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Participatory e-Backasting Approach for Sustaining Abuja City Visions and Development: Methodological Application

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Abstract

Current attempts in practise to encourage sustainable city vision, planning and development are failing to make significant advancements and impact particularly in third world countries like Nigeria. Interventions in this area are often based on unsophisticated interactive approach, which oversee the degree to which participatory practices meet with challenges of increasing societal demands and expectations. Against this background there is the need to consider a more radical socio-cultural, technological and organisational innovative participatory approach that fulfil the goals of facilitating daily participatory practices for better enhanced sustainable city development for Abuja the Federal Capital City of Nigeria. In contrast to the conventional master planning approach and forecasting technique used in planning Abuja, this study adopts a prototyped angle to the operationalisation of a step by step participatory backcasting-oriented e-backcasting (pBC) online using action research to developing future scenarios and action plans to recreate a prototyped vision for Abuja. For pBC participation and extent of inputs constitutes the main plan. The participatory process was undertaken under four iterative stages: Platform issues, Re-visioning issues, Participation issues and Timing issues. Through these stages the practical application of e-backcasting began with the integration of social media and non-social media platform such as sms, email, LinkedIn, Facebook, WhatsApp etc. as interactive tools for undertaking the various tasks and recruitment process. A wide range of over 644 persons were targeted and consent sought from within and outside Nigeria. 82 Open and closed tasks guided participant's inputs. Participants opinions were recorded in different ways: 605 responses were Passive, 899 responses termed active while other responses come under bottom-up or top-bottom category. As a prototype action-research, this paper did not aim for a comprehensive representation of all the residents in Nigeria or in the diaspora. Instead, it aimed at testing the workability of the methodological approach in order to inform future implementation, if proven to be effective. With special reference to online iterative participatory processes and the resultant e-backcasting outputs, it is hoped that such approach can be adapted into governing systems not only for Abuja city but the entire cities in Nigeria. This is believed will depend on the willingness amongst stakeholders participants and those in authority to embrace a radical reconceptualisation of actions towards participation and interactive change to achieving sustainable city development for Abuja.

Keywords: sustainable city development, participatory e-backcasting, social media tools, master plan and forecasting, action research strategy

Introduction

Studies on backcasting and sustainability transitions demonstrate the extent to which participatory-oriented backcasting has been extensively employed in developed countries such as the United States of America (USA), Canada, and Sweden, as well as in several other European and Asian countries with hardly any case reported from Africa. As a planning approach, backcasting was first used in the early 1970s in the USA to address energy challenges (Lovins, 1976). In the last two decades, studies applying the approach are focusing more on achieving global to local sustainable-future visions around community needs such as housing, transportation, and agriculture. Other related applications are in environmental and urban development practices, especially towards adaptation to climate change (Becker, 2010; Svenfelt et.al. 2011; Wangel, 2011; Wehrmeyer et.al. 2012, Olsson

Correspondence: Ache Stella Achuenu Department of Urban & Regional Planning University of Jos, Nigeria et.al. 2015; Achuenu and Irurah 2016; Achuenu, (2019). A GIS-based backcasting approach has also been pioneered towards facilitating sustainable spatial planning and technological development, as reported in Akintan (2014). Equally, a shift towards stakeholder participation with a focus on follow-up, geared towards the pursuit of sustainable futures has been applied in the Netherlands, Canada, and Sweden. Related studies include Quist and Vergragt (2006), Quist (2007) and Carlsson-Kanyama, et.al, (2008). These studies applied various participatory approaches in convening and involving stakeholders (particularly professionals), drawn from a pool of citizens, consumers or end-users, within organised workshops or conferences. Other reported platforms used for convening participants are focus groups, scientists'-stakeholder workshops, policy exercises, participatory modelling, citizen juries, consensus conferences, and participatory planning approaches (van Marjolein and Rijkens-Klomp, 2002).

