

# APPLYING SYSTEMS THINKING TO EXAMINE AND REDUCE DEPENDENCY ON FOOD BANKS

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## ABSTRACT

Systems thinking is the art of understanding interconnections between various disciplines thereby unwinding the existing complexity. Most of the real world problems are complex, take for the example the increasing dependency rate on food banks. While various factors contribute towards it, not much has been done to bring the take off the number of dependents. By viewing this system from a holistic systems thinking lens, one explores the issue in depth. We realise the universally acceptable solution is not alleviating the problem in the long run. By applying systems thinking principles several hidden factors are brought to attention and subsequently can be dealt with more aptly. A movement that transcends disciplines results in delivering better solutions.

## KEY WORDS

systems thinking, food bank, design thinking, social engineering

## CLASSIFICATION

JEL: H31, I31

## INTRODUCTION

Systems thinking entails envisioning real life scenarios through a broad perspective while defying the laws of being systematic [1, 2]. It being a relatively new field of interdisciplinary studies, tries to mend the explanatory gap between the various fields of science, engineering and management. The concept might seem complex at first, however it owes its complexity due to admission of several basic concepts, all viewed under a single systems lens. To understand it better, let us take a real life scenario of traffic congestion, as that helps us best view the need and application for systems thinking [1]. While the transport department will view this situation as a need to increase or decrease automobiles, a city planning commission tackles the problem by providing more efficient customer friendly alternatives. The same traffic congestion would pose a different hazard to construction companies, environmental societies and public health institutions each viewing it differently. While each discipline can express its viewpoint and strategic solution to help solve the problem, for effective planning one needs to integrate these discipline specific viewpoints in order to co-design solutions. Needless to say, working towards a definitive goal across disciplines is not an easy task, especially when the viewpoints are expressed from experts in each domain. According to research published in Design Studies, the process of negotiation intrinsically leads to compromise in the design solution [1]. This is where a Systems Thinking perspective can provide a better insight towards to end goal while drawing appropriate methodologies and feedback mechanisms.

## LEADING AREAS OF SYSTEMS CHANGE

Global health and Education are two key areas among the several areas of focus while considering the application of systems thinking methodologies. Several international development organisations and NGO's deal with the problems associated with health and education in several parts of the world. While their efforts are commendable, it is intriguing to note that advancements in technology have not quite given the necessary tools to tackle these issues. We try to work around these problems part by part, analysing carefully how each sub part can be solved. While such an analysis is crucial to develop appropriate solutions, we fail to recognise the interdependent relations between several such subsystems. The understanding of these dependencies and relations is another such specialisation that can be better understood from a systems thinking lens. The relationship between disciplines is given a higher priority than the discipline itself.

The context of a system surpasses various fields of engineering, medicine, management, sciences, humanities and arts. Hence, it cannot be defined to belong to one particular niche. Universal issues when approached as a system will render a deeper as well holistic understanding. Hence, there is an immediate need to identify and analyse using systems thinking methodologies. While technicality is a prerequisite to coming up with innovative solutions, one cannot gauge the extent of the scenario without establishing an overall understanding.

## RESEARCH QUESTIONS PERTAINING TO DEPENDENCY

The research provides a case study of how Systems Thinking was applied to a local community project. One of the food banks in the city was selected. The primary objective that was being addressed was *how to reduce dependency on the food bank*.

The research focus can be categorised as follows:

- examining the risks that result in dependency,
- exploring barriers; what prevents people from finding a better job,

- alleviation strategies; Moving people from dependency to independency,
- designing a system to prevent dependency.

## **PHASES OF THE PILOT PROJECT**

### **DEVELOP AN INITIAL CONCEPTUAL MODEL**

A causal loop diagram (CLD) was developed to represent the dynamics of the Food Bank under study [1, 2]. The process was simulated bringing in 4 main factors:

- 1) economic,
- 2) social,
- 3) environment,
- 4) policy.

This helped develop an overall understanding of how components within the system interact with each other. This system interconnectedness is reflected through the causal loop diagram. The model utility aims to reflect the behaviour patterns more closely rather than simply the units' interaction.

### **CONDUCT A WORKSHOP/MEETING WITH STAKEHOLDERS**

In order to gain a deeper understanding of the system dynamics a meeting with the people associated with the food bank is crucial. These include the administration, the clients, the donors, the suppliers, volunteers, and all other individuals who are indirectly associated with its functioning.

This is the Research phase of the project, from which we aim to gather Data. Also, this will aid our next step of the project which is to identify leverage points.

A series of interviews were conducted with individuals of the Food Bank administration and volunteers. Their experience ranged from 1 to 3 years serving the food bank. The following areas were highlighted.

