MJ2685/MJ2686 HT18
SMART CITIES AND CLIMATE MITIGATION STRATEGIES

Improving Social Capital of Stockholm Royal Seaport

PROJECT REPORT

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SUMMARY

The group analyzed the survey data of a sample pool of 300 residents of Stockholm Royal Seaport which is the representative dataset of demographics and behaviors of 2000 people living in the neighborhood. On first attempt after obtaining the data, it was deemed necessary to have a visual representation of the data. The group then analyzed the data and discussed individual observations and came to mutual understanding of the findings. Some contradictions between users' attitude towards energy saving as well as their immediate living environment, along with their daily routine were also noted from the visual data. With the findings so far, we the group has mutually agreed that there needs to be a further detailed statistical analysis of the dataset using statistical tools such as regression techniques, to identify possible correlations. The group intends to visit the place in the coming days to better understand the problem.

TABLE OF CONTENTS

1. INTRODUCTION

In 2009, the Stockholm City Council deemed the Stockholm Royal Seaport to be an urban development area with an agenda to meet a better environmental profile and reach sustainable goals. It is the largest urban development area in Sweden, currently housing 2000 people but expected to grow up to figures reaching 12000 homes and 35000 workplaces (Stockholmroyalseaport.com, 2018). A survey was performed on a sample pool consisting of 300 respondents and the data obtained was to be analyzed. The analysis is expected to yield results that determine the social capital of the area. The expected outcome of the project task is to perform reiterative and rigorous analysis in order to gain some insight for better strategy to increase the value of social capital in that area.

2. THEORETICAL BACKGROUND

To understand social capital and the various factors that affect it in the society, a thorough literature review was conducted. The following section details the content that was found during the literature review.

2.1. Social Capital

The World Bank Group states that “Social capital refers to the institutions, relationships, and norms that shape the quality and quantity of a society's social interactions. Increasing evidence shows that social cohesion is critical for societies to prosper economically and for development to be sustainable.”. (Web.worldbank.org, 2018). Social capital is a measure of the social interaction of the society. They are measured by many factors, such as trust, feeling of safety, concern about other members. The higher the social capital, the more the community members can benefit from a sharing economy within the society. As the project aim is mainly focused on improving the social capital of the Stockholm Royal Seaport, there has to be given a brief introduction of the concept pillars.

Social capital has been present and studied for a long time now, there has been many definitions; firstly, Bourdieu et al. (1986) stated that social capital is a network of relationship produced by investments strategies that are directly usable in the short or long term at transforming contingent relations, such as those in neighborhoods, the workplace or even kinship. Meanwhile, a more recent definition by Putman et al. (2000) defines social capital as the connections among individuals (social networks and the norms of reciprocity and trust) worthiness that arise from them and that enable participants to act more effectively to pursue shared objectives. Moreover, Rohe et al. (2004) focuses more on the self-reinforcing model and the civic engagement of relationships,

that lead to greater trusts, and trust leads to effective collective actions and then to individual and social benefits.

Majority of the questions asked in the survey are related to the three basic elements of social capital that scholars tend to agree on: relationships, trust and norms, Mandarano et al. (2010).

Finally, another key aspect that the survey and project tackles is the place identification and environmental sustainability. Uzzell et al. (2002) says that places with a strong identity help to enhance community awareness and bonding, making social cohesions easier. But also, that there is an important link between sustainability and social life, where social, economic and cultural and environmental resources dynamics of the present and future meet.

Social Capital in today's world has become an indispensable tool to measure the performance of diverse groups, growth of entrepreneurial firms, enhanced supply chain relations and evolution of communities. Social Capital has often been cited by researchers as the key element on which successful organizations run and thrive. Before we understand Social Capital it's important to know the reason why people behave, the way they do. Ajzen (1991) in his work tries to find the connections between behavior, actions and attitudes. The study was how do humans process the information they receive and its relation with biological and environmental conditioning? There were no universal answers to the above question but his findings were that, intention is the key as to why people behave the way they do and stronger the intention to engage in a behavior, the more likely should be its performance. Perceived behavioral control with behavioral intention, can be used directly to predict behavioral achievement. These findings are instrumental in understanding as to why people behave the way they do, through which we can gain insights on the status of Social Capital in a community by means of social behavior of people involved.

