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Beyond City Branding: The Emergence of Soft Infrastructure in Digital Transformation towards Urban Planning Research Roadmap Reformulation

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***Abstract*— Beyond city branding shows the emergence of digital transformation for urban planning, which not only symbolizes the advancement of the use of technology as branding for cities in Indonesia but also as a structured effort to improve the achievement of sustainable development by using technology that is suitable for the growth and development phase of diverse cities in Indonesia. It began with data for development is usually highly dependent on official data from the government. In the digital transformation era, there will be opportunities to provide alternative data by utilizing existing technology to expand citizen communication channels, including social media, which needs to be equipped with requirements to be used as a data source for urban planning. Digital transformation for urban planning should be able to answer the challenges of the context of urban planning in Indonesia with the keywords urban problem, urban growth, planning, and sustainable development, including in choosing the appropriate theme of urban planning of the digital transformation era, which will be highlighted using advance technology. In the case of popular city planning concepts to be adapted like a smart city that tends to be as city branding, it is supposed to be justified, structured, and implemented by considering the planning system, urban governance system, as well as regional autonomy policy in responding to the challenges of urban planning in the era of digital transformation in Indonesia. Here appears the role of soft infrastructure where factors beyond the technical engineering side play an important role, namely human factors, social systems, the competitive side of the private sector, and governance.**

***Keywords*— Urban problem; urban growth; city branding; digital transformation; soft infrastructure.**

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I. INTRODUCTION

This paper addresses the impact of digital transformation on urban planning, both in terms of data utilization and the concept of a theme city to be used as branding for cities. The digital revolution [1] from the perspective of urban planning leads to a transformation of the theme of urban planning that combines the latest technological advances with local cultural conditions [2], where the latest technological terms are closely related to filling the urban planning theme, like the terms big data, artificial intelligence, and smart cities [3]. Since a smart city is associated with the theme of city development by utilizing the latest technology, the smart city itself is often positioned as city branding. In contrast, if high-tech is adopted for the city development theme, it can be used to solve urban problems as widely as possible and formulate direction for more predictable sustainable urban development [4]. This is based on the nature of city branding which should function as an expansion of the concept of urban management [5].

The competitiveness of Indonesian cities at the ASEAN level can be used to immediately implement a digital transformation, especially regarding urban development. From the range 2005 to 2015, as studied and analyzed by Kearney, Indonesia is still on part with Cambodia and Brunei. It is just that Indonesia has started to focus on ICT roadmaps and connectivity development, while Cambodia already has an ICT master plan, and Brunei is focused on the early stages of developing a digital governance strategy. Indonesia needs to shift to a phase with a solid and comprehensive digital strategy. Indonesia needs to catch up with Thailand and Vietnam in developing a digital strategy (up to one phase), then also strive to pursue the highest phase with a mature and

comprehensive digital strategy such as Singapore, the Philippines, and Malaysia [6].

It is important to develop leading cities that are ICT literate to be more competitive and share these advantages with other cities systematically, not only based on urban areas [7], by activating and optimizing the respective roles of each city in terms of the national spatial structure. Various innovations need to be promoted, not only innovations in the preparation of city plans but overall, in terms of urban governance, such as the theme of innovative urban development, to innovative development financing, especially financing from non-government sources.

II. Material and Method

The paper traces scientific publication progress towards the concept of one data in the digital era, where social media supported by technology can promote participative planning approaches in digital transformation. Another thing is the spirit of the local government to develop a concept of modern urban planning that is highly connected to technology but still only to show that they are technology literate or use technology as a symbol to cope with high-tech, not yet highlight improving the performance of public services and other attributes to cope with sustainable urban development.

