

Smellscape Perception of Environmental Quality At Stasiun Tugu Yogyakarta

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Abstract. Scent brings a distinct identity to a place and connects people emotionally with the place. Scent plays an important role in eliciting emotional evaluation and user perception of environmental quality. This research aims to analyze the perception of environmental aroma in Yogyakarta Tugu Station Area as a sensory experience for visitors. The method used in this research is by conducting smellwalk, and followed by filling out questionnaires related to environmental quality (such as air quality, temperature, humidity, density) and emotional associated with odors. The result of this study is to determine the perception of smellscape that has an important influence on environmental quality.

1 Introduction

The quality perceived through sensory experience projects the relationship between people and places, reflecting how they live and respond to the surrounding environment, which should be understood and explored in current urban policies to create quality places (Xiao, Tait, and Kang 2018). The exploration process in responding to the environment is related to the “Sensory Experience and Perception of Urban Spaces” which states that there are five sensory experiences stimulated by human senses: sight (viewscape), hearing (soundscape), smell (smellscape), touch (touchscape), and taste (sense of landscape). According to (Pallasmaa 2024) human senses instinctively explore and interact with space at the same time, although the function of each sense is different. One of the human senses that is part of the sensory experience is smell. Smellscape is a series of classifications of scents, fragrances, and odors that can understand the experience of a place as part of the process of perception and individual response to the surrounding environment (“McLean_Kate_PhD_Dissertation_Nosefirst.Pdf,” n.d.). According to (Xiao, Tait, and Kang 2018), factors that determine the odor landscape of a place include the source of odor and smell, as well as the physical environment and human experience of the place, thus providing an overview of how certain scents can influence perceptions of cleanliness and air quality in urban environments, such as train stations. This is relevant to the analysis of environmental quality at Tugu Station.

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In his research (Henshaw 2014) smellscape is suggested to be explored at spatial scales, such as: Macro (city), mission (district), and micro (street). While odor focuses on the human experience, considers odor as an action (feeling), substance (is an environment), can be described as an olfactory environment that is felt and understood by a person (through olfactory sensations influenced by memories and past experiences) in a place. (Henshaw et al. 2016) adopted the term Odor which is one of the components of the smellscape. Smellscape refers to the overall odor experience felt by a person in an environment, Odor becomes an important part of the smellscape because it can affect a person's perception, emotion, and experience of the environment as a whole. In addition, odors can also evoke strong emotions and convey social meanings related to people and places. The emotional reactions that occur mediate the social relationship between people and space, projecting how they live and respond to their environment (Davidson and Milligan 2004), thus shaping visitors' perceptions of the station as part of the journey. These emotional experiences are the subject of research that can inform approaches to managing space and creating more meaningful places (Barclay 2020) and (Oeljeklaus et al. 2022).

Therefore, related to Smellscape research in the Tugu Station area can be divided into several main points: Yogyakarta Tugu Station as a transportation hub presents a variety of odors that can affect users' perception of environmental quality, and in addition to pleasant odors, some odors that are unpleasant and interfere with user comfort were identified. Thus, by managing unpleasant odors and reinforcing positive ones, the environmental quality around the station can be improved, creating a better experience for all users. Odors provide an alternative dimension to fully understand an environment (Xiao et al. 2021). A place can be enriched with various odors (negative, neutral, and positive), surrounded by odor sources, and influenced by the physical environment that determines the spread of odors (Anderson and Smith 2001). Emotional reactions to odors in a place often arise from memories of specific moments in the past when one smelled a particular odor. (Engen and Engen 1997) argue that "feelings towards an odor become attached to a particular stimulus or situation" this focuses on the scent at the station triggering certain emotional reactions and memories. The memory - emotion bond in the olfactory experience is crucial to one's perception of oneself and the environment. Therefore, this perception of the odor scene can provide an idea of the quality of the surrounding environment.

There is a theory that explains the relationship between odor and environmental quality, by Kaplan and Kaplan in 1989, one of their important works is a book entitled "The Experience of Nature: A Psychological Perspective", which explains that Smellscape as part of the environment that can trigger cognitive responses so that it can affect the perception of environmental quality, smellscape can affect a person's emotions towards their environment, and Smellscape can also affect a person's perception of the overall environmental quality in exploring the relationship between smellscape and environmental quality at Tugu Station. Scent also tends to correlate with other aspects of environmental quality such as air quality, temperature, humidity, density, which have both positive and negative impacts. Therefore, this study focuses on how the various scents present at Tugu Station Yogyakarta affect visitors' perception of the station's environmental quality. The main issue is how these olfactory experiences affect visitors' evaluation of aspects such as cleanliness, freshness, and comfort of the station. This research identifies which scents are preferred and which scents are disliked, how they contribute to visitors' overall perception of the station's environmental quality, and another issue identified is how scents trigger emotional reactions in visitors, including attention to certain scents and their influence on positive and negative experiences at the station, so this research also identifies challenges in terms of air quality, cleanliness, freshness, and naturalness at Tugu Station. A key issue is how these factors are influenced by scents in the surrounding environment.