Eriksson (2010) has cited that access to each form of social capital increases the odds for good self-rated health in a similar pattern for both men and women. The findings mention that men and women who trust people in their neighborhood, (i.e., have access to "personalized trust") are twice as likely to rate their health as good compared to those who do not trust people in their neighborhood. The above citing is a testament to the fact that Social Capital is that universal tool which can be employed between different and unique settings to achieve common goals. As a result of its effectiveness in dealing with complex socio-problems Social Capital has extensively been used by all organizations alike such as municipality, business, communities, start-ups etc. to maintain relevancy and increase collaboration between people which ultimately leads to higher profits financially and a motivated workforce socially.

The benefits of Social Capital are known but how does Social Capital operate? Eriksson (2010) states that gathering together with other people creates opportunities for participation, which provides opportunities to learn new skills, gives meaning to life, and confers a sense of belonging to one's community. Thus, social participation can influence people directly by activating physiologic and cognitive systems, and indirectly by a sense of coherence and meaningfulness. With its working known it is now clear that why organizations focus on improving Social Capital in their communities because as stated earlier it brings in coherence and meaningfulness to one's life. With why and where clear, we now have to look at how can Social Capital be built or augmented in communities? One of the cornerstones is building trust among people there by which the more people trust each other, the greater the chances are for a mutual interest in collaboration leading to higher Social Capital. Since trust is a personal feeling, how can it be developed. In order for someone to know that the other person can be trusted, there needs to be familiarity. Familiarity can be shaped by people bonding socially over shared values and same underlying motivation.

There have been lot of debates within the Sociology community as to whether Social Capital can be measured, different authors have different opinions and models for measurement with no consensus on the final and absolute model. But all of them agree that Social Capital can be measured. Onyx, J., & Bullen, P. (2001) with their statistical research conclude that Social Capital is an empirical concept and it is possible to measure in local communities. The elements through which empirical study can be done are participation in local community, proactivity in a social context, feelings of Trust and safety, neighborhood connections, family and friends connections, tolerance of diversity, value of life, work connections, sharing economy, etc.

Before concluding it's important to examine the short comings of Social Capital which are stated by Aldridge et al (2002) the same characteristics of social capital that enable beneficial, productive benefits have the potential to cause negative externalities. Potential downsides of social capital include: fostering behavior that worsens rather than improves economic performance; acting as a barrier to social inclusion and social mobility; dividing rather than uniting communities or societies. The criticism has always been that for Social Capital to exist it has always in been equal societies. Wilkinson, R., & Pickett, K. (2009) summarize their findings with the statement that equal societies are more socially cohesive than less equal societies. In unequal societies there is always exclusion and mistrust that grows between people and ultimately drives a wedge between them.

With a clear understanding of Social Capital and its role in attaining community goals. The task for us as students is to identify key elements in the Social Networks of Stockholm Royal Sea Port. Our observations would be based on the extensive literature review and survey design available to us. The focus would be similar to the key elements as discussed by Onyx, J., & Bullen, P. (2001). Keeping

in mind the limitations as well our study would also include studying behavioral patterns of people in dealing with their fellow neighbors also their views on sustainable practices thereby providing us a complete picture of the scenario.

3. METHODOLOGY

The details and replies of the survey that was conducted among the sample pool of the residents of Stockholm Royal Seaport was gathered and obtained by the group. The dataset of 300 residents was in a numerical form, and to get a better idea of the matter at hand, it was decided to have a visual representation of the data. Using the results obtained visually, correlating various samples of data was made possible. Some general observations and comments were made using the results of these visualizations.

4. RESULTS

The opening section of the survey consisted of question pertaining to the type of household the respondent belonged to. From the visual data that was prepared, it was observed that as much as 97 percent of the survey pool focused on people living in apartments. Further on, it was summarized that nearly 59 percent people owned their household whereas 39percent of the pool rented it. The rest of the pool either rent it out second or third hand or had other manners of ownership such as student housing.

The second section focused on the respondent's behavior towards group identification and social sustainability. From the data, the observation that was common among most replies was that each individual did not place much value on the importance of the people surrounding them, be it their building co-habitants or neighborhood members. Only a maximum of 38percent of the neighborhood found that their surrounding members were of much importance to them. A staggering 48 percent of them found that their ties with the other building co-habitants was very weak whereas the number grew to 68 percent when the same variable was asked relating to the neighborhood co-habitants.