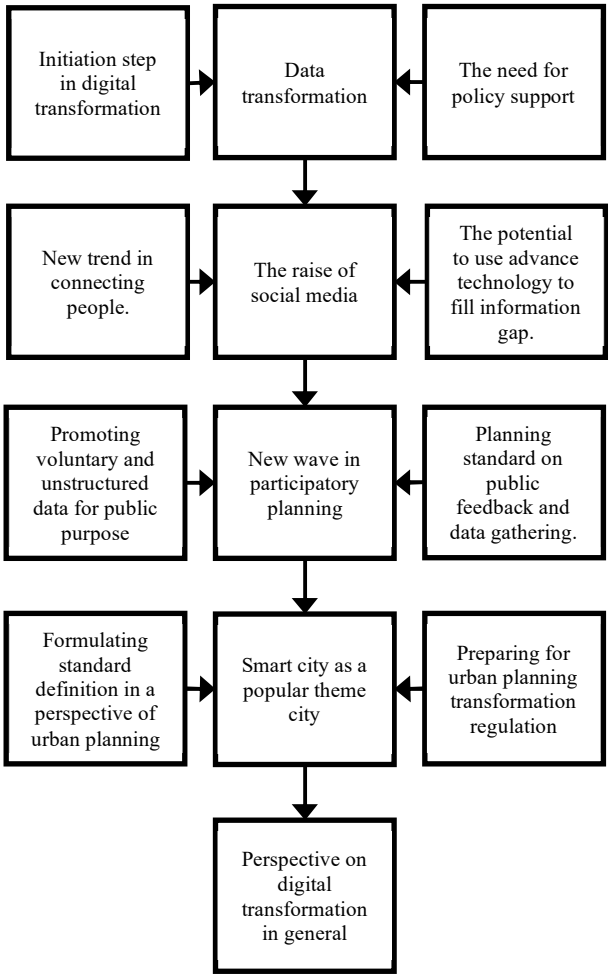

Fig. 1 The Rationale in Formulating Questionnaire

This method emphasizes identifying digital transformation for urban planning in Indonesia through an online survey to respondents who attended the socialization of one Indonesian data and urban development opportunities in Indonesia on 27 February 2021, in which 197 questionnaire answer sheets were collected. The webinar was attended by scientists, practitioners, state civil apparatus, and university students. The results are supported by the literature reviews from scientific publications with Microsoft academic tools (www.academic.microsoft.com). Finally, these results will be positioned in the context of urban planning in Indonesia and the research progress of smart sustainable cities from the perspective of planners [8].

The results describe trends and progress in the digital transformation process as an effort to understand the progress of urban planning in the digital era, then compare with the keywords of the progress of roadmap research on smart sustainable cities by the first author. The discussion stage of this paper brings up the challenge for urban planning systems towards a digital transformation, which begins with data management in the form of Indonesian data. In addition, this leads to integrating spatial planning systems with input from one data and opportunities for using other data in the digital transformation era, namely using data from social media, while considering the nature and limitations of the social media data. In the end, efforts to create an Indonesian database supported using social media data may contribute to answering the challenge of achieving a just, inclusive, and sustainable urban development. The prospective future research for the context of Indonesia is to search for suitable digital transformation in urban planning.

III. Results and Discussion

It can be seen that digital transformation can affect urban planning, especially in the discussion of smart cities for a wider context and even a phenomenon of city branding. Technological developments may encourage studies related to information flow which will change the concept of urban mobility or create a new effort in analyzing urban environments and creativity in urban promotion in the case of city branding. The development of smart cities on a wider scale encourages the formulation of a city as a platform so that they can exchange information and potential as well as how to solve various problems. Also, this can be supported by the use of urban intelligence, which further explains that the presence of the digital era will lead to a new paradigm shift, leading to the new concept of big data, metadata, and information management. Indonesia took strategic steps by way of proposing one data concept. In the case of urban planning in the digital transformation era, this progress is expected to answer various trends, such as the concept of sustainability, polarization space, and green economy as an adaptation of SDGs (sustainable development goals) and NUA (new urban agenda) into urban planning systems in Indonesia.

Progress related to scientific publications shows that artificial intelligence coexists with urban planning. It can be understood that the progress of Artificial Intelligence for urban planning has been developing for a long time, especially in terms of military operations and for the public sphere, it is in terms of GIS (geographical information system). Together with urban planning, the research progress is shown on the theme of smart cities, especially in data

visualization, intelligent systems, human-computer interaction, visualization, the internet of things, and course, in understanding land-use change and behavioral research [9]. In the context of land-use change, as it has become a new phenomenon in the mid-1990s [10], his research has developed, especially in machine learning, urban growth, cellular automata, land use planning, and market chains.

Information on the existence of Indonesia's one data initiative. Most respondents know government programs about the concept of one data (82.20%). This is in line with the political will of the government of Indonesia under the regional autonomy system [11], along with the technological support to provide sufficient data [12].

Data that has been trusted so far (in the context of development planning). Some respondents still believe that official data sources for planning so far have come from official government data (60.90%), other sources, research data (23.40%), or reliable survey results (14.70%). This is in line with the sensitive data managed by private sectors [13].

Identification of views on data sources used to meet data availability so far other than official government institutions. Alternative data that are believed to be trusted and used apart from official government institutions are survey data (45.20%) and research data (43.10%), while a small portion mentions data from individuals/public figures/influencers or data from certain companies, and the smallest is data from social media (0.56%). This indicates that related to data for development planning is not only limited to the availability of alternatives but also the level of trust and legality of the data because the data is used for the livelihood of many people. Another difficulty, like the case in Sydney, is how to moderate social media to stick to urban planning strategic issues [14].

