E-PARTICIPATION IN SLUM UPGRADING

FACILITATING THE ESTABLISHMENT OF A LOCALLY ROOTED LIVEABLE LIFE INDEX TO GUIDE SLUM UPGRADINGB.

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1 INTRODUCTION

Over the years, the term *participation* has become an integral part in the context of urban planning. Its importance has been acknowledged in the improvement of various aspects: relationship building between governments and citizens, stronger levels of democracy and decision-making processes, among others.[1, 2, 3, 4] Several typologies of participation have been derived from Arnstein's influential "ladder of participation".[5] In order to pay closer attention to who is participating, in which context and for whose benefit, further steps need to achieve clarity through specificity, if the call for e-participation is to fulfil its democratizing promise. While some forms of citizen participation, such as consultation rely on the relevance of knowledge and opinions shared by citizens, a collaborative activity, such as the LLI, depends more on the quality of data provided by the participants. The LLI views slum dwellers as decisive stakeholders with expert knowledge about their neighbourhood. Their contribution is solely considered in the definition of locally rooted liveable life indicators to form a LLI[6]. A detailed typology of e-participation might allow a more specific analysis of the causal links between different forms of participation and their specific outcomes.

Still, there is a lack of evidence from studies about e-participation potentials for contexts such as slum upgrading projects of Smart Cities. Extending the findings on e-participation in other contexts creates opportunities for mobile application options. In connection to the LLI, e-participation can facilitate slum dwellers' engagement and thereby the identification of relevant locally rooted liveable life indicators. The LLI is based on a procedure, which focusses on the identification of locally rooted liveable life indicators to classify them among categories and establish a guideline for sustainable slum

[1] Gishti, M. (2017): Citizen participation in urban and landscape planning, International Master of Landscape Architecture, Hochschule für Wirtschaft und Umwelt Nürtingen-Geislingen, p. 14.
[2] Lauria, M.; Slotterback, C. S. (2020): Learning from Arnstein's Ladder: From Citizen Participation to Public Engagement, Taylor & Francis, New York, p. 32.
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[4] OECD (2020): Innovative Citizen Participation and New Democratic Institutions: Catching The Deliberative Wave, retrieved from https://www.oecd.org/gov/open-government/innovative-citizen-participation-new-democratic-institutions-catching-the-deliberative-wave-highlights.pdf (20.10.2021).
[5] Arnstein, S. R. (1969): A Ladder of Citizen Participation, in: Journal of the American Planning Association, Vol. 35, No. 4, p. 214– 216.
[6] Liveable Life Index Definition: The LLI consists of a list of locally rooted liveable life indicators, which display in their entirety a guideline that can be used at policy level to design slum upgrading projects.

upgrading. So far, the concept is based on an analogue approach, developed within the Smart City Bhubaneswar (India).[7] The expansion of ICT in Smart Cities to an e-participation initiative in form of a digital LLI has the potential to disseminate policy planning information and solicit citizen's inputs in planning. Still, the success of an e-participation initiative depends on the careful selection of the best-matching techniques and ICT tools.

2 Citizen participation in the age of ICT: E-participation

The definitions and existing data on e-participation are based on the findings by the Organisation for Economic Co-operation and Development (OECD), the United Nations (UN) and the EU. There exists no general definition for the term e-participation, still the general consensus is that it can be distinguished among three interactions between governments and citizens: e-information, e-consultation and e-cooperation.[8] The category *e-information* is linked to the provision of information that encourages and empowers citizen participation, such as online publishing of policies, schedules for online discussion forums and electronic notifications to inform citizens who want to participate. The category *e-consultation* considers interactive tools to conduct a dialogue and receive feedback/ inputs from citizens, such as online surveys. It considers measures used to request citizen opinion, feedback and input through chats, blogs, online forums, instant messaging, etc. The category *e-cooperation* considers citizens empowerment to a level that takes into account citizens view when making policy decisions within electronic formats. This category holds the highest level of participation, where decision making of dwellers is highest. Within Arnstein's ladder, this condition would display level 7 and 8 (Figure 1).

