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ALTERNATIVE NEIGHBORHOOD CONFIGURATIONS IN AN ABMS MODEL TO ESTIMATE THE ADOPTION OF TELECENTERS IN BRAZIL

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ABSTRACT

In the context of an agent-based modeling that estimates the acceptance of telecenters by their potential users in Brazil, this paper discusses two alternative configurations of neighborhood for the creation of social networks, one based on Moore's cellular automaton, and another based on random relations. This discussion is an essential step in the creation of the overall model, a bottom up approach in which the users (agents) are characterized in terms of their technological innovativeness and are subject to the influence of their social networks; each agent is randomly assigned with a set of initial features in order to reflect the diversity of behaviors and preferences found in a field survey with the target audience. The final model is expected to be an evaluation tool to compare alternative digital inclusion strategies in terms of effectiveness in attracting new users to the telecenters, and assessing the policies in terms of their efficacy in the resource allocations and of how effective is a given equipment deployment strategy or premise location. This can help to reallocate resources so as to maximize the results.

KEYWORDS

ABMS, diffusion models, adoption behavior, public policy, telecenter, digital inclusion.

1. INTRODUCTION

In developing countries, the income limitations of the underprivileged classes are a barrier to the digital inclusion, as in many cases the use of ICTs implies the acquisition of equipment and subscription of services and infrastructures for accessing the Internet, what, in general, is beyond the reach of low-income families.

The creation of public Internet access centers, the so-called telecenters, is one of the possible solutions to bridge the access of the low-income citizens to computers and the Internet. Telecenters have been deployed in many countries, in some cases by NGOs, but often as part of governmental policies. In Brazil, there are several programs initiated by local, provincial or federal government levels, and they vary broadly in terms of size, format, purpose, capillarity and offered services.

However, it seems that in most cases the characteristics of the telecenters and the choice of location reflect a top-down perspective in which the policy-makers specify a predefined configuration and determine the deployment location based on general assumptions that seldom capture the real needs of the serviced communities. We think policy makers could benefit from a planning tool capable of simulating alternative telecenter size and location options in terms of the efficacy of the allocated resources, of the resulting number of serviced users and of the achieved quality of service (QoS).

The efficacy of a proposed policy or solution will depend not only on the availability of the resources (ICTs) but, in a greater extent, on their effective appropriation, that is, on the users' personal involvement and effort in the full exploitation of the ICTs. This appropriation depends both on the social influence to which every potential user is subject as well as, on a more individual level, on the user's perception of the relation between ICT usefulness and easy of use. While the former is determined by the effect of the social neighborhoods in which every user lives, the latter refers to a cost benefit analysis that is, in many respects, very similar to that considered in a generic technological acceptance model (TAM), such as described by (Davis, 1989; Malhotra & Galletta, 1999; Venkatesh & Davis, 2000).

And in order to be a valid planning tool for policy makers, the proposed approach needs to indicate ex ante the effects of such aspects on the adoption of the ICTs and, by consequence, on the effectiveness of the inclusion policies under study. With the specific aim of developing such tool, our approach combines two complementary studies in an attempt to capture and handle actual characteristics and expectations of the target audience, in a bottom-up fashion. The first study, as described in (Bonadia et al., 2007), is based on a field survey conducted in three small localities in Brazil, which are representative of the populations that telecenters are meant to service. The field survey investigated, *inter alia*, the reasons for someone to start using computers in a telecenter, and attempted to correlate the reasons with sociodemographic factors, such as age, marital status, schooling level, tolerance to distance and to waiting time. In addition, the individual characteristics include one of the five innovativeness categories proposed by (Rogers, 1983), to indicate how favorable is an individual's attitude towards an innovation such as a computer or the Internet.

The results collected in the field survey were then statistically analyzed, by means of a logistic regression, so as to produce an equation that models the probability of a non-user to adopt a telecenter depending on a particular combination of personal characteristics and preferences. This probability is then calculable for every target user in order to simulate all the individual behaviors in a bottom-up fashion. The individual behaviors can be modeled in terms of TAM parameters, whereas their aggregate result tends to follow the pattern of a typical innovation diffusion process. Thus, in the last part of the study an agent-based model was developed to simulate the effects that the social relations exert on the adoption of telecenters, and then compare the ICT diffusion rates as a function of the alternative policies and strategies. The agent-based modeling has proven to be a valid method for shedding light on subjective aspects that influence the individual preferences and attitudes and their consequences on the social diffusion of a technological innovation, as discussed in some of our previous ABMS studies on technology diffusion (see Holanda *et al.* 2003 and 2008). Thus, emerging relational phenomena, along with the perceived usefulness of the offered service, can reveal, *ex ante*, the adoption rate of the telecenters.

