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## **BEHAVOURIAL ASPECTS IN PLACEMAKING WITHIN TRANSIT-ORIENTED DEVELOPMENT**

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### **Abstract**

Transit-oriented development (TOD) has attracted significant attention globally for its effective role in promoting pedestrian-friendly environments. Recent implementations have focused on urban redevelopment, with the goal of enhancing walkability and TOD placemaking. The significance of TOD is evidenced by public behaviours within the TOD area. Hence, this research aimed to comprehend the significance of the behavioural aspects in building sense of place within public space in relation to TOD. The study evaluates literature spanning from 1993 to 2021, drawing from various disciplines such as architecture, urban design, environmental geography, psychology, and sociology. The studies incorporate multiple sources including reviews, case studies, and theoretical works. The findings of this study suggest that people's behaviour and daily routines are influenced by their needs. Understanding the psychological patterns and needs of the public is crucial to effective placemaking in TOD neighbourhoods.

**Keywords:** Placemaking, TOD, Sense of Place, Behavioural Aspect, Public Space

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## **INTRODUCTION**

Public transit projects, in conjunction with transit-oriented development (TOD) plans, are a popular instrument for urban revitalization (Aranda, 2006). TOD planning means incorporating transportation and land use planning in a way that encourages the utilization of public and active transit instead of relying on the private automobile (Gomez et al., 2019; Jacobson & Forsyth, 2008; van Lierop et al., 2017). These are integrative projects that include residential, offices, commerce, and places for people to go about their everyday lives (Rahmat et al., 2016). TOD policies are implemented by municipal and regional governments in order to offer more socially, ecologically, and financially viable communities (van Lierop et al., 2017). The concept of TOD is broadly known in Malaysia due to both regional and local plans, and as well as state structural plans (Gomez et al., 2019).

A TOD is typically described as a region with an 800m radius around a transport station, as compared to Peter Calthorpe's definition of 600m radius, which equates to a maximum 10-minute walk from a transportation hub for the average person (Lang et al., 2020). A "secondary area" associated with a TOD may arise at a maximum distance of 1.6 kilometres from the city centre. This area might include low-density dwellings, huge park spaces, institutions, as well as other community amenities (Ibraeva et al., 2020). This is strongly related to the concept of the "pedestrian pocket," which refers to the concept of a neighbourhood plan that encourages walking excursions by providing a choice of possible routes and minimizing travel times for walkers (Ibraeva et al., 2020). A TOD is an attempt to integrate a neighbourhood with features of a town centre, potentially resulting in a less crowded, congested, and hectic place which remains vibrant and functioning (Ibraeva et al., 2020). Implicitly, it can boost the economy and overall quality of life by making an area much more pleasant and structured according to their specialized amenities (Rahmat et al., 2016).

Practitioners' opinions are critical factors impacting TOD implementation (van Lierop et al., 2017). A regional viewpoint should consider TOD as a carefully planned initiative encompassing multiple cities that are economically and culturally intertwined (Aranda, 2006). Collaborative planning is required for the development of socially balanced TODs (van Lierop et al., 2017). Countless planners and urban designers have turned their attention away from the vehicle and toward the pedestrian, in a response to the detached suburban environment (Aranda, 2006). The seven most widely discussed TOD characteristics are spatial layout, mobility, environment, sociocultural, economy, cooperation, and accessibility (van Lierop et al., 2017).

This research, however, will not just focus entirely on TOD world at large, but rather on the psychological patterns of the general public that are affected in constructing placemaking when TOD plans are properly integrated in the neighbourhood. To fully utilise the TOD approach in a selected region,

professionals must first understand the minds of the people that will significantly influence the results of this method, in order to assure that benefits accrue to both government and society in general.