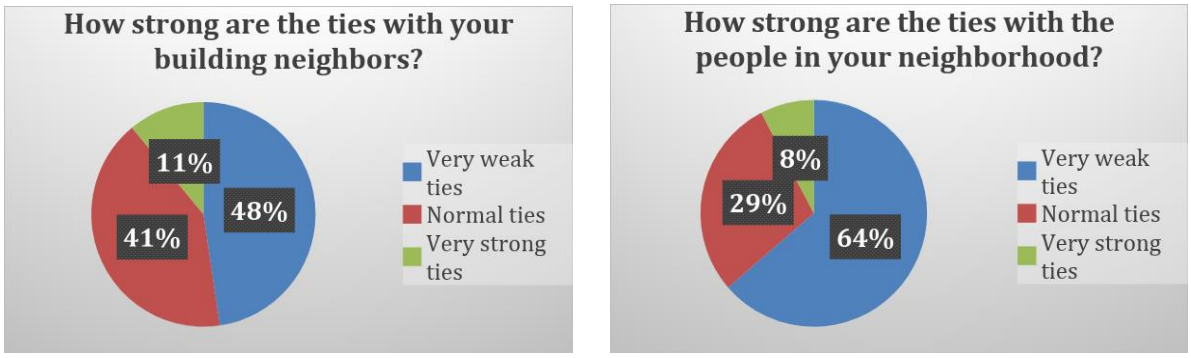

Figure 1. Comparing data on ties with neighboring members.

Another concept through brought itself into the spotlight was that the respondents did not feel that they can identify themselves as members of the neighborhood or with other members of the building.

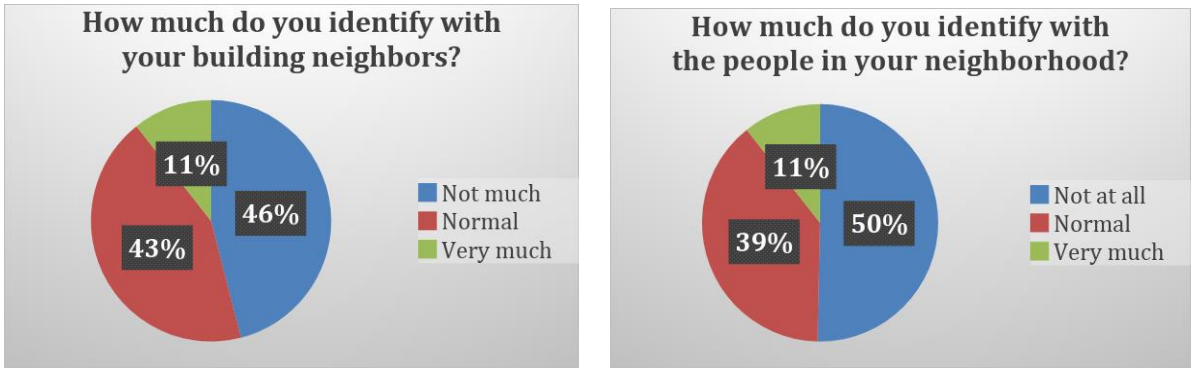

Figure 2. Comparing data on identification with neighboring members.

A factor of social sustainability is trust among people. Although the respondents' replies showed that nearly 15 percent did not trust people in general, the number decreased to 5 percent between building members and to 10 percent among the neighborhood. The numbers seemed satisfying when they were asked about their feeling of safety. 82 percent of them felt that they felt completely safe in the building and the number decreased only to 79 percent when asked with reference to the neighborhood.

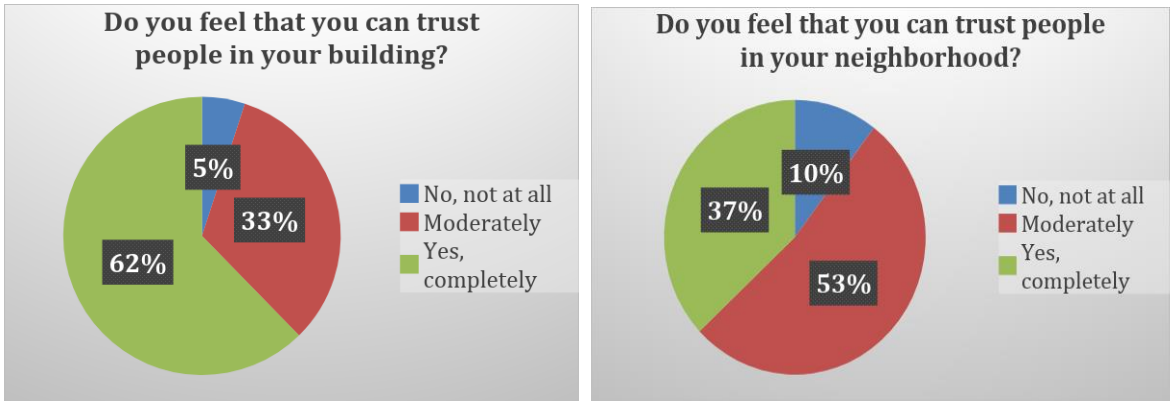

Figure 3. Comparing data on trust with surrounding members.

