MANAGING PROJECT COMMUNITY IN INFRASTRUCTURE MEGAPROJECTS

Johan Ninan, Ashwin Mahalingam, Stewart Clegg

ABSTRACT

Developing countries, such as India, look towards massive investments in infrastructure megaprojects to achieve their development goals quickly. However, megaprojects are plagued with failures and inefficiencies often due to the project's inability to handle external stakeholders such as project community. Project communities are the end users of the project, are most inconvenienced by the project, and they hold significant potential to stop the project by asking a democratically elected government to do so. In this context, we seek to understand how a metro rail megaproject in India manages their project community through visible and invisible strategies using an in-depth case study. The organizational power theories of the dimensions of power theory and the circuit of power theory are used to explain these strategies. The research draws on data from 30 semi-structured interviews with the project team and five years of social media data comprising 640 Tweets. A Grounded theory method is used to find the visible, invisible strategies and their relation between each other. The results show that invisible strategies depend on visible strategies by relying on the adaptations made for the community and the visible strategies depend on the invisible strategies by relying on the changed preferences of the project community. The findings have contributions to theory and practice of managing project community in infrastructure megaprojects.

KEYWORDS

Megaprojects, Project community, Strategies, Organizational Power theory

1. INTRODUCTION

Infrastructure is essential for the socio-economic development of a country. Several empirical studies show this strong correlation between the availability of infrastructure and economic growth (Queiroz & Gautam, 1992). More recently, Söderlund, Sankaran & Biesenthal (2017) highlight that public infrastructure projects in the form of transportation, energy, water supply, and telecom increase global economic activities. The state of infrastructure in India is far from the recommended figures and rather than small infrastructure solutions, there is a need for bigger infrastructure projects. Infrastructure megaprojects make it possible to have huge leaps in development goals in a short span of time. At present, such megaprojects are in progress through projects such as Western and Eastern Dedicated Freight corridors, Delhi-Mumbai industrial corridor (DMIC), Gujarat International Finance Tec-City (GIFT), Diamond Quadrilateral, smart cities, metro rail projects in multiple cities, etc.

Infrastructure megaprojects are projects which cost more than USD 1 Billion (Flyvbjerg, 2014), These projects attract a high level of public attention and political interest because of its substantial impacts on the community, environment, and state budgets (Capka, 2004). Other scholars say 'mega' is less for the money involved and more the features of a large-scale project (Clegg, Sankaran, Biesenthal & Pollack, 2017) such as the high skill level and attention required in managing these projects along with a large number of stakeholders it impacts. The characteristics of megaproject are a bigger size, complex procurement systems, high controversy, long duration, scope creep, urban setting, human and environmental impacts, risk and uncertainty (Capka, 2004). These characteristics of infrastructure megaprojects can also be represented as six C's - Complex, Costly, Captivating, Colossal, Controversial and laden with Control issues (Frick, 2005). These peculiar characteristics result in the megaproject causing a long-lasting impact on the economy, the environment, and society and hence they are a mega-challenge for project management.

Megaprojects cross multiple external stakeholder boundaries. Considering the project community as the end user of the project and that their money funds the project either through tolls payments or tax payments, they have a significant stake in the project. Risks to the project arising from the project community include community protests and politically motivated public

resistance (Iyer & Sagheer, 2009). The project community interfaces are large in megaprojects requiring many members of the community to be managed (Chinyio & Akintoye, 2008).

These stakeholders are also the most inconvenienced by the project as they live near the project and are troubled by the construction noises, vibrations, diversions, and other hassles. Negative emotions towards the project can cause these stakeholders to oppose the construction of the project, boycott the services during operation phase, and even cause a democratic government to withdraw support for the project considering their vote bank. Also, managing these stakeholders are important as the future of an organization depends on how it is viewed by the project community in which the organization operates (Cornelissen, 2004).

These stakeholders are difficult to manage as they exist across permeable boundaries, are not accountable to the requirements of Detailed Project Report (DPR) and cannot be governed with contractual instruments or conformance to standards as in the case of internal stakeholders. Elias (2017) notes from his study on transportation infrastructure projects that complex problems involving multiple stakeholders, such as project community, cannot be solved with simple solutions. Hence, to manage the project community, megaprojects team resort to strategic action. We choose organizational power theories to explain strategies. So, our research objective is to understand how megaproject manages project community from an organizational power perspective.

