

Crime Prevention Through Environmental Design: Visitors' Perceptions of Safety at the Palippis Coastal Tourism Destination in Indonesia

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Abstract

Crime Prevention Through Environmental Design (CPTED) is an approach to problem-solving that considers the environmental conditions and opportunities for criminal activities. CPTED is expected to reduce criminal actions and the resulting sense of fear, making tourist destinations feel safer. Although empirical research on CPTED is advancing, little is known about its impact on tourist sites. The aim of this research is to determine the significant variables of CPTED that correlate with visitors' sense of safety. This is a quantitative study using a survey method located at Palippis beach as a vernacular public space.

Data were collected in field observations and structured interviews with respondents who were selected using accidental and purposive samplings, and then analyzed using SPSS v.25. The results show a correlations between visitors' sense of safety and CPTED principles. The highest Pearson correlation is with maintenance, indicating a very strong correlation, and is determined by regular checks and provide special officer. The second highest correlation is with surveillance, indicating a strong correlation, and is determined by security patrol, arrangement of vegetation, add lighting, and add closed circuit television (CCTV). The lowest correlation is with access control, also indicating a strong correlation, and is determined by accessed by one entrance and exit, guarded by security, and checks by security officer. The reserach concludes that the visitors' safety perceptions strongly correlate with CPTED principles in differing degrees, subsequently maintenance, surveillance, and access control, each with its determining indicator.

Keywords: Vernacular public space, coastal area, criminal activity, security, tourist destinations

Introduction

Criminal activities often occur at tourist destinations. As new phases of tourist destination developments increase, crime rates also often rise, which is related to destination marketing and the public perception of that destination (Matakovic, 2019). The better the

public perception of a tourist destination, the higher the number of visitors, which can attract criminals, especially when the destination lacks security measures. Criminal actions vary, including theft, kidnapping, and various other crimes. These crimes disrupt the comfort of visitors and even the residents living near the tourist destination. Locations for criminal activities at tourist destinations are diverse, ranging from cultural, coastal, natural, and other tourist attractions.

Sulawesi is particularly rich in coastal tourism, especially in West Sulawesi (Said, 2023). It is one of the regions with stunning natural beauty, especially excelled in coastal tourism, from Paku (Polewali Mandar) to Suremana (Pasangkayu). Here, it is easy to find breathtaking locations, making West Sulawesi a recommended destination for enjoying coastal tourism. Below is a table of domestic and international tourist visits.

Table 1: Coastal Tourism Visits

Source : Department of Culture and Tourism of West Sulawesi Province, 2021

NO	REGANCY	DOMESTIC	INTERNATIONAL TOURIST	TOTAL
1	MAMUJU	5.077	37	5.114
2	MAJENE	111.063	42	111.105
3	POLMAN	38.804	150	38.954
4	MAMASA	0	0	0
5	PASANGKAYU	101.616	30	101.646
6	MATENG	38.277	0	38.277

According to the Department of Culture and Tourism of West Sulawesi Province, the beautiful and frequently visited beaches include Bahari Beach, Palippis Beach, Mampie Beach, and Mirring Beach (Department of Culture and Tourism of West Sulawesi Province, 2021). These beaches are known for their white sands and various snacks available nearby, attracting many visitors, especially during family holidays. This can also attract criminals to carry out their activities.

The beauty of the beach panorama in Polewali Mandar Regency includes the Palippis Beach. The entrance to this beach is located along the Sulawesi main road, approximately 20 km from the Polewali city. The Beach offers a beautiful panorama and a view of the open sea. In addition to the beauty of the beach and the ocean views, there are other panoramas nearby, such as a bat cave situated on a hill not far from the shoreline and expanses of rocky cliffs around the bat cave.

Palippis Beach has been a site of frequent criminal activity, with recorded criminal cases occurring around the tourist spot over the years. The crimes involve incidents of mugging that took place in 2018 and 2019. These viral cases have been shared on the victims' private facebook pages. In those posts, each victim recounted the sequence of events leading to mugging, which has made the posts go viral and has also drawn public attention. Subsequent cases have occurred in 2020 and 2022, which have also gone viral on social media. These cases have involved mugging similar to those in previous years. These incidents have led tourists to think twice before spending their holidays at the Palippis Beach indicating a lack of visitor security at the tourist center of Palippis Beach in Polewali Mandar.

Prevention of such crime can be achieved in various ways, one of which is through Environmental Design (Santoso, 2018). Popularly known as Crime Prevention Through Environmental Design (CPTED) it is an environmental approach that focuses on strategies to reduce crime opportunities by manipulating the physical quality and social environment (Shariati, 2017).

CPTED approach differs from other crime prevention perspectives in two ways. First, it examines how crime can be facilitated by the environment, rather than individual tendencies. Second, it places the responsibility for crime control not only on the criminal justice system but also on planners, landscape designers, architects, and public development agencies (Rachel, 2014).

In this context, this paper examines the perception of visitor safety at Palippis Beach, how CPTED is applied in terms of access control, surveillance, and maintenance at Palippis Beach and also what is the correlation between the sense of safety and the principles of CPTED. The aim of this research is to explore the visitor's perception of safety at the Palippis Beach.

Its objectives are:

1. To identify the extent to which CPTED has been implemented in terms of access control, surveillance, and maintenance at the Palippis Beach.
2. To determine the CPTED variables significantly correlated with the safety of visitors.