The aim of this paper is to introduce the proposed multiagent model and then discuss two alternatives of neighborhood configuration, one based on Moore cellular automaton and another based on random relations, highlighting their effects on the diffusion process. This analysis is in the frame of a broader research project on the popularization of computers among low-income citizens in Brazil, undertaken in the scope of a study that focuses on telecommunication solutions for digital inclusion. As discussed in the next section, the simulation was constructed in three subsequent phases that, in combination, try to anticipate the behavior of the target public in terms of the adoption of computers in telecenters.

The paper sections are: (1) introduction and context of the research; (2) summary of field data collection (based on which the model is expected to be grounded on real world values); (3) description of the ABMS model and its alternative neighborhood configurations for implementation in the simulation environment SeSam; (4) presentation of some simulation results; (5) discussion of the results and (6) conclusion.

2. BODY OF PAPER

The model described herein uses data from a field survey whose purpose was to identify the preferences and needs of the potential users of telecenters, trying to correlate such information with the actual attitudes (user or non-user) towards the telecenter. The survey occurred in three Brazilian localities, in three different States, so that the results were less geographically biased. The selected localities had at least one telecenter, in service for at least three years. This was necessary so that the survey could correlate the diffusion process (with respect to the use of the telecenter) with other variables, such as user and non-user profiles, influence of external factors such as distance, waiting time, presence of aides, type of offered services, etc. The model construction phases are schematically depicted in Figure 1, as well as the factors covered in each step.

In the field survey phase, the questionnaires of the applied interviews attempted to capture three different individual characteristics: i) cultural and technological acceptance dimensions, ii) aspects of innovativeness and susceptibility to social influence, and iii) other individual variables.

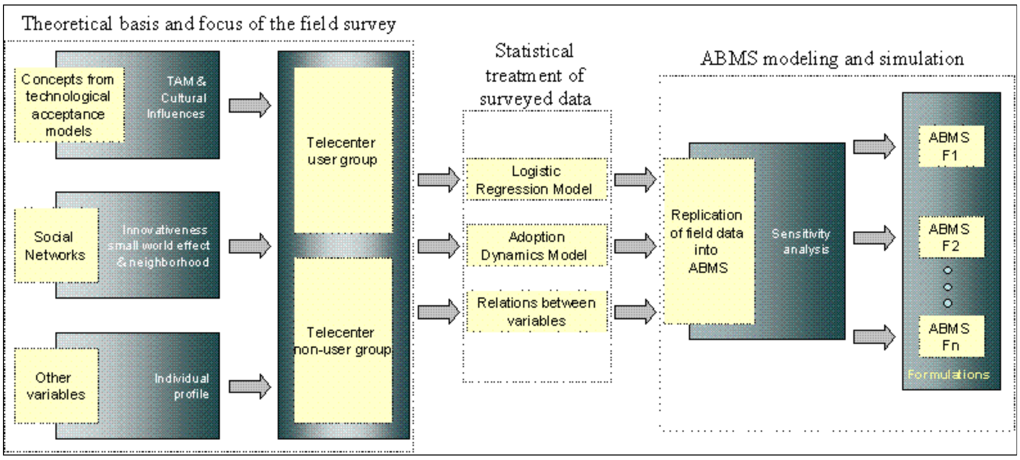

Figure 1: Model overview from the field survey to the ABMS simulation.

2.1 Cultural Influence and Technological Acceptance

The first characteristic seeks to explain individual attitudes regarding technology in general and computer usage in particular. The Technological Acceptance Model – TAM (Davis, 1989) encompass attitudinal determinants in two distinct variables: perceived usefulness and perceived easy of use. The former applies whenever people tend to use a technology on the belief that such use will improve their work performance, and the latter applies when, even though the potential users believe that the technology is useful, it may seem so hard to use that the usage advantages are counterbalanced by the perception of the usage effort.

Although useful in determining factors that affect the technology acceptance and use, the TAM model does not explore social influences or user communication patterns, in contrast with the Theory of Reasoned Action – TRA (Fishbein & Ajzen, 1975), which identified an attitudinal factor that affects certain behaviors. To overcome such limitations in TAM, our model attempted to capture both TAM variables from data surveyed in communities that are representative of the cultural environments of our target audience so as to use the data in an ABMS model to recreate the social dynamics. The applied questionnaires were conceived to survey factors that account for the perceived usefulness of telecenters (e.g. computer usage, Internet navigation, etc.) as well as for the perceived easy of use (basically, telecenter distance and presence of aides for helping novice users) (for more details refer to Bonadia *et al.*, 2007).

