

HACCP-Based Food Store Model In Environmentally Sustainable Implementation at The Kayon Resort Ubud

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Abstract: This research was conducted at The Kayon Resort Ubud which is located on Jln. Raya Kendran, Tegalalang Village, Ubud District, Gianyar Regency, Bali. This study aims to determine the storage of food ingredients and HACCP at The Kayon Re-sort Ubud. The problem of this study is to determine the storage of food ingredients at The Kayon Resort Ubud. In this study, the data collection methods used were interviews, observation, and documentation. The analytical technique used in this research is descriptive qualitative analysis. In this study, the implementations that have been carried out are 2 (two) Flows for purchasing and ordering groceries at Food And Beverage Products at The Kayon Resort Ubud and for storing foodstuffs, foodstuffs are divided into 2, namely groceries and perishables that have been implemented. A food storage model based on Hazard Analysis and Critical Control Point to maintain the quality of food ingredients at the Food And Beverage Product Department at The Kayon Resort Ubud.

Keywords: HACCP, Environmentally Sustainable

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Introduction

Hotel Storage and distribution of foodstuffs is a process of activities involving the entry of foodstuffs, storage of food-stuffs, and distribution of foodstuffs in accordance with requests for the preparation of cooking foodstuffs. Food stor-age is a procedure for organizing, storing, maintaining dry and wet foodstuffs and recording and reporting them. After food materials that meet the requirements are received, they must be immediately taken to the storage room, ware-house or refrigerated room. (Basuki, 2019)

Hazard Analysis Critical Control Point or abbreviated HACCP is a scientific approach used to manage food safety hazards to produce safe food. HACCP in the kitchen is important because the kitchen is the last place food is pro-cessed and supervised. The implementation of HACCP in the kitchen aims to ensure that food is not contaminated and can be ensured that it is safe for consumption by guests. The kitchen is a complex place and is very prone to food contamination because of the large place, the various equipment, and the many workers who work in the kitchen section. HACCP in the kitchen is applied thoroughly, starting from personal hygiene and health, cleanliness of the work area and cooking utensils, and of course on the processing of food ingredients until they are ready to be eaten by guests. However, the success of the kitchen in ensuring food safety cannot be separated from the cooperation of other departments such as the Receiving section as the initial filter in the process of receiving food ingredients ac-cording to HACCP standards, the Store section, the Engineering section in maintaining the walk-in chiller/freezer, and the FB section. Service in serving food. (Prasetyanto, 2018)

Food And Beverage Product department is the department that is responsible for the quality of service and processing in the field of food products. Like at The Kayon Resort Ubud, the Food And Beverage Product department is very concerned about the quality and safety of the product or food that will be served to tourists visiting the restau-rant. The quality and safety of a food product cannot be separated from food processing procedures, these proce-dures are applied in a system called Hazard Analysis and Critical Control Point or abbreviated as HACCP. HACCP aims to identify and control hazards from material receipt, storage, production process to presentation to guests. Food safety is very important to avoid the side effects caused by contamination, abuse and poisoning in food. There are several things that cause food quality to decline, including improper storage of food ingredients, processing and presentation that are not in accordance with applicable procedures. Obstacles that often occur when making observa-tions at hotels related to Hazard Analysis and Critical Control Point (HACCP) are foodstuffs that decompose quickly and cannot be processed into food. Sustainable environment can be defined as everything that surrounds living things that affect their lives with con-ditions that are

continuously preserved naturally or with the touch of human hands without time limits. Environmental sustainability can also be interpreted as how to meet the needs of existing resources for present and future generations without compromising the health of the ecosystem that provides them. More specifically, a sustainable environment is defined as a condition of balance, resilience, and interconnectedness that allows humans to meet their needs without exceeding the capacity of their supporting ecosystems and are able to regenerate to continue to be able to meet their needs into the future. (Effendi et al., 2018)

The application of the Hazard Analysis Critical Control Point has started to be carried out by several hotels in Bali. The Kayon Resort Ubud. However, there are several obstacles in the application of food storage, including food damage such as rotting food ingredients and improper storage, which is a problem that is often experienced by department kitchens.

