

Evaluation Hotel Practices Toward Proper Food and Beverage Storage

Mohammed Sheded Hasan

Hotels Studies Department, Faculty of Tourism and Hotels,
Fayoum University, Egypt.

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Abstract

The literature has shown that there are many facilities, practices, and procedures that should be applied to maintain proper storage of food and beverage. Structured interviews were adopted to collect the data from Forty Five three-star hotels in Cairo. These interviews were conducted with hotel store managers with a response rate of 75.5%. The research findings revealed that most food and beverage stores in the three-star hotels in Cairo undergo a lack of implementation of proper storage facilities and practices and lack of food and beverage stores personnel's awareness towards proper storage practices and personal hygiene requirements. So, this research recommended that hotels should provide the stores with equipment and facilities that will achieve the best implementation of proper food and beverage storage practices and keep the stored food in a manner that makes stock life longer as much as possible and protects it against contamination that might cause foodborne illness or food poisoning.

1. Introduction

Food storage is considered one of the oldest practices that humans have used since ancient times. The significance of food and beverage storage is grown through eras; when there was an urgent need to store large amounts and volumes of products (FAO, 2018). As a result, humans derived some procedures and practices to keep the safety and quality of the stored items (Kasekende., 2018).

The presence of food and beverage stores is very sensitive because food beverages could be purchased at bulk prices to overcome the safety issues of some F&B (Stationaries., 2017) .

The storage process is considered a vital and very important process especially for frozen foods, meat, and fish (Hui., 2014). So, the specifications of the food and beverage stores should be in line with the storage products, for example keeping meat and fish that will be stored for a long period in freezing stores that have a certain temperature and humidity, while these items stored for use soon are placed in other cooling stores that vary in temperature and humidity from freezing stores. Shah and

Mandeep (2017) Pulses products are kept in regular dry stores provided that the proper storage conditions are met (Sekar, and Uthayakumar., 2018).

To use the food for hotel usage, the correct instructions and procedures for storage must be strictly attached. These guidelines have been thoroughly researched by scientists to determine how best to reduce the real threat of food poisoning from the storage of unsafe foods. It is also important to keep the store properly clean, to reduce the risk of bacteria and food spoilage (Karim et al., 2018).

So, the correct storage procedures and practices should be provided, including the adequate location, layout, facilities, and equipment, and implemented by staff who have full awareness of appropriate storage procedures (Suhaimi et al., 2016).

Proper food and beverage storage practices among hotel has continued to attract the keen interest of academicians and hotel industry makers across the world over several decades (Afrifa et al., 2014; Kasekende., 2018); because of its effects on the hotel costs and revenues (Ssekakubo et al., 2014). As storage practices reflects hotel effectiveness and efficiency in making use of a hotel's products, and this, in turn, contributes to the hotel's budget at large (Ramesh et al., 2020).

More literature suggests that proper food and beverage storage practices have a significant impact on the hotel's budget. Because of that a several small hotel firms have breakdown, and one of the grounds for such collapses is poor storage practices

However, as mentioned earlier, there is a lack of researches that evaluate the extent of proper storage practices in hotel industry. Also, the all hotel categories have not been exclusively investigated. Most of the previous literature is focused on Five and Four hotels. This paper contributes to this research gap by evaluating proper food and beverage storage practices across Three star hotels in Cairo.

The main problem within these type hotels is the use of incorrect storage practices based on old criteria which are considered outdated that lead to low storage turnover, shoplifting, increase in the amount of losses as well as contaminated products in food stores. In addition to this, incorrect storage practices may cause errors and inaccuracy in food quality.

Hence, this paper aims to examine hotel practices toward proper food and beverage storage. Besides, this research also wishes to identify any gaps in practices and procedures on staff qualifications and hygiene in storage department.

2. Literature review

Food storage may be very complicated in a busy and most likely small business. Executives managers usually have a daily struggle in trying to correctly store food. The vital aim is to protect the materials from contamination that may come in many shapes (Atti, and Abdelgawad,2016). Occasionally, food outlets becoming busier, rising its size, and exceeding its storage capabilities can put safe food storage at hazards. In this post, the challenges and risks associated with various food storage areas are described (Vasconcellos., 2003).

For a hotel firms, storage practices is crucial to assure smooth service and sustainable food production, as well as preventing stockout that will result in client switch to other hotels (Karim et al., 2018).

