated a new cycle of management, generation, and knowledge transfer, [40].

Competencies in Scientific Research

Nowadays, society demands competent professionals to perform in the labor market through knowledge management. In this line, dietetic practice is a delicate and complex task that requires an interprofessional team specialized in dietetics. In addition, to prepare for optimal job performance in the new world order, professional nutritionists must understand, conduct and critically evaluate scientific research. Therefore, the training of health specialists aims to provide society with professionals who have a deep knowledge of their specialty. This implies that knowledge advancement, through scientific and

technological development, requires professionals to be continuously and permanently updated on issues related to their professions. Therefore, scientific competencies involve research to generate knowledge, [5], [40], [41] [42].

Therefore, scientific competencies allow professionals to analyze and value for their importance the knowledge of the expert and the generator of knowledge (implicit or tacit) in the subject, besides requiring experience in the process of information analysis. The user's scientific criterion must be incorporated into this to achieve a useful exchange between both social actors. This will make it possible to generate knowledge that will respond to the needs and problems raised. This joint interaction will allow for adding valuable information to the results obtained from the information processing while providing the generator with new elements allowing for perfecting the analysis and rethinking the subsequent stages of knowledge management, [28].

2.1 Research Model and Hypothesis

In this research, after performing the conceptual review of the variables and through the hypothetical deductive method, it is considered that the new methodologies have a significant influence on the development of competencies for dietetic practice in the clients of a Peruvian company in the area of nutrition. In this sense, the following hypotheses are proposed:

General Hypothesis:

It significantly influences the use of new methodologies in the development of competencies for dietetic practice in the clients of a Peruvian company in the area of nutrition.

Specific Hypothesis

HE₁: Management by processes has a significant influence on the development of competencies for dietetic practice in the clients of a Peruvian company in the area of nutrition.

HE₂: Agile methodologies significantly influence the development of competencies for dietetic practice in the clients of a Peruvian company in the area of nutrition.

HE₃: Continuous improvement significantly influences the development of competencies for dietetic practice in the clients of a Peruvian company in the area of nutrition.

The current study, of importance for the community of nutritionists in Peru and also for companies that have market knowledge, has been

approached from two variables that are supported through its dimensions that are linked through a link of relationships. Likewise, in various studies addressed in this research, the authors have approached a conception of the variables with these dimensions in different contexts, but with the same users. In other words, competencies in scientific research enable professionals to solve problems in their working environments. The generation of knowledge is generated through the competence of scientific research and the management of knowledge is carried out through process management of knowledge which allows a continuous improvement of nutritionist professionals in their work performance with the labor competencies required by the new world order.

On the other hand, companies that commercialise knowledge are in permanent search of innovation in their processes, therefore they need to investigate these processes to achieve continuous and permanent improvements and to continue in the current demanding and globalised market. The general objective of this study was therefore to determine the influence of the use of new methodologies in the development of competencies for the dietetic practice of clients in a Peruvian company in the area of nutrition.

The literature currently available does not address the variables of new methodologies in the development of dietetic practice competencies. Despite many experiences around the world in the design of food exchange checklists, which are being adapted to the realities of each country. Since each nation has its food habits, ways, techniques, and processes of transforming food from raw to cooked, the bioavailability of food is according to their geographical or geopolitical settings. In addition, the use and management of new methodologies in dietetic practice empower the nutritionist in the Peruvian reality in the use of innovative tools.

In that sense of ideas, this research contributes to a new theory, to be part of the new literature available in this context. It will allow companies that have market knowledge, to assess their processes and rethink them to achieve the business objectives that allow them to remain in the current market.

3 Methodology

3.1 Research Design and Setting

This applied research has a quantitative approach with a non-experimental design of cross-sectional scope and explanatory level.

3.2 Sample Size

The sample was determined by 260 clients of a Peruvian company in the nutrition area, which was calculated according to the formula for finite populations in a universe of 800 clients.

In a universe of 800 nutritionists who received training in the food exchange list and through the finite population formula, it was determined that the representative sample is 260 people who are customers of the Peruvian company in the area of nutrition.

3.3 Instruments

The instrument used in this study was a questionnaire with 24 structured and closed questions, out of which 14 questions corresponded to the independent variable (New Methodologies) and 10 questions corresponded to the dependent variable (Competencies in dietetic practice). They have a 5-point ordinal Likert scale: (5) always, (4) almost always, (3) sometimes, (2) rarely, and (1) never. Likewise, it was distributed and applied through the Google Forms platform.