Methodology

This research was conducted at The Kayon Resort Ubud which is located on Jln. Raya Kendran, Tegalalang village, Ubud sub-district, Gianyar district, Bali. This resort is a five-star resort located in the Ubud area which has been operating since 2017, this research has been carried out since months (months), Secondary data is data taken from published data such as literature, articles, journals and sites on the internet that strengthen the literature review in chapter 2 as well as arguments for the discussion section in chapter 4. In this study, qualitative data is in the form of hotel history, results of interviews with Chef, purchasing and staff of the Food And Beverage Product Department. (Ahyar, 2020)

In this study there are four types of data collection methods including: interview method, observation method, documentation method, Literature study method . Sampling technique is a sampling technique. There are various kinds of sampling techniques to determine the sample to be used in research. (Makanan et al., 2011)

The sample used in this study was purposive sampling, the variables used in this study were two of them: food storage and environmental sustainability. The data analysis technique used is qualitative data analysis technique. (Sugiyono, 2013)

Result and Discussion

Implementation of Storage of food ingredients is something that is important to note because before cooking food ingredients must be maintained in quality considering that this will have an impact on guests who will enjoy meals at the hotel restaurant. With regard to food risk, based on the HACCP principle according to the National Standardization Agency (BSN) in industry there are 3 risk categories, namely:

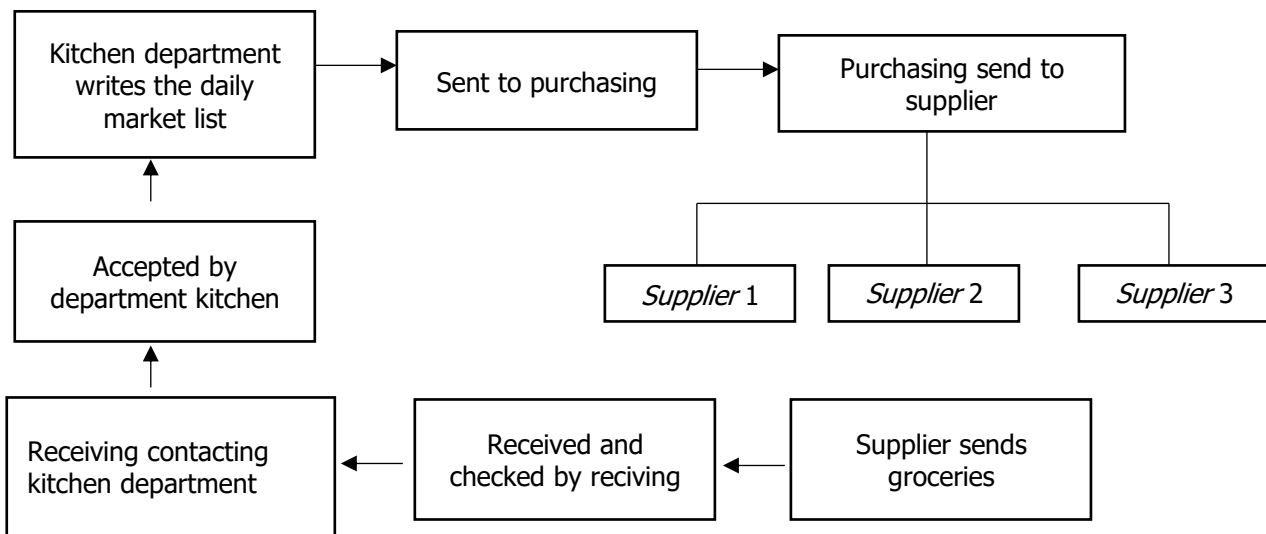
1. High risk (high risk product) This type of product should not be processed or produced and all deviations must be corrected and corrected. Products must be held in circulation or not marketed and tested for safety. For example:
 - Meat, because red meat must be carefully stored and processed, otherwise it will have a negative impact on the health of consumers who will consume the food to be processed, as it is known that there are many cooking methods that must be considered (rare, medium rare, medium, well done)
 - Poisonous fish, such as pufferfish, puffer fish are a favorite food for many people because of their soft flesh and distinctive taste so many are interested in this fish meat, but behind the soft meat there is a danger in puffer fish such as poison that can threaten life for those who eat this fish, therefore those who process pufferfish must be with people who are reliable in their fields.
2. Medium Risk (medium risk product) This type of product may be processed, but must be corrected and repaired in a short time (within a few days). Special monitoring is required until all deviations are resolved. For example:
 - Cheese, cheese is a fermented product of milk that must be kept in mind because if it is incorrect, the cheese decay process will be faster, so it is important to pay attention to the storage of the cheese itself.
 - Fruits, before storage, it would be better if the fruits should be washed first so that later they are safe for consumption directly by consumers who buy food made from fruits.
 - Vegetables must be stored in dry conditions, otherwise they will immediately rot and cannot be used to make vegetable-based food preparations.
3. Low Risk (low risk products) This type of product may be processed, but must be corrected and repaired. Routine monitoring must be carried out to ensure the status of the risk that may change to medium or high risk. For example:
 - Grains, seeds are low-risk foodstuffs.
 - Dry food, dry food is usually ready to eat food such as crackers and many more.