2 Resaerch Methode

2.1 Research Focus and Location

The focus of the research is to evaluate the environmental quality that impacts on Smellscapes in the Tugu Station area. The research location is along the gateway road to Malioboro area (Jln. Pasar Kembang - Jln. Jlagran Lor), buildings related to the road and Tugu Station (South side and west side). The times are in the morning (06.00 WIB – 08.00 WIB), afternoon (12.00 WIB – 14.00 WIB), afternoon 16.00 WIB – 18.00 WIB), and evening (20.00 WIB – 22.00 WIB). Research days were carried out on weekdays (Thursday) and weekends (Sunday).



Fig 1. Basemap (Observation point, Division of Observation Area)

This smellwalk and questionnaire method is designed to directly address the research problem, which is how smellcape affects visitors' perception of environmental quality at Tugu Station Yogyakarta. Through the smellwalk, researchers can identify significant scents and observe visitors' reactions directly. Meanwhile, the questionnaire allows researchers to collect more detailed subjective data related to how scent affects visitors perceptions and experiences. In conclusion, the research methods used in this study are not only easy to identify but also very appropriate to the issues raised. These methods provided sufficient evidence to answer the research questions well.

2.2 Participants

The research participants totaled 12 people, consisting of 6 (six) men and 6 (six) women. This is because, by having a large enough number of participants, such as 12 people, the smellwalk can involve a variety of different perspectives and experiences. Each individual has unique odor preferences and associations, so having more participants can enrich the smellscape experience and analysis. The selected participants are Bachelor and Master of Architecture students aged 18 - 30 years old.

2.3 Data Collection Technique: Smellwalk (Smell Exploration Walk)

The route was designed by the researcher to cover a total length of 700 meters with 7 stopping points, taking into account the characteristics of the place, the distance between

points, the type of activity and the condition of the observation points. The time range was 1 hour - 1.5 hours, taking into account the level of fatigue and maintaining focus that can affect the ability of the sense of smell so as to ensure better data quality. Things that must be prepared to do the smellwalk method : SOP and Smellwalk Instructions; This research will be conducted for \pm 1 - 1.5 hours with a smellwalk and then answer the questionnaire for about 5 minutes. The criteria for respondents, namely: S1 / S2 Architecture students aged 18 - 30 years, who were asked directly to the location to do a smellwalk together with the researcher. With the selection of respondents with an educational background from architecture students who have special knowledge and perspectives on odors and the environment that are not shared by the general population, Respondents are in good health (not in a flu-like condition), making it possible to participate in walking or exploring odors in the Tugu Station area, Respondents were asked to stop at stopping points on a predetermined route, Questions (questionnaires) were asked during the smellwalk at each stopping point. Researchers also saw and recorded (temperature, air pollution index, humidity, and density) through the measurement of the Humadity Temperature Meter tool to determine the environmental quality at each stopping point in the Tugu Station Area.

2.4 Questionnaire (Sensory Evaluation, Enjoyment of Environmental Aroma Quality, and Air Quality).

Questionnaires were distributed to respondents after conducting odor exploration at all observation points and adjusted for indicators related to Smellscapes to visitor evaluations in the Tugu Station Area such as: Emotional reactions (scale 0 -3 point), experiences and memories (Happy and unhappy), environmental scent expectations (Normal and abnormal) , subjective preferences (scale 0 - 4 point), and Overall Olfactory Perception (scale 0 – 4 point). And the quality of environmental scents, namely: purity, cleanliness, freshness, calmness, familiarity, naturalness, and suitability. Also, air quality, temperature, humidity, and density.