3.4 Procedures

To validate the instrument used in this research, it was submitted to expert judgment. Subsequently, the reliability analysis of the instrument containing the two variables of this research was carried out by conducting a pilot test with 30 surveys to correct possible opportunities for improvement in the content of the questionnaire. The results obtained were then subjected to an internal consistency analysis by calculating the value of Cronbach's alpha coefficient.

Table 1. Instrument reliability value

Cronbach's alpha	Cronbach's alpha based on standardized items	N° of elements
0.978	0.980	30

The instrument reliability value is presented in Table 1. Specifically, the value of Cronbach's alpha corresponds to 0.98, which is higher than the recommended value of 0.7. Therefore, it was concluded that the instrument was very reliable for its application.

3.5 Statistical Data Analysis

Once the data collection through google forms was completed, the information was exported to Microsoft Excel, and a database was obtained. Then, for processing, the database was loaded into the SPSS v.22 statistical programs, in which the various analyses were carried out using inferential statistics according to the needs of interpreting the research outcomes. In this sense, to measure the normality of the data, the normality test was performed and, due to the size of the sample, the analysis was carried out with the Kolmogorov-Smirnov results. Likewise, to measure the influence of the use of new methodologies for the development of competencies in dietetic practice, the ordinal logistic regression test was used.

4 Results and Discussion

General hypothesis testing:

H0: The use of new methodologies does not significantly influence the development of competencies for dietetic practice in the clients of a Peruvian company in the area of nutrition.

Ha: The use of new methodologies does significantly influence the development of competencies for dietetic practice in the clients of a Peruvian company in the area of nutrition.

Table 2. Chi-square test of the use of New Methodologies for the development of Competencies for dietetic practice

	Value	df	Asymptotic Significance (2-slide)
Pearson Chi-Square	146.539	2	0.000
Likelihood Ratio	118.832	2	0.000
Linear by Linear	98.704	1	0.000
N of Valid cases	260		

In Table 2, the result of the grouped Chi-square value is observed, which has a value of 146.539, with a significance value of 0.000. In this sense, H_a is accepted, which indicates that the use of new methodologies does have a significant influence on the development of competencies for the dietetic practice in the clients of a Peruvian company in the area of nutrition. Therefore, when the use of new methodologies is managed, competencies in dietetic practice will be developed, i.e., the use of new methodologies is explained by the significant influence on the development of competencies in dietetic practice.

Table 3. Chi-square tests of specific hypotheses (unified)

	Management by processes / Competencies in dietetic practice			Agile methodologies / Competencies in dietetic practice.			Continuous improvement / Competencies in dietetic practice		
	Val	d	Signifi	Val	d	Signifi	Valu	d	Signifi
	ue	f	cance	ue	f	cance	e	f	cance
			(2-			(2-			(2-
			sided)			sided)			sided)
Pears on Chi-Square	79,208	1	0.000	86,073 ^a	2	0.000	120,344 ^a	1	0.000
Likelihood Ratio	63,613	1	0.000	75,957	2	0.000	90,878	1	0.000
Linear-by-Linear Association	78,903	1	0.000	73,253	1	0.000	119,882	1	0.000

Table 3 shows that the significance level is less than 0.05. Therefore, all the specific hypotheses are accepted, i.e., management by process, agile methodologies, and continuous improvement have a significant influence on the development of competencies for dietetic practice in clients of a Peruvian company in the nutrition area.

Table 4. Goodness-of-fit test of the use of New Methodologies for the Development of Competencies for dietetic practice

Model	-2 Log Likelihood	Chi-Square	df	sig
Intercept Only	147.621			
Final	26.217	121.404	3	<0.001

In Table 4 a Chi-square value of the likelihood ratio $X^2=121.404$ with a degree of freedom 3, and a p-value= <0.001 was determined, which, being less than the established level of significance ($p<0.05$), allows accepting the hypothesis that the use of New Methodologies significantly influences the development of Competencies for dietetic practice in the clients of a Peruvian company in the area of nutrition.