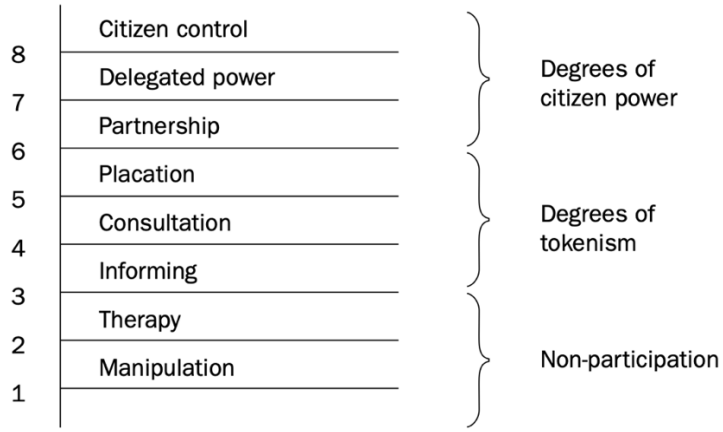

Figure 1: Arnstein's ladder of citizen participation.[9]

3 The establishment of a digital Liveable Life Index

The liveable life concept serves as a basis for analysing slum upgrading from individual perspectives, and for implementing a participatory approach that contributes to a sustained increase in the quality

[7] Eicker, B. N. (2022): The Liveable Life Index: How locally rooted liveable life perceptions are identified to facilitate the initiation of location specific upgrading projects among supporting institutions and create a liveable environment in informal settlements, using Bhubaneswar as an example (unpublished doctoral dissertation), Hafen City University, Hamburg, p. 113.
[8] OECD (2020): Innovative Citizen Participation and New Democratic Institutions: Catching The Deliberative Wave, retrieved from https://www.oecd.org/gov/open-government/innovative-citizen-participation-new-democratic-institutions-catching-the-deliberative-wave-highlights.pdf (20.10.2021).
[9] Arnstein, S. R. (1969): A Ladder of Citizen Participation, in: Journal of the American Planning Association, Vol. 35, No. 4, p. 214– 216.

of life. [10, 11, 12, 13] In order to support the identification of liveable life indicators in slums and give guidance for sustainable slum upgrading, the LLI method has been developed.

The LLI consists of four main elements (safety/ society/ infrastructure (physical space)/ service), which derived from local research in six slum neighbourhoods of the Smart City Bhubaneswar and have proven to be the overriding factors.[14] Each element has location-dependent, different sub-elements, for example socialising, sanitation, distance to education facilities, etc. These sub-elements are conditioned by local climate, culture, society, and geography, among others, and reflect a liveable life indicator that shows what needs to exist according to local priorities.

So far, the LLI concept is based on a non-digital approach, developed within Bhubaneswar and based on a traditional form of face-to-face participation, which has several limitations and obstacles. Most face-to-face methods are time consuming for dwellers as well as experts conducting local research.[15] An average face-to-face method would take three to four working-days in order to get expected results. Further, most of face-to-face methods require physical presence of dwellers at a particular place. Moreover face-to-face methods are not transparent enough, as it is not clear how dwellers contributions would be in an anonymous setting.[16] Lastly, also scale and size are counted as a limitation for face-to-face methods. Administrative processes are usually large and complex, dwellers involvement in particular large neighbourhoods requires many resources and can even be impossible.

In contrast, e-participation in connection to the LLI can effectively facilitate the identification of locally rooted liveable life perceptions that characterize realistic solutions and decision making within slum upgrading. Creating an environment of transparency, openness and integrative options allows personal ownership of established solutions and the creation of relationships among stakeholders. It further aims to drive the quality, usefulness and relevancy of information and services.[17] Lastly, also engagement and dialogue among general key stakeholders related to slum upgrading projects are counted as an advantage of e-participation. Communicating feedback and suggestions in an electronic format simplifies transparent articulations and the gathering of general opinions on approaches.

In order to counteract participation limitations within the non-digital LLI, there is a need for participation forms that make participatory planning processes compatible with new urban settings. Focussing on the expansion of Smart Cities, e-participation became a core element of ICT in the process of allowing easier interactions between governments and citizens. Integrating the potentials of e-participation within the LLI approach has the potential to disseminate policy planning information and solicit citizen's inputs. Still, the success of an LLI e-participation initiative depends on the careful