The Theoretical Framework

Crime Prevention Through Environmental Design (CPTED) is a process aimed at analyzing and assessing risks of crime for the purpose of designing, managing, and using built environments in a way that reduces crime and the fear of crime while enhancing public health, sustainability, and quality of life. It involves components such as natural surveillance, natural access control, territorial reinforcement, and maintenance to prevent criminal activities and improve safety.

According to Reynald (2014), its principles involve architectural design as an approach to problem-solving, taking into account the environmental conditions and opportunities for criminal activities. The primary goal of implementing CPTED measures is to reduce and prevent criminality, thus resulting in both objective and subjective security (Meuleman, 2020). According to Thani (2016), the development components of CPTED encompass the following principles.

1. Natural surveillance, ensuring well-maintained environments to keep the surroundings safer, such as through layout and landscape design.
2. Natural accessibility surveillance, utilizing vegetative designs like fences, flower beds, plant fences, planting areas, and pedestrian pathways.
3. Territorial boundary surveillance, demarcating between public and private spaces.
4. Maintenance, sustaining conditions to deter criminal activities, such as proper lighting and security devices (CCTV), through continuous upkeep for ongoing use.

In this, improvement in security is based on indicators directly related to the physical conditions, social activities, and the design of the environment within the area. This strategy is crucially important to create neighborhoods that are safe, comfortable, and peaceful for the inhabitants. Safety is the feeling of tourists regarding the situation and security conditions while traveling, as a manifestation of the level of security services provided to tourists by the operators during their recreation at a destination (Huda, 2018).

Security and comfort represent an expected state that is stable, inducing a calm feeling without any worries while traveling to a destination. As Amilia (2020) point out, security and comfort are measured by the following indicators.

1. Feeling safe which refers to feeling secure when visiting tourist attractions, both for individuals, groups.
2. Cleanliness indicates that locations of tourist attraction are always kept clean, with availability of sufficient trash bins.
3. Serenity refers to a tranquil atmosphere at tourist attractions that provides joy to every visitor.

As Thani (2016) points out, according to the CPTED theory, the principles consist of access control, territoriality, surveillance, and maintenance. However, empirically, in the case of the Palippis Beach, the territoriality principle is not used because the beach destination is an open and vernacular public tourist area without private zones. Therefore, variables from three CPTED principles: access control, surveillance, and maintenance could be used.

Efforts to prevent criminal activities through the four CPTED principles, namely natural surveillance, access control, territorial reinforcement, and maintenance, are often directed at regulating the objects within the design area, particularly in areas prone to criminal activities, thus creating a safer environment (Thani, 2016). Surveillance focuses on increasing the identification and apprehension of criminals or offenders. Providing lighting may help remove possible blind spots, and hiring supervisory personnel such as police officers or security watches. The supervisory personnel can function and help introduce some components of the surveillance (Lee *et al.*, 2020). Access Control depends on entryways, walls, bushes, and other physical components to keep undesirable people out of a specific spot on the off chance that they do not have an authentic explanation for being there. Access control procedure utilizes physical structure components as avoidance strategies. For example, these involve entryways to control the passage of outsiders or untouchables to the local territory (Zainol *et al.*, 2022).

Safety perceptions refer to an individual's emotional experience resulting from the extent to which the external environment and safety conditions meet a person's safety needs. Safety perception is also a psychological phenomenon involving subjective perceptions of objective occurrences; that is, this phenomenon reflects individuals' trust in the social environment and others' social relations within society (Zou, 2019). Safety in tourism primarily refers to tourists' personal safety and the safety of their property, including individuals' ability to become oriented in a foreign environment, understanding the local system of signs and social conventions, and the safety of shopping and consumer services (Liliana, 2020).

Indeed, safety perceptions of tourists is determined by discrepancies before and after travel, namely their safety expectations prior to travel and their experienced safety during and after a trip. Tourists' expected safety captures their anticipated destination safety before a trip, which is shaped by information acquired via various channels regarding destination safety.

Tourists may choose a destination based on a thorough evaluation of risk factors, personal desires or preferences, and the nature of tourism activities. Tourists' perceptions of destination safety can also emerge from awareness of past safety incidents, media or word-of-mouth communications, and mental processing and interpretation of available information. To many tourists, destination safety is inherently perceptual, be it expected or anticipated safety cognized before a trip or the act of reflecting on safety after a travel experience. By comparing expected and experienced safety, tourists develop a sense of safety around a given destination. For example, Liu, et al. (2016) found that tourists' perceived safety influenced their intentions to visit. Concerns around crime and safety have been clearly identified as negatively influencing tourism behaviour, destination choice, and experience-based satisfaction (Adam, 2016).

However, criminal activities are not limited to large cities but also occur in small towns (Cinoglu, 2023). Different regions experience various types of crime and levels of criminal risk. Crimes also frequently occur in urban areas with a poor social environment, which can support criminal actors (Zen, 2014). In areas where crimes occur, the cause often lies in the opportunities that offenders perceive for carrying out criminal actions. Numerous concepts can be employed through CPTED, to both understand and prevent crimes taking place.