This paper provides a summary of studies on place-making in transit-oriented development (TOD) from 1993 to 2021. The purpose of this research is to comprehend the significance of the behavioural aspect role in building a sense of place in a public space. The fundamental subject addressed in this research is what influences community behaviour in public places? Sub questions related to the primary result of this research have been separated into two sections for additional debate. To begin with, how do an individual's needs impact their attitude? How does a person's sensory experience influence their behaviour? Understanding the applicable terms will help answer both questions. Both concerns may be answered by understanding the reason behind human needs using Maslow's Hierarchy of Needs. Second is to thoroughly comprehend the critical features of placemaking when developing public places in the context of how they may impact people's behaviour. Three questions have been proposed: a) what are the needs that drive behaviour; b) why accessibility and security are essential in placemaking and c) how does sensory effect people's daily routines? These three issues may be answered through understanding society's aspirations and requirements, as well as how the environment impacts individuals in general.

## **LITERATURE REVIEW**

Public spaces are one of the most essential features of Transit Oriented Development (TOD), since they serve as links between buildings and transit stations, and therefore in a mixed-use development (Mehta, 2014). They are spaces which have the ability to incorporate different sets of activities, behaviours and functions would be the main justification that fixates the focus of the public towards public spaces (Jalaladdini & Oktay, 2012). Public spaces are defined as essential as a part of the public's life because they are capable of offering paths for circulation, a way for interaction and a base for recreation and leisure, and also have the ability to provide experiences and insight depending on the role that the spaces portrayed (Aghostin-sangar, 2007, Peimani & Kamalipour, 2020). Public spaces should be celebrated, whether consisting of streets, public building or an open area through placemaking to form appreciation on their societal beliefs (Fisher et al., 2017, Harun et.al, 2021). Fundamentally, public spaces that are located in a mixed-use area would have the privilege of attracting more people, as compared to the public spaces in a one-land use type (Jalaladdini & Oktay, 2012). Basically, such a space that can be enjoyed by the community's despite of their cultural or social preferences (Aghostin-sangar, 2007).

In general, a majority of society has spent their public life in public grounds, indicating that most of the societies would likely agree that public places should comprise some major needs of what it takes to be a fully functional realm

(Jalaladdini & Oktay, 2012). Good public places must be able to build a popular network for people to stroll and enjoy themselves. For example, the width of walkways would allow people to mingle socially and therefore creates social interactions among themselves (KARACOR, 2014). The community should be able to freely access and use these spaces without enforcing biased difficulty towards the class of people who can be allowed in them, or even the intentions for the spaces (Aghostin-sangar, 2007). Streets, parks, squares, and other common areas in a city can be viewed as symbols of communal possibility and well-being, as well as expressions of success and ambitions by urban leaders and visionaries, as well as places for civic culture formation, public interaction, and significant spaces for political debate and conflict (Amin, 2008). Buildings themselves are also an important element of the environmental experience, serving a variety of roles ranging from simple shelter to a myriad of symbolic and ceremonial activities. As a result, successful design can be defined as a balance between functional utility and aesthetic excellence (Burgess, 2012).

Placemaking is a broad notion which spans multiple disciplines (Strydom et al., 2018). Placemaking is a lengthy process that involves future expectations; it must address not only the needs and aspirations of today's people, but also those of future generations (KARACOR, 2014, Setiawan, 2022; Stojanovski, 2019). According to Ellery et al. (2021) and Fincher et al. (2016), placemaking has multiple substantial concepts and definitions; however they are nonetheless widely considered within the same context, as they describe placemaking as a phase either in moulding people or shaping environments (Ali et al., 2020; Schneekloth & Shibley, 1993; Toolis, 2017; Wyckoff & A, 2014). According to Finlaw (2013), Poerbo et al., 2022; the dynamic of the society can be completely transformed through placemaking. Placemaking is not created for the sole of the design or the project, but rather focuses on the collaborative of the whole community with the function of the space (KARACOR, 2014, Raj, 2022). It has evolved as a rising trend in which the residents engage in constructing and altering the environments, they reside with the intention of improving the bond amongst individuals and the locales they shared (Toolis, 2017). Every placemaking effort should represent the unique character of a space, while also taking into account the demands and potential of both society and the location (KARACOR, 2014).