The word “storage” is defined with many Meaning in the literature. In general, stored items are the inventories of products, packaging materials, work in firm operation and finished products that shown in various points around the firm’s production (Pycraft et al. 2010). whereas Chase et al. (2006) defined storage as the stock of any item or material used in an establishment. Benton., (2013) defined the term store, or warehouse as a building or place where products and materials are retained by an establishment. It is the storage of materials under proper circumstances to assure quality levels until time of use.

mainly, storage management can be best clarified as a several of practices, procedures and controls that systematically control and observe materials levels and smart identify at what levels the products should be preserved, what time should the materials be renewed and how substantial of an item quantity should be ordered (Waters., 2003). It is a consistently process of planning, organizing and monitoring materials that aims to reduce the investment in stored materials while at the same time counterbalance supply and demand (West., 2009).

Therefore, proper storage practices plays a dynamic role in decreasing losses and keeping the materials for further operation (FAO, 2018). Decreasing the postharvest losses, largely in hotel firms, could be a sustainable solution for rising food production, decreasing item shortage and improving firm performance (Kumar and Kalita, 2017).

The design and structure of food stores should be suitable in size to manipulate all activities and processes related to the storage of products, and built from durable, non-toxic materials, to be easily cleaned and disinfected, and to prevent the entry of pests, dust, fumes, and other contaminants (Stationaries., 2017),

McLauchlin et al., (2012) mentioned that walls and ceilings of storage should be finished with fire-resistant, non-toxic, light color, high gloss, washable, and easy to clean paint. They also added that walls and ceilings should be free of open joints, cracks, and cracks to inhibit the entry of dirt, dust, and scourges.

Suhaimi et al., (2016) confirmed that store floors must be made smooth, slip-resistant, and non-peeling or peeling substances. Suhaimi added that the floors must be correctly sloped to the drainage vents to easier the cleaning.

The doors in in food stores should be fire-resistant, seamless and closed automatically to prohibit the entry of pests and preventing the causes of the fire (Kamonwan et al., 2021).

Coyle et al., (2016) summarized that all electrical lines should be hidden inside the building walls to as great an extent as enabled or encapsulated in an adopted sealed containment to take away pest hiding places and corridors.

Light lamps should be protected, packaged, or otherwise crashing -resistant to prevent the risk of broken bulbs or lamps falling into storeroom. Light armor made of open wire framing is not approved (Fintrac, 2016).

Stranks (2007) stated that an adequate number of louvered vents should be placed in both high and low point of walls to prevent any streaming of air from polluted to clean areas and to ensure the ideal renovated of air within food stores by getting rid of odors and fumes and limiting the excess heat and humidity.

Gouge (2009) illustrated that enough artificial ventilation regulations including wastewater fans and hoods should be existing in food and beverage storage with the point of the treat being in the open air (Hui, 2014). All ventilation hardware must be offered with filters that can be cleaned, to keep all pests, dust, and dirt away from dripping into storage. (Hui, 2014) also added that bathrooms and lockers areas need to be vented to the out air by an operable screened window, an air shaft, or a light-switch-activated wastewater propeller.

Evans and Brachman (2013) showed that sewage and water disposal systems in food storage should be designed, built, and operated in a manner agreeable to the allowing -issuing official to prohibit backflow and pollution of water supply, food, beverage, or hardware.

The appropriate storage and disposal of rubbish and refuse is necessary to decrease bugs, rodents, and odor issues. Rubbish and refuse should be stored in a sufficient number of impermeable bins, removed repeatedly from the food storage, treat, and disposed of in a manner that guarding food and storage areas against pollution (Jing et al., 2021).

Concerning toilets and restrooms, Shah and Mandeep (2017) confirmed that enough number of disconnected toilets amenities should be offered for males and females and that toilets and employees' rest places should be disconnected from food stores by airlocks or self-closing doors.

Marriott (2013) reported that effective steps shall be taken to prohibit bugs, rodents, and vermin from access, living, or multiplying in food storage areas. For example, proper insect control machines as air blinds, glue boards, electric fly killers and rodent traps and effectively sealing all holes, service entries, crevices, cracks, drains, and ventilation vents should be installed. Also, the internal infrastructure is to be completed and designed to prohibit suitable positions for pest harborage.

It was noticed that food buildings must have discrete storage areas to store the products that are probably the origin of food contamination, like chems, clothing, and personal belongings. These things should be occurred way from food storage areas (CSIRO Food and Nutritional Sciences, 2010)

Saravacos and Kostaropoulos (2012) indicated that all racks, tables, safety stairs, and stools, cooling and freezing hardware, scales, thermometers, and other machines or facilities used in connection with the food storage must be of substances which are smooth, impervious, non-toxic, non-tainting, readily cleaned, durable and non-reactive to food components to keep the products and to decrease quality loses.