2.2 Innovativeness and Susceptibility to the Social Influences

The second characteristic refers to the level of innovativeness of every potential user, what can determine how favorable will be her/his attitude towards computers and telecenters. Our study adopted the same five innovativeness categories proposed by (Rogers, 1969): innovators, early adopters, early majority, late majority and laggards, as indicated in Table 1. Whereas, on one extreme, innovators tend to be open to new products and services, laggards, on the opposite extreme, are notably resistant to new ideas. The three intermediate categories have decreasing levels of innovativeness. In our model, these five categories also define how susceptible their members are regarding the influence of the neighborhood. Thus, whereas innovators behave in a more independent way, and their attitudes and decisions occur regardless of the surrounding influence, laggards depend on a wider acceptance of the innovation within their vicinity.

In the studied alternative simulation grids the neighborhoods are based either on the cellular automaton model proposed by Moore or on random relations, but in both cases the influence required by the members of each innovativiness category is established in terms of a given number of users in the neighborhood, as discussed in Section 3.

Table 2. Rogers' innovativeness profiles and respective proportions

Categories	Innovators	Early adopters	Early majority	Late majority	Laggards
Proportion	2,5%	13,5%	34%	34%	16%

2.3 Other Individual Attributes and Correlation with (Non) User Status

The third input from the field survey refers to the individual characteristics such as age, marital status, schooling level, etc., that arguably could influence the respondent's propensity to go to a telecenter and use a computer. Since this study is part of a digital inclusion project whose main aim is to stimulate hard-to-reach citizens to adopt the use of computers and of the Internet, is was extremely relevant for us to find out how the age and other sociodemographic factors determine the actual probability of someone to adopt such innovations. In this particular, the interviews showed, for example, that the motivations mentioned by the respondents to justify the use of a telecenter vary clearly according to the respondent's age. Whereas young individuals often mentioned that leisure was a reason to use a telecenter, most of the aged respondents answered they saw no particular reason to go to a telecenter (Bonadia *et al.*, 2008). Comparing the responses obtained from users and non-users, the three above-mentioned sets of characteristics were then evaluated in terms of their effects on the adoption.

2.4 Phase of Statistical Treatment of the Collected Data

In order to draw more reliable conclusions, the surveyed data were statistically analyzed to determine the relevance and the weight of each variable. This allowed us to check the validity of the initial assumptions, reconsidering or discovering the significance of some factors. For instance, we at first hypothesized that the distance between the respondent's home and the telecenter could be a key factor in the decision whether to use the telecenter. Yet, although present, the distance effect was less relevant than initially thought, at least in the three (not particularly large) surveyed localities. A more detailed discussion is in (Bonadia *et al.*, 2007).

3. GENERAL DESCRIPTION OF THE ABMS MODEL

The third and last phase in the construction of the ABMS model was the instantiation, in the agent-based simulation environment, of the variables that the field survey showed to be the most relevant in what refers to the adoption of a telecenter by the target audience. This instantiation supposes some level of schematization of the individual and collective characteristics found within the surveyed population. And in an ABMS environment, one key aspect is the configuration of the neighborhood relations among agents, that is, how a particular agent make sense of the world, and how the behavior of this particular agent influences other agents, and then, change their world. To address this question, we evaluated two alternative strategies to create social relations, one based on cellular automata, in which the influences among agents are essentially local, and another based on random relations, in which the influences have no local dependence. Since this is the main focus of this paper, the third phase is discussed in more detail in this section.

As it is well known, in an ABMS environment the relations among agents vary with the time, due to the individual behaviors. The social networks offer an average basis for studying the links among individuals that are the main responsible for their own choices. In this sense, the study of a technological change, under the perspective of the social networks, emphasizes the relations in detriment of the features and characteristics of autonomous individual units (Agapitova, 2003, p.9). Hence, social networks may be beneficial to the society, creating confidence and encouraging the cooperation, but also may cause losses when they enclose the society in rigid relational networks.

The diffusion of an innovation by a society results from a communication process among its members. The diffusion models, including *ex ante* approaches, facilitate the understanding of such communication process by allowing the evaluation of individual behaviors in face of a technological innovation. In this particular, bottom up approaches, such as ABMS, allow analyzing phenomena related to diffusion or contamination processes, and to the emergence of the events, and thus are well suited to follow the dynamics of social phenomena.

