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The Impact of Urban Management on Crowd Movement and User Experience through the Pilgrimage of Hajj (Frequent Temporary Mega-Events)

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Abstract
The research looks at the impact of urban management on crowd movement and user experience during the Islamic pilgrimage of Hajj. This study investigates and develops an urban management framework for crowd movement and user experience at frequent temporary mega-events. The thesis uses a mixed-methods approach to address a complex urban context during the annual pilgrimage in Makkah, Saudi Arabia. Hajj is a unique event that hosts millions of pilgrims; nevertheless, it has many constraints and rituals. The current management system of Hajj suffers from a significant overlap of stakeholders' roles and responsibilities and the absence of user-centricity during the planning and operation of the crowd movement. Thus, Hajj needs a new governance system to establish a framework that addresses the users' needs and expectations. This investigation aims to identify the main touchpoints of the crowd movement toward Al-Masjid Al-Haram from the Jamarat Bridge in Mina to address the following aspects: event management, crowd movement, and user experience.

1. Introduction

Mega-events and mass gatherings worldwide have to plan for crowd movements before, during, and after the event time. The planning for such movements usually requires a well-thought strategy to utilize and develop existing services and infrastructure. Complex crowd movements can be found in different practices, whether it is a daily activity, such as metro terminals, train stations, and Disney World, or seasonal events, such as concerts, festivals, and mega sales, or cyclic events, such as pilgrimages, the Olympic games, and the world cup. However, the planning strategy for these events varies depending on whether it is a permanent or a temporary activity.

Permanent events can be described as specific activities that run regularly and are linked to a designated geographic location, for example, football games, public transportation, and praying at the Holy Mosque (Al-Masjid Al-Haram). Planning for this type of activity is a part of the city master plan and usually falls under the city management strategy. In contrast, temporary events can be described as a cyclic event that is not linked to a specific location and rarely occurs at the exact location more than once in a few decades, for instance, the Olympics and the world cup. This type of event requires a unique management strategy to utilize existing urban settings and develop temporary services, which sometimes leads to permanent development. Nevertheless, there is a third type of event that is a mix of permanent and temporary. This means that the event has a designated location and occurs annually only for a few days, leaving that area deserted for the rest of the year. It is the case with the Islamic pilgrimage of Hajj, for example. This type of event is difficult to plan and manage since any permanent developments will only be used for a few days; also, it is not appropriate to apply temporary developments.

By applying the concept of urban consolidation through transit-oriented development (TOD), the urban planning strategy could avoid the poor outcome of overcrowding and congestion. TOD uses different mechanisms to encourage development around activity centers or existing transport, consistent with many urban consolidation strategies across the world (Mobaraki & Oktay Vehbi, 2022; Gillen, 2006). Although the TOD approach seems an excellent solution to implement an urban consolidation system, there is the issue of privileging cars at the existing urban infrastructure, which is more likely to affect urban liveability without proper planning negatively (McCrea, R. & Walters, P., 2012, Aziz Amen, 2022). More importantly, planning for a new urban management system should integrate the social behavior of its intended users. In addition to the management practices, local regulations, and event restrictions to ensure the consolidation of all urban systems to the existing urban fabric, which can be defined as an urban management system. Urban Management is a broad term covering a large set of functions. In general terms, urban management combines all streams converging together to provide inhabitants with a liveable environment. Williams (1978) defined urban management as a framework for the study. Urban management is tackling the demands of cities and towns, which are expanding and rebuilding with policies for land use, structures, and service networks (Aziz Amen & Nia, 2020). Hajj is a complex system in which one aspect cannot be managed or developed without affecting the other elements. When dealing with elements of the Hajj systems, they will impact one another (Aziz Amen, 2021). For example, when developing crowd management plans, they must be aligned with plans for transportation, housing, security, safety, and their impact on the guests' experience (Makkah Region

Development Authority, 2019). Therefore, all systems must be consolidated and integrated to develop a comprehensive operation and development strategy. Hence establishing a new urban management approach for the pilgrimage is pressing and necessary.

2. The Islamic Pilgrimage of Hajj

The Islamic pilgrimage is significant for Muslims worldwide and takes place in the holy sites of Makkah, Saudi Arabia. Thus, the research concerns enhancing the built urban environment of the pilgrimage journey by developing a new framework for Hajj generally and crowed movement toward Al-Masjid Al-Haram in particular. The study aims to explore the main variables of crowd movements to identify all touchpoints to evaluate the current situation and put forward an urban management scheme that fits the local context for future development and operation. There are many aspects to incorporate in order to find a solution in such a complex holy journey. The new development strategy should revolve around the pilgrims' (users) needs and expectations. The new urban management framework should address the issue of overlapping systems by analyzing and composing a strategy for planning and operations.

2.1. City of Makkah

Makkah is regarded as the holiest city in the Islam faith. It is located on the west side of Saudi Arabia. Al-Masjid Al-Haram (The Holy/Grand Mosque) is situated in the central region of Makkah city. The Holy Sites of Hajj (Al-Mashaeer Al-Moqadasah) consist of three areas; Arafat, Muzdalifah, and Mina, which are located in the eastern area of Makkah city. The area of the holy sites is restricted according to Islamic instruction and cannot be expanded. The city of Makkah has been the core geographic location of the annual Islamic pilgrimage of Hajj for more than 1400 years (Othaimeen, 2000). Makkah has unique characteristics. For instance, according to the Islamic teachings, every good deed performed in Makkah is equivalent to a hundred thousand deeds performed elsewhere, and conversely, punitive measures are doubled for misbehavior. Thus, Muslims are eager to visit Makkah as much as they can and love to stay for as long as possible. Makkah is not open to non-Muslims and restricted to pilgrims during Hajj and high-demand seasons to manage and accommodate the high density of visitors. Many areas in Makkah have been designed to induct a specific function for a limited time, making it difficult to establish permanent urban development of infrastructure and services.