Sekar and Uthayakumar, (2018) described that proper food storage assists to keep food quality by preserving flavor, color, tissue, and nutrients while limiting the occasion of contracting a food- moved disease caused by Microorganisms. So, Berketova et al., (2021) reported that every food product should be stored according to its sort and its appropriate storage techniques, circumstances, and requirements.

The personal safety of employees should be of critical concern to the owners of food firms, including those who operate and work in food stores. Raising employees hygiene and implementing job rules can protect staff. When it comes to personal safety, employers must be informed of both crime stats and safe work environment procedures highly recommend by the career Safety and Health management. Both elements can impact how safe an employee feels at work. (Prakash et al., 2018)

Orobia et al., (2013) stated that each employee working in food and beverage storage areas must maintain a high degree of cleanliness and a tidy external appearance. Personal hygiene in stores is extremely important to maintain food health standards and to avoid foodborne illness. As a result, the supervisor and the manager of food and beverage stores should ensure that all food and beverage store staff follow good personal hygiene practices to prevent food contamination.

3. Methodology

3.1. Data and variables

Based on the objectives and literature of the research, the research framework can be described as follows:

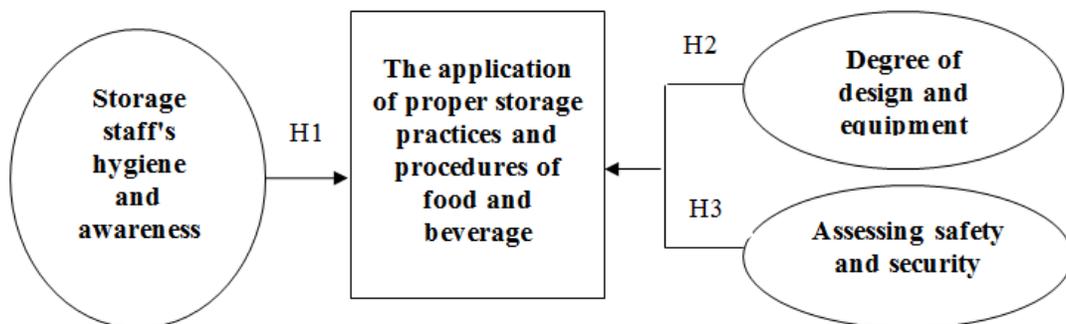


Fig.1. The research framework

Based on the research framework, the following hypotheses can be suggested:

- H1:** There is a statistically significant relationship between the degree of design and equipment of food and beverage stores and the application of proper storage practices and procedures of food and beverage.
- H2:** There is a statistically significant relationship between the assessing safety and security of food and beverage stores and the application of proper storage practices and procedures of food and beverage
- H3:** There is a statistically significant relationship between the personal hygiene and staff awareness in food and beverage stores and the application of proper storage practices and procedures of food and beverage.

Structured interview was used in this research to explore the current position in food and beverage stores in the three-star hotels in Cairo, to identify the extent to which these stores apply the best food and beverage storage practices, to realize how does the level of staff's awareness and training in stores department influence on the degree of their application of the best food and beverage storage practices, and to discover the neglected practices in these stores.

The Structured interview was selected because it permits testing of affluent information. Furthermore, there is a chance to investigate real settings and actual food storage practices, which will give more right information. The researcher also is able to collect data and get an in-depth understanding of proper storage practices in realty

The interview is formulated based on review of literature. The final interview form has 40 five-point Likert scale statements, ranging from 1 (strongly disagree) to 5 (strongly agree). The form includes 9 statements to measure design and equipment of food and beverage stores at three-star hotels in Cairo (Hui, 2014). While assessing safety and security procedures criteria is divided into 8 main statements (Gaber, 2016: Koumanakos, 2008). In additions personnel's hygiene and awareness of proper storage practices criteria contains 9 statements (Gaber, 2016: Omar et al., 2008). Finally, 14 statements to measure Proper storage procedures and practices dimensions (Ramesh et al., 2020), (Table 1).

The research population included all the Three-star hotels in Cairo. (45) hotels, according to the Egyptian Hotel Guide (2018-2019). The Three star hotels in Cairo were selected to be the research population based on scientific and research reasons such as these hotels are located in (Cairo) the capital of Egypt .Since its number are more than the other categories of hotels In addition, a pilot survey was performed with Ten storage managers of these hotels and found that they are suffer from poor food storage practices. So, the structured interviews were held with all stores managers in the Three-star hotels in Cairo. The researcher succeeded in conducting (34) valid interviews with respondents, while (11) hotels refused to cooperate with the researcher, so the response rate is (75.5%).