As mentioned above, in our model, each potential user was represented by an agent with particular features, such as neighborhood relations, psychological innovativeness profile and a set of sociodemographic characteristics. The agents formed a world or society and interacted with one another according to rules of social influence. The grid had a 50x50 dimension, totaling 2500 agents. The agent's individual features and the relational effects in a multiagent environment served to realize the social influence that is implicit in the TAM variables. While some of the adopted variables stood for the "perceived usefulness" (PU), other stood for the "perceived easy of use" (PEU). The resulting equation encompassed both dimensions and calculated, at each iteration, the probability of a given agent to adopt the telecenter.

In Figure 2 we exemplify two iteration steps of a typical diffusion process triggered by the deployment of a telecenter in the center of the community represented by the grid. At first, the telecenter starts to attract new users by offering computers with Internet access and some support services. In the first moment (Figure 2a), only the more innovative agents are likely to adopt the use of the telecenter, because they are not dependent on the choices made by the other agents. This self-sufficient nature is caused, among other reasons, by the fact that innovators, besides their special inclination for what is new, usually have more access to information and news. Their choice is then based essentially on the evaluation of the perceived usefulness of the telecenter (services, support, etc.) versus the difficulty to access its services (distance, shared resources, etc.). However, once the innovators become users, they start to influence their neighbors. Some of these neighbors are early adopters, what means that even though they are not so self-sufficient as innovators in what respects the adoption of the innovation, they do not require a very strong social influence in order to adopt it. In the model, this means that they need at least one user in their neighborhood so that they become prone to adopt the use, provided that the usefulness/difficulty analysis produces a favorable result. And in this way the diffusion process advances through the subsequent categories, until a point where the offered service is degraded by the excessive competition for the limited resources. Then (Figure 2b), the diffusion process saturates and no more agents will adopt the use.

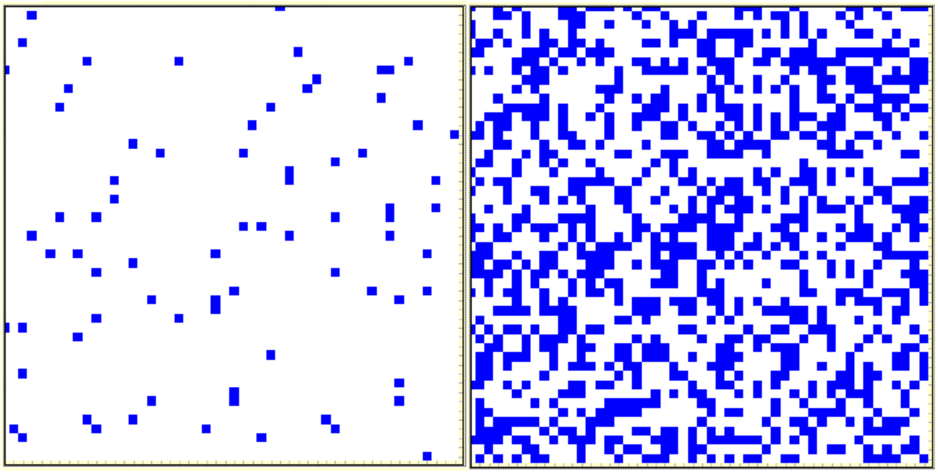

Figure 3. Simulation grid: a) initial diffusion; b) final diffusion

3.1 The involved Variables and Initial Assumptions

The field survey was designed to investigate the relevance of some variables, based on some initial assumptions, such as the hypothesis that the distance between the respondent's home and the available telecenter has a strong influence on her/his decision to use the offered service, or that the respondent's age could be a good predictor of her/his propensity to adopt the use. These common sense conjectures should then be investigated and, most importantly, quantified by the field survey. Such quantitative information has then allowed us to find the most suitable equation to calculate the adoption probability of a given agent based on its very particular combination of individual features such as age, marital status, schooling level, innovativeness profile, and location in the grid. The location in the grid is randomly chosen during the creation of the world, and since the telecenter is situated in a specified position in the center of the grid, the calculation of the distance between agent and telecenter is straightforward. Nonetheless, although the geographical distance is an objective measure, the tolerance to distance is a subjective attribute that the survey attempted to capture. Thus, the actual decision to adopt a telecenter is at first defined by a comparison between these two factors, which vary for each agent.

The other attributes were randomly distributed among the agents in the grid, regardless of their actual position in the grid. In other words, sociodemographic attributes such as age, marital status and schooling level are independent of the agent's location, but the tolerance to distance is a factor that will interact with the actual distance. Moreover, the common sense knowledge that marital status and schooling level are variables that tend to depend on the age, has lead us to perform some adjustment on the likelihood of such combinations among the agents in order to avoid too unrealistic cases, such as the existence of agents whose age is under 20 and whose marital status is widow, or whose schooling level is postgraduate.

