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Kitchen Layout Design and Individual Work Performance of Eatery in Davao Del Norte, Philippines

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

This study assessed the level of kitchen layout design and individual work performance in eateries in Davao del Norte, Philippines. A descriptive-correlational research design was employed in this study to determine the relationship between the two variables. The respondents of this study were 207 employees of eateries in Davao del Norte, selected through a simple random sampling technique. Two adapted questionnaires were used, and the statistical tools included mean, Pearson r, and standard deviation. The findings of this study revealed that the level of kitchen layout design in terms of lighting, space or arrangement of kitchen equipment, and type of flooring was very high. The investigation also found that the level of individual work performance in terms of task performance, contextual performance, and counterproductive work behavior was very high, indicating that these behaviors were always manifest. Additionally, the study found a significant

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relationship between kitchen layout design and individual work performance, with an r value of 0.781 and a p-value of 0.000. Therefore, it was recommended to select a suitable kitchen layout design in eateries to enhance individual performance and workplace productivity. Future researchers were encouraged to continue exploring the space or arrangement of kitchen equipment to better manage kitchens and develop creative technologies for improved comprehension in these areas. Enhancing the study of task and contextual performance was suggested to emphasize human factor considerations and a holistic approach to boost productivity outcomes.

Keywords: Davao del norte; individual work performance; kitchen layout design; eatery.

1. INTRODUCTION

Individual work performance is referred to as an individual's ability to perform in a way that enhances an organization's productivity and competitive advantage, it also includes employee work performance that significantly contributes to labor productivity and includes actions that are consistent with the goals of the organization [1,2,3]. However, workplace culture, individual experiences, and the work environment can all have a negative effect on an individual's work performance, attitudes, and behaviors [4]. This includes job-related stress, which affects an employee's performance individually due to abrupt changes in working conditions, individuals' quality of life at work is particularly vulnerable during a crisis. Employment insecurity, fear of illness, and unclear industry prospects have made the eatery personnel more stressed out [5,6].

The hospitality industry in Asia has shown that workers who are underpaid and work in dangerous kitchens are more likely to perform poorly and produce lower-quality individual work, particularly in the eatery and hotel sectors in Sri Lanka [7]. In Jordan, work pressure, responsibilities, opportunities for career advancement, and the physical workspace have a significant impact on the individual work performance of kitchen staff in eatery [8] and in India It has been discovered that the primary issues affecting individual work performance in eatery and hotel sectors are inadequate pay and benefits, a lack of technical skills, and a fear of losing their jobs [9].

Moreover, the hospitality industry in Africa faces several challenges, such as low staff motivation, poor customer service, and widespread public dissatisfaction that often sparks violent protests in South Africa [10]. In Kenya, Individual work performance can be adversely affected by low pay, unhygienic working conditions, and a higher than average number of reported injury cases [11], and in Ghana, poor mental and sleep health affects waiters' ability to perform their jobs effectively, which in turn affects the performance of restaurants [12].

One factor that may affect the individual work performance of employees in the Philippines' hospitality industry, especially in Luzon, is organizational culture. If an organization's values, beliefs, and norms are not appropriate for an employee's performance, it can negatively impact that employee's individual work performance in a restaurant or eatery in the province of Pampanga [13]. In Visayas, employees' primary concern was customer relations, which affected their performance in Dumaguete City [14] and in Mindanao, employees are finding it difficult to manage more work than they were assigned, which is negatively affecting their individual work productivity and consequently, Panabo city's eatery's motivation and productivity [15].

In their 2020 study, Mayangsaria et al. [16] found that there was a strong positive correlation in individual work performance among Indonesian online drivers—rather than workers in eatery or other food establishments. Individual worker performance has a tremendous impact on kitchen productivity, workflow, and overall culinary experience quality. It has a significant impact on organizational success and productivity, which is influenced by social comparison and personality qualities, making it extremely relevant to society [17,18]. Furthermore, Grasiaswaty's [19] research on the impact of work stress on three types of individual work performance—task performance, contextual performance, and counterproductive work behavior—focuses on government servants rather than eatery and restaurant employees.