### **Needs Influence Behaviour**

Based on McLeod (2018), humans have congenital needs that encourage our behaviours. Individuals are driven to meet specific wants, and some needs take priority over others. Human behaviours, social interactions and experiences are the consequences of the mind development that are affected by various characteristics of the spaces, either it be physically, socially and sensory (Aghostin-sangar, 2007, Lam et al. 2021). Most response is multi-motivated, and

"any conduct likely to be influenced by several or even all of the basic requirements concurrently rather than simply by only one of them," according to the study (McLeod, 2018).

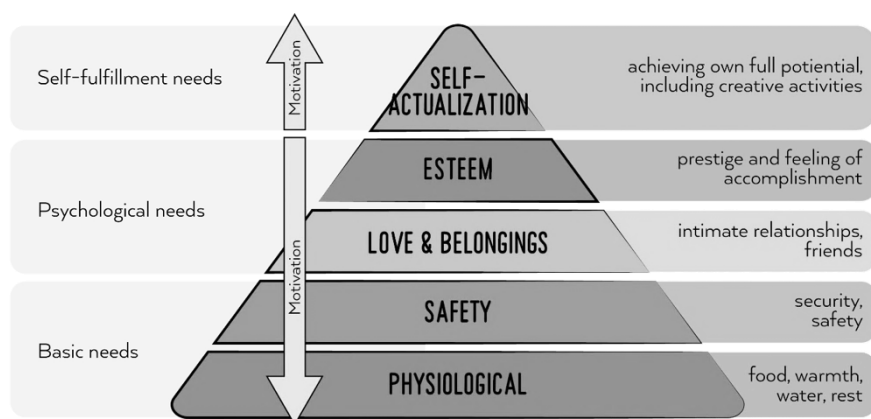


Figure 1 Maslow's hierarchy of needs

Maslow's Hierarchy of Needs stacks different needs according to their respective necessities. McLeod (2018) stated that, individuals must first achieve lower-level deficiency needs before moving on to higher level growth needs but later clarified that satisfying a need is not a "all-or-nothing" phenomenon but rather a choice that individuals would pick first to satisfy partially. To put it another way, individuals would try to fulfil any needs first either way, according to their preferences. Certain human behaviours can be facilitated, modified, or hampered by the built and natural environments (Aghostin-sangar, 2007, Abu Bakar, A. (2023). Maslow's pyramid serves as a prime guide followed by many designers in terms of creating quality spaces for the society (Aghostin-sangar, 2007; Jalaladdini & Oktay, 2012; Tandogan & Ilhan, 2016). To achieve great standards of place-making in public places, we must first understand the importance of each need according to their respected tiers.

Referring to Figure 1, the basic needs that covers the first tier, physiological, also refers to accessibility, and second tier, safety, comprehensively influence and inspire human behaviours, and are capable of shifting the individual in seeking to meet those needs (Tandogan & Ilhan, 2016). A good quality of placemaking must be accessible especially by the public and offer both safeties, not only in design of the architecture, but also are able to create the feeling of safe in the mind of the public (Tandogan & Ilhan, 2016, Afzali et al., 2022). It is understandable that a part of human behaviours may be affected by the surroundings and physical characteristics of the public spaces (Aghostin-sangar, 2007). This fear is due to feeling of unsafe has indirectly strict the access to the social interactions between the community therefore reducing the value of

life (Tandogan & Ilhan, 2016). Due to this realisation, street life has been rejuvenated, and numerous functions for the formation of social interactions have been created (KARACOR, 2014), because city design is an important factor in moulding human attitudes and preferences (Lew, 2017). The second and final needs, which are the psychological and self-fulfilment needs, are both covered by the activities happening around the individuals. Activities are one of the essential reasons for communities to travel to their destination where their needs can be met.