3.2 The Two Evaluated Configurations of Neighborhood

Prior to further sensibility analysis of the surveyed variables, we had to evaluate the ABMS model itself. For instance, we evaluated the effects of the possible social relationship configurations within the grid, so as to understand how they could influence the simulation results. With this purpose, we selected two radically different types of grid neighborhood, as discussed bellow.

The first neighborhood configuration evaluated is the same that we used in many previous ABMS studies on technological diffusion, ranging from a simulation of competition between two cell phone service providers (Holanda *et al.*, 2003b) to the simulation of the deployment of digital television in Brazil (Holanda *et al.*, 2008). This type of neighborhood is based on cellular automata, discrete dynamic systems that form a regular spatial lattice, whose cells (and theirs neighbors) are in one of a finite number of states, in such a way that the grid state advances in discrete time steps. In this configuration, the immediate neighbors necessarily influence every agent in the grid.

In addition to this close neighborhood, which in our model is comprised of eight immediate neighbors (what represents a cellular automaton with radius = 1), the model also incorporates some radomly chosen relations between non-contiguous agents in the grid. The exact number of non-contiguous relations that every agent has tends to range between one and three, since the choice is aleatory in nature and the relations are bidirectional, what means that besides being assigned a remote neighbor from wherever in the grid, every agent can also be chosen to be a remote neighbor of any other agent in the world, as schematically illustrated in Figure 3. The influence of these remote relations is meant to create the so-called Small World effect (Milgram, 1967; Watts, 1999), and therefore tends to create a certain level of social cohesion in the diffusion process, as discussed in (Holanda *et al.*, 2003b).

The combination of innovativeness categories with automaton neighborhood configuration and a Small World effect was also described in (Ávila et al., 2006 and Holanda et al., 2008). This neighborhood type was described in (Bonadia *et al.*, 2007), but the model described here is an updated version of it.

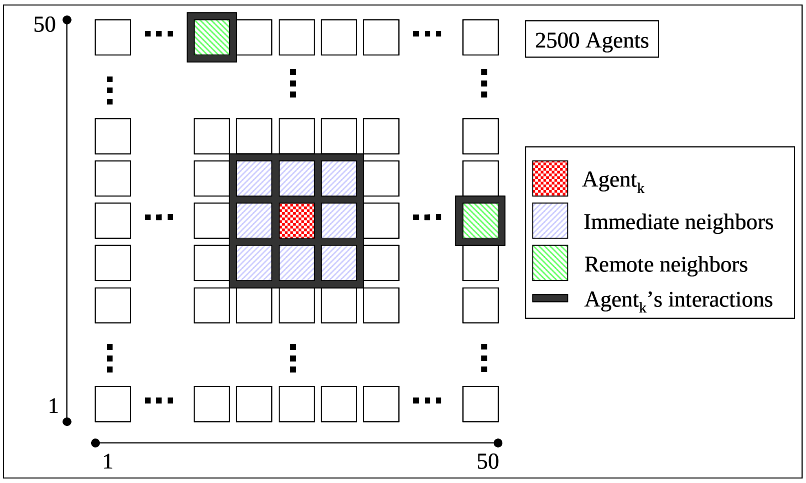

Figure 3. Grid with cellular automaton neighborhood configuration

The second evaluated neighborhood configuration abandoned the cellular automata and adopted a stricly random process when choosing every agent's social relations. Similarly to the previous case, every agent ends up with an average number of 10 neighbors in the grid, but in this case none of them has to be in the immediate vicinity of the agent, even though this can occur by chance. This configuration is schematically depicted in Figure 4.

Figure 4. Grid with randomly formed neighborhood configuration

3.3 Possible Applications of the Alternative Neighborhood Types

As previously discussed and illustrated in Figure 3, in the first configuration each agent has eight immediate neighbors plus one to three randomly picked non-contiguous or remote neighbors, in order to add relational/social influences, and then simulate the Small-World effect. This seems a reasonable approach in the simulation of populations whose daily relations present a strong local nature, such as is often the case of small rural or suburban communities. The inhabitants of such communities seldom have contacts with outsiders, thus their social interactions and communication tends to be confined within the group, what can have a particular clustering effect on the innovation diffusion pattern. This is well illustrated in Figure 4a: a simulation of the diffusion of the telecenter use in a community with local type neighborhood evolves towards the formation of isolated clusters of users and non-users. It is worth mentioning that in all the scenarios simulated here we considered the existence of one telecenter, located in the center of the grid, i.e, in the center of the community.