3 Result and Discussions

3.1 Smellscape Relation to Visitor Evaluation

3.1.1 Smellscape on Emotional Reactions When Smelling Environmental Scents

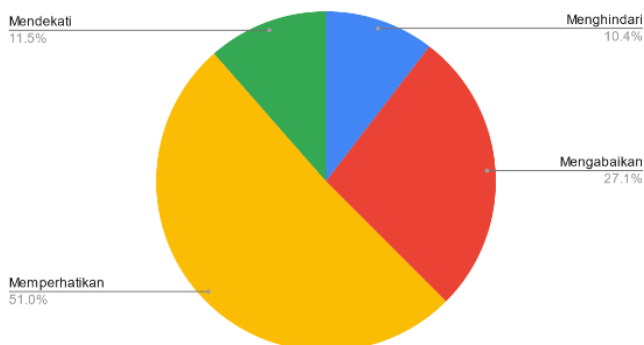


Fig 2. Emotional Reactions

The most dominant emotional reactions felt when smelling the smellscape are paying attention (51%), ignoring (27%), approaching (11%), and avoiding (10.4%). High attention

to odors: The majority of respondents noticed the odors at the station, suggesting that the scents at the station have a striking component. This indicates that there is a strong smellscape element that can attract visitors' attention. From the above findings, it can be known about the impact of the smellscape on emotional reactions when smelling the environment, namely: The majority of respondents noticed the smell at the station, indicating that the scent at the station has a striking component. This indicates that there is a strong smellscape element that can attract visitors' attention. A fairly high level of neglect indicates that some of the odors in the station are at a tolerable level or have become part of the familiar environment for visitors. The small percentage of respondents who approached certain odors indicates that there are positive and attractive scent elements in the station, which could enhance the positive experience of visitors. The percentage of respondents who avoid odors indicates the presence of unpleasant odors that need to be managed to improve visitor comfort.

3.1.2 Smellscape of Environmental Scents that Spark Experiences and Memories

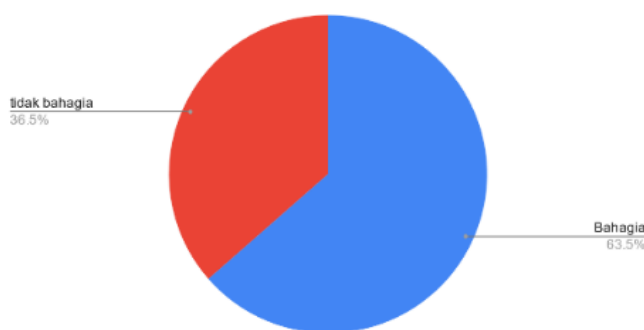


Fig 3. Experiences and Memories

The most dominant experiences and memories were Happy (63.5%), and Unhappy (36.5%). Smells that make you happy: More than half of the respondents felt that the scents at the station made them happy. This suggests that positive scent elements at the station, such as the smell of Yogyakarta's specialties or certain fragrances can remind visitors of happy moments, such as vacations or time with family or the feeling of going home. So this also has a significant impact in creating positive experiences and pleasant memories. From the findings above, it can be seen about the impact of smellscape on the aroma of the environment that triggers experiences and memories, namely: More than half of the respondents felt that the aroma at the station made them happy. This shows that positive aroma elements at the station, such as the aroma of typical Yogyakarta food or certain fragrances can remind visitors of happy moments, such as holidays or time with family or the feeling of wanting to go home. So this also has a significant impact on creating positive experiences and pleasant memories. Some respondents experienced unpleasant memories and experiences triggered by the aroma at the station. This shows that there are aroma elements that need to be improved or controlled to reduce the negative impact on visitors. Especially the smell of vehicle emissions, urine, gutters, garbage can remind visitors of bad experiences or discomfort, such as traffic jams or an unclean environment.

3.1.3 Smellscape to perceived environmental scent expectations

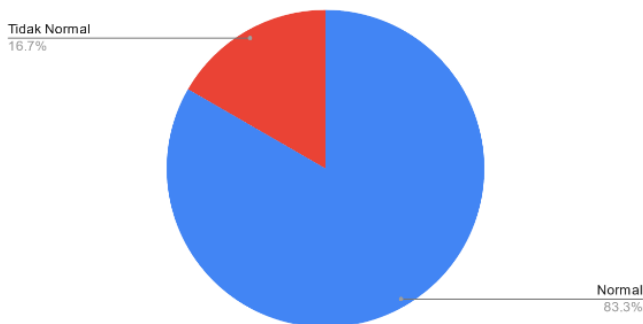


Fig 4. Perceived Environmental Scent Expectation

The most dominant perceived Environmental Aroma Expectations were: Normal (83.3%), and Abnormal (16.7%). Aroma perceived as normal : The majority of visitors felt that the scents in the station met their expectations and were perceived as normal, creating a comfortable and pleasant experience. Respondents found the smells of high-activity stations to be tolerable, such as specialty food aromas, synthetic fragrances, and consistent cleanliness helped to create an environment that was perceived as normal and as expected. From the findings above, it can be seen about the impact of smellscape on the perceived environmental aroma expectations, namely: The majority of visitors feel that the aroma at the station meets their expectations and is considered normal, creating a comfortable and pleasant experience. The aroma of the station with busy activities is known to respondents to be tolerable, such as the aroma of typical food, synthetic fragrances, and consistent cleanliness help create an environment that is considered normal and according to expectations. A small number of visitors feel that the aroma at the station does not meet their expectations and is considered abnormal, creating discomfort. The smell of vehicle emissions, garbage, urine, or tobacco in some unexpected places can interfere with the visitor experience and is considered an unnatural condition.