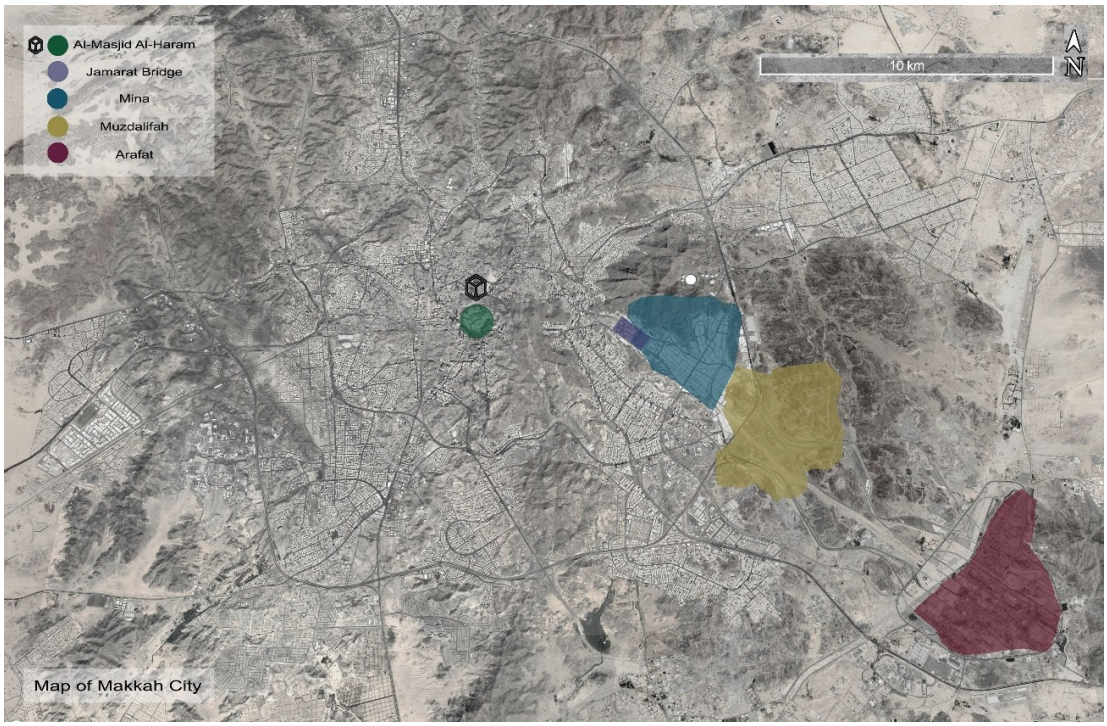

Figure1. Map of Makkah, including the Holy Sites (Google earth, 2020, modified by author)

2.2. History of the Islamic Pilgrimage

Hajj was assigned as an obligation during the time of the Prophet Ibrahim based on God's command. Indeed, Prophet Ibrahim was the Prophet who built the Kaaba in Makkah, which became the destination of Hajj. The Islamic pilgrimage has started by Prophet Muhammad around 632 AD. *"And proclaim to the people the Hajj [pilgrimage]; they will come to you on foot and on every lean camel; they will come from every distant pass",* Verse 27, Surat Alhajj,

Holy Quran. On average, about 2.3 million Muslims perform pilgrimage (Hajj) every year, and this number is expected to increase to reach up to 4.5 million by 2030 (KSA 2030 Vision, 2016). The Holy Sites host the Islamic pilgrimage of Hajj for six days yearly, i.e., from the 8th to 13th of Dhul-Hijjah. The borders of the Holy Sites are determined by Islamic teachings and cannot be changed (Othaimeen, 2000). These spatial constraints and a large number of pilgrims create densities that reach up to 5 or 6 people per square meter during the crowd's movements. Moreover, it creates a significant challenge in terms of transportation and crowd movement.

2.3. Pilgrimage Population

The number of Muslims, according to the latest census of 2020, is about 1.9 billion Muslims worldwide, representing approximately 24.8% of the world's total population (Mhtwyat, 2020). Over the past decades, the number of pilgrims has increased dramatically (General Authority for Statistics, 2019). In the 1930s, the number of pilgrims over a decade was around 500,000 pilgrims and had been growing since then to reach over 16,000,000 pilgrims over the last decade (Figure 2).