For example, territoriality is a design concept directed at reinforcing notions of proprietary concern and a 'sense of ownership' in legitimate users of space, thereby reducing opportunities for offending by discouraging illegitimate users (Askari, 2023). Maintenance of it is a significant aspect of CPTED that allows for the continued use of areas for their intended uses. It is important to keep its security components in good working order. Equipment and materials that are used in a dwelling should be designed and selected with safety and security in mind (Saleh, 2015). CPTED design strategies involving Natural Surveillance, Access Control, and Territorial Reinforcement are considered physically secure and psychologically comfortable compared to designs without it (Lamoreaux, 2020). With the implementation of these strategies, it is expected that criminal activities and the resulting fear can be reduced, making tourist destinations feel safer and more comfortable.

Literature Review

There is an abundance of research on crime prevention through design. Among them, Lee (2016) has analyzed survey data collected from 12 neighborhoods implementing CPTED and 12 similar neighborhoods in Seoul, Korea. The study has gained insights into effective CPTED strategies for creating safe environments and promoting active lifestyles. It has investigated the impact of CPTED actions on walking frequency and residents' fear of crime. The research methodology has utilized structural equation modeling (SEM) to explore the complex relationships between latent variables (fear of crime) and observed variables (CPTED measures and walking frequency). The strengths have included using SEM to delve into the intricate relationships between fear of crime, CPTED actions, and residents' walking activities, contributing to refining CPTED approaches and fostering safer, active environments. However, limitations have included a non-random sample selection potentially distorting the findings and the study's limited generalizability due to its focus on Seoul, Korea. Indeed, it has faced challenges in extracting indicators designed to capture the perceptual, emotional, and behavioral aspects of fear of crime.

Similarly, Piroozfar (2019) has focused on the effectiveness of crime prevention measures in urban centers, specifically CCTV, signage, and lighting interventions. Despite a decrease in crime rates, the areas have still required improvements, particularly in maintenance and signage. It has highlighted the importance of community involvement in crime prevention and has suggested further research to understand the efficacy of these interventions. The strengths of the study lay in using a mixed-methods approach, gathering data from various sources, and involving local communities, police, and businesses in data collection for a more comprehensive understanding of crime prevention effectiveness. Yet, it has had limitations such as inadequate quantitative measurement of intervention effectiveness and an incomplete resolution of potential biases in data collection, particularly regarding respondents' safety perceptions.

Cinoglu (2023), has examined fear levels of crime in Elazığ, Turkey, and the influencing factors. He has used statistical methods to analyze data and test various research hypotheses related to demographic variables, previous victimization, and environmental structure. The strengths of this research include providing valuable insights into fear of crime in Elazığ, Turkey. However, there are several limitations to this study. First, it has been conducted only in the city center of Elazığ. Thus, the sample doesn't represent the entire city. Second, the research has used non-probability sampling methods, not representing the entire city of Elazığ. Third, previous scientific research on fear of crime in Turkey is still limited, impacting the broader research context. Therefore, further research could improve this by using probability sampling methods involving more areas in Elazığ and exploring more factors influencing fear of crime in Turkey. Hence, while it offers valuable contributions to understanding fear of crime in Elazığ, Turkey, its limitations need consideration when interpreting its results.

There are also studies focused on CPTED as an approach to crime reduction. For example, Tejendra (2016) has focused on exploring the history of CPTED, contemporary criminological thinking on crime and potential targets, and the perspectives of potential offenders in evaluating crime locations. He has emphasized the importance of understanding and applying CPTED theories and concepts for effective crime prevention. The methods used has involved theoretical and conceptual analysis of the CPTED approach in crime prevention. The strength of this research lies in its focus on CPTED as an innovative crime prevention method, different from traditional approaches more centered on the offenders themselves. It provides deep insights into CPTED theory, concepts, and their application in environmental design for crime prevention. However, its weaknesses include inconsistencies in applying CPTED and criticism of the methodology used in the research.

In addition to large-scale areas, research on CPTED has also been conducted in specific locations, such as the study by Paul (2015), who investigates the perceptions of safety and the quality of Crime Prevention Through Environmental Design (CPTED) at two train stations in Australia: Gosnells and Oats Street. Despite it being designed using CPTED principles, users

had felt that the Oats Street has had a higher quality of CPTED and has been evaluated slightly safer. This study has also observed land use around each station, finding that land use around Gosnells could influence personal safety perceptions and CPTED effectiveness.

Thus, it has been suggested that CPTED surveys should include measuring geographically proximate land use around the stations and that CPTED efforts might require more periodic reviews. This study raises questions about CPTED effectiveness in Gosnells and the foundational knowledge of the security experts. Overall, it is recommended that CPTED could be better applied by considering the surrounding environment and geographic placement. The strength of this research lies in the use of comprehensive quantitative and qualitative methods to gather data, including interviews with security experts, station user surveys, and audits of land use around the stations. However, it provides a deeper understanding of safety perceptions and CPTED quality at two train stations in Australia. Its weaknesses include a relatively small sample size of only 100 respondents, potentially limiting the ability to generalize the results. Moreover, the research is exploratory and doesn't provide definite conclusions. It also doesn't consider other factors influencing safety perceptions, such as individual characteristics of station users, potentially making the results less representative.