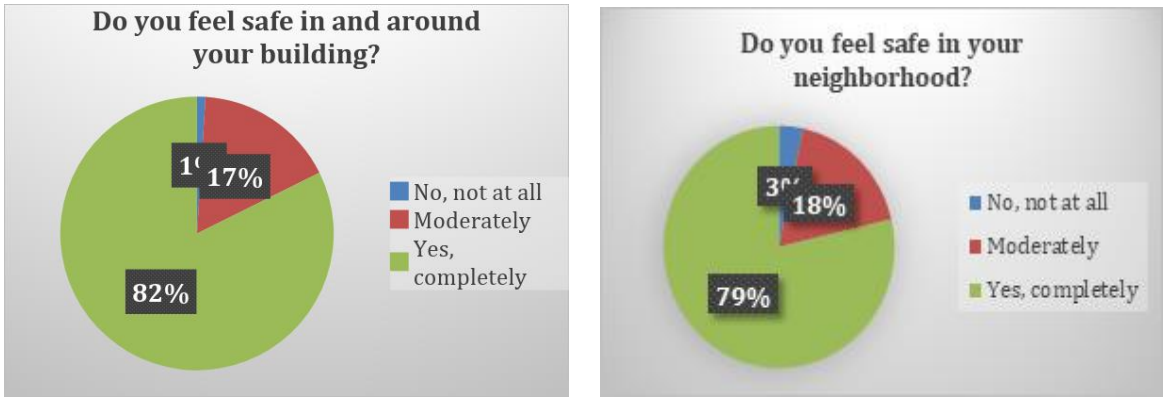

Figure 4. Comparing data on feeling of safety with surrounding members.

The networking and social bonds within neighbors are very diverse and equal in terms of percentages, 50 percent say it's common for them to talk to other neighbors when they meet and the other half say it is not.

The next section of the survey focused on social bonds and networking. The replies were measured on different scales. Several exemplar parameters were used to check the care and thoughts about their neighboring members. The parameters consisted of:

- "care about each other"
- "are you prepared to help each other?"
- "you have insight into each other's life"
- "you take responsibility for each other's children"
- "you are expected to be engaged in questions concerning the area"

The replies pointed out that a large portion of the respondents are moderately concerned about their neighbors. The numbers suggested that the amount of people who were concerned a lot or concerned least was very small. The replies seemed consistent with answer being moderate for all of the above parameters, except when it was asked about responsibility to take care of the neighbor's children. It was observed that a larger portion was uncomfortable in taking care of their neighbor's children.

"Sharing Economy" was a focus in next section. The sharing economy was based on a list of items consisting of bicycle, TV, Computer, home appliances, toys, tools and clothes. The replies were a consistent NO towards sharing of the above items, although the share of NO dipped when asked about cars or motor vehicles.

The next major focus of the survey was energy saving. The behavioral attitude towards energy saving was first measured. The respondents were asked how they felt about energy saving; good, satisfying, pleasant, beneficial, wise or favorable. The responses observed showed that a large majority had a positive attitude towards energy saving.