In contrast to the diverse backcasting studies globally, only a few cases from Africa have been reported and mainly from South Africa, Tanzania, and Botswana. Seward, Xu and Turton (2015) explored ways to improve groundwater governance in Ostrom, South Africa, through backcasting by combining practitioner experience and the Ostrom city design ideology. One of the limitations of the method is the use of one person's knowledge to characterise the approved culture and the use of the same person's standpoint to identify constraints and interferences in the backcasting process. The purpose of singular knowledge undoubtedly could escalate the boundaries of subjectivity and bias as is usually associated with self-reporting by participants in qualitative methods. Van der Voorn, Pahl-Wostl and Quist (2012) put forward a technique on how a participatory backcasting approach, when combined with an adaptive administration, could be used towards implementing different and dynamic climate adaptation strategies and policies for coastal regions. With an example from South Africa, the study demonstrated its applicability for the Breede-Overberg region where a catchment management strategy had already been developed. Faldi (2014) reports on a pilot study testing the use of an alternative scenario backcasting approach for supporting planning for local adaptation to climate change in a peri-urban area of Dar es Salaam's coastal plain in Tanzania. The study successfully engaged a combination of a backcasting methodological approach with the theatre of the oppressed as a method of meaningful participation (Boal, 1995).

However, from an initial exploratory search for similar studies focusing on Nigeria, no evidence emerged on the application of either participatory backcasting or participatory e-backcasting in any domain or field of knowledge (Achuenu, 2019). As a result, it appears that numerous studies on the reason why urban master planning approach, visions, and policies fail have been pursued without systematic efforts towards the consolidation of practical participatory measures in support of a comprehensive strategy to deal with such failures (Ogbazi, 2013; Ebo, 2013, Umoh, 2012; Adeponle, 2013; Wapwera and Egbu, 2013, Okoro, 2014; and Ubani et.al., 2014, Elleh 2016). However based on the literature available to date, the arguments thus far indicate/reflect a critical knowledge gap in the area of articulating and applying transformational approaches that integrate and encourage inclusiveness in stakeholder-driven visioning and sustainable city transitioning processes. Such gaps open up the potential for a methodological approach, such as a participation-oriented e-backcasting approach, which involves generating qualitative information through bridging across interactive online platforms and conventional backcasting (Achuenu and Irurah, 2016; Achuenu, 2019). It was hypothesised that such a method would allow for both top-bottom and bottom-up participation that could enhance the opportunity for a successful long-term strategic planning towards the desirable future vision for Abuja. It also entails engaging participants using interactive online platforms like social media, telecommunication networks and emails towards informing the desirable future scenarios and the prioritisation of the most strategic vision. The utilisation of an online approach to citizen engagement affords access to a broad range of participants to the point of saturation, as determined by the facilitator, depending on the context (especially time and resources available) as well as purpose and scope of the process.

This paper is aimed at leveraging the opportunity with regards to participation towards tackling Abuja's challenges. It was implemented by applying face-to-face participatory backcasting approach to participation-oriented e-backcasting, based on an interactive online platform with social-media tools to facilitate and enhance topbottom/bottom-up stakeholder participation towards a desirable future city vision for Abuja-Nigeria. In this regard, four iterative prototypes stages (with modifications across core issues of the prototype iteration levels) were implemented s summarised in Section 2, which also guides the structure of this paper.

Materials and Methods

Besides data captured through the online platform, a multimethod strategy was adopted in order to substantiate the objective of the study. Given the objective of this paper, a qualitative methodological approach anchored on a prototyped ebackasting and action-research strategy was prioritised. Each strategy was used with its associated analysis procedure (see Table 1, 2, 3, 4, 5 and 6). Data obtained from respondents were gathered and collated in formats that aid quick analyses on a step-by-step basis. Findings were proposed to be presented using narratives combined with simple basic descriptive qualitative statistics such as graphs, tables, figures and percentages in order to address the focus of this paper.

Action research is a narrative-based approach which entails insight/understanding enquiry towards based on intervention on an undesirable status quo situation with an explicitly hypothesised mechanism of transforming the status-quo to a more desirable state. It allows for collaborative inquiry and is mainly aimed at managing transformational change through incorporating feedback from observations for subsequent iterations of the intervention. This study applied the strategy towards embedding a long-term perspective for sustainable urban development through engaging backcasting as a collaborative social learning process using the following steps: a narrative approach, further enquiry towards insight and understanding, intervention on an undesirable statusquo situation towards transforming it to a more desirable state (see Table 1 and Figure 1).

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Fig 1: Action Research Reflection Circle (Adapted from CELT, 2008.