Identify views on the presence of social media as a data provider. Most of the respondents stated that social media data can be used as a reference in making development plans (48.89%), but other answers indicate that not 100% of social media data can be used as a reference (33.89%) and also depends on various conditions (17.22%). However, the rise of big data in general, like social media, will lead to a new arena of competition and innovation in the digital era [15].

Identification of social media data requirements so that they can be used as a reference for development planning. Respondents answered about the requirements for efforts that social media data can be used as a reference for development planning; namely the data is based on reliable studies/research/surveys, data validated by trusted institutions, and social media data from data guardians (40.56%). In comparison, the other data is the data based on trusted studies/research/surveys, data from the eyes of social media uploaders, data validated by trusted institutions (16.67%). This shows the initiation phase of social media to foster citizen engagement and participation in urban planning [16].

Identify the meaning of smart city. Respondents answered that the meaning of smart city was: City of technology/Command Center, City of innovation/creative, City related to efforts to improve science and technology (28.33%), while the second most were innovative/creative city, city related to local wisdom, cities related to efforts to improve science and technology (13.33%). This shows the expectations of smart city to cover features, ranging from the ability to answer problems to utilizing advanced technology to adapting sustainable development, not just urban labeling [17].

Identify the meaning of community participation in the digital transformation period. The meaning of community participation during the digital transformation period, the respondents answered that reading/knowing actual information, taking an active role in solving actual problems, and utilizing various channels as a means of participation (20.56%), while the second-highest answer was reading/knowing actual information, sharing actual information, utilizing various channels as a means of participation (13.38%). The third is sharing actual information, actively solving actual problems, and utilizing various channels to participate (12.78%). Respondents tend to answer the complete attributes for the concept of community participation as part of the digital transformation process for the context of community participation in planning. This phenomenon shows that stakeholders can do it where suitable technology is available for all. This can even change behavior in responding to government programs, especially in access, dialogue, action, and public opinion [18].

Identify efforts to increase community participation in the era of digital transformation. The way to increase community participation respondents answered that the most respondents were to introduce development issues, provide participation channels, and invite direct/active participation (35.00%). The second most were campaigns and promotions, introducing development issues, and providing participation channels (15.00%). An interesting case relevant to this is in Detroit, where technological advances accelerate the achievement of community redevelopment goals [19].

Identify the meaning of city branding in the Indonesian context. Regarding the meaning of city branding in the Indonesian context, respondents answered efforts to solve development problems, efforts to improve the economy, and introducing local characteristics (27.22%), while the second most answered were campaigns and promotions, efforts to improve the economy, introducing local characteristics (21.67%). This shows that city branding is in line with the competitive identity concept [20], where brand, local characteristics (represented by people and culture), and economy (represented by investment) are parts of competitive identity. Concerning city branding from the research of Kavaratzis and Ashworth [5], this indicates that city branding is not only limited to promoting high-tech devices that are already owned by a city, but also makes city branding part of the theme of city development, where the overall concept of city branding needs to be understood by state civil apparatus (ASN=*aparatur sipil negara*). Which then uses it not only as part of a smart city in a branding way but also as part of urban governance implementation in improving the performance of a city towards sustainable urban development.

Identify the economic meaning of digital transformation. Regarding the economic meaning of digital transformation, the respondents answered that most were getting new business opportunities, getting new information to improve business, and Being a partner in providing certain data/information (14.44%), while the second-highest answer was getting new information to improve business (8.33%). This opportunity further emphasizes that a qualified regulatory system must

accompany digital transformation to support economic growth [21].

In summary, the online survey results show that knowledgeable groups, such as state civil servants, researchers, and members of professional associations, understand the importance of data for planning. Advanced technology can provide new opportunities in providing data, especially utilizing the provision of unstructured data for public purposes through social media communication channels that are being trended by almost everyone in utilizing mobile technology to communicate. The popular urban planning theme is also closely related to advanced technology and modern life in the digital city era, namely, the smart city. However, often smart city is considered as branding. Therefore it is important to position the smart city, which is expected to have various features closely related to technology equipped with command centers, innovative/creative cities, and related to efforts to improve science and technology, all of which can play a very important role in supporting urban planning transformation in the digital transformation era.