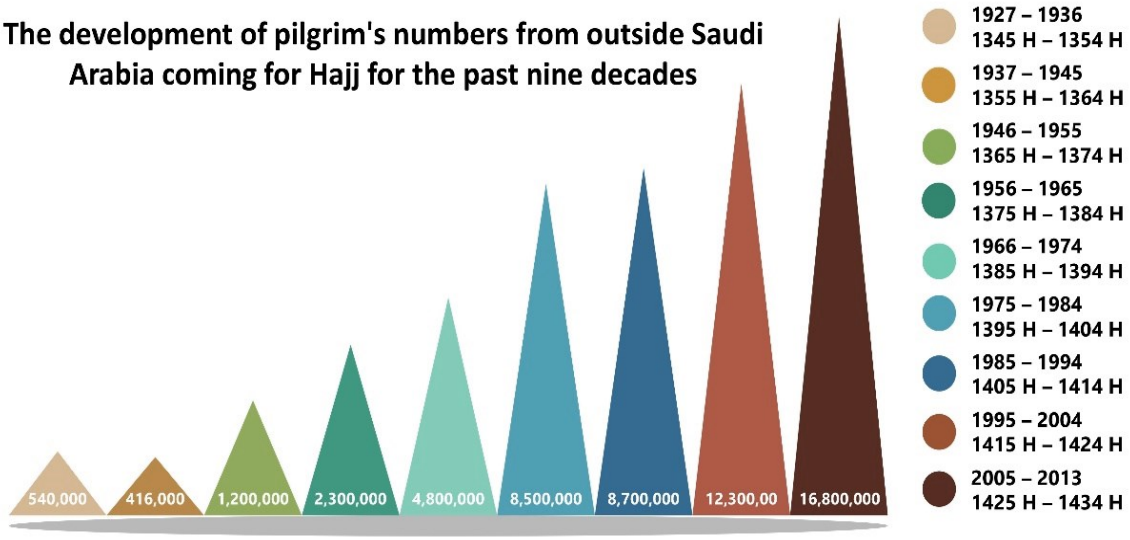

Figure 2. The development of pilgrim's numbers from outside Saudi Arabia coming for Hajj for the past nine decades (Developed by Author).

According to General Authority for Statistics in Saudi Arabia, the Islamic pilgrimage (Hajj) population has been increasing steadily during the last twenty years, starting from 1,839,154 pilgrims in 2000 (1420 H) to reach 2,489, 406 pilgrims and kept growing steadily. In 2012 (1433 H), the number of pilgrims reached 3,161,573, the highest number of all time. That year was considered the baseline for the maximum capacity of the Hajj's infrastructure, which ignited the sequence of developments for Al-Masjid Al-Haram and the pilgrimage sites.

2.4. Service Providers

In such a significant event that over 2.3 million pilgrims attend, it is difficult to provide all the necessary services. Nevertheless, the Saudi government spares no effort or personnel to meet these guests' expectations. In Hajj, hundreds of thousands of people are working behind the seen to manage and provide the essential services for pilgrims and go the extra mile to enhance the pilgrim's experience. The concept of hospitality is rooted deep in the local customs and traditions, making the hosts go out of their way to meet God's guests' needs. "The real concept of hospitality or Dhiyafah can be described as doing good deeds to provide guests' needs … In Muslim belief, Prophet Ibrahim (PBUH) was the first man who provided hospitality to the guests in Makkah. Since then, hospitality became a great ethnic-religious culture that Muslims and Arab have been practicing over centuries." (Karban et al. 2018). According to Mathabh (2017), during Hajj time, there are over 100,000 policemen, 86,987 public servants, 35,938 workers in the transportation sector, 30,870 workers in the health sector, 3,743 workers in communication services, 18,000 firemen, 10,500 volunteers and many more in secondary services. Hence, Hajj does not only host the average number of 2.3 million pilgrims, but it also accommodates all those service providers in addition to the residents of Makkah (approximately 2 million). Therefore, when planning for an urban solution, the strategy should consider all these groups of people directly or indirectly involved in the Hajj process.

3. The Correlation between Event Management, Crowd Movement and User-Centricity; An Urban Management Framework

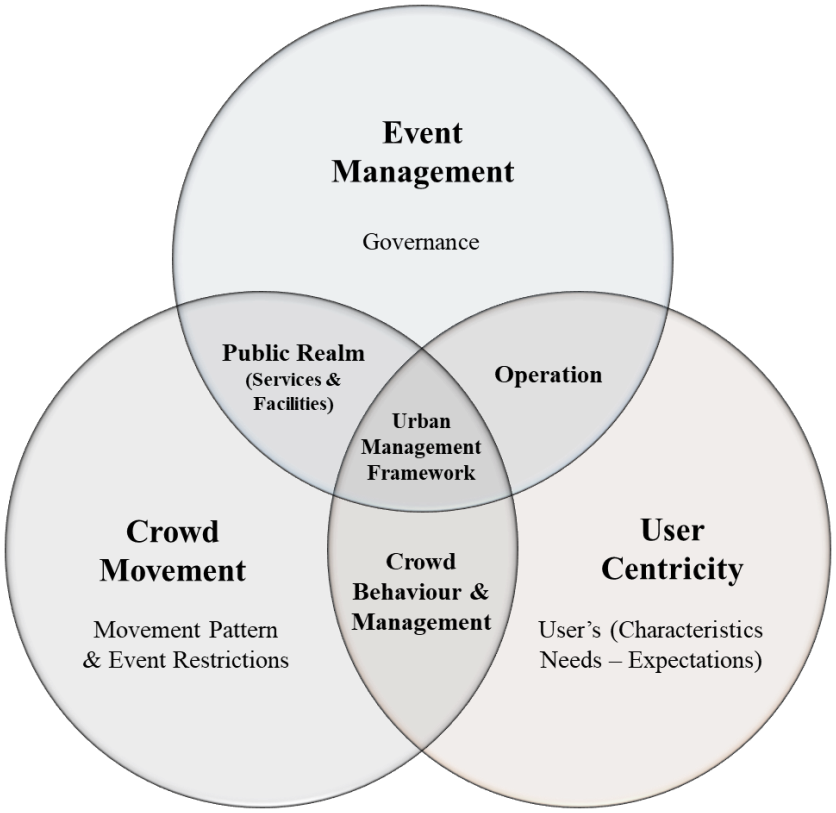

Figure 3. The urban management theoretical framework (Developed by Author).