Following the conventional backcasting method, the study generated information over the status quo state of Abuja in order to project the likely or probable future, given the current and historical dynamics of the city. The process reiteratively employed a series of about 100 carefully prepared open-ended questions adopted from Milan (2008) and Kok et.al. (2011) (see Table 1). The questions were

applied on the feedback for subsequent iterations for the four social media platform (Facebook, blog, email and WhatsApp) with while focusing on the visioning and implementations process of Abuja and to appraise Abuja current-status quo as well as its transitioning pathways over the period of 50 years. The questions were structured into five categories of pre-sets questions (see Table 1). The remaining questions went into the e-backcasting proper. On the average, a minimum of 6 open questions were attached to each write-up per post. The questions were carefully adapted to the objectives of the study. In order to encourage high feedback speed, in subsequent iterations, the questions were redesigned to contain straightforward, simple, clear language and readily answerable questions. The preparation, execution and analyses of findings took a total of 10 months with the recruitment processes starts and ends within four months before initial implementation of the iteration stages.

Table 1: Backcasting-guided steps and	number of questions by platform category.
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Steps	Purpose		Number of questions applied in each platform			
1: Introduction and scoping	To prepare participants and quiz their knowledge on Abuja vision and sustainable city development.	26	10	05	05	
2: Problem orientation	To obtain information on the strength, weaknesses, threats and opportunities through SWOT analysis of problem orientation		12	05	10	
3: Define/establish the target vision To create scenarios, selecting one as the vision that must be engaged with using scenario planning		15	15	05	07	
4:e-Backcasting Use e-backcasting analysis and carry out strategic planning for the selected vision.		16	11	04	08	
5: Participants' demographic /inclusive information	To carry out demographic inquiry and assess the level of inclusivity of participation. Evaluation comes up at any time in between the steps	20	12	11	11	
6: Assessment of the e- Backcasting/Learning/impact by participants.Exposure of participants encounter during the exercise and impact on future planning for Abuja city To ascertain if the basics of the method applied are understood. The selected questions act as debriefing on e-backcasting		22	19	06	16	
	Total				66	

Source: Adapted from Achuenu (2019)

The questions made it a lot easier for participants to exercise their freedom of expression and guide the orderly representation of findings and validate the iterations processes while also guiding participant thoughts at various stages of data collection process. The participatory approach thus helped to build consensus among participants. Data obtained were analysed and discussed according to themes summarised under fewer than four key potential issues and iterations (see Fig. 2 and 3), which are: a) Re-visioning issues where sustainable city vision issues were deliberated and refined

b) Participatory issues where the extent of participation/inclusivity were accessed

c) Platform issues; in this case diversity of platform/online social media tools and their performances were accessed.

d) Timing issues; in this case the time-duration of each prototype stage



Fig 2: Four iterations: Email, Facebook, WhatsApp and Blog. Source: Adapted from Achuenu (2019)

The procedures employed for each critical issue/subject is elaborated in the following sub-sections below;

Platform issues

Platform issue and subject data were derived from multiple channels of data collection instruments and diversity of online media platforms based on three separate tools. They data capturing, recruitment and content include: development tools. Data capturing tools engaged practically four socio-media tools in data collection/iterations. The four levels of iteration were designed and applied using emails as iteration 1, Facebook for iteration 2, WhatsApp for iteration 3 and blog for iteration 4 (see Fig. 2 and 3). Each of the iterations entailed a modification across four critical issues or subjects of the study which are; participation, platforms engaged, revisioning exercise and timing of various tasks employed as presented in Figure 1. The four stages were applied to guide data collection, collation and analyses, incorporating feedback from the review process in order to improve on the understanding and data scope of the study (see Table 3). The prototyping process was conducted on-line. The second category comprised tools employed for recruitment and networking, such as LinkedIn and Mobile phone networks such as MTN, GLO, Airtel, and Etisalat. The

third group are pictures, images and videos that aid content development obtained from software such as vector.com, google.com and youtube.com. They are embedded in all content, written and posted to each online platform or chats in order to facilitate the e-backcasting sessions and also enhance participants' understanding of the topical issues. YouTube.com was used as a multi-media tool in sharing contents by uploading URL videos of not more than 2 to 6 minutes on varying topical issues, making it easier to pass across ideas/information via video to participants in a short time. This software's aided the ease of applying the efacilitating participants' backcasting sessions and understanding of topical issues through visual expressions. The procedure for collecting and displaying visual picture contents using vector.com and google.com software was through downloads of free internet images. The key challenge with using this free software's is that accurate photos were difficult to obtain, thus limiting access to the right images needed. To gain access to quality content/visuals one was required to pay to maintain an account with the web designer and owners of such intellectual property. Table 2 shows when, why and how each of the four platforms was applied in the prototyping process of the study.