- Coffee, coffee storage can be done at room temperature which can be stored anywhere as long as it is placed in a closed place such as jars and other closed containers.
- Tea, tea storage is almost the same as coffee storage but you still have to pay attention to storage. (Nasional-BSN, 1998)

CCP (critical control point) is any point, stage or procedure in a food production system which if uncontrolled can result in unwanted health risks or any point, stage or procedure which if properly and properly controlled can prevent, eliminate or reduce the presence of danger. Foodstuff storage is one of the existing CCPs (critical control points) where the CCP (critical control point) is stated about the storage of foodstuffs stages or procedures in a food production system which if uncontrolled can result in unwanted health risks or any point, stage or procedure which if properly and properly controlled can prevent, eliminate or reduce the danger, improper storage of foodstuffs, especially in large quantities, can cause damage to these foodstuffs.

The implementation of HACCP at The Kayon Resort Ubud hotel makes 2 flows, namely the purchase flow and the food material storage flow as follows:

1. The flow of purchasing and ordering groceries on Food And Beverage Products from the results of interviews with purchasing staff, the purchase flow at The Kayon Resort Ubud is as follows



Sumber: Interview with sraff purchasing 2022

Figure 1. Grocery storage flow

Before a purchase is made, the kitchen department will check the ingredients that are running out after that the kitchen department writes a daily market list which will later be given to purchasing, then received by purchasing and purchasing will select several suppliers who will later send food orders. After the supplier selection is made, the sup-plier will send the food ingredients that have been ordered by purchasing, before being received by the kitchen de-partment, reciving will re-check the food ingredients that have arrived at the hotel whether there are food ingredients that are not suitable or food ingredients that are not of good quality, if food ingredients are found that are of poor quality, the reciving will return the food ingredients to the supplier to replace the food ingredients so that the quality is good, after checking, the re-civing will contact the kitchen department and inform that the food ingredients have arrived and have been checked. Kitchen staff will take the food ingredients and then check them again after checking again, the kitchen staff will store the food ingredients according to food storage standards. How to store foodstuffs that are done properly and in accordance with standardized procedures will help per-ishable foodstuffs to have better durability so that perishable foodstuffs can maintain their condition for a longer time and can also slow down the deterioration process. Preferably, improperly storing foodstuffs according to standardized procedures can result in these foodstuffs being damaged in a faster time and making the production costs incurred soar. Before storing foodstuffs such as vegetables and fruit, they must be cleaned first and separated according to their type. After being cleaned and separated according to its type, it is put into the chiller.

