PRELIMINARY CONTEXT ANALYSIS OF COMMUNITY INFORMATICS SOCIAL NETWORK WEB APPLICATION

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Abstract
Preliminary context analysis is always part of the feasibility study phase in the development of information system for Community Development (CD) purposes. In this paper, a context model and a preliminary context analysis are presented for Social Network Web Application (SNWA) for CD in the Niger Delta region of Nigeria. The context model helps CD facilitators to visualize how SNWA fits into the wider information system for CD and also shows the essential context factors that must be considered in order to tailor the SNWA for CD purposes. Furthermore, the preliminary context analysis used case study research method to provide answers to pertinent questions concerning the situated context of use for the niche SNWA. In all, the context model and context analysis are useful for setting research agenda for the development and diffusion of niche social network for local CD purposes.

***Keywords*:** Community, Development, Informatics, Context, Network, Web Application

1. Introduction

In spite of its divergent views and applications, Online Social Network (OSN) is basically a SNWA that allows people to connect and interact over the internet [1]. Importantly, SNWA provides facilitator-moderated inclusive and interactive communication tools and strategies. As such, SNWA can be employed to proffer solution to some of the running challenges to CD in the Niger Delta region of Nigeria. When SNWA is tailored and applied to facilitate local CD purposes, it becomes part of Community Informatics Social Network System (CISNS). CISNS exists within a broad environment that consists of people and institutions, as well as of political, economic, socio-cultural, technical, legal and other environmental factors that affect the system [2, 3, 4]. Particularly, development of such niche SNWA requires preliminary context analysis

during the feasibility study phase of the software development [5, 6, 7,8].

In this paper, a context model of CISNS is presented. The model shows how SNWA fits into a typical information system for CD. Also, the context model shows the essential context factors that must be considered in order to tailor the SNWA for CD purposes. Furthermore, a Preliminary Context Analysis (PCA) for the niche SNWA is presented. The PCA was conducted in the Niger Delta region using a case study research method. The PCA provides insight into the situated context of use for the proposed niche SNWA and it will also be useful in setting appropriate research agenda for the development and diffusion of such SNWA for CD purposes.

Finally, a review of relevant literatures is presented in section 2 of the paper. The context model and research methodology for the context analysis are presented in section 3, while section 4 contains the results and

discussion of the context analysis. Conclusion and recommendation for further studies are presented in section 5.

2. Review of Relevant Works
2.1 Online Social Network
Boyd and Ellison [9] described online social networks as web-based services that allow individuals to (1) construct a public or semi-public profile within a bounded system, (2) articulate a list of other users with whom they share a connection, and (3) view and traverse their list of connections and those made by others within the system. What makes online social networks unique is that they enable users to articulate their social networks and "make invisible social networks visible" by allowing users to see (with pictures and links) who their friends are, all in an easy-to-use interface [9].

2.2 Community Development (CD) And Community Informatics (CI)
Community development (CD) refers to initiatives undertaken by community members in partnership with external organizations or corporation to empower individuals and groups of people by providing these groups with the skills they need to effect change in their own communities [10]. On the other hand, Community Informatics (CI) is the study and application of Information and Communication Technology (ICT) for community development purposes [2]. In CI, the grand challenge is to develop technological solutions for communities such that the solutions are economically, socially and culturally appropriate for the communities and that are operationally and economically sustainable [11].

2.3 Community Development Experiences in the Niger Delta
The Niger Delta consists of nine states in Nigeria. Nigeria gets her petroleum from the region. [12]. Since early 1990s, there has been periodic eruption of protests in some parts of the Nigeria's oil-rich Niger Delta communities due to lingering anger of years of perceived neglect by the Nigerian government and multinational oil companies [12]. In the face of the widespread protests, Nigerian government made some efforts to address the problems facing the oil-producing communities. In 1992, the government created Oil Mineral Producing Areas Development Commission (OMPADEC), and later Petroleum Trust Fund (PTF) as agencies that will facilitate development in the oil communities [13]. The oil communities themselves, however, clearly do not consider OMPADEC and PTF to be sufficient. Further, as a replacement to OMPADEC, Niger Delta Development Commission (NDDC) was established by President Olusegun Obasanjo in 2000 with the sole mandate of developing the petroleum-rich Niger-Delta region [12, 13]. Furthermore, different Multinational oil Companies (MNCs) have set up CD Initiatives (CDIs), through which a number of community-based projects have been executed [12].