Table 5. Pseudo-R2 coefficient of determination of the influence of New Methodologies in the development of Competencies for dietetic practice

New Methodologies for the development of:	Cox & Snell	Nagelkerke	McFadden
Competencies in Dietetic Practice	0.373	0.625	0.513

The result of the pseudo-R2 test, presented in Table 5, represents the percentage dependence of the influence of the use of New Methodologies in the

Development of Competencies for dietetic practice in the clients of a Peruvian company in the area of nutrition. Likewise, the Nagelkerke value is equal to 0.625, i.e., 62.5% of the independent variable (new methodologies) explains the dependent variable (competencies in dietetic practice).

Table 6. Measures of association and predictive efficacy of the influence of the new methodologies on the development of competencies for dietetic practice

						95% Confidence Interval	
	[Competencies in Dietetics = 1]	Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval
							Estimate
Threshold	Management by process	8.504	1.277	44.357	1	0.000	6.0027
Location	Agile methodologies	1.519	0.528	8.277	1	0.004	0.484
	Continuous improvement	1.492	0.420	12.611	1	0.000	0.669
	[Competencies in Dietetics = 1]	2.611	0.562	21.615	1	0.000	1.510

Table 6 shows a Wald coefficient equal to 44.357 associated with a p-value= 0.000 lower than the level of contrast ($p<0.05$), therefore, H_0 is rejected, and H_a is accepted. Estimating a confidence level of 95%, it can be concluded that as the levels of use of new methodologies decrease, competencies in dietetic practice decrease. Thus, the use of new methodologies significantly influences the development of competencies for dietetic practice in the clients of a Peruvian company in the area of nutrition.

Table 7. Test of Model Effects

Source	Wald Chi-Square	df	Sig.
Management by process	8.277	1	0.004
Agile methodologies	12.611	1	0.000
Continuous improvement	21.615	1	0.000

Table 7 shows the Chi-square likelihood ratio associated with the p-value= 0.004 for management by processes and 0.000 for agile methodologies and continuous improvement, respectively, which are lower than the contrast level ($p<0.05$). Therefore, it is concluded that as the levels of these associated dimensions decrease, the development of competencies for dietetic practice decreases. Thus, management by processes, agile methodologies, and

continuous improvement have a significant influence on the development of competencies for dietetic practice in the clients of a Peruvian company in the area of nutrition.

5 Discussion

The general hypothesis of this research is: The use of new methodologies does have a significant influence on the development of competencies for dietetic practice in the clients of a Peruvian company in the area of nutrition.

In this sense, to respond to the hypothesis posed in this research, a model consisting of four hypotheses has been designed. The validation was carried out taking into account a quantitative study, analyzing a sample of 260 professional nutritionists who are clients of a Peruvian company in the area of nutrition. Finally, after applying and analyzing the surveys, the results found confirmed the four proposed hypotheses as described below:

In the general hypothesis, the results obtained proved the general hypothesis, i.e., it was confirmed that the use of new methodologies significantly influences the development of competencies for dietetic practice in the clients of a Peruvian company in the area of nutrition because it has a significance value of 0.001, which can indicate that, with correct management by processes with agile methodologies and through continuous improvement, the competencies of nutritionists for dietetic practice are developed.

In specific hypothesis 1, it is evident that management by processes has a significant influence on the development of competencies for dietetic practice in the clients of a Peruvian company in the area of nutrition. The significance value is equal to 0.004, which is less than 0.05, indicating that nutritionist clients perceive that training in new methodologies is managed by processes.

These results are evidenced in a study called "Management by Processes in Higher Education Institutions", [21], where they conclude that adequate management by processes will effectively implement the techniques and tools to obtain a common language. This will make it possible to document and communicate activities to all the organization's personnel and to establish a system of quality indicators that, based on the key processes for improvement, will make it possible to eliminate waste, bottlenecks, and duplication of work, within a framework characterized by quality, costs, service, speed, efficiency, and effectiveness in the management of all resources.

Essentially, the process management of the new methodologies in dietetics carried out by a Peruvian nutrition company with the contribution of a group of interdisciplinary professionals, allows nutritionists to perceive a substantial development and improvement in their work performance.

In specific hypothesis 2, it was shown that there is a significant influence between the agile methodologies dimension and the variable Development of Competencies for dietetic practice in the clients of a Peruvian company in the area of nutrition, with a degree of significance of 0.001, which is less than 0.05, confirming that nutritionist clients have the perception that training in new methodologies is managed through agile methodologies.

