



Tropical Kitchen Construction: Assessing The Prospects and Challenges

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ABSTRACT

Tropical kitchen is a culinary space that draws inspiration from tropical regions, incorporating flavors, ingredients, and design elements associated with tropical climates. The study assessed tropical kitchen construction: assessing the prospects and challenges. Constructing kitchens in tropical regions requires specific considerations due to the unique climatic challenges posed by high temperatures and humidity. The selection of appropriate building materials is a fundamental aspect of tropical kitchen construction. Locally sourced, weather-resistant materials such as hardwoods, bamboo, and treated tropical hardwoods are recommended for their ability to withstand the adverse effects of high humidity and heat. Revealed in this study one significant challenge faced by tropical kitchens is the high humidity prevalent in tropical regions. The moisture in the air can lead to issues such as mold growth, wood rot, and damage to appliances. On this basis the study concluded that while opportunities for sustainable practices and cultural integration exist, the complexities of high humidity, extreme weather events, and diverse cultural preferences demand innovative solutions. Integrating eco-friendly materials, resilient design, and community engagement emerges as essential for creating kitchens that are not only structurally sound but also culturally sensitive. One of the recommendations made was that architect should ensure that they prioritize climate-responsive design elements such as natural ventilation, shading, and insulation to mitigate the impact of high temperatures and humidity on kitchen structures.

Keywords:

Tropical Kitchen Construction, Prospects and Challenges

Introduction

The construction of kitchens in tropical is welcome development. Among others it facilitates natural ventilation and cooling. It is actually sad to say that construction of kitchens in tropical regions represents a unique set of challenges and opportunities due to the distinct climatic, environmental, and cultural factors that characterize these areas. As global attention increasingly focuses on sustainable development and resilient infrastructure, understanding the prospects and challenges

associated with tropical kitchen construction becomes paramount.

Tropical regions, characterized by high temperatures, humidity, and diverse ecosystems, present a dynamic setting for construction projects. Kitchens, being integral to daily life and societal well-being, demand thoughtful planning and execution. The prospects associated with tropical kitchen construction include harnessing renewable energy sources, incorporating locally sourced materials, and integrating designs that facilitate natural ventilation and cooling. These strategies not only contribute to environmental

sustainability but also align with the socio-cultural fabric of tropical communities (Oti & Emeti 2015).

However, the challenges in tropical kitchen construction are equally pronounced. High humidity levels can lead to accelerated deterioration of materials and the growth of mold, impacting both structural integrity and hygiene. Extreme weather events, such as tropical storms and hurricanes, pose threats to the resilience of kitchen infrastructure. Additionally, cultural diversity in tropical regions necessitates a nuanced understanding of local preferences and cooking practices, requiring careful consideration in the design and layout of kitchens.

Addressing these prospects and challenges requires a multidisciplinary approach that draws on expertise in architecture, engineering, environmental science, and cultural anthropology. Sustainable construction practices, such as the use of eco-friendly building materials and energy-efficient technologies, can enhance the resilience of tropical kitchens. Moreover, community engagement and collaboration with local stakeholders are crucial for ensuring that constructed kitchens are culturally sensitive and aligned with the needs of the population (UN-Habitat, 2015).

Concept of Tropical Kitchen

A "tropical kitchen" typically refers to a culinary space that draws inspiration from tropical regions, incorporating flavors, ingredients, and design elements associated with tropical climates. This style of kitchen design and cuisine often reflects the vibrant and diverse cultures found in tropical areas around the world. In terms of design, a tropical kitchen typically features bright and bold colors reminiscent of tropical landscapes, such as turquoise blues, lush greens, and sunny yellows.

Natural elements like bamboo, rattan, and teak may be used in furniture or decor, creating

A warm and inviting atmosphere. Open and airy layouts with large windows or doors can further enhance the tropical feel by bringing in natural light and allowing a seamless connection between the kitchen and outdoor spaces. When it comes to the culinary aspect, a tropical kitchen emphasizes the use of exotic fruits, spices, and fresh ingredients commonly found in tropical regions. Ingredients like coconut, pineapple, mango, papaya, and various tropical herbs play a prominent role in creating dishes that are both flavorful and refreshing. Seafood also tends to be a significant component, reflecting the abundance of coastal resources in tropical areas.

Accessories and decor items are essential in achieving the tropical kitchen look. Tropical-themed prints, such as palm leaves or floral patterns, can be featured on curtains, upholstery, or even wall art. Decorative elements like seashells, tropical fruits, and woven baskets may be strategically placed to enhance the overall theme. These accessories contribute to a cohesive and immersive tropical experience within the kitchen space. In terms of cooking techniques, grilling and tropical-inspired marinades are often utilized to enhance the natural flavors of the ingredients. Additionally, tropical kitchens might incorporate traditional cooking methods from specific regions, such as the use of banana leaves for wrapping and steaming. tropical kitchen is usually laid-back and casual, reflecting the easygoing lifestyle associated with tropical destinations. It's a space that encourages relaxation and socializing, making it ideal for entertaining friends and family. Whether it's a beachside retreat or an urban dwelling, a tropical kitchen brings a touch of paradise into the home, creating a unique and enjoyable culinary experience.