3.1. Event Management

Mass gatherings are an event where the number of people attending is sufficient to strain the planning and response resources of the host. The mass gathering may include sports events such as the Olympic Games or FIFA World Cup, religious events such as the Islamic pilgrimage of Hajj or the World Youth Day, and cultural and music festivals. Mass gatherings can also occur at train stations, shopping complexes, business precincts, and tourist attractions (Raineri, A., 2016). According to the English dictionary, a crowd as a noun is defined as A group of people assembled or collected into a compact body without order. As a verb, it means to press together or collect in numbers; to swarm; to throng. Whereas gathering as a noun is A meeting or get-together, a party or social function, and as a verb, the present continuous of gather means collecting or bringing together. World Health Organization (WHO) defines an event as a mass gathering if the number of people it brings together is so large that it has the potential to strain the planning and response resources of the health system in the community where it takes place. Mega-events are usually organized on an international level and attended by mass gatherings, creating high-density crowds. Nieto, P., González-Alcaide, G. & Ramos, J. (2017) stated that the concentrations of more than 1,000 people in a specific location and for a particular purpose are considered to be a mass gathering. As well as they noted that most of the literature refers to multitudinous acts that exceed 25,000 people as mass gatherings.

If a single aspect goes without serious consideration in mass gatherings, this can lead to significant stampedes (Gayathri, H., Aparna, P.M. & Verma, A., 2017). Also, Al-Kodmany, K. (2011) suggested that decision-makers should fully realize the intricacies of the interplay of power. There is some evidence suggesting that cities host mega-events and can be subjected to significant pressure to develop their infrastructure for the sole purpose of a temporary event, not considering the long-term uses and effect on the residents. The findings of Kassens-Noor, E. (2010) suggest that it is essential for city governments to align momentous transport needs with sustainable transportation developments. During a mega-event efficiency of the transport agencies could be improved by implementing the best practices, cooperation experienced, and removing bureaucratic barriers. Many cities that host a temporary major event suffer from transportation over peak during the event time, which requires overloading the transportation systems to accommodate the demand. Al-Rugaiba, A. (2008) studied the temporary public transportation system in that area and its impact on crowd accessibility and Al-Masjid Al-Haram. He concluded that the main issue of the current transit system is that it does not have enough capacity for roads and vehicles to

accommodate the high density of pilgrims. For example, during mass gatherings, the host city replans its transportations to perform over the intended capacity to deliver or evacuate the visitors from and to the event area, which is only possible due to their solid infrastructure. One good example of mass gathering events is the Olympics, which is hosted in different cities every four years, and rarely the same city hosts twice. So, it is almost inevitable that when planning or repurposing the host city's infrastructure and utilities, all changes will be in some form of temporary state. The Summer Olympic Games present (SOGs) with a significant challenge for the host city regarding transportation and services. Authorities must operate an entirely new transport system for participants, visitors, and residents to cope with the dramatic increase in the event capacity (Currie, G. & Shalaby, A., 2012). One crucial aspect of event management is addressing the continuous and changeable needs of the event's participants, determining how to plan and manage several elements, such as crowd movement, dwelling, and service distribution. "Crowd management is a critical part of any event and can be totaled as providing a safe, well-planned and organized event for patrons." Williams, V. (2014, p. 3). Special events with increasing numbers and complexity increase risk dramatically.

3.2. Crowd Movement

Crowd science is a study of the effect of density, dynamics, and behavior (individual and collective) on a crowd. Whereas crowd density is a physical condition of the environment considered an antecedent of crowding. In contrast, crowd dynamics relate to crowds' movement and individuals within that crowd. Finally, crowd behavior is a wide variety of behaviors that arise spontaneously from the collective motion of unconnected individuals, which stems from different types of individual and group motivation. (Raineri, A., 2016). Abbott, J. & Geddie, M. (2000) defined crowd management as effectively organizing the movement of crowds. A crowd can be defined as a large number of people collected into a compact body without a specific order. In other words, crowds contain many faceless individuals that follow a particular lead. It is essential to understand that no two crowds are the same. Generally speaking, crowd control represents the steps and procedures that should be taken once a crowd has lost control. A successful crowd control plan involves measures that should be implemented at certain event stages. The reflection of David, A. (2012) on the annual festival of Hindu Ritual Practices in London and its impact on movement and space that the Hindu festival takes place in the streets of London forming a unique movement pattern following the rituals and activities of the festival. Over many years, the Hindu festival has attracted thousands of participants looking for memories and practices in lands of origin. It is a place for future imaginings. "Religious practices are not only about being in place (or emplaced) but also about the moving and transnational journeys of people, objects, traditions, memories and the deities themselves" (David, A., 2012). According to Farhi F. & Mohamed M.M.A. (2020), modern technology is essential to educate visitors about their services and provide various centers for guidance.