However suited to less fluid communities, such a type of neighborhood may not fit other types of society, since it to some extent underestimates the role of social relations among non-contiguous agents, whereas such remote relations prevail in all the social interactions that take place in other circumstances or in other contexts, such as at work, at school, or even in other strictly urban social settings, such as shopping malls, and so on. Thus, the prevalence of social rather than local relations seems to be typical of more urban and industrialized communities. In many such communities the local relations are replaced or surpassed by daily contacts with other non-adjacent agents. Then, it seems that the second configuration, with neighbors chosen randomly along the grid, in an attempt to represent an essentially social neighborhood instead of a local one, is more suited to simulate a diffusion process within such communities.

The resulting simulation of a diffusion of telecenter use with the second configuration of neighborhood is depicted in Figure 4b. In contrast with the previous case, now there are smaller clusters, indicating that the effect of local influences is less significant than before. Also noticeable is the fact that the overall diffusion was more efficient (totaling 902 users) and permeated the entire grid. This performance theoretically could be credited to a more efficient communication flow in the second case.

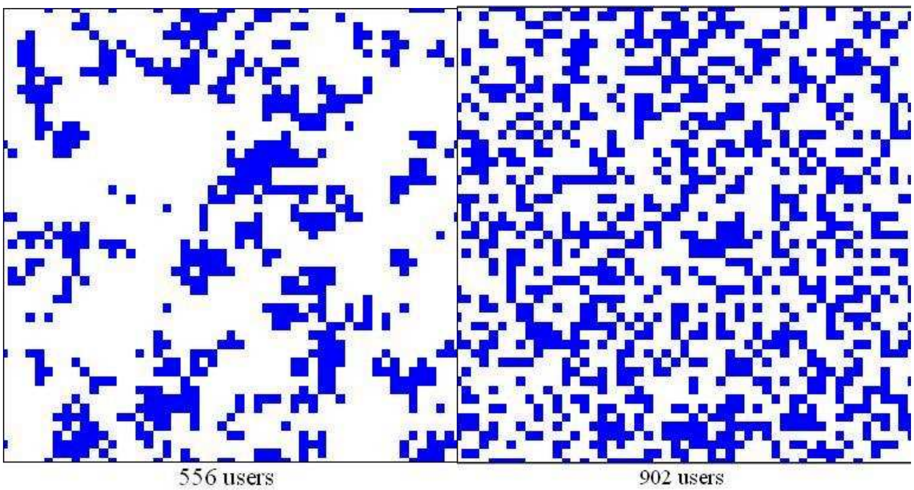

Figure 5. Diffusion pattern with (a) local biased and (b) social biased neighborhoods

3.4 Possible Explanations for the Difference in the Diffusion Speed in the Two Configurations

As advanced above, the greater efficacy of the diffusion in the scenario with non-local neighborhood could be, at least partially, motivated by the fact that this configuration favors the communication within the grid. But it is pertinent to ask if other factors could also play a role in this performance change. We then investigated one of these possible factors, namely, the influence of the average distance between an agent's neighborhood and the telecenter. It is clear that, in the cellular automaton case, each agent's immediate neighbors have the same average distance from the telecenter that the agent itself has. In other words, if an agent is in the vicinity of the telecenter, so are all its immediate neighbors, and conversely, if the agent is far away from the telecenter. This is absolutely not the case in the random neighborhood configuration, because the average distance of the neighbors does not depend on the agent's location with respect to the telecenter. Thus, some pertinent questions are: Does the cellular automata configuration reinforce the effect of the distance on each agent's use decision? If this is empirically detectable, are there other factors that could explain the distance bias? What effect, combined with this assumed higher sensitivity to distance, could make the diffusion pattern in the cellular automaton configuration notably different from the diffusion in the random neighborhood configuration, as illustrated in Figures 5a and 5b.

4. SIMULATION RESULTS

Then, in order to test the hypothesis that the local-biased neighborhood configuration is more susceptible to the effect of the distance to the telecenter we created two simulation scenarios, one with the original distances, and the other with a 100% increase in the scale, so that every agent is located at twice the original distance from the telecenter. If our assumptions are correct, the local-biased neighborhood would be more sensitive to the distance, and we would expect to find not only a reduction in the number of users, but also a stronger reduction when compared with the social neighborhood scenario. In Figures 6 and 7 we illustrate one simulation result of each scenario, even though, to have a more accurate picture of the effect we have to consider the average obtained after a number of simulations. Surprisingly, we found a slight reduction of the average in the former case, and no decrease at all in the latter (resp. 656 → 645 and 866 → 871, after 7 runs). It is worth mentioning that both with original and with increased distance, the local-biased configuration showed a higher variance in the final number of users after the diffusion. The results are shown in Table 2.