The data were analyzed by using the procedures of the SPSS (Statistical Package for Social Science) version 26.00, for windows.

3.2.Results and analysis or discussion

3.2.1. Assessment of outer measurement model

Before testing the research hypotheses, the researcher used (Cronbach's Alpha) to measure the internal consistency and reliability of the statements used in the interview to ensure the accuracy of the measurement. Table (1) illustrates the reliability analysis.

Table 1

Reliability analysis for data collecting method.

| Measurement | No. of phrases | Cronbach's Alpha |
|--|----------------|------------------|
| 1. Design and equipment of food and beverage stores at three-star hotels in Cairo. | 9 | 0.81 |
| 2. Assessing safety and security procedures in food and beverage stores | 9 | 0.80 |
| 3. Personal hygiene practices and awareness of proper storage procedures. | 8 | 0.77 |
| 4. Proper storage procedures and practices. | 14 | 0.78 |
| Total | 40 | 0.79 |

The results indicate that all coefficients are significantly higher than the value of 0.7. As a result, the research measurement is valid and reliable. (Hair, Black, Babin, Anderson, & Tatham, 2006; Vogt, 2007).

3.2.2. Descriptive analysis

Table 2

Analyzing the extent of location and design requirements in FOOD AND BEVERAGE stores in the Three-star hotels in Cairo.

| Variables | Mean | Std. Deviation | Std. Error |
|---|------|----------------|------------|
| 1. Stores location and design have adequate space for the activities to be conducted on the products | 1.55 | 0.55 | 0.19 |
| 2. Walls and ceilings sealed to prevent the entry of dirt, dust and pests; unable to absorb grease, food particles or water; and able to be easily and effectively cleaned. | 1.30 | 0.51 | 0.23 |
| 3. Floors designed and constructed in a way that is appropriate for the activities conducted on the stores and easy to clean and wash. | 1.22 | 0.39 | 0.15 |
| 4. Stores have a lighting system that provides sufficient natural or artificial light for the activities conducted on the food Stores. | 1.14 | 0.65 | 0.17 |
| 5. Stores have sufficient natural or mechanical ventilation to effectively remove fumes, smoke, steam and vapors. | 1.29 | 0.55 | 0.16 |
| 6. Stores have a sewage and wastewater disposal system that will effectively dispose of all sewage and wastewater; and there is no water polluting that contaminating food. | 1.41 | 0.22 | 0.13 |
| 7. Stores have a cleaned and adequate toilet and restrooms requirements | 1.80 | 0.21 | 0.10 |
| 8. Stores have a pest control facilities. | 1.50 | 0.30 | 0.11 |
| 9. Stores contain appropriate equipment for unloading of stored and received products. | 1.49 | 0.36 | 0.10 |
| Total mean | | 1.4 | |

Table (2) shows that the total mean of the extent of the site and design requirements availability in food and beverage stores in the Three-star hotels in Cairo is (1.4). This value is between {strongly disagree (1) disagree (2)}. This indicates that location and design requirements are not adequately available in food and beverage stores in the three-star hotels in Cairo. From the previous table, it is also clear that the mean value (1.29) is the lowest among the other values. This value relates to ventilation facilities. This indicates that ventilation facilities are not available properly in food and beverage stores in the Three-star hotels in Cairo. Consequently, the previous results exactly agreed with what was illustrated by Stationaries, (2017): McLauchlin et al. (2012); Suhaimi et al., (2016) and Coyle et al., (2016) who stated that the design and equipment of food stores must be in accordance with a set of considerations which would protect the stored materials from damage or theft or poor quality.

Table 3

Assessing safety and security procedures in food and beverage stores in the three-star hotels in Cairo.

| Variables | Mean | Std. Deviation | Std. Error |
|---|------|----------------|------------|
| 1.All materials used in the building construction and finishing works are nonflammable. | 1.86 | 0.36 | 0.05 |
| 2.All wires and electrical equipment are firmly fastened according to technical. | 1.83 | 0.38 | 0.05 |
| 3.Stores have an outside electrical switch. | 1.80 | 0.41 | 0.06 |
| 4.Stores are equipped with a fire alarm, firefighting equipment, and a system for television monitoring. | 1.51 | 0.92 | 0.18 |
| 5.Guiding signboards shown how to use fire extinguishers, how to act in case of fire, escape routes, and the evacuations at emergency- are placed at an apparent place. | 1.89 | 1.44 | 0.22 |
| 6.Smoking is strictly forbidden inside the food stores. All smoking warning signs are placed at an apparent place. | 1.88 | 1.07 | 0.18 |
| 7.First-aid kits are available and supplied with the necessary materials and medicines. | .168 | 0.30 | 0.06 |
| 8.There is a daily regular cleaning schedule. | 1.69 | 0.04 | 0.21 |
| 9.There is a standard schedule of pest control by a certified pest control operator. | 1.86 | 1.00 | 0.30 |
| Total mean | | 1.74 | |