Moreover, Alhelalat et al. [20] drew attention to the lack of research about individuals' work performance of restaurant or eatery employee, as well as the lack of research on problems of

perceived risk and satisfaction in the hospitality sector emphasizing the needs of conducting a research in individual work performance [21]. There is a significant gap in the research, as the relationship between these parameters has not been investigated. As a result, this research aims to investigate the relationship between individual work performance and kitchen layout design, providing a structured view of potential benefits for business owners, employees, and researchers.

Although much research has been carried out in the international setting investigating the individual work performance in food service industry, the researchers have not come across any study establishing the kitchen layout design and individual work performance in the eatery particularly in Davao del Norte. Given the above conditions, the researchers found the urgency to conduct this study to investigate the impact of kitchen layout design on individual work performance in Davao del Norte eatery, providing valuable insights for owners and employees. In addition, this study evaluated local government official's ability to effectively address kitchen layout issues that affect individual work performance in eatery.

1.1 Statement of the Problem

The study aimed to know how efficient the kitchen layout design affect the individual work performance in food service industry, the study seek answers to the following questions:

1. What is the level of kitchen layout design in terms of:

   1.1. lighting of kitchen;
   1.2. space or arrangement of kitchen equipment; and
   1.3. type of flooring?

2. What is the level individual work performance in terms of:

   2.1. task performance;
   2.2. contextual performance; and
   2.3. counter productive work behavior?

3. Is there a significant relationship between kitchen layout design and individual work performance of eatery in Davao del Norte?

1.2 Hypothesis

The null hypothesis is tested at 0.05 level of significant stating that there is no significant relationship between kitchen layout design and employee performance.

1.3 Theoretical Framework

This study is supported by sociotechnical systems theory (STS), as developed by Trist, Emery, and others (Trist & Bamforth, Citation1951; Trist, Higgin, Murray, & Pollock, Citation1963) the study intends to improve work system efficiency by investigating how physical infrastructure affects individual work performance, influences technology functioning, and how management strategies can improve employee operational work performance. The scoping review defined kitchen ergonomics as a sociotechnical system framework categorized into work systems, processes, and outcomes, focusing on kitchen user safety, the arrangement of kitchen equipment, and the performance tasks of an employee [22,23,24,25].

The study explores the interplay between people, machines, and technology in producing goods and services, aiming for socio-technical system design for seamless functioning, technical performance excellence, and work-life balance [26,27,28]. The physical infrastructure of the kitchen should promote well-being, be accessible easily, and be centralized, attracting individual workers with technology skills who can follow processes, work toward goals, and comply with cultural norms that is stated by Ainley, [29] and King Business Interiors, [30].

Therefore, there is a direct and strong correlation between kitchen layout design and individual work performance that contributes to understanding the importance of practical work. Practical work won't be conducted properly without well-planned kitchen layouts that include an adequate arrangement of kitchen equipment, tools, and materials. Additionally, if there is sufficient lighting in the kitchen to brighten up the entire area, productivity will increase, staff turnover will decrease, and resources will be used effectively to fulfill an efficient employee's performance task [31].

1.4 Conceptual Framework

Presented in Fig. 1 is the conceptual framework of the variables of the study. The independent variable of this study is kitchen layout design with the following indicators: Lighting of kitchen, space or arrangement of kitchen equipment and type of flooring.

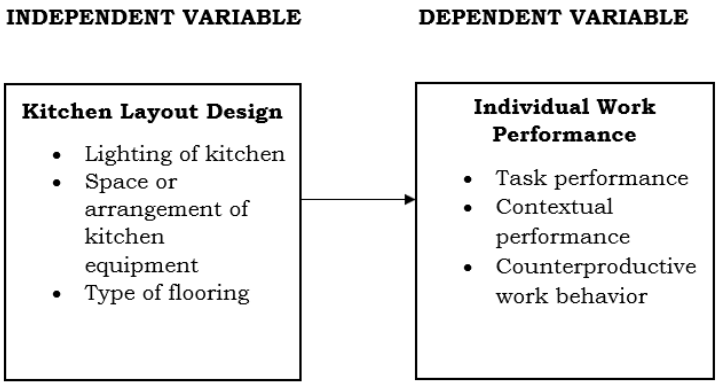

Fig. 1. The conceptual framework of the study

The dependent variable is the individual work performance with the following indicators: task performance, contextual performance and counterproductive work behavior.