#### **Emphasis on Unused Job Skills**

- 1) Dependents are usually lacking language skills (for the job market),
- 2) equivalency issues,
- 3) refugees (education issues),
- 4) resume building is different (cultural shift),
- 5) communication/Internet to gain useful information (Unaware of this concept),
- 6) traumatized (revival clients need 7 years to come out of the cycle),
- 7) revenge mentality on the system.

The following questions arise on examining the system with a critical insight.

**Q1.** How to help them find a job to utilise their existing skills?

**Q2.** Some have lost hope in the system of obtaining jobs. There is a need for pushing them into the system to get them out of assistance

**Q3.** Incentive and platform to improve their skills set/language proficiency.

**Q4.** Discrepancy in the social needs versus the social assistance. The Food Bank has no system in place to assess clients. Some are in desperate need while some are taking advantage of the system (percentage of needs to be identified on a case by case basis).

Surveys from the Food Bank Volunteers revealed a more generalised view of issues surrounding food bank facilities.

Why do you think people depend on Food Banks?

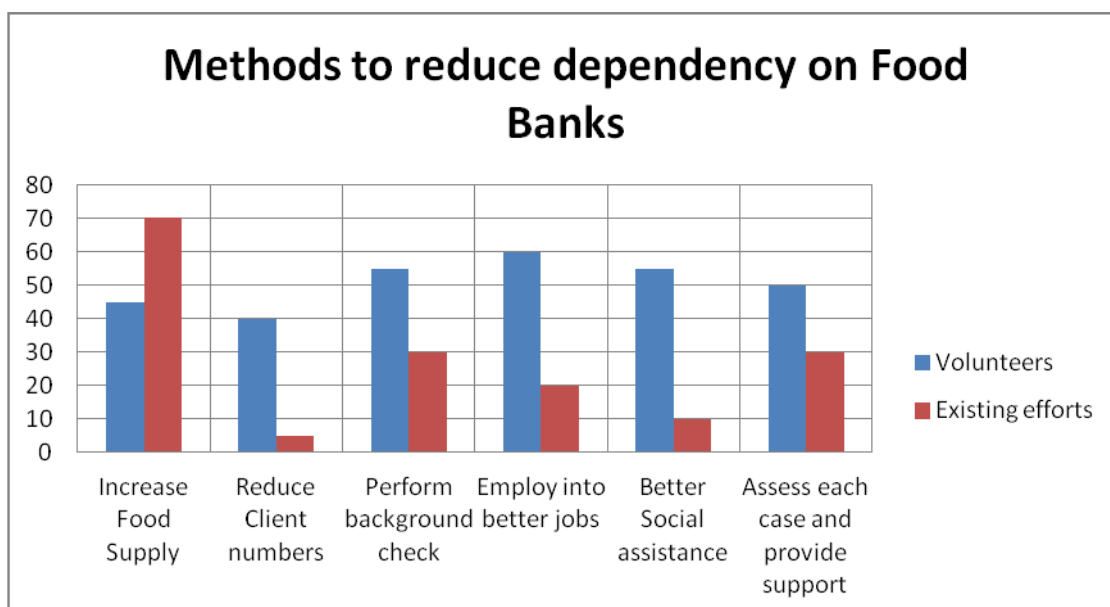
- 1.) Low wages,
- 2.) big families,
- 3.) new to the country,
- 4.) hunger issues,
- 5.) poor wages,
- 6.) relieve financial stress,
- 7.) free food,
- 8.) social assistance.

What prevents people from finding a better job/pay scale?

- 1.) Language barriers,
- 2.) lack of education and qualifications,
- 3.) laziness,
- 4.) unfavoured due to un equivalent education,
- 5.) they don't want a job,
- 6.) lack of opportunities,
- 7.) lack of experience,
- 8.) lack of knowledge on where to find information/opportunities.

Other methods:

- 1.) better shelf space,
- 2.) bigger space,
- 3.) ticket machine,
- 4.) more training sessions for volunteers,
- 5.) better training sessions for the volunteers as everybody has different inputs,
- 6.) get more food into the bank.



**Figure 1.** Volunteer surveyed on the best way to reduce dependency on food banks for the given clients versus the existing efforts to reduce dependency.

The clients interviewed were found to be undergoing training or looking for job opportunities. A few were unable to find jobs due to an increased number of responsibilities and dependencies at home. The following areas were found to be of prime focus. Measures directed towards providing services and awareness towards these areas should be increased to empower the women dependent on the food bank.

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By creating an empathy map, we employ design thinking to understand better the system from an empathetic point of view rather than purely non linear. This creates a cohesive environment to relate to the client in multidimensional ways. Empathy encompasses 4 aspects:

- 1.) what the clients “say”,
- 2.) what the clients are “thinking”,
- 3.) **the actions** that they have up taken to improve their issue; the “do”,
- 4.) how do they “feel” about the current state of things.