3. Methodology
3.1 The Context Model of Community Informatics Social Network System (CISNS)
The context model, Fig 3.1, shows the components of the CISNS and shows how online social network fits into the wider information system for CD. The model also categorizes the CISNS components into two information groups; the environment/context information and the online community information. The context information lays emphasis on contextual issues and also the need to tailor social technologies to the situated context of use in the various localities where the system operates [14]. The online community information includes the SNWA which must supports the purpose, policies, contents, various technologies and people that make up the online community. The implication of the context model is that the development of SNWA requires context information that sets the purpose and policies that will prompt and guide the interaction of people in the online community that will be created and supported on the SNWA. Specifically, the idea of developing SNWA for CD initiatives in the Niger Delta prompted some opposing questions. The immediate questions include, are the people really ready to adopt web-based solution given the problems of poor electric power supply; poor internet access; poor computer and internet literacy; lack of computer and other infrastructures for effective adoption of such

web-based services. In view of these obvious barriers to such solution, a preliminary context analysis was essential at the feasibility study phase of the software development.

3.2 Research Instrument for the Preliminary Context Analysis

The preliminary context analysis adopted a case study research method [15] through the means of administering questionnaire to the respondents who are resident in Akwa-Ibom state . The research questionnaire titled "*Social Network Web Application for Community Development Initiatives in the Niger Delta Region: a research agenda* " and consisting of five sections, (sections A ,B,C,D, and E) was developed for the data collection.

3.2 Data Collection

The questionnaire was administered manually using a simple random sampling technique. Data collection occurred between January, 2011 and August, 2011. Survey respondents were selected from people located in communities within Akwa-Ibom state, which is one of the states in the Niger Delta region.

3.3 Data Analysis and Discussions for Section A of the Questionnaire: Personal Data of Respondents

3.3.1 Data Analysis For Section A Of The Questionnaire

The distribution of the educational qualifications and age distribution of the respondents are shown in Table 1 and Table 2 respectively.
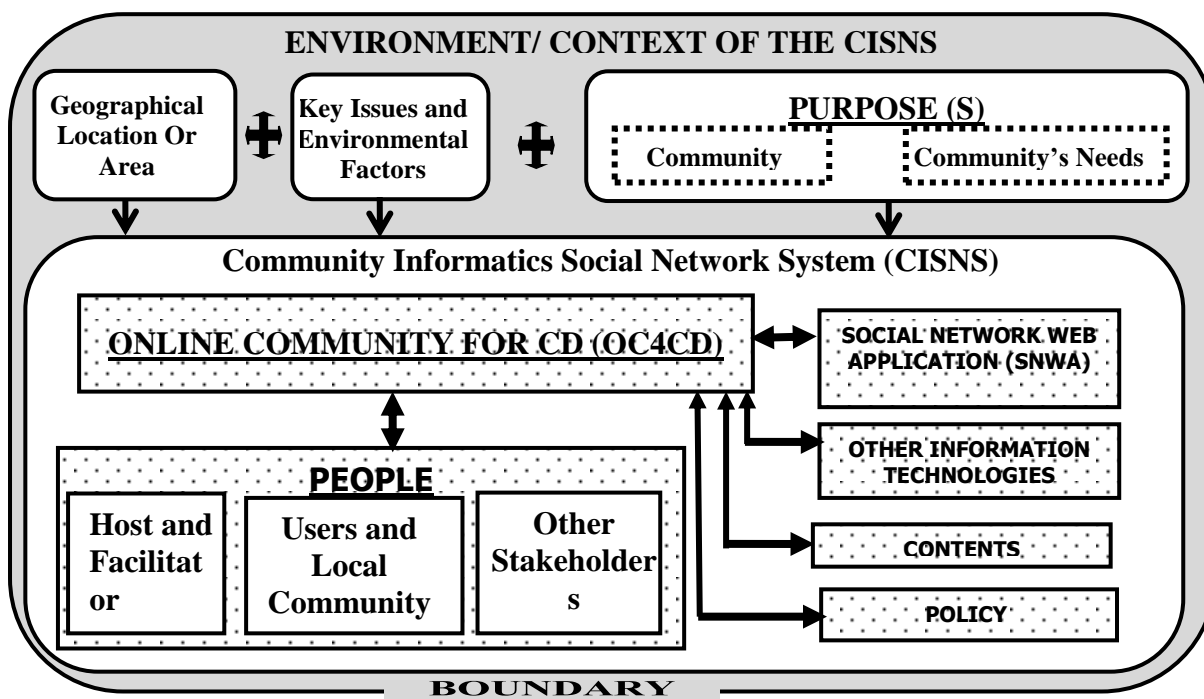