2. Grocery storage, food ingredients are divided into 2, namely groceries. and perishable from interviews with chefs and staff from the Food And Beverage Product department at The Kayon Resort Ubud. Groceries type foodstuffs are non-perishable foodstuffs such as flour, seeds and cooking spices, groceries type foodstuffs are usually stored at a storage temperature of 15-20⁰c or in a dry place. Perishable foodstuffs are food ingredients

that are easily damaged so special attention is needed in their storage such as fish, meat, vege-tables and fruits. (Gultom et al., 2019)

Storage of meat usually starts from the trimming process, which is the separation of parts that are not needed such as fat, then proportioned according to the menu sold at restaurants, after being portioned then collected in one place such as a kitchen tray and stored in the freezer. Meats that are usually processed in The Kayon Resort Ubud's kitchen are sirloin, tenderloin, t-bone and dry age meat. for sirloin steak serving weight is 160 grams. Fish storage, after arriving from the supplier the fish is washed and cleaned the fish's entrails. Especially for salmon meat, the trimming process is carried out and separates the bones from the meat and then proportions according to the restaurant menu after the serving is done. The next step is to store the fish according to its type in a place such as a kitchen tray and then store it in the freezer.

- Storage of vegetables, before storage, it is important to clean the vegetables first and then drain them until they are completely dry, otherwise the vegetables will rot.
- Fruit storage, fruits are washed before being stored but there are some fruits that are not washed such as watermelon, papaya and melon which are usually directly stored in storage areas such as large containers.

The conclusion of the explanation regarding the flow above is that the storage process for perishable food-stuffs starts with cleaning, cleaning vegetables and fruit from dirt, for meat to be cleaned of unnecessary parts (trimming), for meat and fish that have been cleaned and then cut into portions according to size. with the standard menu and put in a container in accordance with the needs of the menu. How to store foodstuffs that are done properly and in accordance with standardized procedures will help perishable foodstuffs to have better durability so that perishable foodstuffs can maintain their condition for a longer time and can also slow down the process damage. On the other hand, improperly storing foodstuffs according to standardized procedures can result in these foodstuffs being damaged in a faster time and making production costs soar. Furthermore, after cleaning from dirt, proceed to sorting according to storage containers, storage materials are stored in their respective places but remain in the freezer. For vegetables and fruit placed in containers in the cold room, meat and fish are stored in the freezer. The next stage is labeling, food ingredients are given a label containing the name of the food ingredient, the quantity of the ingredient, and the date of entry to the store/freezer. After being labeled, the food ingredients are separated by type (grouping) and stored at each predetermined temperature (classifying). Then proceed with the process of entering food ingredients into the store or chiller. Food ingredients are entered into the store by the Food And Beverage Product staff by applying the FIFO system. Storage temperature regulation Each food raw material has different storage specifications, depending on the type, quantity, size and place of storage. Some food raw materials can be grouped into:

- a. Raw materials for foods such as meat, poultry, fish or seafood are included in the storage of cold food ingredients, usually stored at temperatures below 40 0c. Foodstuffs stored at temperatures below 40 0c. In the storage cabinet or chiller there is a temperature control where every shift change. kitchen staff must control the temperature of the storage temperature. Because if the temperature exceeds the minimum limit for food storage, it will be contaminated by bacteria that can cause food damage and food storage will not be optimal.
- b. Vegetable and fruit raw materials In storage, vegetables and fruit must be separated to prevent spoilage. Raw materials for vegetables and fruits are also separated according to their type. Each perishable food ingredient has an ideal temperature that must be adjusted by the food storage facility which is grouped according to the type of food ingredient. The following is the temperature of each type of food, food is stored at the following temperatures:
 - Fruit: 15-20°C
 - Egg, Vegetables, Cooked Food, Pastry :12-18 °C
 - Milk and other milk product: 3-4°C
 - Meat: 1-3°C
 - Poultry 0-2°C
 - Frozen food: -23 - 10°C

For the processing of food waste after storage of food ingredients, the food ingredients will later be processed according to the food menu ordered by consumers, after processing the leftovers are stored and processed into eco enzymes which will be beneficial for the hotel. , here more attention is needed from the kitchen staff to sort out the leftovers and don't immediately throw the leftovers into the trash, if not processed properly, it will have a bad impact on the sustainability of the environment, especially in tourist areas. This will have an impact on tourists who will later visit Bali, therefore wise steps are needed in processing food waste such as making eco-enzyme liquid by utilizing leftovers from food ingredients. Food waste such as fruit and vegetable peels are usually thrown away immediately, this causes the volume of waste to continue to increase, sorting is very important because it will make it easier to process food waste into eco-enzymes.