From the analysis of the data in the previous table, the total mean is (1.74), and this value is limited between the two values [strongly disagree (1) and disagree (2)], frequencies of safety and security procedures applied in food and beverage stores in the three-star hotels in Cairo are closer to disagree. This indicates that food and beverage stores in the three-star hotels in Cairo do not properly implement safety and security procedures. From the previous table, it is also clear that the mean value (1.51) is the lowest. among the other values. This value relates to the point " Stores

are equipped with a fire alarm, firefighting equipment and a system for television monitoring". Consequently, the previous results exactly agreed with what was showed by Saravacos and Kostaropoulos (2012) ;Sekar, and Uthayakumar, (2018) ; and Berketova et al, (2021) who indicate the safety and security considerations in food and beverage stores.

Table 4

Evaluating personnel's hygiene and employee's awareness of proper storage procedures.

| Variables | Mean | Std. Deviation | Std. Error |
|---|------|----------------|------------|
| 1.Each worker has a two-part locker. | 1.77 | 0.41 | 0.17 |
| 2.Workers are wearing a clean uniform that is protective from cold in case of entry freezing stores. Separate footwear is used in stores. | 1.40 | 0.43 | 0.17 |
| 3.Dining, drinking, chewing gum, smoking, or sleeping are outlawed inside stores. | 1.77 | 0.73 | 0.19 |
| 4.Workers are obligated not to wear any jewelry in their hands, and they should wear head covers especially females. | 1.77 | 0.25 | 0.11 |
| 5.Workers' nails are clean and short without nail polish. | 1.27 | 0.54 | 0.12 |
| 6.Mittens used in food processing are in an intact, clean, and health condition and are of an impermeable material. | 2.00 | 0.00 | 0.00 |
| 7.Workers' injuries (cuts, calluses, wounds) are properly protected and covered by water and heat-resistant bandages and gloves. | 2.15 | 0.78 | 0.11 |
| 8.Staff and supervisors in food stores receive periodic and appropriate training programs. | 2.15 | 1.02 | 0.26 |
| Total mean | | 1.78 | |

The data in the previous table shows that the total mean of evaluating the staff's hygiene and awareness of proper storage procedures and practices in food and beverage stores in the Three-star hotels in Cairo is (1.78). This value is limited between [strongly disagree (1) and disagree (2)]and it is closer to (disagree). This indicates that personnel's hygiene and employee's awareness in food and beverage stores in The Three-star hotels in Cairo are not efficient enough to maintain a safe storage environment for food products.

According to the table (4), it is also obvious that the mean value (1.27) is the lowest shown in the previous table. This value relates to the issue that workers' nails are clean and short without nail polish, this mean staff and supervisors in food stores should receive periodic and appropriate training programs in proper food-storage considerations, food health and safety requirements, personal hygiene requirements, and poor storage practices.

This reveals that there are two great problems relating to personnel's hygiene and awareness in food and beverage stores. The first one is the lack of staffs' concern to cover their wounds and cuts by water and heat resistant bandages and gloves, which may affect negatively on their health one hand and may lead to food contamination on the other hand. The second problem is the lack of training programs oriented to personnel and supervisors staff in food and beverage stores in the three-star hotels in Cairo about the proper storage procedures and hygiene practices. Consequently, the previous results exactly agreed with what was illustrated by Prakash et al., (2018) and Orobia et al., (2013) who stated that personnel's hygiene practices and employee's tanning effect on the implementation of proper storage procedures.