We thus seek to understand how a megaproject can manage these project communities to enable the successful construction and operation of the infrastructure megaproject. Firstly, we conduct a detailed literature review on the project community issues and management strategies in an infrastructure project (Section 2). Gaps in the literature are highlighted, and research questions are proposed. A case study is conducted to augment our understanding from the literature by addressing the research gaps and answering the research questions. We discuss the research methodology and research setting for the case study of a metro rail megaproject in India during the construction and operation phases (Section 3). We discuss the visible strategies, the invisible strategies and the relationship between these strategies in the findings and discussion section from an organizational power perspective (Section 4). Finally, we summarize the findings, theoretical

and practical contributions, and limitations and future scope of work in the conclusion section (Section 5).

2. LITERATURE REVIEW

A recently published special issue on megaprojects in the Project Management Journal (PMJ) stresses that megaproject success is often driven by power related factors (Söderlund et al., 2017). Clegg & Kreiner (2013) claim that researchers on infrastructure megaprojects exclude topics such as power, politics, and conflicting interests even when they are crucial. Organizational power defined by Weber (1947), is '*the probability that one actor within a social relationship would be in a position to carry out his own will despite resistance.*' Based on this definition of power, this research seeks to explore the strategies employed by megaprojects to manage the project community. However, power occurs in multiple dimensions with myriad concepts, different interpretations, and diverse theories, making it one of the most 'essentially contested' (Lukes, 1974) subjects in political science. There is no single best definition of power, and definition changes depending on the context of usage thereby constituting a 'family resemblance' concept (Haugaard, 2010). There have been several attempts in the past to map the different forms and dimensions of power (Lukes, 1974; Clegg, 1989; Clegg, Courpasson & Phillips, 2006; Fleming and Spicer, 2014). The most common distinction between the different forms of power is between the overt and the covert dimensions of power (Fleming and Spicer, 2014).

Overt power involves the direct exercise of power easily observable when some agency seeks compliance with its directives on the part of some other agency such as an individual, a team, an organization, or even a material artifact. Covert power, however, cannot be as easily observed as this power tends to be congealed into more enduring institutional structures, practices and taken-for-granted ideas. It is said that power can be most effective when it is least observable (Lukes, 2005).

The overt dimension of power is dependent on the social fabric in which it acts, and that is the covert power dimension of power. Clegg (1989) in his circuits of power theory highlights that the covert power operates in the episodic circuit of power and the covert power operates in the social and systemic integration circuits. He says that overt power relations flow through the obligatory

passage points that are shaped by the covert power. Obligatory passage points are yardsticks against which to measure the acceptability, appropriateness, and legitimacy of actions (Callon, 1986). Thus, power theory encompasses both overt power and covert power and both of them are related.

The literature on external stakeholder management strategies typically deals with visible strategies and overt power. Project teams' overt responses to the claims of project community can involve adaptation, compromise, avoidance or dismissal (Aaltonen & Sivonen, 2009; Yang, Wang & Jin, 2014). These are similar to other strategies such as the use of negotiations, trade-offs, incentives, and concessions (Chinyio & Akintoye, 2008). In their study of an infrastructure megaproject in India, Ninan & Mahalingam (2017) observe visible strategies such as persuasion, deputation, give and take, extra work for stakeholders and flexibility. These strategies are part of the fair process approaches (Kim & Mauborgne, 2003) and are instrumental in handling the relational consequences of interests being vested in megaprojects (Altshuler & Luberoff, 2004).

There is also some literature on the invisible strategies which deal with covert power. Ng & Loosemore (2007) calls for the government to change community behavior by educating them about the benefits of using the infrastructure by highlighting the case of the Sydney airport rail link, wherein the authorities stopped other services thereby coercing people to use the rail link instead of educating people on the benefits of using the rail service during the construction period. Through this educating the community, the researchers suggest the megaproject team change the behavior of the community, their perception of the megaproject and their preferences regarding alternative infrastructure choices. Ninan, Clegg & Mahalingam (2019) discuss branding strategies such as promoting the organization, giving progress updates, appealing to the community and targeting sections of the population as subtle strategies in managing external stakeholders of megaprojects. Henisz (2017) introduces the term 'corporate diplomacy' wherein he talks of the ability of an organization to win the hearts and minds of the external stakeholders. These change in hearts and minds of the external stakeholders can draw parallels to the covert power discussed above.