Research on CPTED has been conducted in various other settings, including a school. For example, Lamoreaux (2019) has focused on using CPTED as an alternative to enhance school security without compromising students' psychological comfort. This research has taken place in the Marana Unified School District, Marana, Arizona. It has delved into the impact of the school environment on the academic outcomes of the students, the relationship between students' safety perceptions and academic functioning, and how using CPTED could simultaneously address physical security and students' psychological comfort. However, the its shortcomings include a lack of explanation on how school design characteristics and academic achievements are interrelated. Moreover, it has not provided adequate explanations on how demographic factors influence school functioning.

Another study has focused on residential areas. Massomeh (2016) has examined the impact of CPTED on home burglaries. He has developed and validated a CPTED hierarchy model for urban environments, and has identified CPTED as a reflective constructive model at the third level, consisting of four main dimensions: surveillance, access control, territoriality, and maintenance. His findings support the theoretical findings linking higher CPTED with lower victimization rates. However, the study has had limitations in coordinating the CPTED scale in the research environment, thus requiring further investigation. It also has not considered the effectiveness of post-CPTED implementation strategies in reducing crime, indicating the need for additional research to understand design features impacting crime rates.

Similar research in Indonesia, focusing on residential homes, have been conducted by Santoso (2018). It has identified crime risks and vulnerability levels in semi-detached housing interiors, proposing solutions by applying CPTED concepts to these interiors. The aim has been to help reduce crime risks within residential areas and optimize the implementation of CPTED principles. The strength of this research lies in using a qualitative approach within a case study method, allowing for a deeper, contextual understanding of the phenomena experienced by the research subjects compared to the previous studies. Moreover, it has proposed solutions to apply CPTED concepts within the home interiors, potentially contributing to reducing crime risks in these houses. However, the limitations of this study include its narrow focus on semi-detached houses, limiting the ability to generalize research findings to specific housing types. Moreover, the study has not included statistical analysis to measure the effectiveness of applying CPTED concepts within the home interiors.

Discussion about research on CPTED in Indonesia remains limited to a few locations, such as the study conducted by Wizaka (2012) exploring the concept of CPTED and its application in environmental design to prevent crime. The research has included examples of designs considering CPTED concepts and their implementation in various countries as effective strategies to address crime issues in communities. The strength of this research is

inproviding a deeper understanding of the CPTED concept and its application in environmental design for crime prevention. It also includes design examples considering CPTED principles, demonstrating their effectiveness in addressing community crime issues. However, the its weakness lies in being overly focused on the CPTED concept and its application in environmental design without delving deeper into analyzing other factors influencing crime rates in communities, such as social, economic, and political factors. Moreover, it doesn't provide information on how the CPTED concept can be adopted and effectively applied in Indonesia, a country with unique environmental and social conditions.

Subsequent research by Wulandari (2019) has discussed public perceptions regarding surveillance, accessibility, and maintenance-supporting activities in relation to crime prevention in Kampung Kali Code. This study, more specific than previous research, has used quantitative methods to test the relationship between community perceptions of environmental design and crime prevention. The strength of this research lies in using quantitative methods allowing for testing the relationship between community perceptions of environmental design and crime prevention. Moreover, it provides a clear overview of the relationship between natural surveillance, territoriality, and maintenance-supporting activities with crime prevention. However, its weakness lies in its limited focus on a specific area, Kampung Kali Code, restricting the generalization of research findings solely to that area. Moreover, it doesn't encompass other factors that can influence crime prevention, such as social and economic factors.

Research in another specific location has been conducted by Aulia (2021) examining CPTED at the motorcycle parking facility of the Faculty of Cultural Sciences at the University of North Sumatra. This study has involved analyzing the physical condition of the parking area and developing a model for organizing parking facilities based on CPTED concepts. The strength of this research lies in the systematic, factual, and accurate implementation of qualitative descriptive research methods. Moreover, it includes an analysis of the physical condition of the parking area and the development of a model for organizing parking facilities based on the CPTED concepts.

The research also provides concrete solutions based on the analysis of the physical condition of the parking facilities. However, the weakness of this research is the lack of quantitative data supporting the analysis of the physical condition of the parking facilities. Moreover, it doesn't provide information about the validity and reliability of the data used in the research. There is also a shortfall in addressing maintenance of the parking facilities that isn't thoroughly explained.

Research on CPTED in tourist attractions remains limited. In Indonesia, researchers have not found specific CPTED studies conducted at tourist spots. There have been several previous studies abroad, such as the research by Shafirah (2016), analyzing public safety perceptions during recreational activities in specific city parks in Shah Alam, Malaysia. Moreover, an analysis has been conducted on the implementation of CPTED principles in three different city parks around Shah Alam. Findings from this analysis has revealed areas within the park design, lighting, signage, visibility, pathways, seating, parking, and park landscaping that require improvements to enhance safety perceptions and user safety. The strength of this research lies in the use of quantitative methods enabling strong and objective data analysis. Moreover, the study has used the Analytic Hierarchy Model (AHP) to identify the best locations for implementing the CPTED principles. However, the limitations of this research are its focus solely on one specific geographic location, the city parks in Shah Alam, Malaysia, potentially limiting the generalization of findings to that context. Moreover, this research has not included qualitative aspects in evaluating public safety perceptions, which could provide deeper insights into factors influencing safety perceptions. The conclusion drawn from this research is that the application of CPTED principles in city parks in Shah Alam, Malaysia, needs improvement. This study identifies areas in park design, lighting, signage, visibility, pathways, seating, parking, and park landscaping that require enhancement to improve safety perceptions and user safety.