3.1.4 Smellscape to Respondents' Subjective Preferences

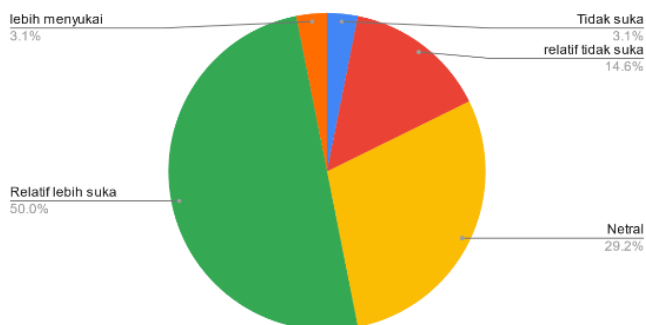


Fig 5. Respondents Subjective Preferences

Respondents' subjective preference for the most dominant environmental aroma, viz: relatively prefer (50%), dislike (29.2%), relatively dislike (14.6%), Neutral (3.1%), prefer (3.1%). The majority of respondents (50%) relatively preferred the smell of the environment at the station, indicating that most of the current smellscape elements are in line with visitors'

preferences. So that by maintaining and improving the preferred aroma elements such as the smell of delicious, pleasant food and drinks, and keeping the environment clean. The majority of respondents (50%) relatively prefer the aroma of the environment at the station, indicating that most of the current smellscape elements are in accordance with visitor preferences. So by maintaining and improving the preferred aroma elements such as the smell of delicious, pleasant food and drinks, and maintaining environmental cleanliness.

3.1.5 Smellscape to Overall Environmental Scent Perception

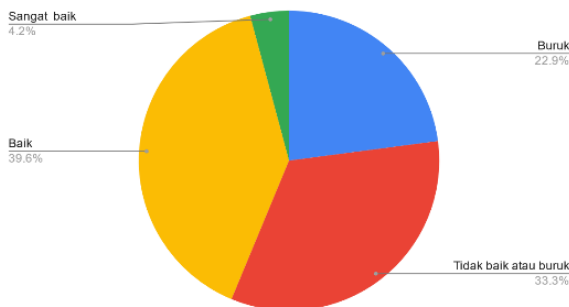


Fig 6. Overall Environmental Scent Perception

The most dominant perception of Overall Environmental Aroma (Smellscape), namely: Good (39.6%), Not good or bad (33.3%), Poor (22.9%), and Very Good (4.2%). The majority of respondents gave a positive assessment of the environmental aroma at the station, indicating that the current smellscape is adequate. From the analysis above, it can be seen about the impact of smellscape on the overall perception of environmental aroma, namely: The majority of respondents rated the environmental aroma as good: The majority of respondents gave a positive assessment of the environmental aroma at the station, indicating that the current smellscape is quite adequate. As many as 56.2% of respondents had a neutral to negative perception of the aroma at the station, indicating room for improvement. Only 4.2% of respondents rated the aroma as very good, indicating the potential to explore highly preferred elements and expand their use.

The data presented from the questionnaire shows that the aroma in the environment of Yogyakarta Tugu Station plays an important role in shaping respondents' perception of the station's environmental quality. Respondents' emotional reactions to scents, such as dominant food odors, indicate that scents attract attention. Food aromas, perfumes, and familiar smells evoke fond memories and a sense of nostalgia, which is in line with Henshaw's (2013) research which states that food aromas in commercial areas can increase attractiveness and create positive experiences. Respondents have an expectation that the smells present at the station are within normal limits, not too noticeable or distracting based on their experience or standards expected from public places, such as the smell of vehicles, food, cigarettes and air pollution. In a sustainable region, it is important to meet these expectations in a healthier and more environmentally friendly way. For example, reducing vehicle emissions by introducing green transportation or setting up smoking areas away from public places. Respondents tended to prefer cleaner, fresher and more natural smells, such as the smell of food, moist plants on cool, crisp mornings, and preferred perfumes, reflecting a desire to be in a more comfortable and pleasant environment. The overall perception of odors at the station is considered good as there are smells of food and refreshing morning air, indicating the presence of positive odors although there are also negative odors mixed in. Clean, fresh and natural smells tend to give a positive impression and support the image of a healthy and sustainable area.