Even though the literature of megaprojects discusses the visible strategies and invisible strategies, there is very less understanding on how these strategies work in practice. Also, the

relationship between the visible and invisible strategies is less theorized. We argue that organizational power theories, specifically the dimensions of power and the circuits of power theory, can help us understand these strategies in practice and thereby help in managing project community more efficiently. The following research questions guide our inquiry, (1) anchored in dimensions of power theory, how are the megaproject community managed through visible and invisible strategies? and (2) based on the circuits of power theory, how are visible and invisible strategies related in practice to manage project community?

3. RESEARCH SETTING AND METHOD

To answer our research questions, we chose a qualitative research methodology. Scholars suggest such a methodology when the aim is to gain familiarity with a new area, such as in our case with strategies used to manage project community, or generate new insights (Scott, 1965; Ariño, LeBaron & Milliken, 2016) or generate theories from practice (Benbasat, Goldstein & Mead, 1987). Case studies, in particular, allow researchers to understand how organizational behavior and processes are influenced by the organizational and environmental contexts (Yin, 2003). An in-depth single qualitative case study can provide excellent opportunities to enhance such contextual understanding because of its depth in data collection and analysis (Lundin & Steinthorsson, 2003; Flyvbjerg, 2006). From this single case, we seek to identify project community management strategies and to understand the power dynamics surrounding them.

We chose a metro rail megaproject in India as a case study for identifying strategies in practice to manage the project community. The project costs 2.2 billion USD and thus satisfies the quantitative requirement of a megaproject (cost greater than USD 1 billion). This project being housed in an existing city with coordination required between multiple stakeholders has characteristics of colossal, complex, captivating, costly, controversial, and laden with control issues thus satisfying the qualitative requirement of being a megaproject. The phase 1 of the project consisted of two corridors of a total length of 45.1 kilometers which had both elevated and underground sections with the majority (55%) underground. Thus, there are multiple interactions with the project community as they are affected because of the noise, pollution and traffic diversions frequently found with elevated construction and vibration and building cracks frequently found with underground construction.

Interviews were used to identify the visible strategies employed. We conducted 30 semi-structured interviews with the megaproject team to understand the strategies in practice to manage the project community. Only the megaproject team was interviewed as we sought to understand the strategies employed by the project. The interview data comprised of retrospective data of how the megaproject managed the project community from the memory of the respondent. We chose a section of the metro rail project which was completed only six months before, so that the participants would recall several recent, specific incidents relating to their experience with managing the project community.

To understand the invisible strategies, we sought to look at how the megaproject interacted with the project community. Multiple interactions were made through social media, press briefings, public meetings, community events and information provided in the annual reports. Of these, we chose social media because they were more frequent than the other interactions often occurring on a day to day basis. Also, interactions from other forms of media such as press briefings, public meetings, community events, and annual reports were summarized in the social media posts of the metro rail organization. The multiple effects of social media are accepted in the literature such as creating gradual political change, animating social movements (Ghobadi and Clegg, 2015) and even sometimes toppling governments (Shirky, 2011).

Among the social media sites, such as Facebook, Twitter, YouTube, and Instagram, we chose Twitter. We chose Twitter because it provides concise updates and noteworthy information (He et al., 2013). The official Twitter page of the metro rail organization had 6658 followers (as on 13th November 2018). The Twitter page had 640 tweets from April 2012 (date of first posting of the metro rail organization) to August 2017. Construction of the project started in 2010 and part of the section was commissioned in June 2015 with construction in multiple stretches still in progress. Thus, the tweets studied spread across multiple phases of the megaproject such as construction and operation. We recorded the content of the tweets so that a qualitative case study can be conducted.

We used grounded theory (Strauss & Corbin, 1990) to analyze the data collected from the semi-structured interviews and the Twitter data. We also followed principles of netnography (Kozinets, Dolbec & Earley, 2014) – ethnography on the web, as we analyzed five years of Twitter data. We first open coded the data during which we went through each of the interview transcripts and

Twitter data looking for instances of the strategies used to manage the project community. We recorded these instances and assigned a category that emerged from our data. Hence, we were able to create broad categories such as 'giving project related information.' As a result of this systematic coding and categorizing of incidents, we were able to arrive at the list of strategies that were employed to manage the project community. We followed this up with the axial coding of data to find the relation between the visible and invisible strategies. Then we did subsequent coding of the remaining data and checked whether the data fits the codes created, refining the codes in the process. Refining of codes in this process increased the validity of the findings and grounded the new theory in data. We followed this with theoretical review complying with the suggestions of Strauss & Corbin (1990) to connect our data with the organizational power theories. This theoretical and empirical grounding of our data helped us understand strategies employed to manage megaproject community.