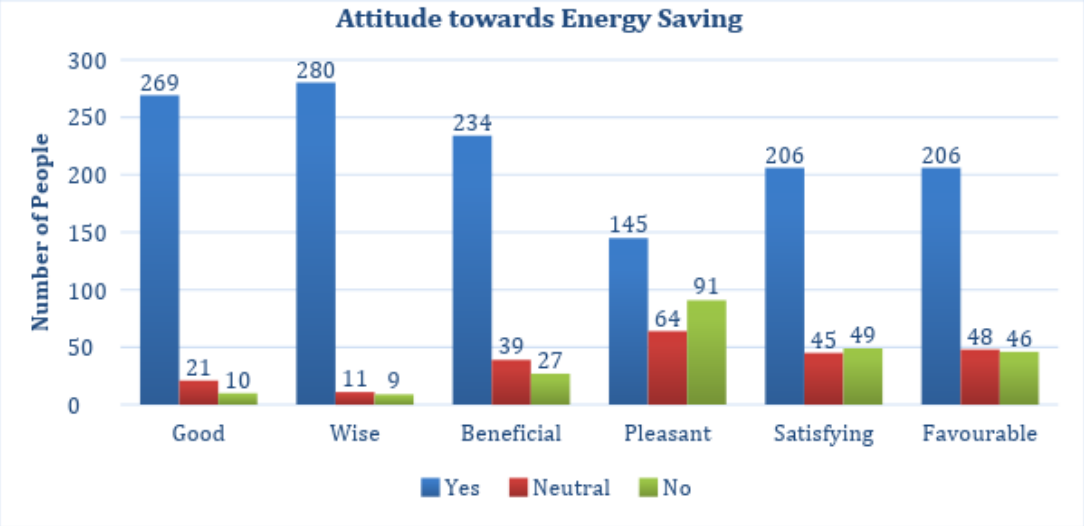

Figure 5. Attitude towards energy saving.

The social acceptance an individual when energy saving was done was measured. 68 percent felt that were more socially approved when they saved energy and 18 percent felt that it unaffected. 14 percent of the respondents felt that energy saving had a negative impact on their social acceptance.

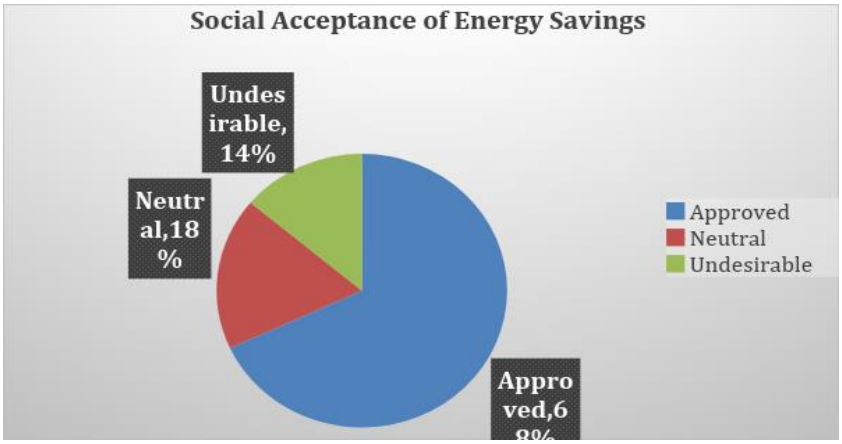

Figure 6. Social acceptance towards energy saving.

Correlating data on how an individual thought to be one among the group (group identification) and attitude towards energy saving and also the individual's belief whether others thought the same way towards energy saving was compares and is displayed in Figures 6 and 7.

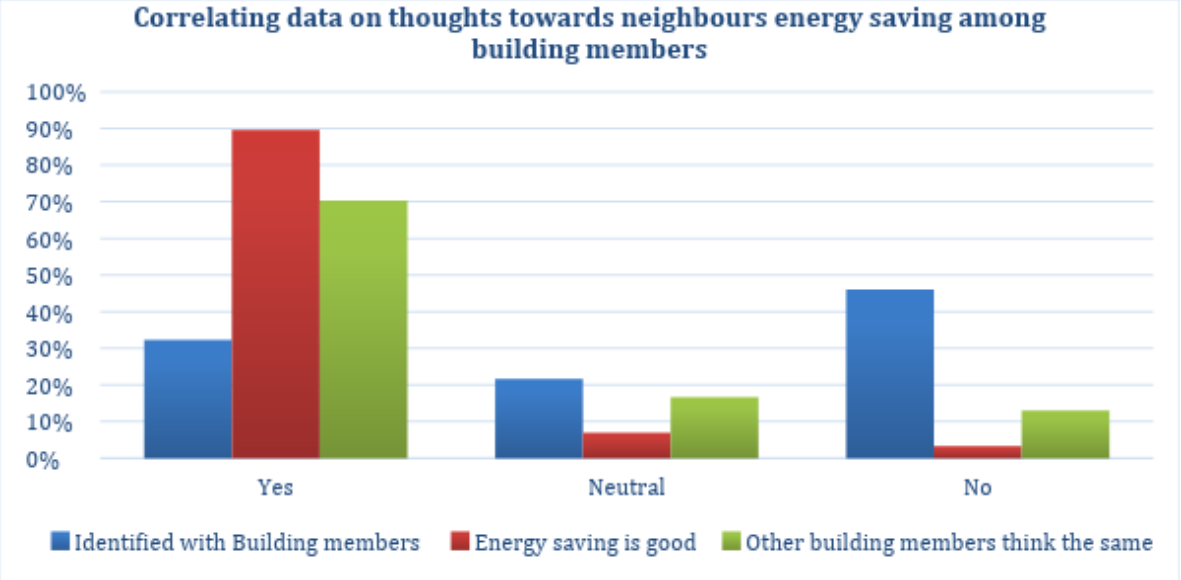

Figure 7. Correlating data on thoughts towards neighbors energy saving among building members