In Hajj, there is one noticeable act of crowd management; crowd organizers urge pilgrims to be in a constant motion state during rituals performed to avoid breaking the crowd flow. However, Currie, G. & Shalaby, A. (2012) suggested that the significant outcome of being patient and allowing extra time for journeys during SOGs resulted in the lower expectation of the transportation system during games time and peak demand spread as travelers left. Abbott, J. & Geddie, M. (2000) argued that effective communication among employees, management staff, and guests should lead to successful coordination between these parties, which is an essential element of effective crowd management. In addition, from an event manager's perspective, signage is another form of communication that is effective and useful. Thus, certain techniques or approaches can enhance the operation performance by affecting user behavior. A reasonable approach to tackle this issue could be the customer journey, improving a specific service, or company sales. To truly design a service or an operating system that revolves around its users or customers, a customer journey needs to be mapped out to identify motivations, critical points, and touchpoints (Lemon, K. & Verhoef, P., 2016).

Crowd safety is an emerging concern of local authorities, Johansson A. et al. (2008) discussed the results of relevant video data of high-density conditions during the ritual of Ramy Al-Jamarat at Jamarat Bridge in Mina. These data revealed unexpected pattern formation phenomena. The average individual speed does not go to zero even at ten persons per square meter localities, as an example of pilgrim flows entering the previous Jamarat Bridge in Mina. Haase K. et al. (2019) developed an optimized schedule for pilgrims performing the ritual of Ramy Al-Jamarat. The pilgrim schedule prescribes specific routes and time slots for all registered pilgrim groups. Also, Rehman Felemban (2019) introduced a tool for an interactive visualization rescheduling of groups based on pilgrims' Islamic school of Jurisprudence for performing the ritual of Ramy Al-Jamarat. Additionally, critical crowd conditions such as crowd turbulence can occur due to crowd congestions resulting from significant flow drops, which can cause stop-and-go waves followed by an increase in crowd density. Al-Halabi W. (2018) holds the view that the main issue for pilgrims' accessibility during the movement between Jamarat Bridge and toward Al-Masjid Al-Haram through the southern area is the mixture of pedestrians and vehicle traffic, accompanied by the absence of passenger stations for public transport, and traffic congestion and disruption. That is due to the limited movement axes, high pedestrian density,

and the lack of spaces that can be used for establishing public transportation stations. Multiple technologies for crowd management are currently used in Hajj. For example, Fourati, J., Issaoui, B., & Zidi, K. (2017) argued that some crowd management issues can be solved by applying the principles of the Theory of Inventive Problem Solving (TRIZ). For instance, the principle of segmentation involves dividing an object into independent parts, making an object easy to disassemble, and increasing the degree of its fragmentation or segmentation.

3.3. User-Centricity and Experience

Contrary to common belief, the Hajj journey starts when pilgrims begin the trip to Makkah from their home country and continues through the performance of the ritual itself, to eventually ends where it began. In order to apply the concept of the guest's experience in the pilgrimage sequence, a set of the journey's touchpoints is identified. Currently, there are many challenges in the pilgrimage journey, especially the issue concerned with crowd management. The pilgrims' movement and circulation are unique and restricted by the Islamic teachings and directions regarding competition and performance of rituals. Thus, this is likely to put a heavy load on the current management and operation system. Guest experience is a derived term for customer experience in the hospitality industry. So, it applies to any entity that considers its customers as guests. It is the interaction of the guest with the host or brand. It is hard to imagine the scope of what guests experience when applied to the pilgrimage journey. Guest experience is a collective of various touchpoints, feelings, emotions, and thoughts associated with your brand at any time, way before arrival. Guest experience does not fit neatly into a real-world physical model that is easy to conceptualize. It begins as the first spark of awareness of the brand, and it never really ends. So, the guest experience is inextricably linked to brand quality. Hence, to truly understand the guest experience, it can be radically improved across the board at all touchpoints during the pilgrimage journey, such as accommodation, infrastructure, and transportation. Excellent guest experience is a mindset that needs to be adopted by everyone and everything in the pilgrimage journey. It is all-encompassing and omnipresent (Lemon, K. & Verhoef, P., 2016).

Lefebvre, H. (1991) believed that the human experience of any space is a reflection of the history and key events of that space, "lived experience already possessed its internal rationality; this experience was producing long before thought space, and spatial thought, began reproducing the projection, explosion, image and orientation of the body". Also, Lefebvre, H. (1991) argued that "Nothing disappears completely ... In space, what came earlier continues to underpin what follows ... Pre-existing space underpins not only durable spatial arrangements but also representational spaces and their attendant imagery and mythic narratives." Lefebvre, H. (1991). Lefebvre's statement indicates the importance of the relationship between the use of space and social interaction. Christou, et al. (2018) believed that emotions and satisfaction are linked since the visitor satisfaction is an indication of a successful event, "...the mere fact of being categorized as a group member seems to be necessary and sufficient to produce ethnocentrism and competitive intergroup behavior." (Hogg & Vaughan, 2002, p.400). Thus, a crowd consists of individuals' collective behavior based on their background and culture. "A crowd is a compact gathering or collection of people with connotations of homogeneity of characteristics and unanimity of behavior." (Brown & Lewis, 1998, p.649). Kaysi, I. et al. (2013) suggested that users' evaluation and experience can clearly illustrate the quality of service and reveal its shortcoming. Therefore, the relationship between the urban context and the guest experience directly correlates, which is the leading cause of a thriving urban management system around user needs. In contrast, the current managing system of Hajj can be described as a systemic reactive practice for operation procedures to the existing infrastructure and resources.