Table 5

The proper storage procedures and practices in Food and beverage stores at the three-star hotels in Cairo.

| Variables | Mean | Std. Deviation | Std. Error |
|---|-------------|-----------------------|-------------------|
| 1.Food and beverage products are placed within dry stores in an orderly manner at appropriate heights. | 1.91 | 0.25 | 0.04 |
| 2.There are enough spaces between the containers. | 1.86 | 0.84 | 0.15 |
| 3.There is sufficient space between the food and the walls of the store. | 1.83 | 0.90 | 0.16 |
| 4.The height of the stacks does not reach the ceiling level. | 1.68 | 0.44 | 0.35 |
| 5.The products of heavyweight or big size must be stored on the lower shelves. | 1.89 | 0.70 | 0.05 |
| 6.Products as sacks of flour and rice are not placed directly on the floor of the store. | 1.58 | 0.22 | 0.06 |
| 7.Food cans are in a suitable state free from any holes, scratch or dents and stored in a technique facilitates reading the data printed on them and facilitates the process of withdrawing the oldest to the newest, (FIFO). | 1.89 | 0.33 | 0.40 |
| 8.There is a list called Bin Card located on dry store doors. | 1.77 | 0.44 | 0.35 |
| 9.Food items is classified and kept wrapped with an approved material inside refrigerators and freezers. | 1.79 | 0.51 | 0.04 |
| 10. There is a list of the doors of refrigerators and freezers. | 1.85 | 0.46 | 0.06 |
| 11. Temperature degrees and time are monitored and recorded in special tables and records. | 1.97 | 0.64 | 0.07 |
| 12. Medical checks of meat, poultry and fish are approved by veterinarians. | 1.89 | 0.22 | 0.22 |
| 13. Products that their properties affect other products are stored away from each other. | 1.77 | 0.52 | 0.33 |
| 14. Detergents, disinfectants, and pesticides are stored away from food. | 1.79 | 0.34 | 0.29 |
| Total mean | | 1.8 | |

From the analysis of the data in the previous table, the total mean is (1.8), and this value is limited between the two values [strongly disagree (1) and disagree (2)], this indicates that food and beverage stores in the Three-star hotels in Cairo do not properly apply best storage procedures and practices and do not attain to the required levels.

From the previous table, it is also clear that the mean value (1.58) is the lowest among the other values. This value relates to the point "products as sacks of flour and rice are not placed directly on the floor of the store". Consequently, the previous results exactly agreed with what was explained by Atti, and Abdelgawad. (2016); Pycraft et al. (2010); Chase et al. (2006) and West, (2009), who indicate the proper storage procedures and practices in food and beverage stores.

3.2.3. Testing research hypotheses:

H1: There is a statistically significant relationship between the degree of design and equipment of food and beverage stores and following the procedures and practices of proper storage by stores departments.

Using regression analysis to measure the effect of the design and equipment of food and beverage stores on following the procedures and practices of proper storage by stores departments, table (5) revealed that the independent variable explains (0.561) of the variance in the dependent variable (where R square value = 56.1%).

Table 5

Model summary of the first hypothesis.

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|-------|----------|-------------------|----------------------------|
| 1 | 0.74a | 0.561 | 0.48 | 0.06 |

a. Predictors: (Constant), design and equipment of food and beverage stores.

According to the table (6), ANOVA test revealed the value of (F=7.65), and (p<0.05) referring to a significant effect of the independent variable on the dependent one.

Table 6

ANOVA analysis of the first hypothesis.

| Model | Sum of Squares | DF | Mean Square | F | Sig. |
|-------------------|----------------|----|-------------|------|--------|
| Regression | 0.033 | 1 | 0.033 | 7.65 | 0.033b |
| 1 Residual | 0.026 | 6 | 0.004 | | |
| Total | 0.058 | 7 | | | |

a. Dependent Variable: following the procedures and practices of proper storage by stores departments.

b. Predictors: (Constant), design and equipment of food and beverage stores

For coefficient values, it was found that b value of design (the independent variable = 0.268) and (p<0.05) in addition to the alpha value of (1.205) and (p<0.05). These results were illustrated in table (7).

Table 7Coefficients^a of the first hypothesis.

| Model | Unstandardized Coefficients | | Standardized Coefficients | T | Sig. |
|----------------------|-----------------------------|------------|---------------------------|-------|------|
| | B | Std. Error | Beta | | |
| (Constant) | 1.205 | .192 | .749 | 6.267 | .001 |
| Design and equipment | .268 | .097 | | 2.766 | .033 |

a. Dependent Variable: following the procedures and practices of proper storage by stores departments.

Accordingly, the first hypothesis is supported which indicates that there is a statistically significant relationship between the degree of design and equipment of food and beverage stores at the Three-star hotels in Cairo and following the procedures and practices of proper storage by stores departments.

H2: There is a statistically significant relationship between the degree of safety and security of food and beverage stores and following the procedures and practices of proper storage by stores departments.