[10] Magalhães, F. (2016): Slum Upgrading and Housing in Latin America, Inter-American Development Bank, New York, p. 13.
[11] Wagner, F.; Caves, R. W. (2019): Community Livability: Issues and Approaches to Sustaining the Well-Being of People and Communities, 2nd edition, Taylor & Francis, London, p. 45.
[12] Wagner, F. (2018): Livable Cities from a Global Perspective, Taylor & Francis, London, p. 69.
[13] Patki, S. Y.; Shah, M. G.; Kale, C. M. (2020): Building Drawing with an integrated approach to Built Environment, 6th edition, McGraw-Hill Education, New York, p. 110.
[14] Eicker, B. N. (2022): The Liveable Life Index: How locally rooted liveable life perceptions are identified to facilitate the initiation of location specific upgrading projects among supporting institutions and create a liveable environment in informal settlements, using Bhubaneswar as an example (unpublished doctoral dissertation), Hafen City University, Hamburg, p. 113.
[15] Selle, K. (2013): Mitwirkung mit Wirkung? Anmerkungen zum Stand der Forschung über planungsbezogene Kommunikation und das, was von ihr bleibt, in: Planung neu denken, Vol. 2013, No. 2/3, p. 19.
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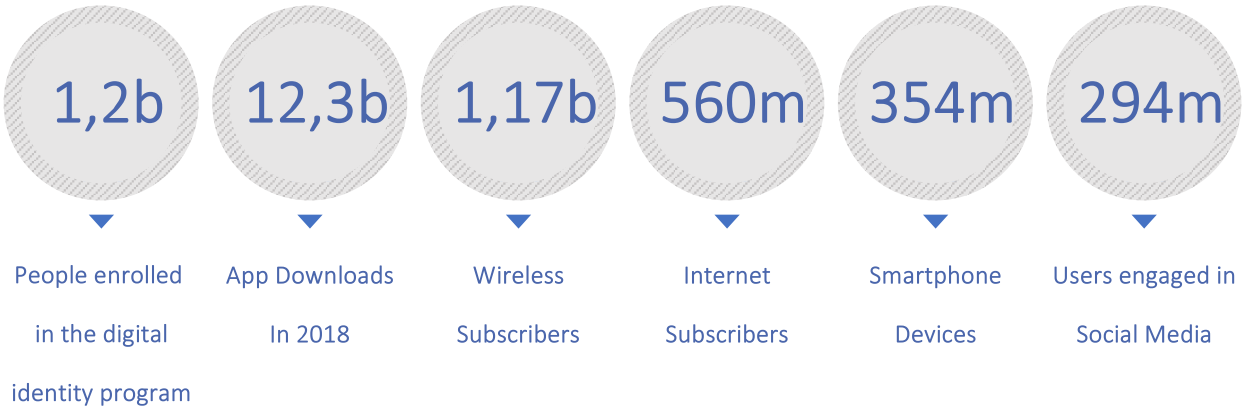
[17] Münster, S.; Georgi, C.; Heijne, K.; Klamert, K.; Noennig, J.; Pump, M.; Stelzle, B.; Meer, H. (2017): How to involve inhabitants in urban design planning by using digital tools? An overview on a state of the art, key challenges and promising approaches, in: Procedia Computer Science, Vol. 112, p. 2391-2405.

selection of best-matching technologies and ICT tools. To ensure the acceptance of a digital tool most commonly used in slum landscapes, digital trends with a major focus on mobile phones in the Indian market have been analysed, based on primary and secondary data. India has in the last five years undergone what is called the *quiet digital revolution*.[18] It's internet user base has grown rapidly, which can be traced back to decreasing costs and rising availability of smartphones, as well as high-speed connectivity (Figure 2).[19]

Indians downloaded 12,3 billion apps in 2018 and the country had 560 million internet subscribers in 2018, ranking India second in the world behind China. Further, an average Indian internet subscriber spends 17 hours on social media platforms each week and due to the countries lowest data costs in the world, the share of Indian adults with at least one digital financial account has more than doubled to 80% since 2011. It is predicted that internet subscribers will continue to grow, as subscriptions rose by 23% since 2015. Statistics also show that 3G or 4G networks cover 84% of India's population.[20] To complement this digital revolution, a wide array of urban upgrading missions dominated India's urban landscapes, such as the Smart Cities Mission, National Urban Digital Mission or AMRUT, of which all move towards adopting ICT perspectives with regards to GIS mapping and drone usage.



[18] ET Government (2021): Smart City Mission: India sets big goals, gears up for 4,000 cities expansion in 2 years, retrieved from https://government.economictimes.indiatimes.com/news/smart-infra/smart-city-mission-india-sets-big-goals-gears-up-for-4000-cities-expansion-in-2-years/83831631 (03.12.2021)

[19] McKinsey Global Institute (2019): Digital India: Technology to transform a connected nation, retrieved from https://www.mckinsey.com/~/media/mckinsey/business%20functions/mckinsey%20digital/our%20insights/digital%20india%20technology%20to%20transform%20a%20connected%20nation/digital-india-technology-to-transform-a-connected-nation-full-report.ashx (03.06.2019).

[20] GSM Association (2017): Triggering mobile internet use among men and women in South Asia, retrieved from https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2017/11/GSMA-Triggering-Mobile-Internet-Use_Web.pdf (24.01.2020).