Another study, conducted by Liliana (2020) has examined the perceptions and attitudes of managers and employees in the hospitality sector regarding the influence of security and safety aspects on their activities. The study has also involved an analysis of the Travel and Tourism Competitiveness Index of Romania, specifically focusing on the third pillar, Security and Safety. The strength of this research lies in using a questionnaire method involving 200 respondents working in the Romanian hospitality sector and experts in the tourism field, providing a comprehensive overview of perceptions and attitudes related to security and safety in the tourism sector. Moreover, the research analyzed Romania's Travel and Tourism Competitiveness Index, offering in-depth insights into security and safety aspects in the tourism context. However, the limitations of this research include the lack of clear mention of the results of the analysis of the questionnaires, resulting in a less comprehensive description of the research findings. Moreover, the study has not extensively detailed the methodology used in data analysis, thus providing less comprehensive information about the data analysis process conducted.

The issues and solutions to address frequent criminal activities often involve the implementation of CPTED, which is considered physically secure and psychologically comfortable compared to designs without CPTED strategies. This aligns with previous research. However, studies on the implementation of CPTED and its relationship with criminal actions in Indonesia are still very limited and have not been conducted at maritime tourist destinations as vernacular public spaces. Hence, this research will delve deeply into exploring this topic.

Research Methodology

The Location and Time of the Research

Pantai Palippis, situated on the main road of West Sulawesi Province, precisely in Bala Village, Balanipa District, is the location of the research, which is close to the researcher's home, only 3 kilometers away. The scope of the area in this study is within a 1-kilometer radius from the research center, encompassing the entrance gates 1 and 2 when entering the tourist center. Within this radius, it will also display the conditions of the upper and lower paths when visiting Pantai Palippis. The research was conducted over two months, from August to September 2023, on Saturdays and Sundays, from 07:00 to 09:00 and from 17:00 to 18:00.

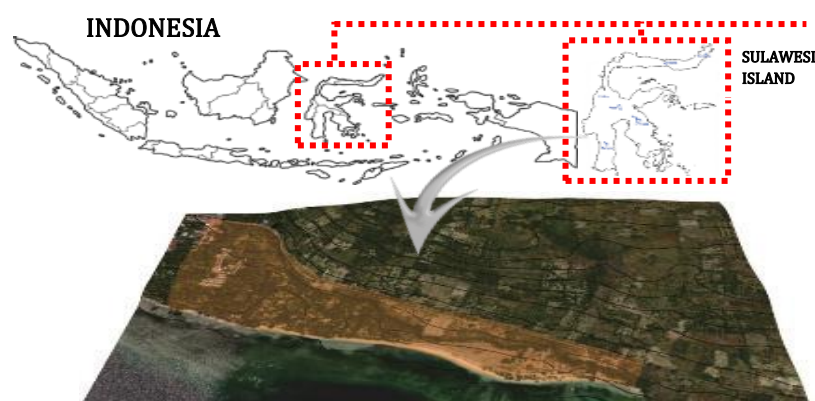


Fig. 1: Location of Palippis Beach
Source : Author's Illustration

Source and Types of Data

The subjects in this research are the visitors of Pantai Palippis, who serve as respondents—individuals responding to or answering the researcher's questions, both written and oral (Arikunto Suharsimi, 2013). There are two types of data used: primary data and secondary data. Primary data sources are obtained directly by the researcher through direct observation at the research site. Secondary data is acquired from a review of literature, including books and research journals related to the conducted research.

Research Instruments

1. The tools utilized in this study include writing tools for the questionnaire, a mobile phone for audio and visual recording, and a computer for processing the collected research data.
2. The materials prepared consist of the questionnaire.

Population, Sample, and Sampling Technique

The research involves personal opinions based on what is seen, and the visitors' opinions based on their experiences while visiting Pantai Palippis. Determining the number of respondents is done by inputting the population number into the Slovin's formula, obtaining the required value. The number obtained from the Slovin's formula is 101, consisting of visitors at Pantai Palippis. After gathering questionnaire responses, the visitors' expectation levels for each variable was determined. This process involves using a scoring method, where 5 points are given for strongly agree answers and 1 point for disagree answers.

1. Sampling technique refers to the method used to select samples for research. In this study, two sampling techniques are employed: Accidental sampling involves selecting respondents as samples based on chance encounters, meaning anyone who coincidentally meets the researcher at Pantai Palippis.
2. Purposive Sampling entails selecting samples based on specific considerations according to desired criteria to determine the number of samples to be studied (Sugiyono, 2018). Considerations in determining respondent criteria involve adult visitors aged between 18-35 or older.

Data Collection Techniques

The methods of data collection in this research are as follows:

1. Literature Survey
This technique gathers theoretical literature relevant to the research topic by exploring libraries containing scientific works, whether published or in the form of soft copies (E-Books).
2. Observation and Documentation
The observation technique involves the researcher visiting Pantai Palippis to systematically observe, record, and document using a mobile phone camera to take pictures.
3. Structured Interviews
The structured interview technique involves direct communication between the researcher and respondents. Apart from conducting direct interviews, the questionnaire was administered to the respondents. Once they're completed, the questionnaire responses were collected for data analysis.