### **Vitality and Equity in Accessibility and Security**

The dynamics of people congregating in and moving through streets, squares, parks, libraries, and cultural and recreational facilities are more likely to be understood in terms of their influence on consumer cultures, strategies for navigating in the urban environment, and social reactions to unidentified others than in terms of their central role in forming civic and political culture (Amin, 2008, Afzali et.al, 2021). Physiological needs, on the first tier from the bottom of the pyramid, are also known as basic needs in the state of place-making. This refers to the main key of what a public place should offer, which is accessibility to fulfilling the basic needs of the humans. Without accessibility, a space cannot be called a place, since there would be no entities allowed in those areas, which is why having access to a space is considered as one of the basic needs in a public place (Jalaladdini & Oktay, 2012). The accessibility of a public area itself can be both an effective element and a hindrance to higher use and the attainment of social interaction in a public place (Pasaogullari & Doratli, 2004, Peimani, & Kamalipour, 2020). The building density and the standard of having circulation for pedestrian is so much higher than vehicular in providing vitality in a place, making it rather important (Jalaladdini & Oktay, 2012; Mouratidis & Poortinga, 2020). Accessibility to a place comes in two types, visually and physically, which balance all the senses that are needed for the public's interest.

Public open areas are essential in promoting fairness and inclusiveness in towns and cities (Attia & Ibrahim, 2018). Equity and inclusion are major elements that form urban life and the public sphere in neighbourhoods (Attia & Ibrahim, 2018). Environments that can be equally shared by all societal groups are said to be equitable. They offer all the characteristics that a wide range of users need, and they accommodate the requirements of many groups without jeopardising the well-being of others (Jalaladdini & Oktay, 2012). In terms of daily activity, urban vitality is a requirement for a secure and thriving city (Mouratidis & Poortinga, 2020), while equity creates a safe, vital public arena in which various people from different socioeconomic structures can engage without conflict (Jalaladdini & Oktay, 2012). Access to streets and building density are both required for urban vitality (Mouratidis & Poortinga, 2020).

On the second tier from the bottom is the need of safety, where this covers both safety and security physically and mentally as in being safe from any form of harm or being able to handle any situation particularly in the scope of security (Jalaladdini & Oktay, 2012). The word 'safe' according to Hornby (2015), defines numerous meanings, but to specifically depicts what is safe in this context is to not likely to lead to any physical harm or danger. According to Figure 2, safety is one of the most vital necessities when establishing placemaking, as shown in the second tier of the Maslow's Hierarchy of Needs, which represents the basic needs of humans (Tandogan & Ilhan, 2016). Thus, making 'safety' as a positive quality in a city and the spaces within it (Jalaladdini & Oktay, 2012). Feelings of fear could easily happen when one does not feel safe in any condition and when it is discussed about as a topic that is related to public spaces, 'crime' would always be mentioned beforehand (Tandogan & Ilhan, 2016).

Public life in the streets helps in providing safety in cities, encouraging small businesses or shops to become the eyes on the street, especially in residential areas (KARACOR, 2014). Researchers are particularly interested in the interactions between people and their surroundings (Burgess, 2012). A vibrant street life can provide safety and security while also contributing to the development of social sustainability (KARACOR, 2014). Creating a safe public environment will help in creating more engaging public spaces where people can gather and communicate in a psychologically normal behaviour (Finlaw, 2013). However, although a space can be safe from any physical danger done by the space itself, the behaviours of human being are also capable in initiating the feeling of fear in an individual, resulting in bad impacts towards the liveability and growth of the city (Tandogan & Ilhan, 2016).

### **Experiences Affect Interest in Activities**

Public spaces that have vitality in them may succeed in acting as a breeding ground of social relationships in the community (Jalaladdini & Oktay, 2012). The discipline focuses on the ways in which surroundings influenced behaviour of the people, individual comprehensions and perceptions of environments, and the impact of environmental changes on people's feelings and activities (Burgess, 2012). Another supporting factor that helps in creating quality public spaces the number and kind activities that these places can hold in a time. People tend to spend more of their public life in a place where they can do most of their day or night activities there, especially when it comes to creating and strengthening social relationships among themselves (Jalaladdini & Oktay, 2012).