When applied	Why they were applied	How they were applied		otal conte used	ent
1: Introduction and scoping	To assess participants residual knowledge on Abuja vision and sustainable city development.	 Group creation Introduced myself (researcher) Briefs on why Abuja was chosen Rules guiding participation and how to get involved Why sustainable city development 1, 2 and 3 	10	08	02
2: Problem orientation	To deliberate on the present state of Abuja SWOT analysis	 Achieving sustainable development through good city administrative practices The need for enhancing participation/decision- making Abuja Urban Form and quality of the built environment Abuja Environment and environmental conservation Socio-economic well-being of Abuja residents 	06	10	02
3: Define/ establish the target vision	Create 4 alternative scenarios for Abuja and select one vision that must be engaged with using scenario planning	 Creating sustainable inclusive vision for Abuja: Could long-term city visioning and strategic planning tools like backcasting reinvigorate sustainable city planning/development for Abuja 	07	15	03

4: Re-visioning Use e-backcasting analysis to carry out strategic planning for the selected vision. • Key stakeholder • 111			city • Creation of scenarios and stream down to one vision.		
	4: Re-visioning	Use e-backcasting analysis to carry out strategic planning for the selected vision.	 Selected a key timeline and five mid-term lines Developed strategies towards achieving target vision Key stakeholder 	11	01
Total 23 posts 30 44	Total		23 posts 30	44	08

Source: Adapted from Achuenu (2019)

Data from the four iterations were then analysed to appraise the impact on participants and level of inclusiveness while testing the inclusive potential and adaptability of ebackcasting towards sustainable city vision processes

Table 3	3:	Platforms	and	their	respective	purpose	and	timeline.
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Platforms/software's	Purpose	Duration/weeks
WordPress blog	Interaction and data collection	16
WhatsApp	Data collection, interaction, recruitment and networking	17
Facebook	Data collection, interaction, recruitment and networking	12
LinkedIn	Recruitment of participants	24
email (piloting)	Data collection, interaction, recruitment and networking	8
Mobile networks	Recruitment of participants	24
Vector.com and google.com.	Visual expressions, content development, free internet images	34
Scenario planning & SWOT analysis	Data analysis	Spans throughout the duration of exercise
	Total	117

Source: Adapted from Achuenu (2019)



Fig 3: Action Research Circle Stages Showing Step by Step Participatory e- Backcasting Process. Source: Adapted from Achuenu (2019).

Iteration 1, many reason motivated for the use of email in the piloting stage of this study. The cost of sending an email is less expensive and the rate of delivery is much faster with emails than most other alternatives. Several studies have shown that Nigerian online community ranked high in Africa in the usage of email for their everyday communication needs. Because of the wide use of email on smartphones, it enabled ease of users checking their email while on-the-go throughout the day. Following the first pilot stage, findings obtained were subjected to respondents' review where some insightful feedback was provided to improve the research rigour and determine the minimum duration required for participants to respond to topical issues deliberated. The pilot study also enabled a review of the timing process of participants, invariably reducing the time spent for each set of questions from 20 to 5 minutes. The subsequent three sessions, iteration 2, 3 and 4 involved re-strategising in cases where changes were needed, using the same method to reflect and iterate where necessary. (see Figure 3).

Iteration 2, Facebook platform was used primarily as a mobile photo app platform and a formal learning platform for participants sharing of opinions, insights, experiences and their perspectives with one another (see Fig 3). The advantage of using Facebook is that the content and usually the functionality is manned and regulated by the user community itself and not the provider of the tool or a third-party institution. This ability for participants-community to control it-self explains why Facebook was used in this research for the three most popular primary uses such as networking, facilitation of connections between participants, communication and soliciting participation (Gachago and Ivala, 2012; Nwokeafor, 2015).

iteration 3, WordPress blog/web blog was engaged in the third iteration because of its ability to act as an unedited published voice of the people, as it sometimes functions as an online journal (Rettberg, 2008; Gachago and Ivala, 2012; Fakude, 2014). More so it has the ability to draw groups, academics and students together in accessing free academic materials, publishing and offering feedback, thus not only enriching their learning experience, but also facilitating for shared outcomes and communicating the actual focus of the study. It can also be written by one person or a group of contributors (Minocha, 2009). YouTube video downloads; Google images and vector graphics were used alongside maps, texts, stories, figures and other relevant information in a manner that gives a coherent guide to the various vital activities to support participants' engagement in an interactive manner (see Fig.3). These are a few of the many reasons for prioritising WordPress blog. The challenge here was to communicate academic ideas in simplified ways that could make all potential participants feel conversant enough to participate.