Using regression analysis to measure the effect of the safety and security of stores on following the procedures and practices of proper storage by stores departments, table (8) revealed that the independent variable explains (0.662) of the variance in the dependent variable (where R square value = 66.2%).

Table 8

Model summary of the second hypothesis.

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|-------|----------|-------------------|----------------------------|
| 1 | 0.77a | 0.662 | 0.59 | 0.07 |

a. Predictors: (Constant), design and equipment of food and beverage stores .

According to the table (9), it is clear that the ANOVA test revealed the value of (F=8.76), and (p<0.05) referring to a significant effect of the independent variable on the dependent one.

Table 9

ANOVA analysis of the second hypothesis.

| Model | Sum of Squares | DF | Mean Square | F | Sig. |
|------------|----------------|----|-------------|------|--------|
| Regression | 0.044 | 1 | 0.044 | 8.76 | 0.044b |
| 1 Residual | 0.037 | 6 | 0.005 | | |
| Total | 0.069 | 7 | | | |

a. Dependent Variable: following the procedures and practices of proper storage by stores departments.

b. Predictors: (Constant), safety and security of food and beverage stores.

For coefficient values, it was found that (B) value of design (the independent variable = 0.367) and (p<0.05) in addition to the alpha value of (1.306) and (p<0.05). These results were illustrated in the table (10).

Table 10

Coefficients^a of the second hypothesis.

| Model | Unstandardized Coefficients | | Standardized Coefficients | T | Sig. |
|----------------------------|-----------------------------|------------|---------------------------|-------|------|
| | B | Std. Error | Beta | | |
| (Constant) | 1.306 | .192 | .859 | 6.368 | .001 |
| safety and security | .367 | .095 | | 2.767 | .044 |

a. Dependent Variable: following the procedures and practices of proper storage by stores departments.

Accordingly, the second hypothesis is supported which indicates that there is a statistically significant relationship between the degree of safety and security of stores and following the procedures and practices of proper storage by stores departments.

H3: There is a statistically significant relationship between personnel's hygiene and employee's awareness in food and beverage stores and the application of proper storage practices and procedures of food and beverage.

Using regression analysis to measure effect of personnel's hygiene and employee's awareness in food and beverage stores on and the application of proper storage practices and procedures, table (11) revealed that the independent variable explains (0.553) of the variance in the dependent variable (where R square value = 55.3%).

Table 11

Model summary of the third hypothesis.

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|----------|--------|----------|-------------------|----------------------------|
| 1 | 0.743a | 0.553 | 0.478 | 0.066 |

a. Predictors: (Constant), personnel's hygiene and employee's awareness in FOOD AND BEVERAGE stores.

According to the table (12), the ANOVA test revealed the value of (F=7.42), and (p<0.05) referring to a significant effect of the independent variable on the dependent one.

Table 12

ANOVA analysis of the third hypothesis.

| Model | Sum of Squares | DF | Mean Square | F | Sig. |
|-------------------|----------------|----|-------------|------|--------|
| Regression | 0.032 | 1 | 0.032 | 7.42 | 0.034b |
| 1 Residual | 0.026 | 6 | 0.004 | | |
| Total | 0.058 | 7 | | | |

a. Dependent Variable: application of proper storage procedures and practices.

b. Predictors: (Constant), personnel's hygiene and employee's awareness in FOOD AND BEVERAGE stores.

For coefficient values, it was found that (B) value of personnel's hygiene and employee's awareness (the independent variable = 0.186) and (p<0.05) in addition to the alpha value of (1.386) and (p<0.05). These results were illustrated in table (13).

Table 13Coefficients^a of the third hypothesis.

| Model | Unstandardized Coefficients | | Standardized Coefficients | T | Sig. |
|--|-----------------------------|------------|---------------------------|--------|-------|
| | B | Std. Error | Beta | | |
| (Constant) | 1.386 | 0.130 | 0.743 | 10.674 | 0.000 |
| personnel's hygiene and employee's awareness | 0.186 | 0.068 | | 2.723 | 0.034 |

a. Dependent Variable: application of proper storage procedures and practices.