3.2 The Relationship between Smellscape and the Quality of Environmental Aroma

3.2.1 Smellscape Against Purity

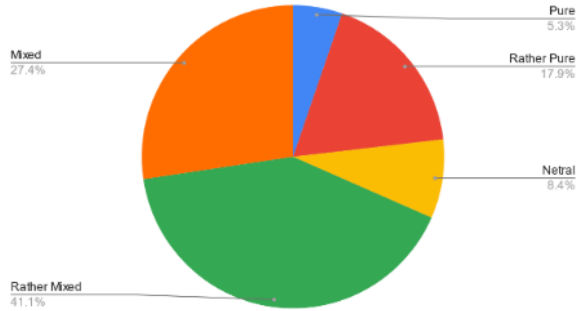


Fig 7. Purity

The most dominant impacts of smellscape on Purity are: rather mixed (41.1%), mixed (27.4%), rather pure (17.9%), neutral (8.4%) and pure (5.3%). The majority of respondents (68.5%) rated the aroma at Tugu Station as "rather mixed" or "mixed" indicating that a mixture of impure aromas is dominant in the area. Managers need to focus on reducing sources of undesirable odors and enhancing purer, more pleasant aromas to improve overall perception. From the analysis above, it can be seen about the impact of smellscape on purity, namely: The majority of respondents rated the aroma at Tugu Station as "rather mixed" or "mixed" indicating that a mixture of impure aromas is dominant in the area. Management needs to focus on reducing sources of unwanted odors and strengthening purer and more pleasant aromas to improve overall perception.

3.2.2 Smellscape Against Clean

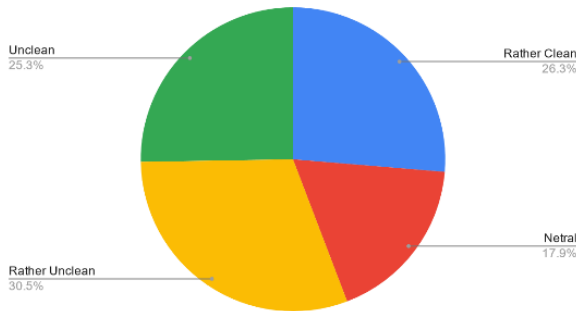


Fig 8. Clean

The most dominant impacts of smellscape on cleanliness are: rather unclean (30.5%), rather clean (26.3%), unclean (25.3%), and neutral (17.9%). As many as 55.8% of respondents rated the aroma at Tugu Station as "rather unclean" or "unclean" indicating that the perception of the cleanliness of the aroma in that area is quite low. Managers need to increase cleaning efforts, identify and reduce sources of unwanted odors. From the analysis above, it can be concluded that the impact of smellscape on cleanliness is: respondents rated the aroma at Tugu Station as "rather unclean" or "unclean" indicating that the perception of

cleanliness of the aroma in the area is quite low. Management needs to increase cleanliness efforts, identify and reduce sources of unwanted odors.

3.2.3 Smellscape Against Freshness

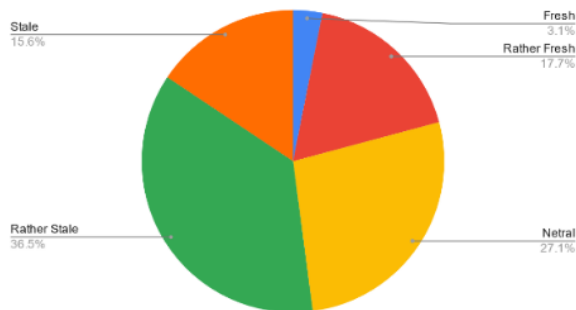


Fig 9. Freshness

The most dominant impacts of smellscape on freshness are: rather stale (36.5%), neutral (27.1%), rather fresh (17.7%), stale (15.6%), and fresh (3.1%). As many as 52.1% of respondents rated the aroma at Tugu Station as "rather stale" or "stale" indicating that the perception of the freshness of the aroma in that area is quite low. Management needs to increase efforts to improve the freshness of the air at the station, such as by adding vegetation around the station. From the analysis above, it can be seen about the impact of smellscape on Freshness, namely: respondents rated the aroma at Tugu Station as "rather stale" or "stale" indicating that the perception of aroma freshness in the area is quite low. Management needs to increase efforts to improve air freshness at the station, such as by adding vegetation around the station.