4. Data Collection and Fieldwork

This research uses an explanatory mixed methods approach that begins with a qualitative phase for collecting and analyzing the data. This mixed-method research uses multiple methods and techniques for gathering data, including surveys, interviews, and observational studies. First, the surveys were conducted amongst pilgrims during their respective movements to measure the satisfaction rate of the pilgrimage journey's touchpoints and map the crowd movement pattern. The survey primarily focused on the urban settings and the user experience during their movement. The survey is conducted online during the pilgrimage season. The questionnaire included the following topics: availability, quality, and accessibility of services, guidance, and directional systems, and movement conditions and satisfaction rate. These data have resulted in qualitative and quantitative data; each will be analyzed separately. The quantitative data is the primary outcome of the surveys, reflecting the pilgrims' demographics, trip conditions, and satisfaction rate. In contrast, the qualitative data presents the user's opinion and overall experience. Second, the interviews were held with the main stakeholders of the pilgrimage to collect data from several entities to acquire the necessary information regarding Hajj's governance system and operation, which included: regulations and legislation for the pilgrimage of Hajj, general statistics on the pilgrimage of Hajj, crowd numbers, durations, and management system, and future developments. The interviews focused on various aspects, such as user experience, urban management, crowd accessibility, crowd movement, governance regulations, operation practices (services,

resources, human resources), and crowd behavior. Third, the observational study of the crowd movement took place during the pilgrimage, specifically during the pilgrim's movement toward and throughout Al-Masjid Al-Haram. That provided an overview of the crowd movement pattern and operation management. The observational study uses two approaches to collect data. One approach is to visit and document the current situations to observe the movement and operations from the operator's point of view, assuming the service provider role. The other approach is to assume the user role (using the secret shopper approach) during the actual events to gain a similar experience to determine the main touchpoints of the pilgrimage journey.

5. Urban Management Framework

Urban Management primarily regards the co-management system of all urban systems, which directly looks at multiple aspects: space (public realm), governance, activity, and user. Although an urban management framework should incorporate the previous aspects, in this case, the aspects of space and governance can be combined as management, which means the control of space, including assets, resources, and operations, and the governance of the event. Hence, the urban management framework can consist of management, activity, and user. Moreover, the urban management framework identifies various themes, categories, and approaches. Based on that, mixed with the fieldwork findings, the new urban management framework for crowd movements in mega-gathering events has been formed. The analysis process identifies the framework's central themes, sub-themes, and elements. This process has resulted in 59 elements for the new urban management framework; each element is projected on the current situation of the pilgrims' movement in the area.

The data analysis process accrued as follows; After developing the variables of the research framework into the three analysis themes of event management, crowd movement, and user-centricity, which represents the central aspect of organizing frequent temporary mega-events. Next, each theme is divided into three sub-themes, resulting in several sub-themes: public realm (services & facilities), operation, and governance, for the event management theme, which reflects the management aspect, and movement pattern, crowd management, and crowd behavior, for the crowd movement theme, which reflects the activity aspect, and user needs, user characteristics, and expectations (user experience), for the user-centricity theme, which reflect the user aspect**.** Then the following analysis categories of assets & resources, mechanisms, controls, critical points, enablers, directives, requirements, constraints, and objectives are matched respectively with the sub-themes (Figure 4). Lastly, Hajj's customized urban management framework resulted in 59 elements that emerged from the fieldwork data collection and were grouped into the themes and sup-themes of the urban management framework.