Fig 3.1a: Context Model Of Community Informatics Social Network System (CISNS)

Table 1 Section A: Educational Qualifications of Respondents

Qualification of Respondents	No. of Respondents	Percentages
WASC/GCE	260	41.94%
NCE/OND	76	12.26%
HND/B.Sc	148	23.87%
M.Sc/MBA/PhD	136	21.93%
Total	620	100 %

Table 2 Section A: Age Distribution of Respondents

Age of Respondents	No. of Respondents	Percentages	Gender of Respondents	No. of Respondents	Percentages
18-23	140	22.58%	Male	351	56.6%
24-29	152	24.52%			
30-35	80	12.90%			
36-40	60	9.68%	Female	269	43.4%
Above 40	188	30.32%			
Total	620	100			
			Total	620	100%

3.4.2 Data Analysis for Section B To E

Table 3: The 5-Point Likert Scale Questions of Section B to E

S/N	Question
1	Majority of the members of your community believe that it is the basic right of the community that business corporations should contribute significantly to the development of their host community
2	Majority of the members of your community believe that it is the basic right of the community that the various tiers of government should contribute significantly to the development of your community
3	Majority of the members of your community believe that the community members should not just be informed, but should be involved in managing the resources in their community
4	Majority of the members of your community are adequately informed about community development programmes and projects in your community.
5	Information concerning the Community Development activities in the community should be made available to the entire community and every community member should be encouraged and allowed to access the information.
6	Majority of the members of your community believe that the community development projects publicized through the mass media by Government Agencies, in most cases, are propaganda.
7	Majority of the members of your community believe that the existing channels of communication between the community members and the Multi-National Oil Corporations (MNCs) and/or Government Agencies are not appropriate for effective communication
8	Majority of the members of your community believe that the Multi-National Oil Corporations (MNCs) are doing enough in terms of their contributions to the development of your community in the Niger Delta Region of Nigeria
9	Majority of the members of your community believe that the various tiers of government are doing enough in terms of their contributions to the development of your community in the Niger Delta Region of Nigeria
10	It is mainly the community leaders and representatives of the community in the government that are involved in the discussion and negotiations concerning community development programmes and projects in your community.
11	Majority of the members of your community believe that the community leaders and representatives of the community in the government are not representing the community well in matters of community development
12	Majority of the members of your community believe that some people are hijacking or diverting community fund and resources meant for community development to themselves.
13	Cell phones and other alternative means of computation and access to the internet are making internet access more affordable to many members of your community
14	Competition among the mobile telecommunication service providers is making the communication and internet services more available and affordable.
15	Although more communication infrastructure need to be provided , especially, in the rural communities, however, the present status of such facilities and services in your community is enough to embark on internet-based system for supporting community development process and activities in your community
16	Although a lot more need to be done as regards electric power supply , however, the present status of power supply in your community , coupled with the use of cell phones and other low- power alternative means of computation and access to the internet, is good enough to embark on internet-based system for supporting community development process and activities in your community
17	I support the use of social network to enable community members to participate in the community development process and activities.

Table 4: The Details of the Analysis of the Responses to the 5-Point Likert Scale Questions

Question No.	n_1	n_2	n_3	n_4	n_5	n	P (%)	ARQI	Remarks
1	6	16	8	245	329	604	97.4	4.45	Agree Quite Strongly
2	0	5	2	204	408	619	99.8	4.64	Strongly Agree
3	0	4	0	239	375	618	99.7	4.60	Strongly Agree
4	328	177	57	27	3	592	95.5	1.65	Disagree Quite Strongly
5	1	15	4	209	389	618	99.7	4.57	Strongly Agree
6	57	78	24	272	177	608	98.0	3.71	Agree
7	5	17	5	192	398	617	99.5	4.56	Strongly Agree
8	405	181	3	23	7	619	99.8	1.46	Strongly Disagree
9	365	201	2	34	16	618	99.7	1.60	Disagree Quite Strongly
10	2	11	13	205	383	614	99.03	4.56	Strongly Agree
11	3	12	3	198	403	619	99.8	4.59	Strongly Agree
12	0	1	2	205	412	620	100.0	4.67	Strongly Agree
13	45	85	21	272	195	618	99.7	3.79	Agree
14	7	76	7	294	235	619	99.8	4.09	Agree
15	53	97	7	262	199	618	99.7	3.74	Agree
16	89	157	3	234	135	618	99.7	3.27	Faintly Agree With The Statement
17	4	16	2	178	419	619	99.8	4.60	Strongly Agree