4. FINDINGS & DISCUSSION

This section discusses the visible and invisible strategies observed from the metro rail megaproject in India. The findings are discussed from an organizational power perspective.

VISIBLE STRATEGIES

In some instances, the project community near the tunneling locations complained of experiencing vibrations in their homes due to tunneling. The metro rail agreed to monitor the vibrations and fixed sensors on their building to check settlement or damage. The metro rail organization also inspected the buildings and rated the health of the building. Special care was taken to evict some sections when the health of the building was lower than requirements, and there would be potential damage to the building because of tunneling. If damages were present after tunneling, the metro rail organization repaired the building.

In another instance of construction near a street which was very frequently used, the metro rail organization opted to use sheet piles at extra cost instead of closing the street. An engineer from the organization remarked,

'At that location we had to dig very close to the road ... normally, we excavate easily by closing the road ... but we used sheet piles here so the road won't be closed and business won't be affected'

Trees were cut down to enable the construction of the metro rail project. Some parks were also allotted to the metro rail organization to enable the construction of the underground sections. When the community raised this issue of reduction of green cover in the city in the form of reduced trees and reduced parks, the project resorted to planting numerous trees and saplings in those areas. In response to the demand for park areas, the metro rail organization agreed to develop and maintain parks on the station land. The parks that were affected due to the construction of the underground sections were agreed to be restored and renovated after the construction was complete.

The metro rail project was framed as an environmentally friendly project operating on clean energy. However, the city which hosts the metro rail project is an energy deficient city with multiple blackouts as the electricity board cannot meet the demands of the community. When the metro rail signed an agreement for drawing electricity from the state electricity board, the community protested as the project would draw electricity from the already deficient source. The metro rail in response agreed to install solar panels in their stations and buildings so as to generate their own electricity and even agreed to provide surplus energy to the electricity board thereby addressing concerns of the community. Avelino (2011) notes that the execution of the overt form of power relies on the actor's ability to mobilize resources to realize certain goals. The ability of the megaproject to mobilize funds and use them for procuring solar panels can be seen from this instance.

In another instance, some members of the project community raised concerns of the elevated stretches blocking the entrances and views of their properties thereby reducing the land value. The metro rail dealt very humanly with this situation. They called the affected parties and showed them 3D drawings of the elevated stretches and heard suggestions from the community members regarding the best design which would cause a minimum disturbance. The project team carried out multiple iterations till a mutually favourable solution was arrived. One of the managers of the metro rail organization remarked,

'*They said … if you built this way, we can't get out of our house … or our view is blocked … we addressed them*'

These visible strategies aimed to compensate the affected community and reduce the inconvenience caused due to the metro rail construction. Supporting this, Freeman (1984) underlines that investing an organization's resources and time to address issues and concerns of stakeholders, such as project community in our study, is a justifiable managerial activity.

INVISIBLE STRATEGIES

The metro rail employed multiple invisible strategies while it engaged with the project community through social media. These included giving project related information and giving non-project related information.

i. Giving project related information

The project related information such as project progress updates and achievements of the project were shared through the social media page. The progress of the project relates to the construction progress as well as the supply chain progress such as the delivery of new metro rail coaches, etc. The progress updates of the project included the progress locations as seen in the tweet below,

> **** (name of work package) Package work progress, TBM 1 from *** (name of station A) to *** (name of station B) has completed 98meters* (Tweet by metro rail organization on 6 April 2013)

The progress updates sometimes involved photos of the work complete.

> *I posted 6 photos on Facebook in the album 'Rolling Stock taken from *** (place of Depot) to *** (name of station place)*' (Tweet by metro rail organization on 15 July 2016)

There were posts of non-construction related progress such as metro rail coaches reaching the depot as seen in the tweet below,

Trains 30, 31 & 32 reached *** (name of metro rail organization) depot from *** (place of manufacturing plant). Train No. 30, 31 & 32 transported from *** (name of coach manufacturer) Factory, ... (Tweet by metro rail organization on 28 December 2015)

Such progress updates can be compared to 'reporting' from the work of Verma & Singh (2016) wherein they highlight 'reporting' as one of the strategic instruments used to foster stakeholders' trust in order to survive and prosper.

The achievements of the project involved awards received by the metro rail organization or awards received by a contractor based on their performance in the project.