The Case Study

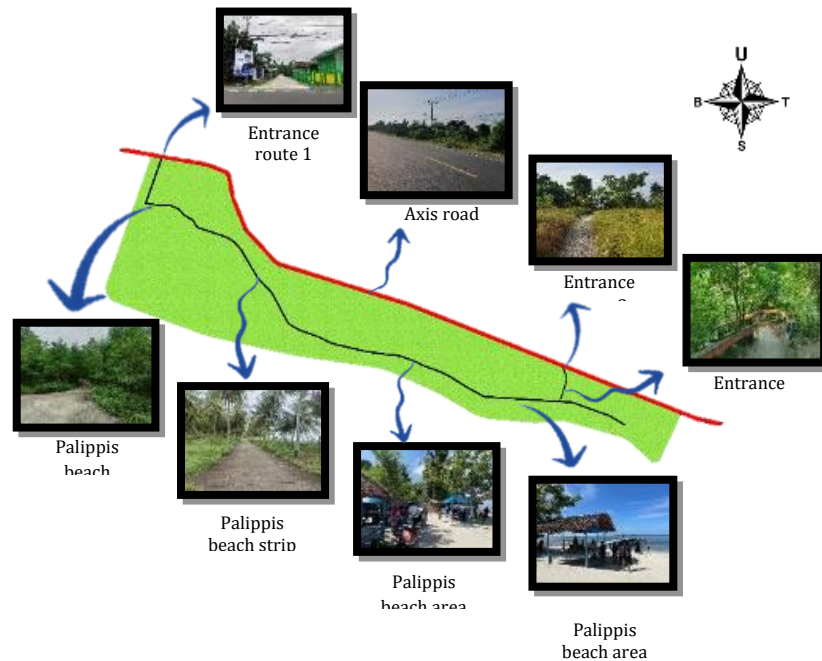


Fig. 2: Location of Palippis Beach
Source : Author's Illustration

Fig. 2 shows the route map to Palippis Beach. As seen in the image, there are two entrances to access Palippis Beach: one through the Polewali main road (red line) and the other via the intersection road from the main road (black line). Both routes can be accessed by four-wheeled vehicles. However, there are differences between them. The first route, through the intersection road (black line), has a secluded path to the beach surrounded by trees that sometimes obstruct the view while driving. Additionally, this route is dimly lit at night due to the lack of lighting. On the other hand, the second route through the Polewali main road (red line) provides quicker access to the beach by heading south towards the descending stairs. Nonetheless, this route also lacks lighting and security as there are no guards stationed at the beach entrance, following the removal of the security police post.

Findings and Discussion

Visitor's Perception of Safety

The number of respondents in this study was 101 people. Here is a table depicting the visitors' perception of safety:

Table 2 Safety Perception Variable

Source: Analysis, 2023

VARIABLE	INDICATOR	VERY SAFE	SAFE	LESS SAFE	NOT SAFE
Safety Perception	Criminal Case	10 9,90%	30 29,70%	43 42,57%	18 17,82%
	Location of Settlement	5 4,95%	14 13,86%	65 64,36%	17 16,83%
	Portal Door	12 11,88%	12 11,88%	44 43,56%	33 32,67%
	Vegetation	6 5,94%	20 19,80%	48 47,52%	27 26,73%

The safety perception variable shows a variety of responses from the respondents. The statements in the questionnaire provide an accurate picture of the actual conditions at Palippis Beach, starting from questions about criminal cases, residential locations, entrance portals, and vegetation. Respondents expressed a "less safe" feeling about each question. The obtained results indicate percentages as follows: criminal cases 42.57%, residential locations 64.36%, entrance portals 43.56%, and vegetation 47.52%. The percentage results from the questionnaire show that visitors' perceptions of safety at Palippis Beach are "less safe," with indicators including 3-4 criminal cases occurring every 3 years, the residential location being less safe due to the sparsity of settlements, entrance portals being less safe because there are no guards at the upper entrance, and vegetation being less safe due to trees obstructing the view.

Additionally, interview results with vendors and guards revealed that their concerns aligned with what visitors experienced. They believed that the perpetrators of extortion in the vicinity of Palippis Beach came from the surrounding community. This occurred due to a lack of supervision from authorities and the absence of adequate lighting during the night, making it easier for crimes to occur

The results of this research align with previous studies stating that environmental design variables that influence crime prevention include accessibility and supporting activity maintenance. Indicators of this include well-maintained lighting and the availability of patrol posts to safeguard the area (Desias and Dewi, 2019). Furthermore, other research also indicates that lighting is crucial for people's perception of safety (Piroozfar *et al.*, 2019). The percentage results regarding safety perception in this study emphasize that Palippis Beach requires greater attention from both the local government and the residents living in the vicinity.

Application of CPTED: Access Control, Surveillance, and Maintenance

Several applications of Crime Prevention Through Environmental Design (CPTED) at Palippis Beach as a vernacular public space can be assessed based on access control, surveillance, and maintenance, as seen in the availability of supporting facilities, security facilities, and other amenities at the Palippis Beach tourist location. Supporting facilities include gazebos for visitors to relax, restrooms for sanitary purposes or changing clothes, and paid facilities like food vendors as a complement to visitors' needs. These facilities aim to provide comfort for visitors to enjoy their leisure time with their families. Security facilities include beach guards, security personnel, and surveillance cameras (CCTV) as additional security measures.