Iteration 4. one of the major reasons for using WhatsApp for this iteration was due to the rise in its usage as a mobile chat app and social networking platform globally and in Nigeria in 2016. The rise in its usage lays in the affordability its mobile app to network, recruit, interact and communicate amongst participants (thus serving as a better alternative to SMS). Its mobile app also performs well on a lower bandwidth, requiring thus facilitating for lower usage. These attributes explained why the WhatsApp platform performed much better than other platforms for this study as most participants showed more interest in engaging through it, thus, resulting in the highest number of participants for this study (Choudhary, Momin and Kantharia, 2015; Nitza and Roman, 2016). The perceived advantage of using an online platform format is that all ideas were archived electronically in their original form as contributors posted their comments at will. It allows users to log on for a more extended period to enable time enough before posting their ideas. All contributions were retrieved later for further transcription, coding and analysis (see Fig.3).

Participation issues

Participants' selection approach began online where participants were identified, selected and categorised through volunteered self-selection sampling (a participant chooses to participate of his or her own volition) and from various structures (see Table 4). Participant recruitment was primarily based on snowball/chain or networking method. The process included the situation whereby those already contacted either provided names of other potential participants known to them or sent direct messages to the contacts themselves This approach became necessary because it afforded expedited and easy access to possible participant/target groups that were difficult to reach solely through the effort of the researcher.

Organisation/companies /ministries	sation/companies Professional Universities groups/CBO/NGOS		Religious groups	Researcher's direct contact
Federal Capital Development Authority Abuja (FCDA)	LinkedIn	Baze University, Abuja, Nigeria	Living Faith church, Durumi Abuja	Friends
National Secretariat Abuja, Nigeria	Nigerian Institute of Planning(NITP),	University of Jos, Nigeria	Redeemed Christian church Abuja	Colleagues
Abuja Geographic Information System, Nigeria (AGIS)	Nigerian Institute of Building (NIOB),	University of Witwatersrand Johannesburg, South Africa (SA)	Abuja Central Mosque	Acquaintances
Kuje Area Council	Town Planners Registration Council (TOPREC)	University of Science Malaysia	Saint Mary's church in Abuja	Family
Federal Ministry of Housing and Urban Planning	Read learn and grow literacy organisation of Nigeria (RELEGLON)	Kaduna State Polytechnique Kaduna, Nigeria	Living Faith church, Wynberg, South Africa	Women support groups
	Peace front for Development initiative, Abuja, Nigeria	University of Loughborough, U.K		Youth support group
	, j ,	Enugu State University of Technology, Nigeria (ESUTH)		

Table 4: Sample social frames/structure through which possible participants (both in the diaspora and Nigeria) were identified and recruited

Source: Adapted from Achuenu (2019)

To facilitate contacts between the researcher and participants and amongst participants, two modes of recruitment approach were used as follows: non-social media approach and social media approach. Social media approach was the significant recruitment and interactive medium for the study. The non-social media recruitment approach was a complementary to the social media approach since it had the advantage of combining both direct physical contact and texting possible participants who may not have been aware of such an interactive exercise. Through these set-ups, there was a lot of chatting, communication, and networking among possible participants either across the same network or between two or more systems in a conversation at the same time. However, accessing and obtaining approval from possibleparticipants became a highly complex task as quiet a number of participants did not show interest initially because of unfamiliarity with the subject matter as well as concerns with time commitment for pro-longed participation.

The primary criterion for selecting participants were as listed in the inclusivity and exclusivity criteria in the selection recruitment process (see Table 5). In this way, although some participants were not resident in Nigeria or aware of Abuja's historical development process, they were willing to contribute positively within the framework of the study while at the same time learning through the process.

Table 5: Criteria	for selecting and	l recruiting par	ticipants for t	he e-backcasting task
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Inclusivity criteria in selection	 Accessible online through one of Facebook, Blogs, emails 				
recruitment process	• Those who frequently share and use online contents at least once a day, particularly within the				
	time set out for the study.				
	All self-volunteers Nigerians; irrespective of whether they reside in the country or the diaspora				
	 Adults 18 years and above, males, females, experts and non-experts, 				
	• Users of any four of MTN ng, GLO, Etisalat and Airtel networks				
	• The choice of the participant for the online process was more inclusive rather than exclusive				
Exclusivity criteria in participation	Nigerian Nationality				
	 Participants 17 years and below were excluded 				
	• Participants who were not ready to neither commit to the rules nor give reasonable time within				
	the time frame for activities before opting out.				
	Anyone who does not fall into the inclusion criteria is automatically excluded				

The dynamic nature of these platforms is that it allowed room for stakeholders who wished to dropout/leave/opt-out for a while and resume later, as this could be granted as well as for new participants who might want to join the process, at whatever step or stage.