The British Safety council award *** (name of metro rail organization) contractor- *** (name of contractor). An international safety award and merit certificate was ... (Tweet by metro rail organization on 2nd May 2014)

These updates of the facilitations bestowed on the megaproject would make the community like the metro rail megaproject organization as noted by Gopaldas (2014) who highlight that organizations carefully select, calibrate and broadcast sentiments to entertain consumers and transform the marketplace.

ii. Giving non-project related information

This involved the metro rail celebrating events and boasting of the initiatives it carried out for the project community. The metro rail celebrated national and regional festivals and broadcasted the same on their social media page as below,

*** Metro Rail celebrates *** (name of regional festival) festival at *** Metro Station on 7th &8th Jan 2017 (Tweet by metro rail organization on 6th January 2017)

The metro rail megaprojects celebrating these regional and national festivals make the project familiar to the project community, and is noted in the literature as an important antecedent to brand likeability (Nguyen, Choudhury & Melewar, 2015).

The project also shared tweets which show their work culture such as vigilance awareness, national integration, as shown in the tweet below,

> **** (name of metro rail organization) takes Vigilance Awareness Pledge. *** (name of metro rail organization) observes 'Vigilance Awareness Week' from 28th October to ...* (Tweet by metro rail organization on 28th October 2013)

The metro rail also engaged with the project affected families and offered some services to them in the form of Corporate Social Responsibility (CSR) as shown in the tweet below,

> **** (name of metro rail organization) distributes Mosquito nets. *** (name of metro rail organization) distributed 392 mosquito nets to the Project Affected Families. *** (name of metro rail organization).* (Tweet by metro rail organization on 21st May 2013)

Kanji & Agrawal (2016) note that every organization follows a different strategy to implement CSR activities. Here, we see the metro rail organization helping the project affected family and giving these updates on the social media page.

The metro rail organization also was active in the community using its resources to help the community in every way possible. All those initiatives were broadcasted in their social media page, such as the one below wherein the metro rail rescued a private loaded trailer from falling into an excavated area.

> '*A Friend in Need' On 14-06-12 at 3:00 am a private loaded trailer with structural material was about to fall...* (Tweet by metro rail organization on 18 June 2012)

These non-project related tweets employed by the megaproject team can be compared to corporate diplomacy from the work of Henisz (2017) wherein he talks of its ability to win the hearts and minds of the external stakeholders such as the project community.

RELATION BETWEEN VISIBLE AND INVISIBLE STRATEGIES

Our data suggest that there is a relation between the visible and invisible strategies. The invisible strategies were observed to be dependent on visible strategies and vice versa, as discussed below.

i. Adaptations made for community: Invisible strategies depend on visible strategies

When works were undertaken for managing external stakeholders from the government side such as the government water department, electricity department, telecom department, etc., the extra work projected as a CSR activity.

Shifting and interconnection of Metro Water pipelines. Interconnections for 600mm and 450mm pipelines and fixing. (Tweet by metro rail organization on 24 July 2013)

In another instance, when an arch sewer was diverted to enable the construction of the metro rail stations, the metro rail tweeted,

Diversion and Interconnection of Arch Sewer at *** (name of station) Station. An Arch sewer constructed in 1940's... (Tweet by metro rail organization on 25 October 2012)

Even metro rail organizations work to please the project affected stakeholders were projected as a social responsibility as seen in the quote above where they distributed mosquito nets to the project affected families.

Sections of the community opposed the metro rail organization cutting trees to make way for the elevated metro rail viaducts. The organization was accused of reducing the green cover of the city. The metro rail opted to transplant a few trees to newer locations rather than cutting it down to address the concerns of the community. This was tweeted as the project's environmental responsibility.

Successful Transplantation of Trees by *** (name of metro rail organization) - Tree Transplanting involves relocating or moving a tree safely from ... (Tweet by metro rail organization on 17 April 2012)

ii. Preferences of community changed: Visible strategies depend on the invisible strategies

When traffic diversions were made to enable the construction of the metro rail project, the community was in acceptance with the diversion and supported the project. The project did have to coordinate with the highways and the traffic police department for creating these diversions, but community protests would have resulted in the project spending more money till the community is in acceptance of the diversion or accelerating the construction work to finish sooner to reduce inconvenience. Since the community felt that it was their project, they supported the project. The Human resource manager of the metro rail organization remarked,

> *'When we create traffic diversions for work ... There is no agitation from public ... They (project community) have accepted us'*

Also, when the metro rail organization sought to acquire land from the project community to enable the construction of the metro rail, there were fewer cases of land owners going to the courts. Not only did the metro rail organization offer market rates for acquiring land from these landowners, but also highlighted that the project was for a 'public good' and appealing to the preferences of the community in the process.