Activities are influenced by the ambient of the place. The term "ambient environment" refers to the non-visual and non-physical characteristics of the constructed environment such as sound, smell, temperature, and lighting and these are perceived by sensory organs such as the ears, nose, skin, and eyes (Aghostin-sangar, 2007). Direct sensory experiences result from the combination

of stimuli such as sight, smell, sound, touch, and taste. The majority of studies have focused on visual perception and standards of visual quality (Burgess, 2012). The sense of sight has a much broader functional range, which allows individuals to notice a subject from afar (Gehl, 2011). People's decisions on where they will travel and what they will avoid doing are also influenced by weather changes such as rain, wind, cold, and heat (Aghostin-sangar, 2007). This is because there are two types of sensory apparatus: distance receptors (eyes, ears, nose) and proximate receptors (skin, membranes, muscles). These receptors differ in terms of specialisation and functional domains (Gehl, 2011). As an example, the sense of smell detects odour differences only within a relatively narrow range (Gehl, 2011). This implies that people's interactions with their surroundings are tri-dimensional, involving emotions, thought or cognitive processes, and physiology (Aghostin-sangar, 2007). Appropriate surroundings are those that make culturally appropriate emotions and feelings visible (Burgess, 2012).

Environmental perception studies are based on the idea that an individual's view of the world is constructed using direct sensory experiences that are ordered in major ways by processes of perception and cognition and are impacted by social and cultural norms (Burgess, 2012). As with other ambient factors, there is significant evidence that noises can 'arouse' or distract individuals, to the level which they are regarded bothersome, a nuisance, or pleasurable is determined by individual sensitivity (Aghostin-sangar, 2007). This is due to the auditory sense, which has a wider functional range (Gehl, 2011). Uncomfortably noisy surroundings are associated with increased arrest rates, hostility, decreased environmental care, decreased social engagement, and errors in judgement (Aghostin-sangar, 2007). Because sight and hearing are associated with the most comprehensive of outdoor social activities - seeing and hearing interactions - how they perform is, of course, a critical planning consideration (Gehl, 2011).

Experience is obtained by action and interaction with the environment, and is represented in the individual's ability to change settings of a place for their own purposes that contrast with its true function or to interpret cues for acceptable behaviour in public places (Burgess, 2012). The diverse purposes portrayed in the streets offer various objectives that allow the public to create both active and semi active edges. This allows a space to be build outside their region to encourage the presence of the people into that space (Jalaladdini & Oktay, 2012). Activities that occur in outdoor spaces can be categorized into different specification, which include the function of a space and the recurrence pattern of events (Hanzl & Ledwoń, 2017). All activities that take place at certain locations are distinct and intriguing enough to keep people coming back (KARACOR, 2014).



## **RESEARCH METHODOLOGY**

The literature evaluation was drawn from a variety of disciplines, including architectural, urban design, environmental geography, psychology, and sociology. This study has already been confined to publications published between 1993 and 2021 in order to condense the research, which includes reviews, case studies, and theoretical work. Literature was gathered to highlight the significance of understanding behavioural aspect in placemaking and its success as a technique.

## **ANALYSIS AND DISCUSSION**

Public spaces offer physical and psychological links between individuals and their surroundings. It is a space that can host a wide range of activities depending on its functions, which makes it ideal as a gathering venue for social activities. Any vacant location that is accessible to the public, yet serves no purpose or meaning, lacks the essence of place-making. As a result, establishing place-making in a public area can enhance a city's strength of its rich and diverse communities that are active in social interactions. According to the literature assessment, placemaking represents either moulding the place via the people, or perhaps shaping the individuals themselves through the function of such public spaces. In any case, the participation of both parties-communities and practitioners-is critical in generating high-quality placemaking. It is comprehensible that a public place could influence people's attitudes; for example, the presence of a pond in a public park can draw users to go fishing; but even so, individuals also are capable of altering the character of a place simply by throwing trash in that specific pond, likely to result in poor behaviour, and the capacity to prevent other individuals from entering that particular park with said pond.