Fig.1: A picture of a tropical kitchen



Fig.2: A picture of a tropical kitchen

Components of Tropical Kitchen Building Material

Houzz (2017) listed the following as components of a tropical kitchen:

- Pitched ceiling



Fig.3: A picture of a Pitched ceiling

- Wood



Fig.4: A picture of woods

- Paneled cabinetry



Fig.5: A picture of a Paneled cabinetry

- Louvered windows



Fig.6: A picture of Louvered windows

- Wicker and rattan



Fig.7: A picture of Wicker and rattan

- Tropical furniture and fittings



Fig.8: A picture of tropical furniture and fittings

- Countertops



Fig.9: A picture of Countertops

- Deck tiles and planks.



Fig.10: A picture of Deck tiles and planks

- Kitchen cabinetry.



Fig.11: A picture of Kitchen cabinetry

- Roofing and gutters.



Fig.12: A picture of Roofing and gutters

According to Bora VertriebsGmbH (2023) when planning a kitchen with a sloped ceiling, functionality is obviously just as important as a nice, tidy appearance. You need enough room for manoeuvre and somewhere to put your cooking utensils and store your groceries. Another important aspect in kitchen planning is ergonomics. Depending on how tall you are and how low the sloped ceilings are, you need effective, tailored solutions so that you don't hit your head or get back pain from cooking. From an aesthetic point of view, sloped ceilings can create a sense of cosiness, but at the same time they can make the room feel tight. Wood is qualities probably make it the most outstanding material for construction. As a renewable building resource, wood is environmentally friendly and consumes the least amount of energy during manufacture. Although new materials have emerged over time, wood still remains one of those most used today (Lantic 2023).

According to Cliqstudios (2023) raised panel cabinets create a warm elegant look to any kitchen, old or new. Whether complementing the architecture in an older home or creating a traditional feel in a newer kitchen, this style can do both. A door panel with edges routed to float in the frame define a raised-panel design. The varied depth enhances the lines of the cabinetry with light and shadow. In cliqstudios signature line cabinets with a stained wood finish, appearance of the wood grain varies from flat or stepped to curved surfaces for a subtle, rich

effect. Each door panel becomes in effect a display piece

According to Widelind windows and Doors (2023) Louvre windows boast a rich and extensive history, tracing all the way back to the Middle Ages. Initially designed as lanterns, they were made of wood and placed in roof openings of large kitchens to improve ventilation crucial to combat the overwhelming smoke produced by wood-fired stoves. The design was fairly straightforward, providing a simple yet effective way to improve airflow. As time progressed, the design of the lantern was incorporated into window openings, and thus Louvre windows were born. Pottery became the material of choice, and the louvres took on more artistic forms, resembling faces through which smoke and steam escaped via the eyes and mouth.

According to Patio Production (2023) rattan is a type of material that is used in wicker weaves. Rattan is a naturally growing vine like species that is native to tropical regions of Australia, Asia, and Africa. For production use, the skin is peeled away and utilized for weaving purposes. Often times, the core is not wasted and finds use for different types of furniture.

Rms Media Group (2023) if the kitchen is an open plan, the rest of the furniture should reflect the tropical style. Here the sofa is made from bamboo poles, and the lights over the kitchen island are inspired by Indonesian fishing traps.

According to UTC (2023) the common fitted Western-style kitchen developed in the early

fifth century, is typically an arrangement of assembled unit cabinetry covered with a more or less continuous countertop work surface. The "unfitted" kitchen design style exemplified by Johnny Grey may also include detached and or varied countertop surfaces mounted on discrete base support structures. Primary considerations of material choice and conformation are durability, functionality, hygienics, appearance, and cost.

According to Warner Bros (2023) deck tiles are varieties of wood, which can be placed over any flat surface and have natural defenses against elements and pests keeping them looking spritely for many seasons. Deck tiles has a natural ability to defend against pest and natural elements which are prominent in the tropical regions, this makes deck tiles a valuable material in building tropical kitchen:

According to Garlock French Roofing (2023) gutters are responsible for water management. During a storm, they effectively channel water flow from your roof, through the downspouts, and direct it to appropriate areas outside the home. Without a gutter system, your roof can pick up a bunch of leaves and other debris, causing water to stagnate and overflow. This can make your home vulnerable to rotting, rusting, and other damage.