By connecting the findings of several investigations, the researcher arrived at the hypothesized model shown in Fig. 1.

2. METHODOLOGY

This chapter presented the research design, research subjects, research instruments, and data gathering procedures used to obtain relevant data and information concerning the relationship between kitchen layout design and individual work performance of eateries in Davao Del Norte. The statistical tools utilized for this study were also presented in this chapter.

2.1 Research Design

The study employed a quantitative research design, incorporating elements of both descriptive and correlational research. This quantitative approach involved the gathering and evaluation of numerical data collected from the study participants. The research aimed to identify trends and averages, generate hypotheses, and potentially examine causal relationships between variables. Additionally, it sought to extrapolate the findings to a larger population [32].

Specifically, the research utilized a descriptive approach to provide a precise and systematic description of the relationship between kitchen layout design and individual work performance in eateries located in Davao Del Norte [33].

Furthermore, a correlational approach was used to examine the association between kitchen layout design and individual work performance [34]. This method analyzed the strength and direction of the relationship without manipulating any variables. In essence, the chosen research design aimed to gather quantitative data to understand the connection between these two factors in the chosen eatery setting.

2.2 Research Subject

The respondents of this study were the individual employees who worked in eateries in Davao Del Norte, and had worked for over one year and above. The general population of respondents in the study were composed of a total of 207 employees. In particular, Street 1 consisted of 27 individual employees, Street 2 consisted of 87 individual employees, Street 3 consisted of 36 individual employees, and Street 4 consisted of 39 individual employees, and 18 individual employees from Street 5. Hence, the researchers applied simple random sampling to gathered data and information in the entire population.

In this case, simple random sampling involves selecting people via random from the population used the probability sampling technique [35]. In addition, every person had an equal chance to take part in the study under this selection approach, where the selection procedure was solely dependent on fate [36].

2.3 Research Instruments

The researcher modified two instruments form internationally disseminated articles to achieve the goal of this research.

Table 1. Distribution of respondents

Eatery	Total No. Employee	Percentage
Street 1	27	13%
Street 2	87	42%
Street 3	36	17%
Street 4	39	19%
Street 5	18	9%
Total	**207**	**100.00%**

Table 2. Parameter limits, with their corresponding descriptions

Parameter Limits	Descriptive Equivalent	Interpretation
4.20-5.00	Very High	This indicates that kitchen layout design of eatery is much evident.
3.40-4.19	High	This indicates that kitchen layout design of eatery is evident.
2.60-3.39	Average	This indicates that kitchen layout design of eatery is moderately evident.
1.80-2.59	Low	This indicates that kitchen layout design of eatery is less evident.
1.00-1.79	Very Low	This indicates that kitchen layout design of eatery is least evident.

Parameter Limits	Descriptive Equivalent	Interpretation
4.20-5.00	Very High	This means that individual work performance is always manifested.
3.40-4.19	High	This means that individual work performance is oftentimes manifested.
2.60-3.39	Average	This means that individual work performance is sometimes manifested.
1.80-2.59	Low	This means that individual work performance is seldom manifested.
1.00-1.79	Very Low	This means that individual work performance is never manifested.

Kitchen layout design questionnaire: The instrument for kitchen layout design was adapted from the kitchen layout design questionnaire by IbrahimMazne et al [37]. There were 15 items survey questionnaire comprises the three (3) indicators such as Lighting of Kitchen (5 items), Space or Arrangement of Kitchen Equipment (5 items) and Type of Flooring (5 items). Furthermore, the questionnaire was anchored on a 5-point Likert Scale ranging from 5- Strongly agree, 4- Agree, 3- Moderately, 2- Disagree, and 1- Strongly disagree. The followed parameter limits, with their corresponding descriptions, would applied for the level of kitchen layout design.

Individual work performance questionnaire: The instrument for individual worked performance was adapted from the individual worked performance questionnaire by Koopmans et al. [38]. There were 15 items survey questionnaire comprises the three (3) indicators such as Task Performance (5 items), Contextual Performance (5 items) and Counterproductive Work Behavior (5 items). Furthermore, the questionnaire was anchored on a 5-point Likert Scale ranging from 5- Strongly agree, 4- Agree, 3- Moderately, 2- Disagree, and 1- Strongly disagree. The followed parameter limits, with their corresponding descriptions, would applied for the level of individual work performance.