The metro rail organization is currently preparing for its next phase in the city. For this, the organization sought funding from the earlier international funding agency. A news article covered the reply of the funding agency spokesperson as quoted below,

> *Asked whether he was satisfied with the progress of implementation of the first phase of the Metro Rail project, Mr. *** (name of representative from the funding agency) termed the project 'very important' and replied, 'I hope to see early completion of the project … On that basis, we are ready to look into the project (phase 2 of the metro rail project) in a very serious manner'* (Quoted from a news article of 15th July 2017)

So, the adaptations made for the community as part of the visible strategies were highlighted in the social media as part of the invisible strategies and created a change in preference of the project community. This support from the project community led the megaproject to acquire more resources from the funders to enable further visible strategies.

Thus, as seen in Figure 1, the visible strategies employed to manage the project community led to some adaptations made for the community. These adaptations were highlighted in the social media as metro rail organization's commitment to the project community as part of the invisible strategies employed to manage the project community. These invisible strategies caused changes in the preferences of the community resulting in them supporting the construction activities of the metro rail megaproject. Supporting this, Derakhshan, Mancini & Turner (2019) claims that the community's experiences with the project organization can influence its legitimacy. These changed preferences enabled the megaproject to save costs as the community supported the project.

5. CONCLUSION

The research was conducted to understand how megaprojects manage project community through visible and invisible strategies. The visible strategies were observed from 30 semi-structured interviews with the project team, and the invisible strategies were observed from 640 Twitter posts of the metro rail organization, collected from a span of five years. The visible strategies led to adaptions made for the community which led to invisible strategies which led to changed preferences of the project community which finally led again to visible strategies.

Theoretically, we highlight through our framework how the overt stakeholder management practices are dependent on the covert practices and vice versa. We deem that future research can utilize the initial framework developed here to expand on and to develop it further. We also contribute theoretically to the discussion on how organizations can link CSR activities with their normal business (Verma & Singh, 2016). We see the metro rail megaproject adapting to the demands of the project community and broadcasting the changes as CSR activities. While we do not claim that all of the organizations CSR activities were just adapting to the demands of the community, it was observed that some of them were.

The practice implications of this research are the visible and invisible strategies that can be employed by a megaproject to achieve community support and manage the project community. We highlight how adaptations made for the community can shape the invisible strategies and how the change in the preferences of the project community can shape the visible strategies. While we

do not contribute to a discussion on the planning and selection phase of a megaproject, our study can help the megaproject team to gain community support for the project during its construction and operation phases. Community support ensures that selected projects are not crippled by community risks such as community protests and politically motivated resistance. The findings of this research can help project managers design better organizational structures to manage the project community in a megaproject environment.

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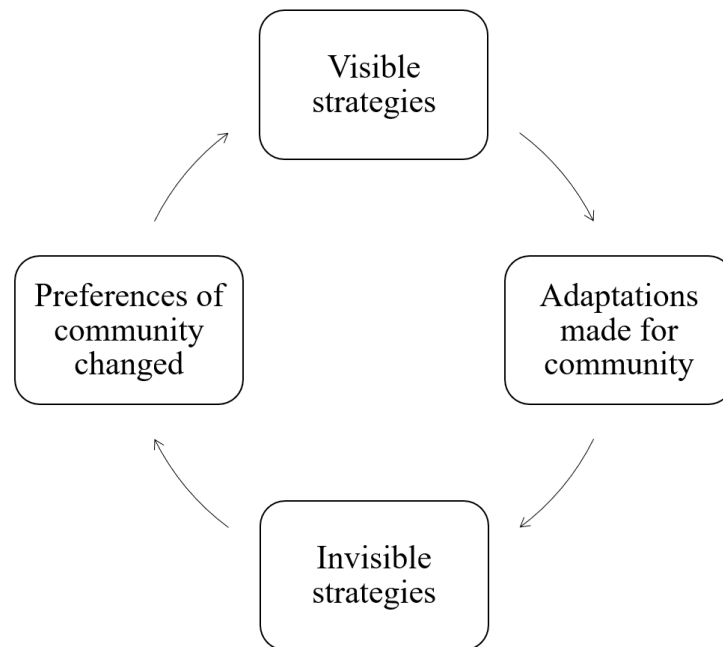
Figure 1: Relation between visible and invisible strategies used for managing project community