Palippis Beach embodies several CPTED principles, and in terms of security, these must always be considered, given that the beach is known to be vulnerable to crimes such as mugging, theft, extortion, and more. This discussion focuses on respondents' feedback regarding the implementation issues of Crime Prevention Through Environmental Design principles correlated with visitors' safety perceptions at Palippis Beach as a vernacular public space.

Access Control

This concept aims to reduce the likelihood of crime by obstructing access to the target of the crime and creating the perception in potential offenders/criminals of the risks they would face if they commit the crime. This concept can be achieved through road design, pedestrian pathways, main entrances, and side entrances of buildings that clearly indicate the distinction between public and private areas and the pathways that can be used by the public. It can also reduce the sense of freedom for users when entering private areas (Thani, 2016). Access control relies on doors, gates, barriers, and other physical elements to prevent unauthorized individuals from entering specific areas unless they have a valid reason to be there. In its simplest form, access control can be achieved in individual residences or commercial buildings using keys, doors, and adequate window barriers. However, as one transitions from private ownership to vernacular public or semi-public spaces, the

implementation of access control requires more maintenance (National Crime Prevention Council, 2003).

Based on the percentage results obtained regarding visitors' safety perceptions of Palippis Beach, it is evident that Palippis Beach is less safe in terms of access control principles. Some indicators include visitors' complaints about the two entrance pathways to the beach, with the focus on only one of the pathways. There is insufficient control at the beach entrance, allowing visitors to freely access the beach area, and a lack of inspections, resulting in inadequate beach security.

Regarding the issues of visitors' safety perceptions, which are later correlated with access control principles, the researcher also conducted a questionnaire about expectations for the implementation of crime prevention through environmental design principles at Palippis Beach. Below is a table showing the questionnaire results conducted by the researcher with 101 respondents.

Table 3: Access Control Variable
Source: Analysis, 2023

VARIABLE	INDICATOR	STRONGLY AGREE	AGREE	SLIGHTLY DISAGREE	MODERATELY DISAGREE
Access Control	Palippis beach can only accessed by one entrance and exit	33 32,67%	36 35,64%	23 22,77%	9 8,91%
	Guarded by security officers at the entrance to Palippis beach	26 25,74%	39 38,61%	28 27,72%	8 7,92%
	Checks are carried out by security officers at the entrance to Palippis beach	29 28,71%	30 29,70%	25 24,75%	17 16,83%

Surveillance

Surveillance is about how design can enhance visibility, as most offenders do not want to be observed. This can be promoted or hindered by environmental design and can affect both crime and the safety perception of those using the space (Cozens, 2015). Surveillance can be achieved through a variety of techniques. Activity flows can be channeled to place more people (observers) near potential crime areas. Windows, lighting, and the removal of obstacles can be positioned to improve lines of (National Crime Prevention Council, 2003).

Based on the percentage results regarding visitors' safety perceptions of Palippis Beach, it is evident that Palippis Beach is less safe in terms of surveillance principles. Some indicators include visitors' complaints about the absence of security patrols in quiet areas, areas with obstructed views along the beach access road due to vegetation, the lack of nighttime lighting, resulting in complete darkness on the beach area, and the absence of surveillance cameras that continuously record visitor activities.

Regarding the issues of visitors' safety perceptions, which will be correlated with surveillance principles, the researcher also conducted a questionnaire about expectations for the implementation of crime prevention through environmental design principles at Palippis Beach. Below is a table showing the questionnaire results conducted by the researcher with 101 respondents.

Table 4: Surveillance Variable
Source: Analysis, 2023

VARIABLE	INDICATOR	STRONGLY AGREE	AGREE	SLIGHTLY DISAGREE	MODERATELY DISAGREE
Surveillance	Security patrol by officers	26 25,74%	48 47,52%	15 14,85%	12 11,88%
	Arrangement of vegetation that obstructs views	21 20,79%	52 51,49%	19 18,81%	9 8,91%
	Add lighting for	20	50	26	5

December, 2023

night conditions	19,80%	49,50%	25,74%	4,95%
Provide additional surveillance facilities (CCTV)	32	41	17	11
	31,68%	40,59%	16,83%	10,89%

Maintenance

Maintenance focuses on preserving the pleasant image of an area to protect property and improve the quality of life. An attractive image of a well-maintained area enables its residents to develop an attachment to their environment and strive to maintain its safety (Johnson, 2014). On the other hand, poor protection and maintenance (e.g., graffiti, litter, and damaged equipment) can attract potential wrongdoers to the area and alienate responsible citizens. Maintenance keeps conditions in check to prevent crime, such as maintaining lighting and security devices (CCTV) with continuous care (Thani, 2016).

Based on the percentage results of visitors' safety perceptions of Palippis Beach, it is evident that Palippis Beach is less safe in terms of maintenance principles. Some indicators include visitors' complaints about the lack of periodic checks on every facility at the beach, resulting in damaged facilities left unrepaired, and the absence of dedicated staff to address these facility issues.

Regarding the issues of visitors' safety perceptions, which will be correlated with maintenance principles, the researcher also conducted a questionnaire about expectations for the implementation of crime prevention through environmental design principles at Palippis Beach as a vernacular public space. Below is a table showing the questionnaire results conducted by the researcher with 101 respondents.