It is true how both communities and the environment have such a role in creating high-quality placemaking. People's behaviour and attitudes become crucial in the process of placemaking because they can impact the overall goal of placemaking. However, before individuals may engage with one another in a public space, they must first be able to access it. This is when the Maslow's hierarchy of needs comes into play, as a guideline for basically all practitioners to better understand people's behaviour so that they may design out spaces and functions wisely and comprehensively. According to Figure 2, Maslow's Hierarchy of Needs includes five stages, with the first and second tiers classified as basic needs which are fundamental requirements, the third and fourth tiers classified as psychological needs, and the top layer classified as self-fulfilment needs. These requirements differ depending on their position, with the bottom position indicating the most desirable wants to be met first, and the top position indicating the final one to be met.

Public places must be easily accessible to the public in order to function efficiently to meet basic and additional needs. Streets and parks are considered

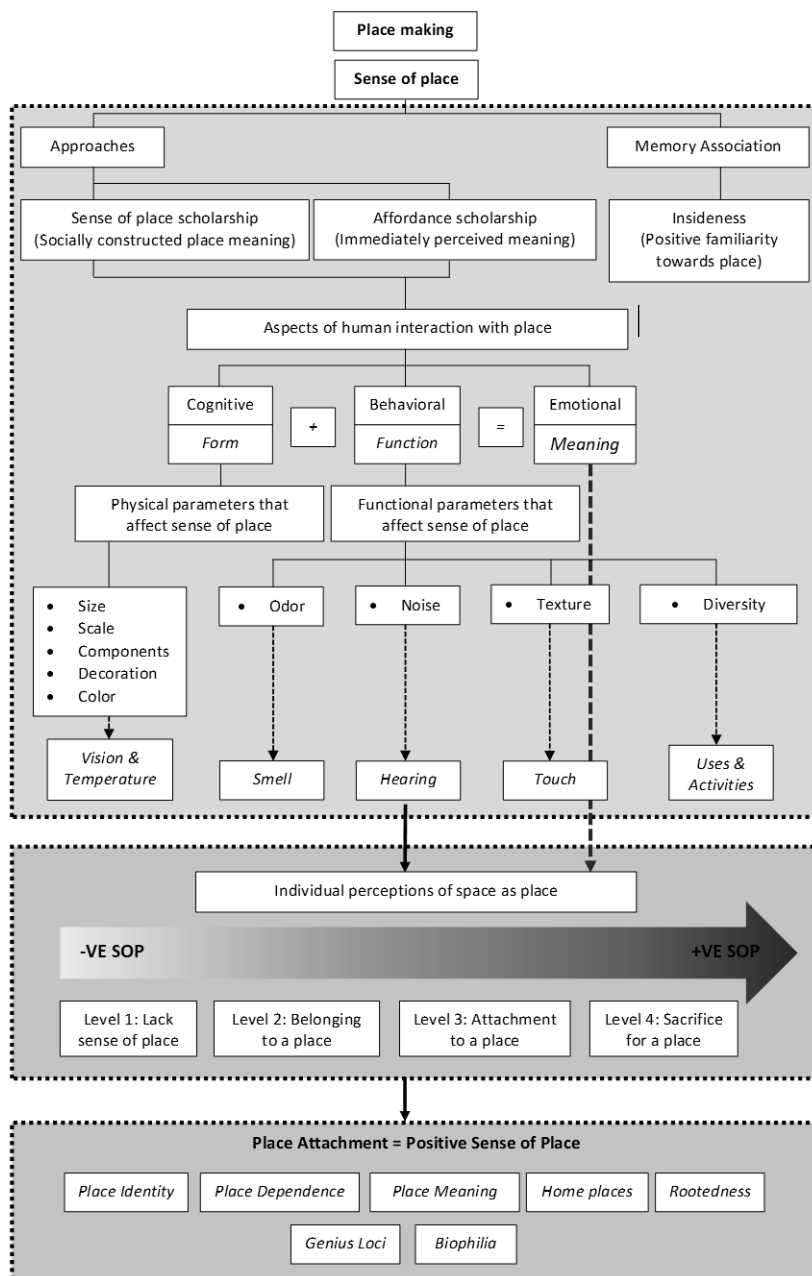
public places; thus, in order for them to properly operate as a location for activity to occur, everybody must be able to use them without difficulty, including the disabled. One of the most important factors in creating vitality and equity in a community is accessibility. Vitality is important in marketing public spaces in order to bring in more people, whereas equity provides equitable service, which implies that the public space and its functions really are available to all segments of society.