2.4 Data Gathering Procedure

Data collection is defined as the method of gathering, estimating, and investigating precise experiences for research through established, recognized procedures [39]. In addition, the process of collecting data is crucial to any research or analysis since it stores

representations of the information. Facts, figures, statistics, and other values are examples of data. Compiling data would enable us to address some of the questions [40]. The following procedures performed in collecting data.

Seeking the Permission to Conduct the Study: The researchers obtained formal authorization through a written communication from the Vice President of Research, granting permission for the collection of population data and the off-site conduct of the study. Additionally, the researchers sent a letter via email to the rightful owners of the adapted survey questionnaires. Furthermore, validation forms were sent to an evaluator to check and ensure the validity of the research instrument. To gain permission to conduct the study, the researchers provided an official letter to the owner of the establishment, outlining the intention to involve their employees in the research. On the other hand, the potential respondents received official letters from the researchers requesting their participation in completing the questionnaire. These letters included a brief introduction to the researchers, the goal of the study, and the title of the research project.

Distribution and Retrieval of the Questionnaire: Upon receiving approval, the researchers will proceed to physically distribute the survey questionnaires to the designated respondents of the study. To uphold the validity and reliability of the research, the researcher would verify that all distributed survey questionnaires are returned intact and completed in their entirety.

Collection and Tabulation of data: The research instrument was retrieved, examined, and organized for the purpose of data tabulation. The researchers enlisted the support of designated statistician for assistance in data analysis.

2.5 Statistical Treatment of Data

The following statistical tools used in the computation of data and testing the hypothesis at alpha 0.05 level of significance.

Mean: It was known as the average of the total numbered of valued in a data set [41]. This would have used to determine the leveled of kitchen layout design and the leveled of individual worked performance. This addressed researched questioned 1 and 2.

Pearson r: The Pearson correlation coefficient (r) was the most common way of measured a linear correlation that measured the strength and direction of the relationship between two variables [42]. This would have used to determine the significant relationship between kitchen layout design and individual worked performance. This addressed researched questioned 3.

3. RESULTS AND DISCUSSION

This chapter presented the findings and analysis of the study. This exhibits, namely, the data in tables together with the descriptive interpretations that go along with it. The study's null hypothesis was also put to the test by the researcher.

3.1 Summary on the Level of Kitchen Layout Design

Table 3 presented the summary level of kitchen layout design. Kitchen lighting has the highest mean of 4.88 out of the three indicators, followed by type of flooring with a mean of 4.84; both indicators' means achieved the descriptive equivalent of very high. On the other hand, indicator of the space or arrangement of the kitchen equipment has the lowest mean, 4.79, indicating the diversity of responses from employees to these variables.

The summary level of kitchen layout design. The results indicated the overall mean of 4.84, with a descriptive equivalent of very high. This signifies that the kitchen layout design is very evident. The standard deviation of 0.39 (SD<1.00) indicates the consistency of the responses for this variable, with a descriptive level of very high. The result further implies that it is evident that the lighting of the kitchen, the space or arrangement of kitchen equipment, and the type of flooring have a significant impact on the employees' performance.

Kitchen layout design presented a new method for optimizing kitchen layouts in labor-intensive food-service environments, integrating simulation, genetic algorithms, and staff-shifted planning through combinatorial auctions for service production and consumption [43]. As supported by Pejic J. & Pejic P. [44], kitchen layout design demonstrates improved efficiency, performance, and user experience, speeding up designers' work, enhancing client communication, and educating interior design

students. Moreover, the kitchen design is essential, serving as a crucial workshop where efficient equipment layout, lighting, and functionality are imperative for the success of the eatery [45].

Additionally, better plan development and ergonomic ideas were emphasized in the design of kitchens for low-cost homes in Malaysia, resulting in increased comfort and functionality [46]. The study on rural kitchen design discovered that although the kitchens satisfied size requirements, they were devoid of a work triangle, adequate ventilation, and deep storage shelves [47]. This emphasized the necessity of better kitchen layout design ergonomics for working women, stressing the relationship between physical fatigue levels and job type, work center design, posture, and tools [48].