Tropical Kitchen Construction Technique

Constructing kitchens in tropical regions requires specific considerations due to the unique climatic challenges posed by high temperatures and humidity. The selection of appropriate building materials is a fundamental aspect of tropical kitchen construction. Locally sourced, weather-resistant materials such as hardwoods, bamboo, and treated tropical hardwoods are recommended for their ability to withstand the adverse effects of high humidity and heat (Lopez et al., 2018). These materials not only contribute to the longevity of the kitchen but also align with sustainable building practices. Given the intensity of tropical sunlight, roofing materials and design are critical factors in maintaining a comfortable kitchen environment. Light-colored, reflective roofing materials help to reduce heat absorption, minimizing the transfer of heat into

the kitchen space. Additionally, well-ventilated roofing designs, such as gable or hip roofs, facilitate natural airflow, aiding in the dissipation of heat (Tan & Wong, 2020). Proper ventilation is paramount in tropical kitchen construction to prevent the buildup of heat and moisture. Incorporating large windows, louvers, and adjustable vents promotes cross-ventilation, allowing hot air to escape and cool air to enter. The strategic placement of these openings, taking into account prevailing wind directions, enhances the effectiveness of natural ventilation systems (Santamouris et al., 2019).

Elevated flooring is a traditional technique in tropical architecture that helps address issues related to flooding and moisture. Constructing kitchens with raised floors facilitates air circulation, reducing the risk of water damage and promoting a cooler environment. Furthermore, elevated floors provide a buffer against rising humidity levels, safeguarding the structural integrity of the kitchen over time (Gomez & Hernandez, 2021). In line with global efforts towards sustainable construction, tropical kitchen construction should prioritize eco-friendly practices. This includes the use of recycled or locally sourced materials, rainwater harvesting systems, and energy-efficient appliances. Integrating green building principles not only contributes to environmental conservation but also enhances the overall resilience and longevity of the kitchen (Kumar & Manohar, 2022).

Constructing kitchens in tropical regions requires a thoughtful combination of traditional wisdom and contemporary practices. By selecting suitable building materials, implementing effective roofing and ventilation strategies, incorporating elevated flooring, and embracing sustainability, tropical kitchen construction can withstand the challenges posed by the tropical climate, ensuring durable, functional, and comfortable culinary spaces.

Heat Resilience Of Tropical Kitchens

According to Houzz (2017) tropical kitchens are bright, breezy, and balmy relaxed spaces to **be** in and are characterized by warm, natural, organic materials such as wood and rattan. The tropical look encompasses both down-to-earth Balinese and classic Caribbean

styles. The architecture of the house has much to do with your kitchen. For a tropical feel, think lots of air and light, and natural materials that bring the outside in. Wood is prevalent in tropical kitchens. The wood cabinetry in this kitchen in Hawaii is warm and inviting.

Tropical regions are characterized by high temperatures and humidity, posing unique challenges to various aspects of daily life, including kitchen environments. Kitchens, being essential spaces for food preparation, require careful consideration to ensure they remain functional and comfortable in the face of tropical heat. Effective kitchen design plays a crucial role in mitigating the impact of tropical heat. Adequate ventilation is essential to dissipate heat and moisture, preventing the buildup of uncomfortably high temperatures. Incorporating large windows, skylights, and strategically placed exhaust systems can enhance airflow and promote natural cooling. Additionally, positioning the kitchen in a way that minimizes exposure to direct sunlight during peak hours can significantly contribute to a more comfortable cooking environment (Smith et al., 2019).

The choice of materials in tropical kitchen construction is pivotal in ensuring heat resilience. Opting for heat-resistant and reflective materials for countertops, flooring, and walls can help reduce the absorption of heat. Traditional materials such as ceramic tiles and natural stones possess properties that make them suitable for tropical climates, as they tend to stay cooler and are easy to clean (Brown & Jones, 2020). Moreover, using light-colored finishes can reflect sunlight and contribute to a cooler atmosphere within the kitchen space. Modern kitchen appliances and technologies also play a role in enhancing heat resilience. Energy-efficient and well-ventilated cooking appliances help in minimizing the heat generated during cooking processes. Additionally, the integration of smart technologies, such as sensors and automated ventilation systems, can optimize energy usage and maintain a comfortable temperature within the kitchen (Gupta & Sharma, 2021).

Ensuring the heat resilience of tropical kitchens requires a comprehensive approach

that considers both traditional wisdom and modern innovations. By incorporating effective design strategies, selecting appropriate materials, and leveraging advanced technologies, tropical kitchens can be transformed into resilient spaces that provide a comfortable and functional environment for culinary activities.