A public area not only needs to be inclusive, but it also needs to be safer in terms of physical architecture as well as the surroundings which other individuals creates at a place. Such sites may be secure in terms of design; however if they contain crimes, they are still deemed hazardous and would automatically induce dread in the population. As a result, people will have fewer social encounters with strangers, because they will be hesitant to trust them. This is why some urban designers believe that effective place-making requires mixed-use density, such as placing housing, retail, and transit hubs next to one other, in order to ensure that these places are not left unoccupied or vacant for crime to occur.

Aside from accessibility and safety, which can affect an individual's behaviour, sensory experience is able to influence people's attitudes toward a location, whether it looks appealing or resistant to visitors. Human senses normally refer to the senses of sight, smell, taste, touch, and smell, but it genuinely means to somewhat more beyond just five basic senses. The significant meanings behind such perceptions create reasons for an individual to travel from one location to another. There are several sensory experiences that a person might experience in the setting of public areas. Humans utilise their senses of sight and hearing the most, especially when they are too far away for other senses, such as smell and touch, to pick up. This is because the human vision field is significantly broader and therefore can detect an entity from such a distance. People are compelled to travel because of visual and auditory stimulus. These senses also play a part in the enjoyment of activities, for instance when a person sees colourful canopies or hears people laughing, that person would undoubtedly rush over to whichever his eyes locate and as to why and where the sound comes from. Not only may senses lure individuals to an object, but they can also drive them away if the entity causes unpleasant inputs to the human sensory system. Bad odours from rubbish bins behind shop lots in alleyways might deter people from utilising those pathways, and even unclean sidewalks due to spilt food and drink are reason enough for people to avoid that location. In theory, less activity will occur in these sorts of situations, but in such areas where bad behaviour has become the norm, portions of the senses will be disregarded to maintain the activities going. This is the part during which the demands of self-fulfilment are met.

In this study, it is obvious that not only physical characteristics are significant in producing a sense of place in placemaking, but behavioural components are also key in giving the place a purpose and allowing it to completely operate. The sensory experience plays a vital role in placemaking, and experts may

quickly discern what is ideal for the community with the aid of Maslow's Hierarchy of Needs.



**Figure 2** Theoretical framework of placemaking

## CONCLUSION

In transit-oriented development (TOD), how does the behavioural component impact the methods of placemaking in a public space? People's attitudes and daily routines are definitely influenced by their needs. These requirements may be identified and met with the aid of Maslow's Hierarchy of Needs, which indicates how important each need is based on its stage.

The behavioural element, on the other hand, might vary based on the environment and the individuals themselves. This happens because the type of behaviour is sometimes unexpected, and it may be challenging to keep proper behaviour in society. Nonetheless, while all human wants are the same, what distinguishes one person from another is the desire to fulfil that need. Maslow's Hierarchy of Needs identified the major categories of human needs and ranked them according to their significance. Access to a public space is one of the most important aspects of placemaking since it is the preliminary stage as to what gives the public space value. When activities occur in a public space, this already portrays the purpose of the space and carries its own significance based on the cultural rationale for the activity. Safety, on the other hand, is what makes individuals feel at ease being in a given location. Apart from being able to access public space easily, safety is also important, and it is what makes individuals feel secure being at that location. Sensory experiences involving the five sensory organs are essential for initiating social and recreational connections. The surroundings, which comprise the environment as well as the events taking on around them, primarily excite all of the senses. Accessibility, safety, sensory stimulation, and activities are all important factors which influence people's actions in public places. All of these factors must be considered in order to create high-quality placemaking and to prevent spaces from becoming unoccupied or vacant.

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