Here are the ingredients that can be used in the manufacture of eco enzyme.



Sumber: Interview with staff F&B Product 2022

Figure 2. Eco enzyme

The hotel industry should apply the manufacture of eco enzyme liquid because it will be very helpful in reducing the volume of waste in Bali. Organic waste in landfills creates unpleasant odors in the environment and reduces plastic recycling rates. Decomposition of organic waste also produces methane gas, methane gas is one of the greenhouse gases that causes global warming. Making eco-enzyme liquid is a step to process most of the waste and will reduce the burden on final disposal sites in Bali. In the process of making eco enzymes, the hospitality industry must pay attention to this because it will greatly impact the sustainability of tourism and also be environmentally sustainable Benefits of food waste (fruits and vegetables) such as the manufacture of eco enzymes.

Eco enzyme is a fermented liquid from fruit and vegetable foodstuffs mixed with palm sugar and then placed in a large container or barrel, stored for 3-6 months according to the place of storage, while for container volume measurement = 10 L vol-ume maximum water = 6 l, water 6 l (equal to 6 kg) sugar 600 grams, the rest of the fruit/vegetables 1,800 grams. If the fermentation goes well, the fermented solution will smell of alcohol after 1 month and a fresh sour smell like vinegar after 2 months. It's normal to see mold and jelly-like layers in the fermentation solution. In the manufacture of eco enzymes, it is necessary to pay attention to food residues such as uncooked fruit and vegetable peels, fruit and vegetable peels in good condition and not rotting, because if use leftover food in-gredients that have decomposed, the eco enzyme liquid will fail and smell bad. (Septiani et al., 2021)

Here are the benefits of making eco enzyme liquid:

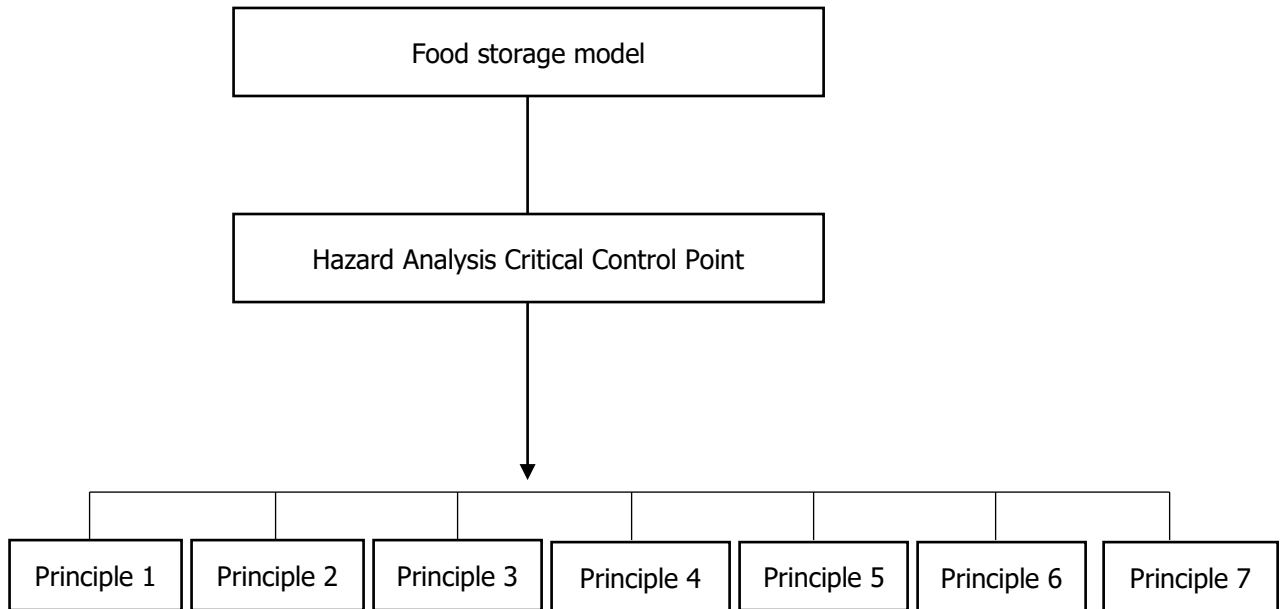
1. Can be used to water the plants in the hotel, this liquid will also make the plants fertile. The rules on how to use this eco-enzyme liquid, mix the eco-enzyme liquid and water into a container, then mix it together after that, flush all the plants in the hotel.
2. Be another alternative to replace chemicals in mopping hotel floors. In addition to using chemicals, eco enzyme can also be another alternative for cleaning hotel facilities such as cleaning floors, rooms and so on, using eco enzymes will also be able to reduce hotel costs in purchasing chemicals..
3. Reducing the volume of waste at the hotel and can save costs in shipping waste. Making eco enzyme liquid will also reduce the volume of waste and the cost of shipping waste can be overcome in the manufacture of this eco enzyme.
4. If excess eco-enzyme liquid is produced, you can distribute it to hotel employees while educating hotel employ-ees to use leftover food ingredients