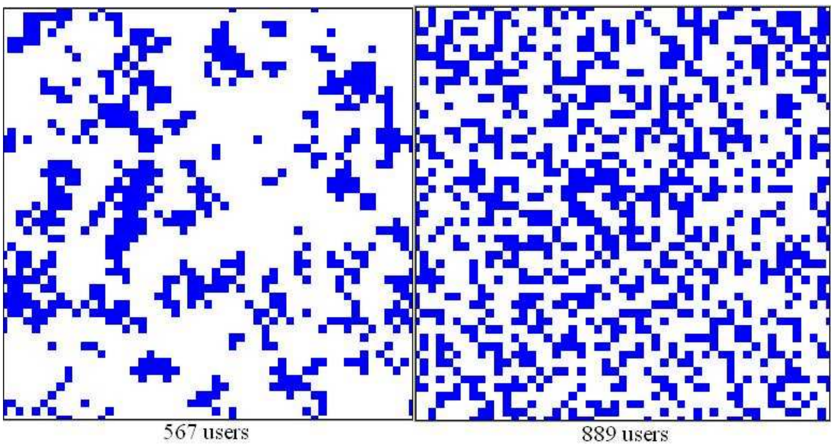

Figure 6. Diffusion with original distance (a) local biased and (b) social biased

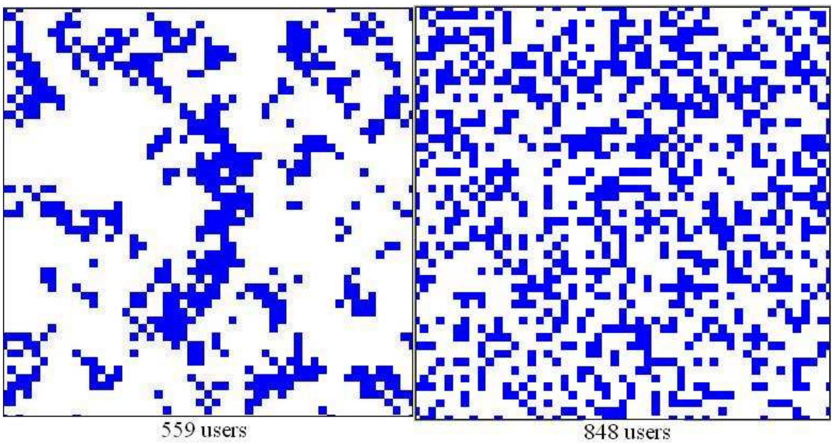

Figure 7. Diffusion with increased distance (a) local biased and (b) social biased

Table 1. Mean number of users and standard deviation after 7 simulations with scale change

	Original situation	**Doubled scale**	**Variation**
Local-biased neighborhood	x = 656 σ = 72.9	x = 645 σ = 145.8	-1.7 %
Social-biased neighborhood	x = 866 σ = 28.3	x = 871 σ = 36.9	+1.1 %

To make sure that the distance effect was being correctly accounted for, we created two new scenarios in which, instead of increasing the distance by means of a change in the scale of the grid, we made about half the agents less tolerant to the distance and thus less prone to become users if the telecenter is not close to their location in the grid. Some instances of such scenario are illustrated in Figures 8 and 9. Averages and standard deviations are in Table 3.

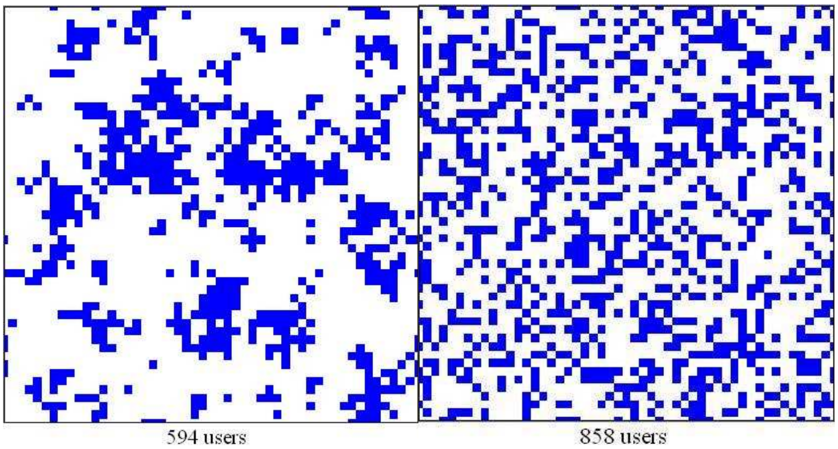

Figure 8. Diffusion with original tolerance (a) local biased and (b) social biased