This result is based on the study "Application of Agile Methodologies to the University teaching-learning process", [25], which concludes that the implementation of agile methodologies has several advantages over traditional methodologies since, besides enabling rapid and flexible management of changes, it allows the prioritization of tasks according to needs, the active and direct participation of the client, who will give feedback to the results delivered progressively, as well as the self-management of the project by the project team, which implies the collaborative management of the project. In other words, the use of new methodologies in the area of dietetics provides timely and flexible management to make new processes and changes to address dietetic practice according to the needs of the patients being seen in their day-to-day work.

In specific hypothesis 3, it was observed that there is a significant influence between continuous improvement and the development of competencies for dietetic practice in the clients of a Peruvian company in the area of nutrition. The significance value is equal to 0.001, which is less than 0.05, indicating that nutritionist clients perceive that training in new methodologies leads to continuous improvement in the performance processes in their work field.

This result is based on a study entitled "Continuous improvement: a determining objective for achieving excellence in higher education institutions", [29], which argues that continuous improvement implies both the implementation of a system and the ongoing learning of the organization, following a management philosophy and the active participation of all individuals. On all accounts, the institution that provides the knowledge of new methodologies is constantly learning through the feedback it receives from its nutritionist clients in

order to provide constant improvement in facilitating knowledge and tools for innovation in dietetic practice.

It should be emphasised that the development of competencies in dietetic practice is an innovation of the processes in dietetic practice. For this reason, it should be viewed with an integrated vision of the individual, social, and professional interests of nutritionists who are always in search of innovations that enable them to meet the needs and demands of the reality of their work performance, which requires them to carry out many activities, processes, and methods in accordance with the contexts of their workplace, to be able to apply knowledge, skills, counseling, interventions, and prescriptions from the academic, research and work dimensions.

From the above, it should be noted that, in the approaches developed in this research, the variables analyzed were: new methodologies (Peruvian Food Exchange List) and Competencies (in dietetic practice), which have been managed in a Peruvian company in the area of nutrition. In other words, the creation of a Peruvian Food Exchange List is conceptualized as a new methodology that chains a learning training in dietetics in the face of the Peruvian reality to innovate in the dietetic practice and ensure the development of competencies.

In that sense, [11], reaffirms that, currently, nutrition tools must be constantly reviewed so that nutrition professionals can be updated with current trends in the management of nutrition-related conditions, especially in dietary planning. In other words, continuous improvement must be managed in these processes.

On the other hand, (10), argues that one of the new methodologies in the dietetic field is the food exchange list, a methodology that allows nutrition professionals to quickly, practically, and reliably quantify the intake of calories and nutrients of an individual, thus being able to identify possible deficiencies or excesses. In this sense of ideas, the results have shown that the Peruvian company in the area of nutrition has managed a continuous improvement in its academic processes for the creation of the Peruvian Food Exchange List, which has followed processes of continuous improvement to present to the community of nutritionists in Peru the new methodologies for the development of competencies in the field of dietetics.

This research aims to link the competencies for dietetic practice with job performance. In this sense, in addition to active methodologies, it is necessary to identify the bridge that connects competencies with practice in the real world and real-time,

focusing on the tasks the professional performs daily during clinical work. In other words, it is a new operational approach that links training and evaluation through tasks performed in daily work to identify situations, problems and causes in individuals, [5].

Likewise, [13], reaffirms that, at present, in all educational fields, the development of professional competencies is the epistemological axis where the action of training, incorporation of knowledge, values, skills, and abilities for job performance is the starting point.

On the other hand, [14], argue that professional competencies are a system of knowledge, procedures, attitudes, and values that are put into operation in job performance, in a given context, that contribute to obtaining concrete performance results, and where intellectual capacities which are expressed in knowing, know-how, and knowing to be to learn how to act in the solution of problems of their professional practice are involved. Therefore, in this research, the results show that the training in the Peruvian Food Exchange List has significantly influenced the formation of competencies in dietetic practice because it is a set of knowledge processes in dietetics, which have been oriented to be applied in the job performance of Peruvian nutritionists.

In Peru, [15], published the first food exchange guide. This guide presents a methodology focused on the healthy population and only considers a total of 118 foods. However, [6], argues that the Peruvian Food Exchange List has a global approach to dietetics for the current reality of the country, i.e., with methodologies applicable to all pathologies of the health state of patients. This list is published for the Peruvian reality due to the great biodiversity of foods, the varied gastronomies in all the geographies of the country, and the need to have a tool of practical and universal use in dietetics for the Peruvian population.