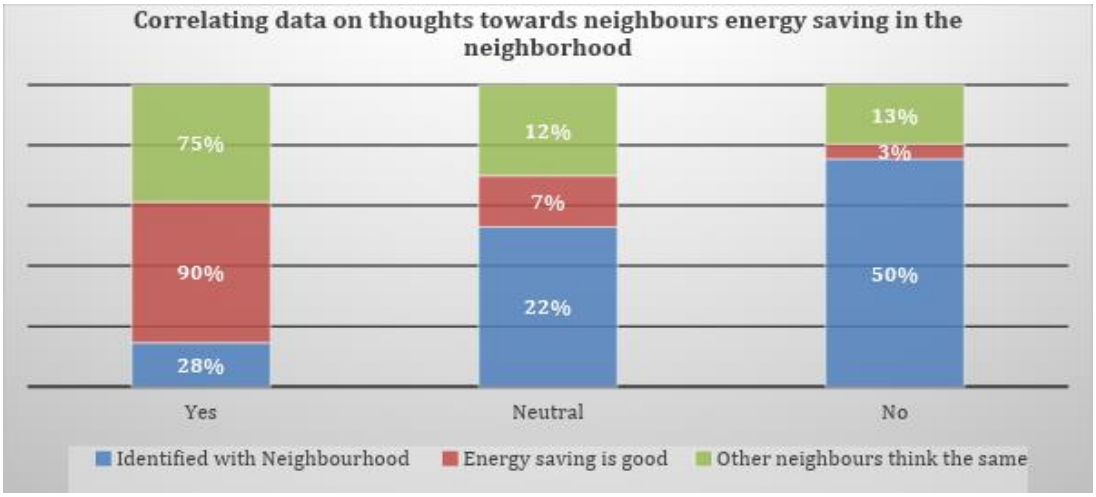

Figure 8. Correlating data on thoughts towards neighbors energy saving in the neighborhood.

The next concept that was measured was the respondents' knowledge as well as control over their energy savings, as shown in Figure 9.

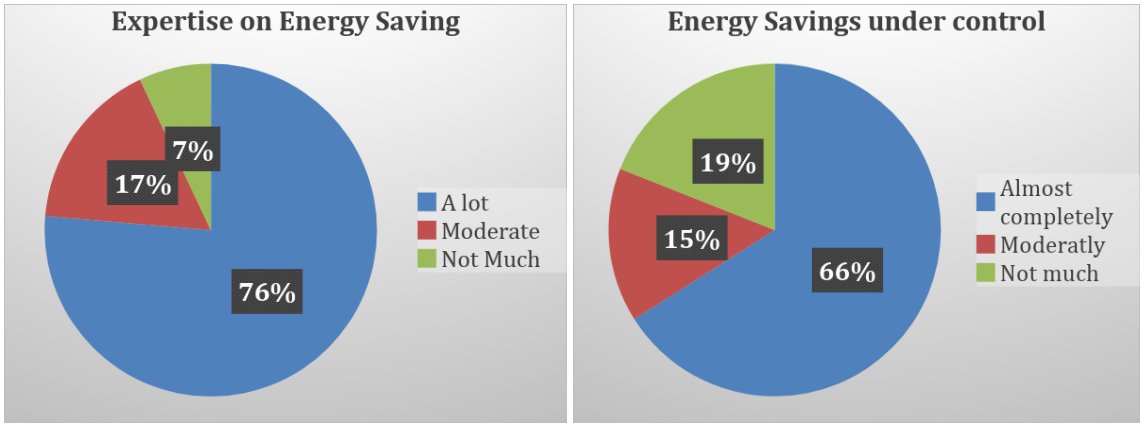

Figure 9. Comparison of knowledge and control over energy savings.