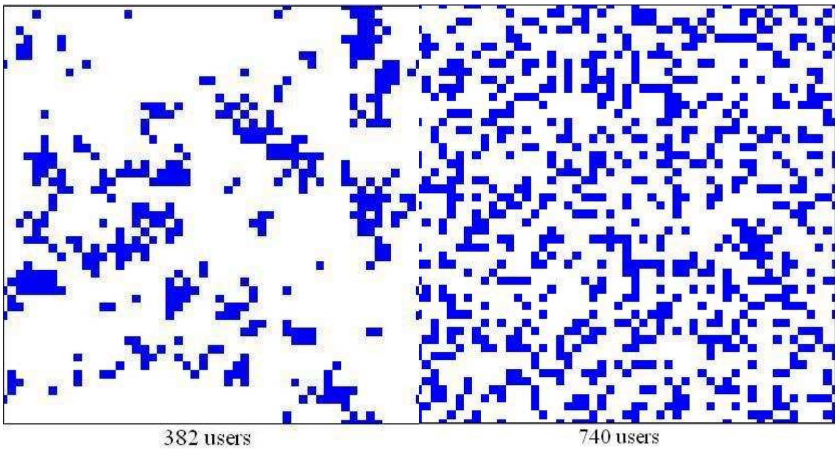

Figure 9. Diffusion with decreased tolerance (a) local biased and (b) social biased

Table 3. Mean number of users and standard deviation after 7 simulations with tolerance change

	Original situation	**Doubled scale**	**Variation**
Local-biased neighborhood	x = 610 σ = 80.8	x = 474 σ = 88.8	-22%
Social-biased neighborhood	x = 872 σ = 79.7	x = 720 σ = 75.7	-18%

The results clearly show that the social-biased neighborhood creates a faster diffusion in all cases, what could be credited to a more efficient communication within the network. However, even though the results in Table 3 seem to corroborate the initial hypothesis that a local-biased neighborhood tends to show a stronger sensitivity to the distance factor, the high standard deviations found in the results of both configurations do not allow such a strong claim. In fact, given the complexities that resulted from the real world data that we surveyed, we consider that this particular issue requires further research, with a deeper analysis of the related variables. For instance, the tolerance to distance in our survey has an essentially subjective nature; thus, when evaluating which agents will adopt the use of the telecenter our model does not treat distances above the tolerated limit as a deterministic factor. In order to simulate the essence of the human variability, our model uses this information in a more probabilistic way, in which even the outermost agents are allowed to adopt the use, no matter how intolerant they are with respect with the distance. The only difference is that they will be less likely to adopt. If the distance factor were treated more deterministically, we would probably see a more outstanding difference between the two neighborhood configurations.

5. DISCUSSION OF THE RESULTS

As seen in the previous section, our hypothesis was partially corroborated, only when we changed the distance tolerance factor directly in the agents, by changing the number of individuals that subjectively consider the distance a hindrance to use the telecenter, instead of altering the grid scale in order to create indirectly the same effect. It is not clear what caused such conflicting results. But since in our model every agent is assigned a large the number of individual characteristics (which are condensed in the final probability equation) it is possible that many of these variables relate differently with the distance. Thus, a simple scale change is not the safer way to test the effect of the distance, because it makes it difficult to draw immediate conclusions without a deeper analysis of the entire model. The direct change in the distance tolerance, on the other hand, appears to be a more straightforward way to test the influence of the distance on the diffusion speed in the different configurations, but even in this case we have to be cautious with the analysis of the results, given the high standard deviation in the final number of users after each simulation.

Since our short-term goal was to evaluate if and how the two alternative configurations of neighborhood could affect a diffusion process in an ABMS environment, we think that our results were very instructive in that particular respect, pointing to qualitative and quantitative differences in the diffusion pattern according to the employed type of neighborhood.

Further study is required to evaluate, for instance, if and how one particular configuration is more suited to certain types of communities, to simulate social phenomena in general, and communication/diffusion processes in particular, as suggested by the discussion above.

6. CONCLUSION

In this paper we contextualized the aims of our research project and how it makes use of ABMS to study social dynamics with a level of individualization that is only possible with bottom-up approaches. We then discussed the particular modeling issue of neighborhood configuration in an ABMS environment and concluded that, depending on some modeling decisions required by an ABMS tool, there may be some differences in the simulation results, in particular in the diffusion scenarios. It is then clear that a deeper analysis of such modeling issues are necessary prior to further experiments based on real-world data. We believe that the better option has to consider the actual nature of the simulated community, i.e., evaluate what neighborhood type effectively captures the communication dynamics of that community.

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