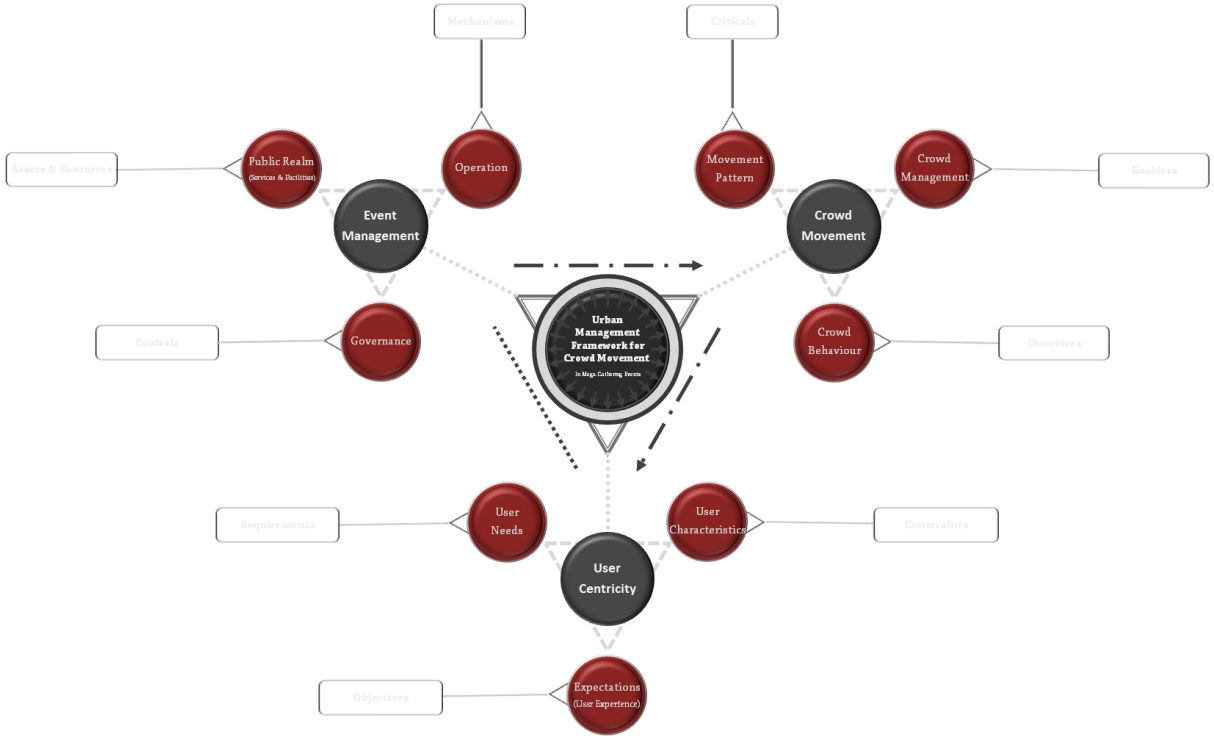

Figure 4. The urban management framework, themes, sub-themes, and analysis categories (Developed by Author).

First, the "Management" aspect of the framework is represented by the event management theme, which includes 21 elements. The first group of elements falls under the sub-theme of the public realm (services & facilities) as follows: infrastructure, developments, transportations, pedestrian pathways, public utilities, temporary usage, cost, urban consolidation, and urban liveability. The second group of elements falls under the sub-theme of operation: human resources, supplies, operation models/practices, standers & guidelines, maintenance, and knowledge transfer. The third group of elements falls under the sub-theme of governance: legislation & regulations, event theme, jurisdiction & responsibilities, supervision & oversight, stakeholders management, and emergency procedures (Figure 5).

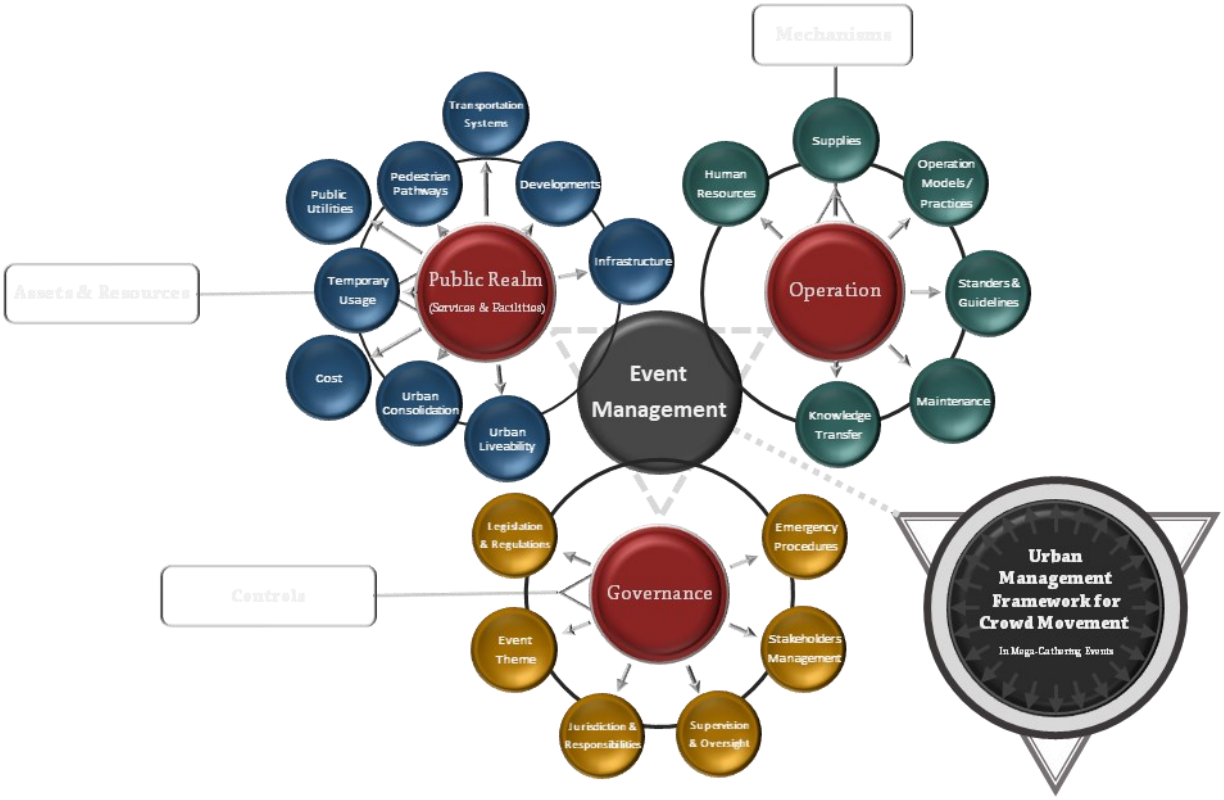

Figure 5. The urban management framework, the theme of urban management (Developed by Author).

Second, the "Activity" aspect of the framework is represented by the theme of crowd movement, which includes 21 elements. The first group of elements falls under the sub-theme of movement pattern: weather hazards, crowd size & density, crowd flow & speed, event restrictions, destinations & routes, peak times, and bottlenecks. The second group of elements falls under the sub-theme of crowd management as follows: management approach & techniques, movement scheduling, safety & security, direction system (signage & navigation system), tools & technology, movement sources, crowd control approach, and guidance approach. The third group of elements falls under the sub-theme of crowd behavior as follows: individual awareness, movement flexibility, sense of security, individual behavior, penalties & incentives, and spirituality (Figure 6).