Figure 2: India's key dimensions of digital adoption (own representation based on McKinsey Global Institute analysis data).[21, 22, 23, 24, 25]

As mentioned, the number of mobile phone owners, volume of app downloads and distribution of internet accessibility is rising. With only few formats capable of managing larger participant numbers, independent of time and place, it is most reasonable to make urban participatory slum upgrading planning processes compatible with digital trends (ICT, e-participation, mobile application). [26] Approaching the LLI approach in an e-participation-app format has the ability to create a platform through which stakeholders can network and support dwellers in need, faster and more efficient. This includes access to a remote diagnosis of the local requests and deep learning algorithms. Enabling slum dwellers to share liveable life perceptions in the LLI app, will contribute to the storage of requests and corresponding coordinates in the LLI data base. Connecting requests to locations independently of time and place turns an area to which a request is connected, into a hyperlocal area. GPS systems in network-attached mobile devices enable the determination of coordinates. Respective experts can then analyse the stored requests and corresponding coordinates to develop proposals for countermeasures. New data, in the form of requests, locations and countermeasures enter the system continuously, thus enriching the semantic layers of the LLI app. The more data is stored in the system, the more complex facts (requests-locations-countermeasures) can be linked and local solutions optimised. Hence, e-participation via app has the ability to motivate and enhance an effective and sustainable environment for engagement, enabling citizens to e-participate in the design of their living place.

4 CONCLUSION

With the development of Smart Cities, increasingly more investments take place into ICT and new approaches of participation allow services to be offered online. It stands to reason that there exists an increase in citizens that adopt to ICT tools in order to engage in activities, which they believe to be more effective and efficient. To explore the potential of e-participation in promoting citizen participation in slum upgrading processes, in the context of the LLI, it is relevant to raise understanding on the determinants of e-participation. It aims to extend our understanding of communication tools that are convenient for slum dwellers and display already a high social value within their community, such as the increased use of mobile phones. Conducting research in the Smart City Bhubaneswar and discussing secondary research, this study examines citizen's opportunity to continuously participate online in order to establish a locally rooted LLI and initiate according countermeasures.[27] Apart of that,

[21] GSM Association (2017): Triggering mobile internet use among men and women in South Asia, retrieved from https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2017/11/GSMA-Triggering-Mobile-Internet-Use_Web.pdf (24.01.2020).

[22] Financial Inclusion Insights (2019): India, Aave 6 Report, Sixth Annual Fii Tracker Survey, retrieved from http://finclusion.org/uploads/file/india-wave-6_final-5-28-19.pdf (18.07.2020).

[23] Keelery, S. (2021): Internet usage in India - statistics & facts, retrived from https://www.statista.com/topics/2157/internet-usage-in-india/ (09.10.2021).

[24] Keelery, S. (2021): Digital population across India as of February 2021, retrived from https://www.statista.com/statistics/309866/india-digital-population/ (09.10.2021).

[25] McKinsey Global Institute (2019): Digital India: Technology to transform a connected nation, retrieved from https://www.mckinsey.com/~/media/mckinsey/business%20functions/mckinsey%20digital/our%20insights/digital%20india%20technology%20to%20transform%20a%20connected%20nation/digital-india-technology-to-transform-a-connected-nation-full-report.ashx (03.06.2019).

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[27] Zheng, Y. (2017): Explaining Citizens' Usage: Functionality of E-Participation Applications, in: Administration and Society, Vol. 49, No. 3, p. 423–442.

effective e-participation in an anonymous environment requires the development of trust in the entire participation process to ensure good communication and commitment. It has been verified that ICT tools contribute to a rise in trust and comfortable communication.[28] With anonymous participation it is expected that recipients are more comfortable to disclose sensitive information.

The results of this study compensate for the lack of literature discussing the factors influencing e-participation in urban slum upgrading. Extending the LLI to a general Smart City scale, it must be considered that the intention to participate online varies by Smart City progress and socio-demographic characteristics. Still, different types of ICT tools such as applications, e-mail, online chatting provide citizens with more choices and allow planners and citizens to communicate.[29] At policy level, the present study helps in building strategic plans for the LLI that enhances a sustainable environment for engagement of slum dwellers. Nonetheless, the findings have some limitations. Studies about e-participation are not set in the context of sustainable upgrading in Smart City slums. How to leverage existing findings into new social areas, such as that of slums, needs to be further studied. Enabling participative community approaches in an e-participation format to guide sustainable slum upgrading can contribute to the sustained improvement of the quality of life in informal neighbourhoods.

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