Table 5: Maintenance Variable

Source: Analysis, 2023

VARIABLE	INDICATOR	STRONGLY AGREE	AGREE	SLIGHTLY DISAGREE	MODERATELY DISAGREE
Maintenance	Regular checks on every security facility on Palippis beach	21 20,79%	65 64,36%	7 6,93%	8 7,92%
	Provide special officers to handle damage to security facilities	17 16,83%	65 64,36%	11 10,89%	8 7,92%

Correlation of Safety and Access Control

Table 6: Correlation of Safety and Access Control

Source: Analysis, 2023

		Safety Perception	Access Control
Safety Perception	Pearson Correlation	1	.537**
	Sig. (2-tailed)		.000
	N	101	101
Access Control	Pearson Correlation	.537**	1
	Sig. (2-tailed)	.000	
	N	101	101

The table above shows the correlation between safety and access control. The result obtained is a sig. (2-tailed) of 0.000, which means less than 0.05, indicating that H_0 is rejected, and H_a (there is a relationship between safety and access control) is accepted. In the

Pearson correlation column, the value obtained is 0.537, signifying a strong correlation. With the positive correlation value, it can be concluded that the implementation of access control at Palippis Beach as a vernacular public space, including access management, security personnel, and inspections by staff, will also enhance the sense of safety for beach visitors.

Correlation of Safety and Surveillance

Table 7: Correlation of Safety and Surveillance
Source: Analysis, 2023

		Safety Perception	Surveillance
Safety Perception	Pearson Correlation	1	.610**
	Sig. (2-tailed)		.000
	N	101	101
Surveillance	Pearson Correlation	.610**	1
	Sig. (2-tailed)	.000	
	N	101	101

The table above shows the correlation between safety and surveillance. The result obtained is a sig. (2-tailed) of 0.000, which means less than 0.05, indicating that Ho is rejected, and Ha (there is a relationship between safety and surveillance) is accepted. In the Pearson correlation column, the value obtained is 0.610, indicating a strong correlation. With a positive correlation value, it can be concluded that the implementation of surveillance at Palippis Beach as a vernacular public space, including security patrols, vegetation management, nighttime lighting, and the addition of CCTV surveillance cameras, will also enhance the sense of safety for beach visitors.

Correlation of Safety and Maintenance

Table 8: Correlation of Safety and Maintenance
Source: Analysis

		Rasa Aman	Maintenance
Rasa Aman	Pearson Correlation	1	.823**
	Sig. (2-tailed)		.000
	N	101	101
Maintenance	Pearson Correlation	.823**	1
	Sig. (2-tailed)	.000	
	N	101	101

The table above shows the correlation between safety and maintenance. The result obtained is a sig. (2-tailed) of 0.000, which means less than 0.05, indicating that Ho is rejected, and Ha (there is a relationship between safety and maintenance) is accepted. In the Pearson correlation column, the value obtained is 0.823, indicating a very strong correlation. With a positive correlation value, it can be concluded that the implementation of maintenance at Palippis Beach as a vernacular public space, including regular security facility checks and providing staff to handle facility maintenance, will also enhance the sense of safety for beach visitors.

Correlation Test Results

Table 9: Correlation Test Results

Source: Analysis, 2023

Safety Perception	Variable		
	Access Control	Surveillance	Maintenance
Pearson Correlation	0.537	0.610	0.823
Sig. (2-tailed)	0.000	0.000	0.000
Rank	III	II	I

The table above represents the results of the correlation tests for all variables. It can be observed that maintenance is the variable with the highest Pearson Correlation value of 0.823, indicating a very strong correlation. The second and third highest variables are Surveillance with 0.610 and Access Control with 0.537, showing strong correlations. For sig. (2-tailed), all variables yielded results less than 0.05, indicating correlations.

Conclusion

This paper concludes that perception of visitor safety at Palippis Beach as a vernacular public space is closely related to the observed conditions. Based on the results obtained by involving 101 respondents, the indicators show the following. Criminal cases with the highest percentage of 42.57% indicate "less safe". The indicator for the location of settlements has the highest percentage of 64.36% indicating "less safe". The indicator for the entry portals with the highest percentage of 43.56% also indicate "less safe". The vegetation indicator with the highest percentage of 47.52% indicate "less safe" too. In addition to visitors, the research also interviewed the guards and vendors in the vicinity of Palippis Beach. Their responses also indicate "less safe".

The correlation between visitor safety perception and the principles of crime prevention through environmental design yielded the following results through Pearson correlation. The highest correlation is with maintenance, which has a value of 0.823, indicating a very strong correlation, and is determined by regular checks and provide special officer with a percentage 64,36%. The second highest correlation is with surveillance, with a value of 0.610, indicating a strong correlation, and is determined by the arrangement of vegetation with percentage 51,49%. The lowest correlation is with access control, having a value of 0.537. It also indicates a strong correlation, and is determined by guarded security officer with a percentage of 38,61%.

This research thus establishes the correlation between visitors' perceived sense of safety and the application of three CPTED principles, potentially resolving the frequent criminal cases at Palippis Beach. However, this study couldn't assess the territorial principle because Palippis Beach: the research site, is an open, vernacular space without private zones. Hence, it's hoped that future research will encompass all CPTED principles.

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