Furthermore, an enhanced system may be used in interior design, homes, and kitchens to optimize constructed kitchen design layouts and increase efficiency and space usage [49]. A study by Moslehian et al., [50] found a cleverly designed small kitchen plan that is ideal for smaller homes and eateries, emphasizing space optimization for effectiveness, safety, and flexibility to different lifestyles. Depending on the age group, kitchen layout design affects cooking and dining experiences. Food behaviors are influenced by features including size, connectivity to other areas, and safety features, underscoring the need for more research [51].

3.2 Summary on the Level of Individual Work Performance

Table 4 presented the summary level of individual work performance. Out of the three indicators, counterproductive work behavior has the highest mean of 4.82. On the descriptive equivalent, the item received very high scores. Additionally, task performance and contextual performance have the lowest mean of 4.80 and are able to achieve a very high descriptive equivalent.

The summary level of individual work performance. The results indicated the overall mean of 4.81, with a descriptive equivalent of very high. This signifies that individual work performance is always manifested. The standard deviation of 0.44 (SD<1.00) indicates the uniformity of the responses for this variable, with a descriptive level of very high. The result further implies that it is always manifested that task performance, contextual performance, and counterproductive work behavior have a significant impact on the employees' performance in eateries.

Competency, self-efficacy, career awareness, resources, and targets drive work performance. These factors should be considered to enhance productivity and design effective incentives and rewards for improving performance [52]. As mentioned by Yuan et al., [53] discovered that work conditions influenced individual performance based on ability levels, and these findings suggest practical ways for organizations to enhance group and individual performance. Furthermore, leadership, culture, and commitment significantly impact individual work performance. Strong leadership, along with a positive culture and high commitment, enhances performance [54].

Leadership positions, workplace atmosphere, and personal dedication all have an impact on an individual's ability to perform at work, both directly and indirectly on their ability to contribute to an organization. Goals, the sort of compensation, and personal values all affect an individual's success at work [55]. The income was 29% higher with variable pay. Students outperformed employees by 18%, while men outperformed women by 26% [56]. This study emphasizes the individual performance of employees and establishes a modest degree of task productivity and satisfaction among respondents in the context of referencing competency [57].

Table 3. Summary on the level of kitchen layout design

Items	SD	Mean	Descriptive Equivalent
1. Lighting of Kitchen	0.34	4.88	Very High
2. Space or Arrangement of Kitchen Equipment	0.44	4.79	Very High
3. Type of Flooring	0.40	4.84	Very High
Category	**0.39**	**4.84**	**Very High**

Table 4. Summary on the level of individual work performance

Items	SD	Mean	Descriptive Equivalent
1. Task Performance	0.43	4.80	Very High
2. Contextual Performance	0.45	4.80	Very High
3.Counterproductive Work Behavior	0.43	4.82	Very High
Category	0.44	4.81	Very High

Table 5. Significance of the relationship between kitchen layout design and individual work performance

Variables Correlated	R	p-value	Decision on H_o	Decision on Relationship
Kitchen Layout Design and Individual Work Performance	0.781	0.000	Rejected	Significant

Moreover, individual job performance typically rises throughout the first three years of a career (ages 25 to 30) before progressively declining after that. Due to a combination of event-driven factors and age-related patterns, younger workers typically do better [58]. Also, phenomenological examination of individual performance reveals six distinct meanings: outcome, technical action, social action, effort, mental ability, and personality, demonstrating a range of employee perspectives and elements affecting the assessment of an individual's performance [59]. Stable interpersonal relationships did not exhibit substantial positive relationships, but job satisfaction and fair performance systems did [60].

3.3 Significance of the Relationship between Kitchen Layout Design and Individual Work Performance

Table 5 shows the relationship between the kitchen layout and individual work performance. The study found a significant relationship between kitchen layout design and individual work performance, as indicated by the correlation between the two variables (r-value 0.781, p<.000). Which is less than 0.05, this signifies the rejection of the null hypothesis. It indicates that there is a strong correlation between kitchen layout design and individual work performance among the employees in the eatery.

The results indicate a significant relationship between kitchen layout design and individual work performance. It is shown by the results that the design of the kitchen layout has a major impact on each eatery employee's specific work performance. Also, a well-planned kitchen layout design reduces stress, improves speed, and enhances work efficiency. It provides organization, quick action, easy access to tools and equipment, and motivates employees for overall improvement, ensuring a comfortable and efficient workspace that can lead to employee productivity.