Modes of enrolment/ recruitment	Format of interaction/instrument	Format of recruitment/ instruments	Platforms engaged	Duration/Weeks (start and end exploratory time frame for contacts across categories
	Contact, recruit, chat and network (WhatsApp)	Contact and chat, network among participants (WhatsApp)	WhatsApp	12
Social media mode Contact and chat (LinkedIn) Contact, recruit and network (Facebook) Nil(blog)	Contact and chat (LinkedIn)	Contact and chat with participants (LinkedIn)	All platform	32
	Contact, recruit and network among participants (Facebook)	Facebook	06	
	Nil(blog)	Nil (Blog)	All platform	22
Non social	Contact, recruit participants(Email)	Send emails, contact and recruit (Google email)	Google email	08
Non-social media mode	Send bulk SMS to participants to seek consent and recruit (Mobile networks)	Send bulk SMS to participants to seek both consent and recruit(Mobile phone network)	All platforms	36

Source: Adapted from Achuenu (2019)

When obtaining consent from possible participants, it was made clear to them the nature of information to be collected, moderation policy and site participation guidelines, their intended use and knowledge possibleparticipant could expect to gain from their participation. Participants were informed that if their comments did not comply with the standard, they would not be published.

Re-visioning issues

The "five steps methodological framework" of Kok et.al., (2011) was adopted and slightly modified by compressing the five steps into two phases for ease of online administration (Achuenu and Irurah, 2016). The first phase involves the development of future vision and deliberate problem orientation, while the second phase involves

choosing the preferred future vision and engages the ebackcasting and assessment of impact/knowledge gained among participants (Achuenu, 2019). Each step involves the use of several types of online interactive data collection tools (see Table 2). All information at this stage was obtained through varying opinions of participants, their mind-set, values, experiences and interests. At this point participants brainstormed on the factors driving change and development in the relevant areas of Abuja planning, needing sustainable development such as infrastructure development, housing, government funding, employment, security, environmental and aesthetics conservation among others. Participants also brainstormed on how these issues and their challenges relate to their needs.

The essence was to ascertain what needed to be done over the next few years to ensuring that all programmes are on course towards achieving the targeted scenario. Participants summarised their backcast by identifying actions, goals and targets, that can be worked on in the immediate future and the 'how' to go about achieving it (see Table 2). Participants' responses helped to assess the extent to which they had individually learned through interaction during vision-development and future-present pathway definition processes. Information obtained was primarily expressed with a quantitative target which provided a measurable point of reference as an indication of impact. Participant responses also helped in conducting an appraisal of the success of the scenario-building and e-backcasting techniques. It also facilitated the overall assessment of the adaptation potential of the approach as well as the consolidation of all the outcomes into a set of clear insights and strategic recommendations for the study as a whole.

Timing issues

In contrast to the initial estimate of six months, a crosssectional time horizon of 4 months was eventually dedicated in conceptualising, piloting and executing the prototyped-based action research for the e-backcasting and finalisation of participation stages of the study. The initial six month timeframe allotted for this stage was based on the fact that the study was prototype-based and not intended as a full-scale roll-out. The ten months timeframe fits within a reasonable timeframe (even though it far exceeds the initial six month proposed). The additional four months were primarily spent on the initial exploratory stage prior to commencement of data capture. Some additional time also went into the finalisation of participation stages, as well as data analyses and derivation of findings (see Table 7).

Table 7: Proposed versus executed timeframe for selecting, recruiting, engaging, finalisation of participation and data collection.

Iterations(1-4)	Proposed start/end date for exploratory contacts across sample groups for Iterations (Duration /weeks)	Executed start/end date for exploratory contacts across sample groups for Iterations (Duration/weeks)	Proposed start/end date for data collection, compilation, iteration and feedback (Duration/weeks)	Executed start/end date for data collection, compilation, iteration and feedback (Duration/ weeks)	Time commitment
1: E-mail	2weeks (reserved for Piloting)	4weeks	2weeks (Piloting)	4	21 days for posting commenting and giving
2: Facebook	4weeks	6weeks	2weeks	10	feedback with extra five
3: Blog	4weeks	12weeks	3 weeks	16	days interval allowed for
4:WhatsApp	2weeks and 2 days	12weeks	4weeks	16	data compilation,
Total period	3 months	8month 2 weeks	5 months	11 months 2 weeks	organisation, and plan preparation for the next iteration.