Accordingly, the third hypothesis is supported which indicates that there is a statistically significant relationship between personnel's hygiene and employee's awareness in food and beverage stores and the application of proper storage practices and procedures of food and beverage

4. Conclusion and Recommendations

Recommendations addressed to the top management at the Three-Star hotels in Cairo

Hotels should

- Attempt to redesign and interior space of food and beverage stores in the Three-star hotels in Cairo whenever possible, when putting future plans or when planning to base a new food and beverage stores, to suit the amounts of stored items and to achieve flexibility for all stages of work that include workers' movement and storage and handling of products inside the various storage areas.
- Design ventilation vents that will make airflow simpler inside food and beverage stores and reduce temperature and humidity degrees to build a suitable condition for storage.
- Implement a regular maintenance plans to reduce heat and noise caused by exhaust fans located in food and beverage stores.
- Provide food and beverage stores with standard items for painting walls and ceilings that should be free from any substances that may add toxic material to food whether by direct contact or vapor should also heat, steam, and fire-resistant.

Recommendations addressed to the management of food and beverage department:

Hotels should:

- offer enough insect control hardware in several positions that are not above food and beverage storage areas in the Three-star hotels in Cairo.
- Provide stores with the appropriate number of racks made of stainless steel or any other substance realize the same characteristics taking into account that lower shelves and plastic or stainless-steel pallets should be 30 cm off the floor.

- Provide an adequate number of thermometers and moisture measurements in more than one place in dry stores to control and systematically investigate the temperature and moisture degrees.
- Design an appropriate number of clear guiding signboards that display areas where smoking is prohibited, how to use fire extinguishers, how to react in case of emergencies, escape routes, and the evacuations at crises.
- Develop regular training programs to elevate awareness and performance of workers in food and beverage storage areas about adequate food-storage considerations, food health and safety requirements, personal hygiene requirements.
- Prepare the appropriate number of lists fastened on the doors of various storage areas showing items of food stored and dates of production, receiving, and expiry dates.

Limitations and future research

The findings of this research are limited to three-star hotels. Proper Food and Beverage storage practices should be measured across diverse hospitality providers including catering processes, hospitals, restaurants, and other segments. The size of the establishment and its brand are considered in this research as influencing variables of proper Food and Beverage storage Practices. Practices that encourage other establishments should be considered in future research. The benefits of proper food and beverage storage practices activities should be investigated.

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تقييم ممارسات تخزين الاغذية والمشروبات السليمة في الفنادق

محمد حسن شديد

قسم الدراسات الفندقية، كلية السياحة والفنادق، جامعة الفيوم، مصر .

المخلص

تمكن وظيفة المخازن في الحفاظ على المنتجات بشكل سليم وصحي وحمايتها من السرقة أو التلف أو التغير في الجودة ، مما يضمن سلامتها وبقائها صالحة للاستخدام من وقت دخولها إلى حين صرفها لجهات الاستخدام المختلفة. لذا يجب أن يتم تخزين المواد الغذائية طبقا لاشتراطات خاصة وهذا يتطلب أشخاص لديهم معرفة تامة بالممارسات الصحيحة الواجب إتباعها في تخزين المنتجات الغذائية. وعليه تهدف هذه الدراسة إلى التحري عن مدى إتباع إدارات مخازن الأغذية والمشروبات في الفنادق الثلاث نجوم بالقاهرة لممارسات التخزين السليمة سعيا للوصول إلى متطلبات التطبيق المثلى لعمليات التخزين المثلي، مما يؤدي إلى الحفاظ على المنتجات من الفساد والتلف وتقليل التكاليف. تشمل عينة البحث مخازن الأغذية والمشروبات بالفنادق الثلاث نجوم بالقاهرة وعددها خمسة وأربعون مخزن. حيث تم استخدام المقابلات الشخصية كأداة لجمع البيانات مع مديري المخازن وذلك بمعدل استجابة (75.5%). وقد جاءت أهم النتائج أن غالبية المخازن لا يتناسب تصميمها نوعا ما وتجهيزاتها ومساحتها الداخلية مع الممارسات المثلي للتخزين، بالإضافة إلى وجود قصور في درجة وعي وتأهيل العاملين بالممارسات الصحيحة الواجب إتباعها في تخزين المواد الغذائية. لذلك توصى الدراسة بمحاولة إعادة هيكلة المساحة الداخلية للمخازن عند القيام بوضع خطط تطوير أو تحسين تصميم المخازن بما يتناسب مع كميات المنتجات المخزنة وبما يحقق الانسيابية لكافة مراحل العمل، مع ضرورة تزويد المخازن بالتجهيزات التي تحقق التطبيق الافضل لممارسات تخزين المواد الغذائية، بالإضافة إلى تطوير وعي وتأهيل العاملين بالممارسات والإجراءات الواجب إتباعها في تخزين المواد الغذائية ومتابعة وتقييم ذلك بشكل دوري .

معلومات المقالة

الكلمات الختامية

مخازن الاغذية
والمشروبات؛ الفنادق
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