A food storage model based on Hazard Analysis and Critical Control Point to maintain the quality of food ingredients at the Food And Beverage Product department at The Kayon Resort Ubud.

Implementing HACCP in food ingredient storage, the food storage model in hotels generally must be applied in order to maximize the storage of foodstuffs, but there are several things that make food storage not optimal. The models used in this study are models in the form of schematic models (such as flowcharts or arrow diagrams), physical models (such as miniatures), game models (such as leadership training scenes, management exercises), symbolic models (such as econometrics and computer programs) and model is a representation of an object,

object, or ideas in a simplified form of conditions or natural phenomena. The model contains information about a phenomenon that is made with the aim of studying the actual system phenomena. This food storage model plays an important role in maintaining food quality so special attention is needed in its storage because it will have a direct impact on the health of consumers who later visit the restaurant at The Kayon Resort Ubud. poisoning for visiting guests, therefore the importance of implementing a food storage model in order to maintain the quality of food ingredients

Food Storage Model based on Hazard Analysis Critical Control Point



Sumber: Interview with staff F&B product

Figure 3. Food storage model

The explanation of the model above is based on the problem that there are 7 principles in the model, including: Principle 1 namely identifying potential hazards associated with feed production at all stages, from farming, handling, processing in factories and distribution to the point where the feed product is consumed. This principle assesses the likelihood of a hazard occurring and explains why the hazard occurs. The danger in question is a hazard that can cause feed to be unfit for consumption, examples of hazards are excess content, insufficient content, contamination, expiration, and so on. Storage of foodstuffs needs to be considered because it concerns the health of the foodstuffs themselves, if they are negligent in storage, the quality of foodstuffs will deteriorate, such as foodstuffs that rot quickly and are not suitable for use.

Principle 2 namely determining the point or operational stage that can be controlled to eliminate the hazard or reduce the possibility of the hazard occurring (CCP or Critical Control Point). CCP means every stage in feed production or factory which can include the receipt of raw materials, production, harvesting, transportation, formulation, processing, storage and so on. Selecting and determining control points to anticipate food hazards itself, as it is known that control points are steps and food production to prevent, minimize or reduce potential hazards.

Principle 3 that is, establishing critical limits (CL or Critical Limits) that must be reached to ensure that the CCP is under control. Establish critical limits to ensure food safety and these criteria distinguish what is acceptable and what is unacceptable in foodstuffs.

Principle 4 namely establishing a monitoring system from the CCP by means of testing and observation. Monitoring is a very important activity in the application of Hazard Analysis Critical Control Points, the results of monitoring can warn the hotel industry about critical points in good or bad conditions.

Principle 5 namely determining corrective actions to be carried out if monitoring results indicate that certain CCPs are out of control. Correction or improvement must be done immediately if there is an error in the storage of food ingredients, Hazard Analysis Critical Control Point focuses on preventing the occurrence of food damage.

Principle 6 namely establishing verification procedures that include additional testing and adjustment procedures that certify that the HACCP system is operating effectively. Verification is carried out when the implementation of the Hazard Analysis Critical Control Point system has been running well and to continuously maintain the quality of food ingredients.