Source: Adapted from Achuenu (2019)

2 months was set aside for set-up/ preparation and piloting with exploratory contacts across sample categories, induction/orientation on roles and expected level of effort and initial input solicitation. The actual commencement time for data captures, finalisation of participation stages, analysis and findings were carried within the same months (see Table 4).

Note: that the start and end dates for both recruitment and data collection processes took place concurrently collimating in to a total of 11 months plus. Times of participation were done in consultation with willing respondents in order to ensure respect of their privacy. Throughout interactive process with the tools the researcher, acknowledged comments added within a 48 hour period during the time frame allowed for data collection for each stage of the fieldwork. It was necessary to set a limit on time-allocation to ensure completion of the entire scope of on-line participation-process and thus

allows for comprehensive data capture. Although the exact time it took each participant to give their responses varied substantially (ranging from one day to two weeks interval).

Practical ways in which participants' knowledge and opinions were included

In each of the four platforms, the e-backcasting method solicited participants' knowledge and ideas by using an interactive and iterative online process which also facilitated also adapting inquiry into e-backcasting with several written texts to guide stakeholders in thinking and brainstorming first about Abuja's current state, then revisioning backward to acquire the needed change. Participants' ideas and perspectives (based on five focus issues) were deliberated on, accompanied and guided by open-ended discussions. The approach was similar for all four tools regarding the degree to which, and the approach in which participants' ideas were brought into the prototyping task and the nature of their engagement.

Table 8: Results of the Methodological Application of Participatory e-Backcasting

Pla	Participant issues					Re-visioning issues-	Timin g issues		
Practical tools	Recruitme nt Mode (social/no n-social media	Content creation tools	Schedul e	Recrui Contac ts made	itment Conse nt receive d	Extent of p Active Response	articipation Passive Response	4 stages: • Preliminary stage; introduction	Start time- End time

Iteration 1: Email	Email Bulk SMS	Open- ended question s	8 weeks	50	26	15/4wks =3.75	60/4wks=15	and scoping Strategic problem orientation 	4mont hs
Iteration11 : Facebook	WhatsApp Facebook Email LinkedIn Bulk SMS	Open- ended question s, YouTub e	12 weeks	113	58	133/5wks=26. 6	84/5wks =16.8	of the current state of Abuja city vision and development using	4mont hs
Iteration11 1: WhatsApp	WhatsApp Facebook Email Blog LinkedIn Bulk SMS	YouTub e, vector images, google images and open- ended question s	16 Weeks	441	209	448/8wks=56. 13	755/8wks=94. 38	SWOTs Develop future vision through exploratory scenario creation of the Abuja City Vision Analyses	4mont hs
Iteration 1V: Blog	WhatsApp Email Blog Bulk SMS	YouTub e, Vector images, Google images and open- ended question s	12 Weeks	39	09	09/12wks=0.7 5	00	using e- backcasting	4mont hs
Total			48 weeks/4 platfor ms 12 months	644	302	83.48	126.18		12 months

Source: Adapted from Achuenu (2019)

Three different categories were identified for analysing the nature of participation: passive or active participants input, the extent to which the various tasks of the e-backcasting procedure was open or closed for participants' response and bottom-up or top-bottom approach to knowledge and views on the subject matter.

Passive or active involvement

Looking at the case of active participant input, participants were willingly and actively involved in the e-backcasting process as individuals with their own views and knowledge while passive participants never contributed (most of them preferred to be on the observer side) (see Table 8). Although passive participants did not interact in the dialogues, they were still counted (because they gave consent). As such they have played a major role in the study especially towards an understanding of how social media is expected to impact participation in the ebackcasting approach. For the email platform, those who sent apologies through emails or made promises or other similar responses were also regarded as active participants while those who never responded to any of the emails were considered as passive participants. For the Facebook tools, those regarded as active comprises those within the group of participants who committed to either like, view and/or sometimes comment by further sending responses through Facebook messenger. The "Like and View" attributes make Facebook platform operation very different from other platforms (see Table 5).