3.2.4 Smellscape Against Calmness

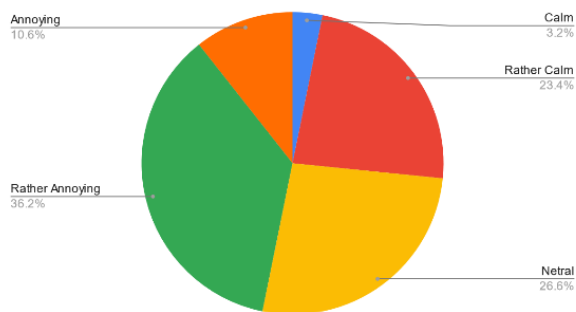


Fig 10. Calmness

The most dominant impacts of smellscape on calmness are: rather annoying (36.2%), neutral (26.6%), rather calm (23.4%), annoying (10.6%), and calm (3.2%). As many as 46.8% of respondents rated the aroma at Tugu Station as "rather annoying" or "annoying" indicating that the perception of the calmness of the aroma in that area is quite low. Managers need to take steps to reduce sources of irritating odors and increase calming aroma elements. From the analysis above, it can be concluded that the impact of smellscape on calmness is: respondents rated the aroma at Tugu Station as "rather annoying" or "annoying" indicating

that the perception of calmness of the aroma in the area is quite low. Management needs to take steps to reduce sources of disturbing odors and increase elements of calming aromas.

3.2.5 Smellscape Against Familiarity

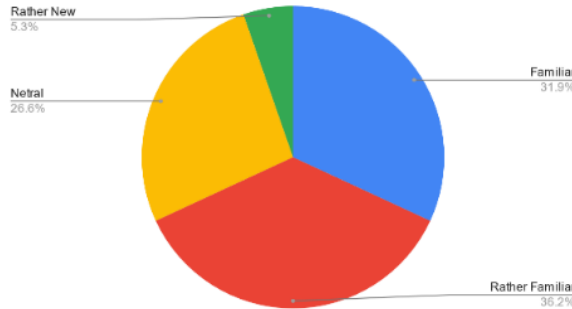


Fig 11. Familiarity

The most dominant impacts of smellscape on familiarity are: rather familiar (36.2%), familiar (31.9%), neutral (26.6%), and rather new (5.3%). The majority of respondents (68.1%) felt that the aroma at Tugu Yogyakarta Station was quite familiar or very familiar. Maintaining and enhancing familiar aromas can create a more positive experience and strengthen visitors' emotional connection to the station. From the analysis above, it can be seen about the impact of smellscape on familiarity, namely: The majority of respondents felt that the aroma at Tugu Yogyakarta Station was quite familiar or very familiar. Maintaining and enhancing familiar aromas can create a more positive experience and strengthen visitors' emotional connection with the station.

3.2.6 Smellscape Terhadap Naturalness

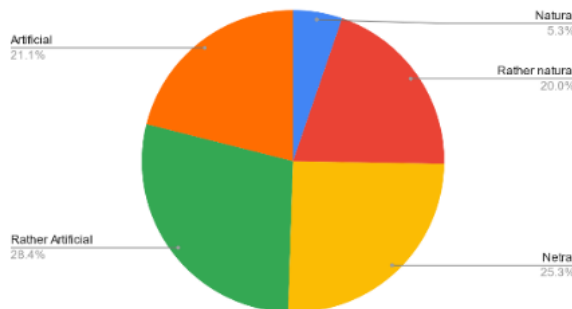


Fig 12. Naturalness

The most dominant impacts of smellscape on naturalness are: rather artificial (28.4%), neutral (25.3%), artificial (21.1%), rather natural (20%), and natural (5.3%). Most respondents (49.5%) felt that the aroma at Yogyakarta Tugu Station tended to be artificial or very artificial. Reducing artificial scent elements and increasing the presence of natural scents can help increase visitors' perceptions of naturalness and comfort. From the analysis above, it can be seen about the impact of smellscape on naturalness, namely: Most respondents felt that the aroma at Tugu Yogyakarta Station tended to be artificial or very artificial. Reducing artificial aroma elements and increasing the presence of natural aromas can help improve the perception of naturalness and visitor comfort.