Likewise, [16], argues that nutritionists in Peru have been trained from the methodological and orderly planning of undergraduate studies, and their continuing education should be lifelong. Therefore, agile learning methodologies are processes focused on the student, from whom knowledge processes are structured, seeking meaningful, constructive, structured, and science-based learning, which motivates the student to be the learning protagonist, i.e., continuous improvement should be the banner of professional nutritionists.

The dimensions of process management, agile methodologies, and continuous improvement are integrated into a continuous, harmonious, and functional link in any organisation that markets

knowledge and is in constant search of innovation, which is why this Peruvian nutrition company has opted to take a leading role in the community of Peruvian nutritionists to offer them training services in new methodologies through a structured knowledge interface in a structured way. This Peruvian nutrition company has committed to assume a leading role in the community of Peruvian nutritionists to offer them training services in new methodologies through a knowledge interface structured in a dynamic, practical and enjoyable way to allow optimal learning and the development of dynamic tools to use in their professional contexts to solve health problems that arise during their work performance.

Likewise, competencies in scientific research are integrated with knowledge management and work competencies. We are currently facing a new world order characterised by permanent innovation, globalisation, technology, and dizzying competition throughout the value chain of all economic activities, from a good or service. Society demands competent professionals to perform in the world of work through knowledge management, [42]. This implies an advance in the field of nutrition through the scientific development of new methodologies that are applied to the nutritionist's need to improve their work performance. Currently, all professions in all fields of science are innovating their processes, which is positive because it invites other professionals to seek to generate new knowledge to improve job skills or performance.

Theoretical Limitations of This Research

The background information presented in this research does not include studies that address both variables in the context of dietetic practice. The research studies found that each variable has been addressed in different approaches and realities. The new methodology in the dietetic field of nutrition in Peru is the Peruvian Food Exchange List, which, as a new methodology in the world, is being developed as a tool to help nutritionists in their work. In addition, it can be adapted to many contexts concerning the health state of people. However, there are no studies that have measured or related its use in the development of nutritionists' competencies. Therefore, it can be assumed that the background does not correspond to the topic studied, which is not correct, since it is a new field of study and the variables have been addressed one by one in their respective approaches. Likewise, the new methodologies of the Peruvian Food Exchange List are currently being developed and applied more and more in Peru, allowing for innovation and

development of competencies in dietetic practice in the field of nutrition.

5 Conclusions

The conclusions inferred from the results reflect that each of the hypotheses proposed for the two variables and the three dimensions of the independent variable has been confirmed through the results, which allows for approving and corroborating the empirical sustainability of this study since it is evident that the use of new methodologies does significantly influence the development of competencies for dietetic practice in the nutritionists of a Peruvian company in the area of nutrition, with a significance value of 0.000.

The data set presented also evidences a sustainable result in the dimensions. In this sense, it was described that management by processes does have a significant influence on the development of competencies for dietetic practice in clients of a Peruvian company in the area of nutrition, with a significance value of 0.004. Likewise, it was identified that agile methodologies do have a significant influence on the development of competencies for dietetic practice in clients of a Peruvian company in the area of nutrition, with a significance value of 0.001, it was also described how continuous improvement does have a significant influence on the development of competencies for dietetic practice in clients of a Peruvian company in the area of nutrition, with a significance value of 0.001.

These values obtained are significant and positive, which is favorable for them to be considered for future research in models that are to be applied in geographically different contexts and the face of the reality of each population.

In addition, companies engaged in knowledge commerce should be aware of evaluating the achievements of their production processes that allow them to measure the results achieved by their customers to reinvent their processes and continue on the path of constant improvement.

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Contribution of Individual Authors to the Creation of a Scientific Article (Ghostwriting Policy)

-Joaquín Aguirre and Jorge Vargas conceived the study and were responsible for the design and development of the data analysis.

-Joaquín Aguirre wrote the first draft of the article.

-Jorge Vargas reviewed the first draft of the article and provided supervision.

-Joaquín Aguirre and Jorge Vargas were responsible for data collection and editorial review.

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Conflict of Interest

The authors have no conflict of interest to declare.

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