Principle 7 is to develop documentation of all procedures and proper records for these principles and their application, this documentation to ensure that the system remains sustainable in the long term. Documenting all procedures, re-cording and recording so that everything runs smoothly, documents and records also explain the stages of all the Hazard Analysis Critical Control Point processes themselves, if problems arise, they can be resolved by monitoring and not causing continuous damage to storage food material. For Food And Beverage Product Department. (Gehring & Kirkpatrick, 2020)

Conclusion

Based on the results of the research and discussion conducted by the author, the following conclusions can be drawn: The implementation of HACCP at The Kayon Resort Ubud in the Food And Beverage Product Department, food storage is very important to note so that there is no damage to the quality of the food itself, so special methods are needed for storing foodstuffs, such as applying the FIFO system to maintain the quality of foodstuffs. Attention to food ingredients such as meat, poultry, seafood and so on so that the quality is maintained and the same goes for fruits and vegetables where storage should not be the same or storage must be different Pay attention to the temperature in storage which affects the quality of food, danger zone always a warning so that the quality of food ingredients is maintained, awareness is needed for kitchen staff to pay attention to small things about food storage. The application of the food storage model needs to be considered because the hotel industry is one of the largest contributors of waste in Bali, therefore it is important to find a way out so that the volume of waste such as the manufacture of this eco-enzyme liquid, will get a lot of benefits for the hotel.

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Reference

- Ahyar, H. dkk. (2020). *Buku Metode Penelitian Kualitatif & Kuantitatif*. Yogyakarta: CV. Pustaka Ilmu. (Issue March).
- Basuki, K. (2019). Penyimpanan Bahan Makanan. ISSN 2502-3632 (Online) ISSN 2356-0304 (Paper) *Jurnal Online Internasional & Nasional Vol. 7 No.1, Januari – Juni 2019 Universitas 17 Agustus 1945 Jakarta*, 53(9), 1689–1699. www.journal.uta45jakarta.ac.id
- Effendi, R., Salsabila, H., & Malik, A. (2018). Pemahaman Tentang Lingkungan Berkelanjutan. *Modul*, 18(2), 75. <https://doi.org/10.14710/mdl.18.2.2018.75-82>
- Gehring, K. B., & Kirkpatrick, R. (2020). Hazard Analysis and Critical Control Points (HACCP). *Food Engineering Series*, 191–204. https://doi.org/10.1007/978-3-030-42660-6_8
- Gultom, J. Y., Ariani, N. M., & Sri Aryanti, N. N. (2019). Pengaruh Penyimpanan Bahan Makanan Terhadap Kualitas Bahan Makanan Di Kitchen Hotel The Patra Resort And Villas Bali. *Jurnal Kepariwisata Dan Hospitalitas; Vol 3 No 1 (2019): VOL 3 NO 1 2019*, 3(1), 158–176.
- Makanan, L. P., Masyarakat, D. G., Manusia, E., Masyarakat, G., Manusia, F. E., & Universitas, P. A. (2011). *Metodologi penelitian* (Issue September).
- Nasional-BSN, B. S. (1998). *Sistem analisa bahaya dan pengendalian titik kritis (HACCP) serta pedoman penerapannya*.
- Prasetyanto, H. (2018). Analisis Penerapan Hazard Analysis Critical Control Point (Haccp) Pada Pengolahan Makanan Di Mainkitchen Hyatt Regency Yogyakarta. *Wahana Informasi Pariwisata : MEDIA WISATA*, 16(2). <https://doi.org/10.31227/osf.io/hnbma>
- Septiani, U., Najmi, N., & Oktavia, R. (2021). Eco Enzyme: Pengolahan Sampah Rumah Tangga Menjadi Produk Serbaguna di Yayasan Khazanah Kebajikan. *Prosiding Seminar Nasional Pengabdian Masyarakat LPPM UMJ*, 1(1).
- Sugiyono, D. (2013). *Metode Penelitian Kuantitatif, Kualitatif, dan Tindakan*.