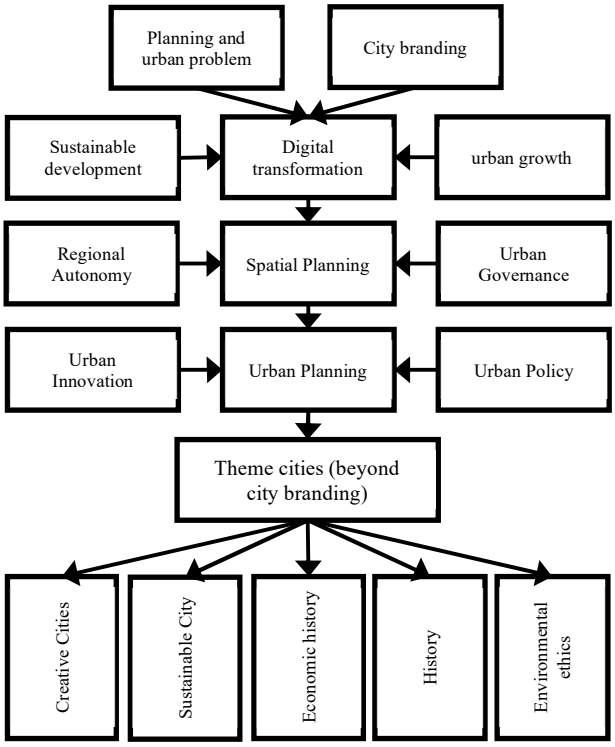

Fig. 2 From Urban Problems and Digital Transformation to Theme Cities

This paper was created to respond to the phenomenon of digital transformation in the Indonesian context from the perspective of urban planners. This phenomenon shows a new trend in response to four keywords from the scope of the first author's research that seeks to be studied through smart, sustainable cities, namely planning, urban problems, urban growth, and sustainable development [8] [9]. For urban planners, digital transformation can provide a new trend in spatial planning. In Indonesia, it is influenced by regional autonomy policy and the urban governance system, which cannot be separated from the role of the central and provincial governments. In more detail from spatial planning, urban planning has challenges to always innovate by considering the urban policy system in responding to various urban problems [8].

When related to scientific publications, the four keywords in the research progress of smart sustainable cities can be described as follows. Every city in the world has its own uniqueness, and no one city is exactly the same, because each city has its own history from the point of view of space and its arrangement. In addition, the interpretation of the city and its social conditions also provides an overview of various perspectives on actions to solve problems in the city [22]. Information about history and space can be well understood through the data shared for planning, as shown by respondents who consider that one data is the first step in entering the digital transformation era. In the Indonesian context, one data is an initiative that is supported by the government's political will with the openness of public information on the current regional autonomy system [11]. In the era of digital transformation, urban planners hope that technology will be able to explore these problems further because it is now possible to obtain data from residents in the form of feedback on certain urban policies [12].

Urban complexity in the 21st century is, of course, more complex than the development of previous cities, including during the identification of urban characteristics, which increased and the area expanded beyond administrative boundaries, as revealed by the classical work on the urban field by Friedmann and Miller in the mid-1960s [23] which later developed into studies on the polycentric urban region [24]. At the same time, there have been attempts to understand urban growth and spatial structure using mathematical modeling equipped with cases in various places [25]. Even in the era of the 2000s, there were already studies on the characteristics of urban growth in developing countries [26]. Responding to respondents' answers to data limitations, data dependence on a trusted Government. Opportunities to provide data for planning indicate that this is a challenge for urban planning education at the university level to improve the quality of its planning studio lessons, including research in the development of living labs, and the clarity of the research roadmap. Continuous research related to urban planning, including collaboration between providers, not only for market purposes or for improving the university's general performance indicators, but also as progress for the public interest. Therefore, since the 2010s decade, many people have written about the opportunities for social media and mobile technologies to foster citizen engagement and participation in urban planning [16], including when they relate these opportunities to urban conditions in Indonesia [27].

Today's technological developments that allow intensive communication between stakeholders have actually been discussed in the realm of planning theory, specifically about communicative action [28], even Healey in the next decade has linked the role of knowledge in communicative practices [29] and even did not long after that, some articles corrected Habermas' assumptions, especially regarding considerations of political and professional nuances [30]. The development of this theory shows the uniqueness of planning that must always be based on the public domain, as stated by Friedmann [31]; where this is still relevant in the era of digital transformation, considering the presence of advanced technology can provide feedback related to social learning,

how to encourage social reform, even social mobilization. Likewise, the presence of social media can be used as a reference in making development plans with various specific requirements. For example, past documentation through a device can be used as a consideration in determining policies that are more proportional to the social conditions of the community [27].