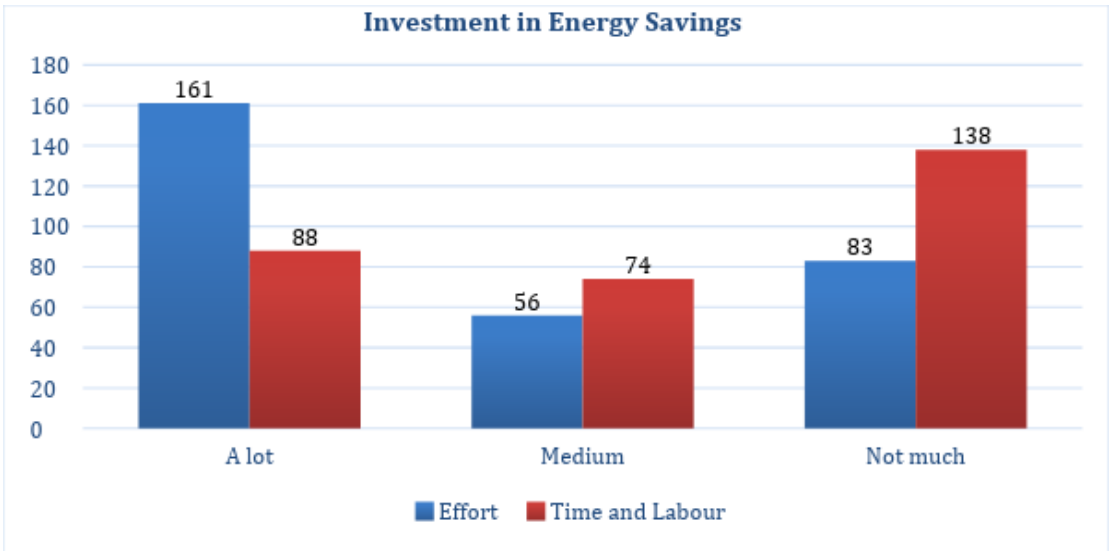

Figure 10. Investment in Energy Savings.

The effort and time and labor invested into energy savings was compared. 138 of the 300 respondents had not put much time and labor into saving energy.

The findings of the survey states that a third of people have energy saving practices with the majority of them having positive attitudes towards energy saving. this can be confirmed by the number of energy saving appliances installed at home also with reference to the below graph, more than 50 percent of people are committing to save energy over the next 6 months by using best practices and energy efficient appliances.

From the data, it was gathered that most of the people in the neighborhood are living alone or have one other member in the household. The majority lives in the households with an area of floor less than 100 square meters. The majority of inhabitants are university graduates and are employed, while interestingly 24 percent of the population is retired.

Around 70 percent do not have financial problems whilst managing their household expenses and 91 percent are native Swedish.

5. DISCUSSIONS

From the results, we held multiple rounds of discussions of what defines a finding within the society. The extensive literature review defined the factors to look for, but there was still doubt on how to identify and select key findings from the results of analysis. We conducted reiteration of analysis through a statistical software, IBM SPSS, and tried identifying high magnitude of Pearson's correlation between any two questions. Further, based on the key findings, we decided to find a recommendation that could benefit the community of Stockholm Royal Seaport. In the next section, we have also detailed the recommendations that we can pose. A significant thought that was common throughout many discussions was that of the same questions seemed to have the same meaning when posed to a respondent. This could result in miscommunication and yield inaccurate findings. Similarly, the response system of replying 1 to 7 is quite not accurate when 1 and 7 are detailed in measurable quantities. For example, the quantification of 7 for different thought-processed people will be different as it has no tangible measurable scale.

6. CONCLUSIONS

From the responses, it was observed that a large portion of the respondents stated that they do not believe to hold good ties with their surrounding members. The numbers seemed to be lurking around 50 percent. This can be owed to the fact that the Seaport is a relatively new neighborhood and people are still getting to know each other as they may have just moved in.

From the results, we can observe that figures 3 and 4 show that the trust and feeling of safety in the community is very high. The sense of feeling secure in one's own neighborhood can help the community blossom as a whole. The security can be a key feature for parents for their children and also for senior citizens, as that plays an important role in their daily routine.

Taking into account the major focus, energy saving showed great potential. Although many of them do not identify themselves with their surrounding environment, there is a common thought that holds energy saving in high regard. Many of the respondents, have stated that energy saving is something they all look forward to, in great numbers, which is observed in figure 5. This is a positive finding and this can possibly lead to one day deployment of better energy technologies with a positive response.