Challenges Of Constructing Tropical Kitchen

Constructing a tropical kitchen poses some challenges that require careful consideration to ensure both functionality and aesthetic appeal. One significant challenge is the high humidity prevalent in tropical regions. The moisture in the air can lead to issues such as mold growth, wood rot, and damage to appliances. It is crucial to select materials that are resistant to moisture. For instance, using moisture-resistant paint, treated wood, and stainless steel appliances can help mitigate the impact of humidity (Smith, 2018). Another challenge is the intense heat experienced in tropical climates. Traditional kitchen appliances may struggle to function efficiently under such conditions, leading to increased energy consumption and potential breakdowns. Investing in energy-efficient appliances designed for tropical climates can help alleviate this issue (Jones et al., 2019). Furthermore, tropical regions are prone to severe weather events, such as hurricanes and typhoons. Designing a kitchen with these extreme weather conditions in mind is essential for ensuring its resilience. This includes incorporating reinforced structures, impact-resistant windows, and secure storage for perishable goods (Brown & White, 2020).

Ventilation is a crucial aspect of tropical kitchen design. The combination of high temperatures and humidity can create an uncomfortable cooking environment if proper ventilation is not in place. Installing exhaust fans, large windows, and ventilation hoods can aid in maintaining a comfortable and well-ventilated kitchen space (Johnson, 2017). In addition to environmental challenges, cultural considerations must also be taken into account when constructing a tropical kitchen. Local preferences in cooking styles, social dynamics, and traditional culinary practices should

influence the kitchen's layout and design to ensure it meets the needs of the community (Lee, 2021). Constructing a kitchen in a tropical climate involves addressing a range of challenges related to humidity, heat, extreme weather, ventilation, and cultural preferences. By carefully selecting materials, incorporating suitable appliances, designing for resilience, and considering local customs, it is possible to create a functional and comfortable tropical kitchen.

Prospects Of Tropical Kitchen Construction

Oladunni, Oladipo and Kunle (2014) posits that kitchens are acclaimed successful when they fulfill both functional and aesthetic requirements. Safety, ease-of-use, good work flow and maintainability are essential determinants of a good kitchen. The construction of kitchens in tropical regions presents a distinctive set of challenges and opportunities, requiring a comprehensive approach that considers climate conditions, cultural preferences, and innovative design solutions.

Tropical climates are characterized by high temperatures, humidity, and heavy rainfall, necessitating climate-responsive designs for kitchens. Utilizing reflective roofing materials, proper insulation, and efficient ventilation systems can help mitigate heat and create a comfortable workspace (Smith, 2019). Such adaptations ensure that kitchens remain functional in extreme weather conditions, contributing to the sustainability and longevity of the infrastructure. Understanding and incorporating local traditions into kitchen design is essential for successful construction in tropical regions. In many tropical areas, traditional cooking methods involve open flames and specific spatial arrangements. Integrating these practices into modern designs not only enhances usability but also fosters cultural acceptance and preservation (Brown et al., 2020). Collaboration with local communities ensures that kitchens become a seamless part of their daily lives.

The prospects of tropical kitchen construction are bolstered by the use of innovative materials and technologies. Sustainable building materials such as bamboo,

which is abundant in many tropical regions, offer an eco-friendly alternative (Green Building Council, 2021). Additionally, incorporating modular designs and prefabricated structures allows for efficient and cost-effective construction, particularly important in areas prone to extreme weather events. The prospects of tropical kitchen construction are promising when approached with a holistic perspective. Climate-responsive design, cultural integration, and the incorporation of innovative materials contribute to the development of kitchens that are not only resilient but also culturally sensitive and sustainable. By combining these elements, the construction industry can play a pivotal role in creating kitchens that meet the unique challenges of tropical regions, ultimately enhancing the quality of life for the communities they serve.

Conclusion

The assessment of prospects and challenges in tropical kitchen construction underscores the need for a balanced and context-specific approach. While opportunities for sustainable practices and cultural integration exist, the complexities of high humidity, extreme weather events, and diverse cultural preferences demand innovative solutions. Integrating eco-friendly materials, resilient design, and community engagement emerges as essential for creating kitchens that are not only structurally sound but also culturally sensitive. Future endeavors should focus on interdisciplinary collaboration to address these complexities, ensuring that tropical kitchen construction aligns with global sustainability objectives and meets the evolving needs of communities in tropical regions.

Recommendation

1. Architect should ensure that they prioritize climate-responsive design elements such as natural ventilation, shading, and insulation to mitigate the impact of high temperatures and humidity on kitchen structures.
2. It is advisable to select durable and resilient building materials that can withstand tropical weather conditions, resist mold growth, and ensure the

longevity of the kitchen infrastructure. With all of these the full benefits of tropical kitchen can be achieved.

3. Explore the integration of renewable energy sources, such as solar or wind power, to enhance energy efficiency and reduce the reliance on conventional energy in tropical kitchen operations.

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