3.3.2 Discussion for The Responses To Questions In Section A

The data in Table 1 and Table 2 indicate that the respondents are matured individuals who have adequate and relevant educational qualification to understand the basic concepts of CD and ICT as required by the questions posed to them.

3.4 Data Analysis for Sections B to E of the Questionnaire

3.4.1 Data Analysis Approach For Sections B To E: 5-Point Likert Scale Questions

The sections B To E of the questionnaire consist of 5-Point Likert Scale questions with the following numeric values: Strongly Agree (5); Agree (4); Indifferent (3); Disagree (2) and Strongly Disagree (1). The data obtained from respondents were analyzed using Relative Quality Index (RQI) denoted as Q_5, Q_4, Q_3, Q_2 and Q_1 for the fives scales respectively. Let n_x, where x = 5,4,3,2,1 represent the number of respondents that indicate any of the five quality indices, then, n represents the total number of participants that actually responded to the question being considered. Let N represent the total number of respondents that turned in their questionnaire. In the situation where some respondents do not indicate their response in any given questions, then, n < N for that given question. Then

$$n = \sum_{x=1}^{x=5}(n_x) \tag{1a}$$

Average Relative Quality Index (ARQI) is

$$ARQI = \frac{\sum_{x=1}^{x=5}\{(n_x)*(Q_x)\}}{\sum_{x=1}^{x=5}(n_x)} = \frac{\sum_{x=1}^{x=5}\{(n_x)*(Q_x)\}}{n} \tag{1b}$$

Finally, let P_x, where x = 5,4,3,2,1 represent the percentage of the respondents that indicated any of the five quality indices, and let P represent the total percent of the respondents that responded to the question being considered. Then

$$P_x = \frac{(n_x)*(100\%)}{N} \tag{2a}$$

$$P = \sum_{x=1}^{x=5}(P_x) = \frac{(n)*(100\%)}{N} \tag{2b}$$

Analysis of the respondents responses in section B to E are presented in Table 3 and Table 4.

4. Discussion of results

▪ The responses to questions 1 and 2, in section B indicate that the community members are quite aware and expectant of some level of CD responsibilities from the government and corporate business organizations.

▪ The responses to questions 3 to 7 of Section C show that there is a gap in communication, gap in participation and lack of effective communication and participatory development approaches in the region.

▪ The responses to questions 8 to 12 of Section D show that there is the fear of the problem of 'elite capture' in the region and

the feeling that 'not enough' has been done to improve the living conditions of the people in the region.

▪ Furthermore, it is initially feared that lack of requisite internet facilities and services along with very poor power supply will stall the implementation of web-based solution in the Niger Delta. However, the responses in questions 15 ,16 and 17 indicate that the community members are willing to adopt such web-based solution, if it can enable them to participate meaningfully in the development initiatives in the region. Besides, the availability of low-cost, low-power and internet ready communication devices like the cellphones greatly increased the chances of adopting web-based solutions in the region.

▪ In all, any research effort that seeks to employ social network to address the running challenges to CD initiatives in the Niger Delta must focus on bridging the communication and participation gaps. In addition, such niche SNWA will have to support the context factors prevalent in the Niger Delta region, namely the CD stakeholders and their divergent needs; the online community policies that facilitates social interaction among the CD stakeholders; and the ICT technologies that are available and affordable in the region.

5.0 Conclusion

In this paper, a context model of CISNS was presented. The model showed the essential context factors that must be considered in order to tailor a SNWA for CD purposes. In addition, a preliminary context analysis was conducted to understand the situated context of use for the SNWA that will facilitate CD in the Niger Delta region of Nigeria. Apart from identifying some of the challenges to CD in the Niger Delta, the context analysis also showed that the community members are ready to adopt such web-based solution to address those challenges. In all, the study provides useful information for setting the research agenda for the development and diffusion of such web-based solution to CD issues in the Niger Delta region.

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