Another finding was related to sharing economy of the community. It may be owed to the fact that a majority of the residents at the Seaport are earning a

livelihood that is quite sufficient to manage to buy new goods. But certain goods such as tools, which can be expensive some cases for a one-time use can be shared on mutual terms. The numbers showed that nearly 66 percent of the respondents did not believe in sharing tools. There is a large room for improvement here.

Through the use of SPSS, the analysis brought to light two question that showed a high value of correlation. The first question being if the respondents were willing to shift their washing machine usages from afternoon, when the electricity prices were high, to night if the prices were lower then. The second question was, if the respondents were willing to shift their washing machine usage to night if the habit could be good for the environment. It was found that both the questions resulted in answers that showed a great value of correlation. It shows that a majority of the residents are willing to be benefited from being more sustainable.

Some of the other findings include the response towards effort and labor spent on energy saving and the results varied greatly as seen from figure 10. There could have been a misunderstanding on the concept of investment in energy saving. Some of the questions may have left the respondents confused and may have answered vaguely, yielding results that could not be correlated for two relayed questions.

Based on the above findings, the group had decided to brainstorm recommendations that could benefit the community. Out of the many findings, we have summarized two findings that seemed most feasible.

The first recommendation is creating a mobile app that monitors electricity prices during different periods of the day and sends notifications based on the what type of electricity load usage the owner has subscribed to. For example, the owner receives notifications to use the washing machine when the electricity prices are low.

The second recommendation is creating a digital platform that is exclusive to the community members of the Seaport for promoting a sharing economy. The digital platform can also have a mobile app interface. The app is discussed to have many features. Firstly, for primary sharing of goods such as bicycles, tools etc. The price for sharing can be decided between the interested parties and is mutual and in certain can be loaned/ borrowed or for free. This app also has the provision for flow of second-hand goods between members of the community at their desired prices. The platform can also encourage buying together for interested parties as a common commodity, such as tools. Since tools are usually not used daily and can prove to be expensive, the burden can be shared. The interested member can put it on the platform and interested parties can subscribe to the topic and discuss further. This can reduce waste of resources.

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APPENDIX A. Project timeplan

Group name: Echo-V

Project goal and problem description

Identify Indicators and analyze social behavior trends from the sample data of residents of Stockholm Royal seaport and suggest recommendations tying energy efficient behavior and elevating the standard of living.

Project tasks

No	Task	Status	Responsible	Due Date
1	Concept research -Social Capital -Statistical Analysis -Stockholm Royal Seaport	Complete	All	19 Sep 2018
2	Receive Data	Complete	Hamza	17 Sep 2018
	Project Plan Submission		Hamza	21 Sep 2018
3	Review Data	Complete	Richard	24 Sep 2018
	Update Project Plan	Complete	Hamza	28 Sep 2018
4	Perform Analysis	Complete	Siddharth	3 Oct 2018
	Intermediate Project Report Submission	Complete	Hamza	5 Oct 2018
	Intermediate Project Review	Complete	Supervisor	9 Oct 2018
	Review Analysis Methods	Complete	Mirza	15 Oct 2018
5	Identify Key Indicators	Complete	Julen	28 Oct 2018
	Group Meetings with Supervisors	Complete	All	8 Nov 2018
6	Summarize 5 Findings and Recommendations	Complete	Hamza, Siddharth	21 Nov 2018
	Feedback from Peer Groups		All	6 Dec 2018
	Final Project Presentations		All	14 Dec 2018
	Final Project Report Submission		Hamza	21 Dec 2018

Time plan

No	Date, Time, Location
1	24 Sep 2018 9 am in KTH Library
2	1st Oct, 2018, 9 am KTH Library
3	3rd Oct 2018, 2 pm in KTH Library
4	29th Oct 2018, 11 am in KTH Library
5	7th Nov, 2018 10 am, Stockholm Royal Seaport Visit
6	22nd Nov 2018, 5:30 pm in KTH Library
7	30th Nov 2018, 8:30 am in KTH Library
8	5th Dec 2018, 5;30 pm in KTH Library

Risk management

Risk Description	Likelihood (Low, Med, High)	Impact (Low, Med, High)	Mitigation Measures
Failure to Identify Key Indicators	Medium	High	Frequent contact with the supervisors
Coordination Failure	Medium	Medium	Keep Updated with group work
Sample data not representative of the population	Low	High	Come up better data survey questions for future projects
Not enough time to implement physical recommendation	Medium	Low	Have cushion time for milestones
Poor data analysis results	Medium	High	Try multiple analytical methods, consult experts