3.2.7 Smellscape Against Appropriateness

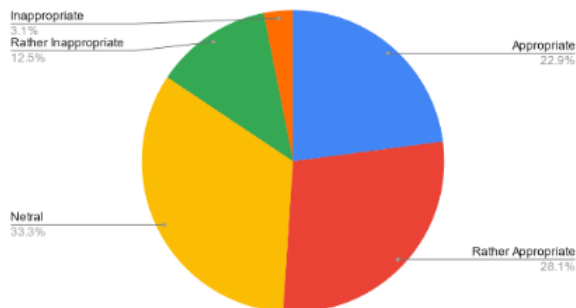


Fig 13. Appropriateness

The most dominant impacts of smellscape on appropriateness are: neutral (33.3%), rather appropriate (28.1%), appropriate (22.9%), rather inappropriate (12.5%), and inappropriate (3.1%). Most respondents (33.3%) had a neutral perception about the suitability of aroma. Identify aroma elements that can be optimized to increase the perception of suitability to be more positive. From the analysis above, it can be seen about the impact of smellscape on appropriateness, namely: A large number of respondents felt that the aroma at the station tended to be or very appropriate (51%). Maintaining elements that currently provide positive perceptions and strengthening these elements to create a more consistent experience.

3.3 Smellscape on Air Quality

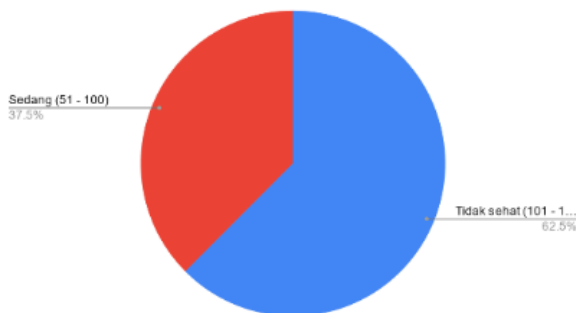


Fig 14. Air Quality

The most dominant impacts of smellscape on air quality are: Unhealthy (62.5%), and moderate (37.5%) categories. Data shows that the dominant air quality at Tugu Yogyakarta Station is poor. With 62.5% unhealthy air quality, this indicates a serious problem that needs to be addressed. From the findings above, it can be concluded that the impact of smellscape on air quality is: Data shows that the dominant air quality at Tugu Station Yogyakarta is bad. With 62.5% unhealthy air quality, this indicates a serious problem that needs to be addressed.

3.4 Smellscape Against Temperature

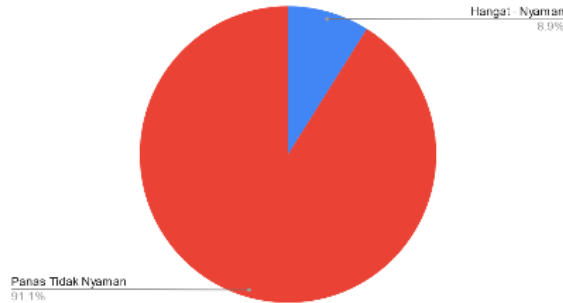


Fig 15. Temperature

The most dominant temperatures in the Yogyakarta Tugu Station area are: Uncomfortably Hot (91.1%), and Warm – comfortable (8.9%). Uncomfortable heat and negative perceptions: High temperatures can exacerbate the experience of undesirable odors, such as carbon emission odors and synthetic odors, which are already considered bad by most respondents. This can increase visitor discomfort and dissatisfaction with the station environment. From the findings above, it can be concluded that the impact of smellscape on air temperature at the station is: High temperatures can worsen the experience of unwanted odors, such as carbon emission odors and synthetic odors, which are already considered bad by most respondents. This can increase visitor discomfort and dissatisfaction with the station environment.

3.5 Smellscape Against Humidity

Dominated by humidity that is too humid (100%), data shows that air humidity in the Tugu Yogyakarta Station area is always at a level that is too humid. This high humidity can affect various aspects of the environment and human health. Management of Odors and Air Quality, Management of Garbage and waste by improving waste management and to reduce sources of unpleasant odors, including routine cleaning and effective waste processing. Use of Pollutant Absorbing Plants: Planting plants that can absorb pollutants and odors, so they can help improve the smellscape.