Sustainable development is the fourth keyword, where this keyword shows the planning commitment to keep adapting environmental awareness as it was originally introduced by Ebenezer Howard and Patrick Geddes in the early 1900s in the scientific development of urban planning, as this attention was reaffirmed in the 1980s that development must pay attention to sustainability [32]. It is important to be a concern of the world community [33]. Therefore, the understanding of sustainable development as the concept was discussed in the 1990s decade [34] and in the following decades [35] shows that urban planning must remain grounded in sustainable development.

The concept of theme cities [36] in the 2010s showed a new nuance of enriching the concept of sustainability and a better future in urban planning. It can be seen as an effort to respond to digital transformation by considering the presence of advanced technologies, local potential, and identity. The essence of a theme city is a creative approach to planning a sustainable city by considering the history and economic potential and adopting environmental ethics in its development.

In order to ensure attention to history and culture, environmental ethics, and sustainable development, one approach to city planning that is closely related to advanced technology, namely smart city [37] [38], should be seen as part of a theme city to ensure its position that is pro to sustainable development, inclusiveness, and environmental ethics. From the survey results, it can be seen from the expectations of the respondents for the smart city concept which wants to cover many of these features, ranging from the ability to answer problems to utilizing advanced technology and adapting sustainable development, not just urban labeling [17] as a trick to marketing advanced technologies products. To check on the theme of city development, which is often more branding, respondents are asked to try to understand their perceptions in the public eye because in theory, city branding is useful in developing a competitive identity [20]. This concept provides economic opportunities for its citizens, such as writing about the New York branding case in crisis to open up opportunities for stakeholder collaboration [39]. Both the smart city concept and the branding concept for the public sphere challenge how advanced technology can be used inclusively by all stakeholders so that the public can inclusively participate in city planning during the digital transformation period [40]. This is also what we want to emphasize on the questionnaire questions related to the meaning of community participation in the digital transformation era because it contains the meaning of access for everyone in the context of encouraging an inclusive and sustainable development theme, as discussed in the implementation target of SDGs 11 to make cities. inclusive, safe, resilient, and sustainable [41]. The smart cities in the digital era with the Helsinki case as well as the use of advanced technology, can lead its citizens towards data-based innovations and a knowledge economy [42].

As previously stated at the beginning of this article, previous research on smart sustainable cities stated that it is important to understand from the start the characteristics of a city before formulating a smart sustainable city formula, namely: planning, urban problems, urban growth, and sustainable development. In this case, these four things are the first step in providing a basic framework, where in the next stage, smart sustainable cities will definitely be faced with innovative planning products, which include technical engineering matters or hard infrastructure and soft infrastructure. Regarding soft infrastructure, it appears that the analysis results show that a smart sustainable city will largely be determined by stakeholders' characteristics, roles, and competencies to be willing to cooperate for the common good. Indeed, in this soft infrastructure concept, there are challenges such as conflict of interest between business and public interests because innovative products related to data are works that can be commercialized and compete to become the choice of city residents. As mentioned in the discussion above, this choice will also be influenced by governance, especially the role of government from the central level to the city level.

IV. Conclusion

Beyond city branding represents point of view the emergence of digital transformation in Indonesia. It showed literacy in the form of adapting advance technology, including investment in technological-based tools for the public and the extension to enable more effective governance at the city level.

Digital transformation for urban planning symbolizes the urban growth of decades, from the increase and the area expanded beyond administrative boundaries in the 1960s [23] to the attention of urban growth in developing countries in the 2000s [26]. The emergence of digital transformation enables stakeholders to participate in urban planning processes. This can be seen as the latest development to communicative action concept [28] and knowledge [29] in public domain [31], like urban planning arena, including professional and political interest in it [30].

Social media as a data provision option has the potential to be used to increase environmental concern [32], which has been instilled since the beginning of urban planning science being developed globally [33], as an action from sustainable development as the fourth keyword which in 1990s [34] and 2000s [35] still shows that urban planning concept is based on sustainable development.

It appears that the popular urban development themes are those that are closely related to technology usage in the expectation of accelerating urban economic growth like branding case which is in crisis to provide opportunities for collaboration among stakeholders [39], or smart cities where the public can inclusively participate in city planning during the digital transformation period [40]. These technology-based concepts can be covered under a theme city concept [36] whose content is based on environmental ethics, which is a sustainable creative approach by considering the history and economic potential. In a smart city development concept, this idea is given awareness of the importance of the nation's identity to ensure the proposed concept is fit with Indonesia,

as the Japanese's concept of digital triplet [43]. Once again, in the smart sustainable cities discourse, the soft infrastructure side needs to be integrated because it becomes a guide to accompany the creation of technical engineering innovations so that it can be carried out more proportionally in a city according to the characteristics and capabilities of the city.

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