The results are supported by the idea of Sun and Ji [61], an enhanced particle swarm intelligence algorithm that optimizes kitchen layout with the aid of integrated kitchen design, which improves work performance by meeting restrictions and increasing efficiency within a given space. As certified by Kiran et al., [62] optimizing space use, enhancing productivity, and meeting the demands of multiple individuals are the goals of the compact kitchen layout design, which may have a favorable effect on work performance in the kitchen. On top of that, kitchen layout design affects working individuals' physical exhaustion, productivity, and job efficiency, and that relationship between kitchen layout design and individual work performance can be noted [63].

Furthermore, contemporary kitchens allow multitasking, family engagement, and smart home integration, thereby enhancing efficiency and overall functionality. There is a significant correlation between kitchen layout design and individual work performance. Different production responsibilities are assumed by humans in a workspace [64]. On the one hand, people create work schedules in an effort to increase productivity by finishing chores as quickly as feasible. However, a well-designed workspace is necessary to promote teamwork. Work plan design and workstation design are complementary to one another in this way [65].

4. SUMMARY, CONCLUSION AND RECOMMENDATION

This chapter includes a summary of the findings of the study, conclusions, and proposed recommendations for possible implementation.

4.1 Summary

The major findings of the study were the following:

1. The lighting of the kitchen had the highest mean of (4.88) for the level of kitchen layout design, with a standard deviation of 0.34 and a descriptive equivalent of very high. The type of flooring that came in second with means of 4.84 and standard deviations of 0.40 earned a very high descriptive rating. Finally, the kitchen equipment arrangement space received the descriptive equivalent of a very high score, with a mean of 4.79 and a standard deviation of 0.44. Its descriptive equivalent was very high, and its overall mean was 4.84 with an overall standard deviation of 0.39.

2. Counterproductive work behavior had the highest mean (4.82), standard deviation (0.43), and descriptive equivalent of very high for the degree of individual work performance. Task performance and contextual performance came next, both receiving the descriptive equivalent of very high, with the same means of 4.80 and the standard deviations of 0.43 and 0.45. It also had a descriptive equivalent of very high, an overall mean of 4.81, and an overall standard deviation of 0.44.

3. Kitchen layout design had a significant relationship with individual work performance among eatery employees ($r = 0.781$ and $p = <.000$). Specifically, these variables' degree of connection showed a positive correlation and were statistically significant at the less than 0.05 level. This indicates that there is a significant relationship between kitchen layout design and individual work performance. Therefore, the null hypothesis was rejected.

4.2 Conclusions

Based on the findings of this study, the following statements were constructed:

1. The level of Kitchen layout design was very high.

2. The level of individual work performance was very high.

3. There is a significant relationship between kitchen layout design and individual work performance among eatery employees, where the r value is 0.781 and the p-value is 0.000. It meant that the higher the kitchen layout design, the higher the individuals' work performance improved.

4.3 Recommendations

Based on the findings and conclusions of the study, the following recommendations are offered:

1. Business owners are recommended to ensure their employees' need are properly addressed for their performance in the kitchen or eatery to further enhance productivity, skills, and customer attraction ability as an advantage over other existing eateries in providing appropriate facilities.

2. Employees facing space or arrangement issues with kitchen equipment should report concerns to management for necessary adjustments. Innovative solutions include investing in space-saving equipment or rearranging workstations. A good kitchen environment can provide employees with security, allowing them to accomplish their task efficiently without feeling stress and encouraging them to speed up their work and provide essential services.

3. Customers are encouraged to choose an eatery where they can enjoy the good service provided by the food establishment, the cleanliness and orderliness of the surroundings, the peace, the cozy atmosphere, and the excellent performance of the employees to serve them while enjoying their dining experience in the eatery.

4. Future researchers are encouraged to think about using mixed-method approaches to collect quantitative data and qualitative employee perspectives when examining the relationship between kitchen layout design and individual work performance. Interviewing kitchen

employees and making on-site observations can yield insightful contextual knowledge on how layout design affects efficiency and workflow. Additionally, investigating the effects of creative design solutions and ergonomic interventions might aid in the creation of useful guidelines for improving kitchen environments and worker performance.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declares that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during the writing or editing of manuscripts.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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