3.6 Smellscape Against Density

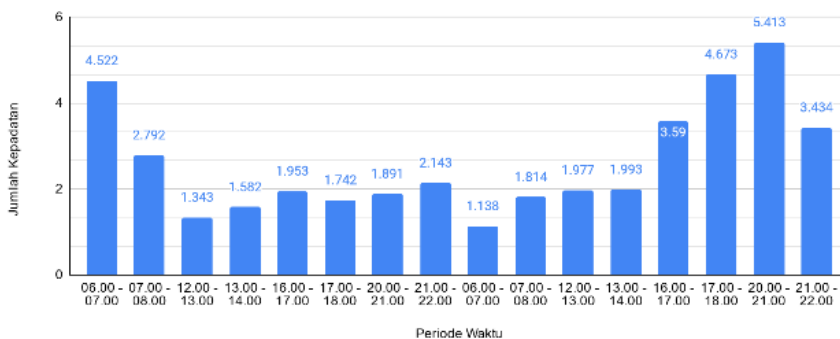


Fig 16. Density

The most dominant density in the Yogyakarta Tugu Station area is: In the evening at 20.00 – 21.00 with a total density reaching 5.413 then, in the afternoon at 17.00 – 18.00 with a total density of 4.673, and in the morning at 06.00 – 07.00 with a total density of 4.522.

Overall, the aroma quality of the environmental smellscape at Tugu Station Yogyakarta shows significant challenges in terms of cleanliness, freshness, and air quality. The smell is mixed, unclean, stuffy, and distracting, and the air quality is unhealthy because it is dominated by the smell of carbon emissions and synthetics throughout the day, the temperature is hot so that unpleasant odors such as the smell of garbage, cigarettes, and air pollution appear. High humidity all contribute to the deterioration of environmental aroma quality. (McLean 2015) explains that carbon emissions in high-traffic areas degrade air quality and create an uncomfortable experience. While there are some familiar scents that provide a sense of comfort, improved hygiene management, vegetation planting, and air pollution management are needed to create a more positive and comfortable experience.

Improving the scent quality of the environment through sustainable environmental management can be done by introducing more green spaces around the station, which can help absorb air pollution and reduce carbon emissions, as well as provide fresh natural scents and can help regulate temperature and humidity, reduce the effects of unpleasant odors and create a more comfortable environment. In addition, renewable energy sources such as solar panels also support the overall sustainability of the area, or the use of air quality sensors can help monitor environmental conditions in real-time and provide useful data for environmental management. Good air quality is essential for visitor health. Clean air can reduce the risk of respiratory diseases and allergies. By reducing pollution and keeping the air clean through sustainable efforts and technology, visitors' health can be well maintained. A healthier environment will improve visitor comfort and well-being, creating a more positive experience at the station.

3.7 Discussion and conclusion

Findings related to time of day differences and perceived smellscape environmental quality include: Morning Natural Scents: in the morning, the scents around the station are fresher and more natural, especially after morning rain or dew. This creates a better perception of environmental quality compared to other times of the day. During peak hours, such as morning and evening, the smell of vehicle fumes and air pollution is more pronounced, lowering visitors' perception of environmental quality. At night, there is less human activity, however, there are odors from waste or garbage that may not be properly handled, especially around certain areas, which affects the perception of the nighttime environment. The difference in perception of smellscape environmental quality between revitalized and unrevitalized areas at Tugu Station Yogyakarta can be seen from the revitalized area: this area has better cleanliness and more organized waste management. Visitors tend to feel fresher smells and are less exposed to unpleasant odors, while the unrevitalized area: still faces problems with poorly managed garbage, unpleasant odors. The findings of this study show that aroma has a significant influence on visitors' perception of environmental quality at Tugu Station Yogyakarta.

This research identifies the relationship between scent and environmental quality at Tugu Station Yogyakarta. Scent has a significant impact on visitors' perception of the cleanliness, freshness and comfort of the station. While there are scents that are pleasant and create a positive experience, the mix of negative scents also needs to be better managed. Recommendations focus on reducing negative scents such as emission odors and garbage, and amplifying positive scents that contribute to a better visitor experience. Overall, this research provides valuable insights into the importance of scent in creating better environmental quality in public spaces.

To overcome the smellscape challenges at Tugu Station Yogyakarta, a comprehensive strategy is needed that involves improving the sustainability of the area, adoption of renewable energy, application of advanced technology, and attention to visitors' health. These efforts will help to create a better quality of environmental aroma, thus creating a more comfortable, healthy, and pleasant station environment for all visitors. Effective smellscape management at Tugu Station Yogyakarta requires a holistic approach that includes aspects of sustainability, use of renewable energy, application of advanced technology, and attention to visitor health. With the right strategy, the quality of the environmental aroma can be improved, creating a more comfortable, healthy, and pleasant station environment for all visitors. This will increase the attractiveness of the station and create a more positive and memorable experience. Thus, Yogyakarta Tugu Station can become an example of a sustainable and environmentally friendly public area.

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