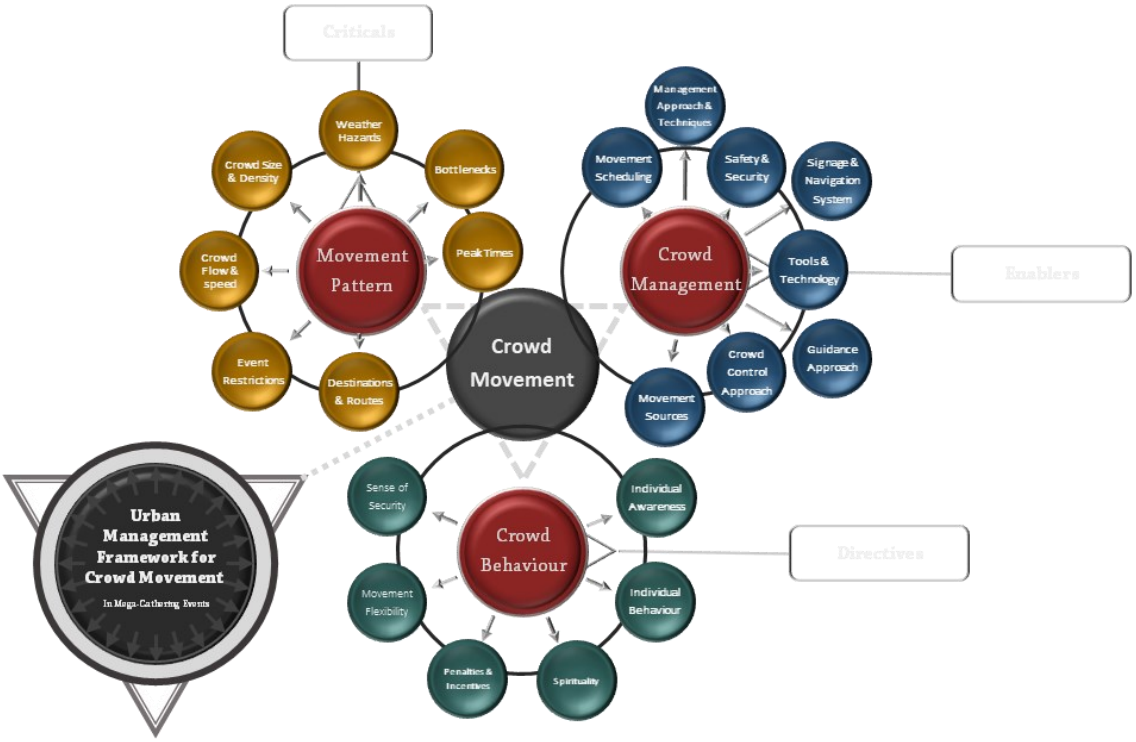

Figure 6. The urban management framework, the theme of crowd movement (Developed by Author).

Third, the "User" aspect of the framework is represented by the theme of "User-Centricity", which includes 17 elements. The first group of elements falls under the sub-theme of user needs as follows: ritual completion, essential services, direct communication, universal access, and targeted services. The second group of elements falls under the sub-theme of user characteristics as follows: ethnicity, culture, belief, health, and costumes & habits. The third group of elements fall under the sub-theme of expectations (user experience) as follows: mobility, service quality, enriched experience, satisfaction, affordability, and options availability (Figure 07).

Figure 7. The urban management framework, the theme of user-centricity (Developed by Author).

6. Conclusions

The study emphasizes the necessity of establishing a new urban management approach for frequent temporary mega-events as a holistic framework that combines and addresses all aspects of management, operations, and activities as one system. On a theoretical level, the research identifies an initial set of learner factors that arise from applying a holistic framework that companies the three themes of event management, crowd movement, and user-centricity. On a practical level, the study will outline a governance strategy for crowd movement during the Islamic pilgrimage of Hajj. This research is expected to enrich the pilgrims' (guest) experience by articulating a set of multi-level touchpoints on that route journey to design guidelines tailored for individuals and groups of pilgrims. These guidelines are expected to realize pilgrims' satisfaction with availability, accessibility, and quality of services. **This study shows the** significant benefit of outlining a strategy for establishing an urban management system to ease crowd accessibility for the Islamic pilgrimage of Hajj in Makkah. This comes in addition to its impact on enhancing the current quality of services and pilgrims' experience. All that can be achieved through policy reform, leading to change in practice. Thus, establishing an urban management framework will accomplish the goal of easing the crowd's movement and enhancing the pilgrims' experience. Finally, a further concern in the research is to provide a base for future research, as some of the subject's data are difficult to acquire. However, it is challenging to develop an urban management framework for a complex urban context with many constraints and ritual customs that should fit the needs for management, operation, and users to achieve the maximum capacity and quality in a well-built environment that hosts millions of pilgrims every year. This requires examining different urban systems that might work as an integrated system. These systems include transportation systems, direction systems, pedestrians' services, and most importantly, the governance guidelines of pilgrimage management. The process should also consider different aspects such as circulation, crowd accessibility, services, regulations, safety, and users' experience to find solutions for such a complex journey.

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Conflict of Interests

The authors declare no conflict of interest.

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