Participants who actively engaged in the different prototype stages through moderated deliberations and deliberation processes brought their knowledge and awareness into the e-backcasting process. Many participants maintained their participation to the end of the study period thus, indicating consistent commitment. The degree of stakeholder involvement in recruitment process was in fact relatively low. For most of the platforms, participants' responses to the first three sets of activities/schedules (the current state of Abuja and the re-visioning process) were limited. In contrast, the influence of participants on the re-visioning steps through scenario planning and SWOTs analysis was high because ideas were generated; proto-scenario development, scenario evaluation and elaboration of ebackcasting stages were entirely based on the contributions of participants.

Open or closed tasks

Tasks sets for the direct contribution of inputs by participants were regarded as 'open'. A highly focused creative process was used in engaging participants, thus helping to explore ways, which may possibly lead to a long-standing change to a sustainable future for Abuja. The response option and strategy creation tasks were open, except for the one-on-one assessment task that was administered individually to each participant (see Table 1, 2 & 3).

The first set of activities was deliberately focused on generating ideas towards problem delineation. Participants

strongly influenced the content, but they had little influence on the process and who participated (see Table 5). Participants also had more influence on the scenario creation and the re-visioning process. The researcher (who also doubled as the moderator) moderated the use of ambiguous terms. The input on the moderation role consisted of oversight on the discussions and thus mainly ensuring that participants had the essential information on sustainable city development. The moderation process guided participants' contributions to the deliberations, particularly on 'what' and 'how' issues were discussed under each task as they participants improved on their understanding.

The generation of the sustainable-city vision for Abuja under backcasting started with participants brainstorming ideas through a creative process on the best sustainablefuture scenario to aspire for as the final prototyped vision for Abuja within the 50 years' time-horizon. After having discussed and reached an agreement on the desirable future scenario/vision, participants then worked on exploring pathways for the desirable future state (see Table 6, 7 and 8). With ongoing moderation by the researcher, participants created change elements, specific activities and made a general list of actors. The researcher also developed the formats and detailed scripts for each e-backcasting task (see enumerated task in Table 3).

Bottom-up or top-bottom approach

Participants' views were integrated, using a combination of both bottom-up approach and top-bottom approach, rather than using the commonly used top-bottom approach in decision-making under masterplan/modernist planning approach. Participants' views on particular topics were deduced from general classifications of perspectives topbottom, such as ideals on types of sustainable city development approaches. A mixed participatory approach of both top-bottom and bottom-up was adopted for this study. This was specifically evident where the group moderator regulated against the use of ambiguous concepts and professional/technical terms (relating to city planning) in order to encourage each participant to talk about their concerns within the level of language they could master.

Each platform had its respective discussions guided by specific topical issues without imposing disempowering ideas from outside (see Table 4). The concepts that participants used to think about sustainable city development and the visioning process were stimulated by relevant short YouTube video presentations and in some cases, pictures and Google–sourced images/graphics which facilitated better understanding of the various topics discussed. Open-ended questions were also attached to the topics to cover sustainable city issues and a wide range of key guiding possibilities.

For ease of understanding and follow up by each participant the procedure was repeated every 48 hours for WhatsApp. For emails, blog, and Facebook, the repeat was every other day/week within time schedules until all active respondents had the opportunity to contribute their ideas. Participants' thoughts and ideas were thus aroused in a bottom-up manner. One may perhaps maintain that such an open, bottom-up process that includes participant point of view are endless as there are as many different perceptions as the individual participants. Conclusion One primary reason for choosing to adapt the Participatory e-backasting approach as a proposed analysis tools in initiating and envisaging participation towards achieving sustainable transitioning (Quist and Vergragt, 2006; Quist, 2007). The actual step-by-step application of the ebackcasting approach has facilitated to some extent participation and impact on participants inputs at different levels (Achuenu, 2019). In summary;

- The process of strategic planning became easier online as it helped in exploring new solutions to the problems and status quo of the city deliberated upon,
- It helped in deciding on the direction that was most effective as it facilitated communications amongst participants, as the process helped stakeholders break through communication barriers, through strategic decisions on how current and alternative development paths might affect the future,
- The process also aided brainstorming while trying to reveal possibilities and limitations for change as consensus about different issues, such as opportunities and threats, were reached. It enhanced the credibility of interpretation of the entire exercise particularly with the findings and how it was utilised in presentation
- Through the analysis process, participants were more willing to learn, as it assisted in diversifying the people's long-held opinion and encouraged particularly rethinking towards change on a certain communal way of life, particularly areas for which they have fixed mind plan as the process promoted better handling initiatives for new situations as they arise.

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