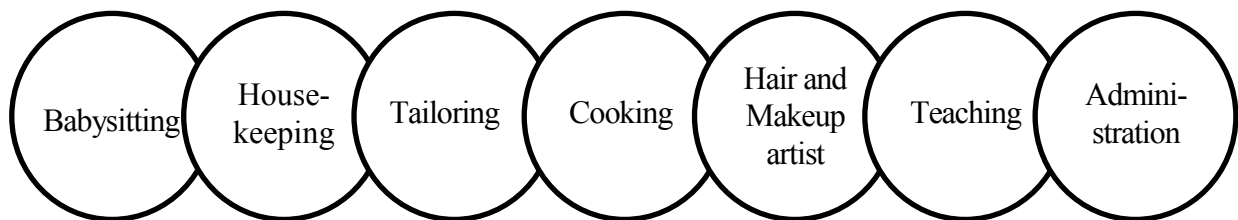
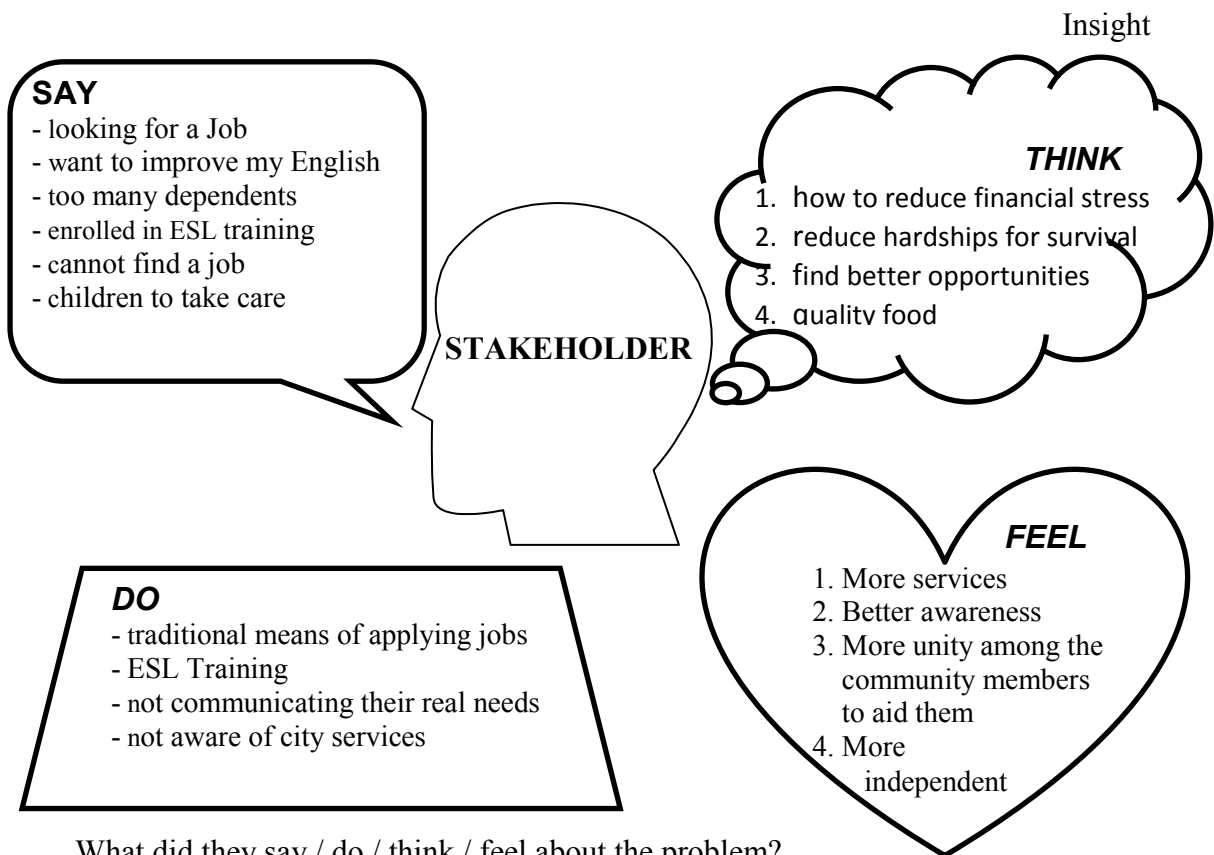


Figure 2. Areas to increase empowerment of women clients.



What did they say / do / think / feel about the problem?

Figure 3. Empathy Map to help define problem statement for the given social problem [3].

The empathy map, Figure 3, highlights the factors that need to be considered in order to develop an effective problem statement. It is a statement that defines the problem from the clients' perspective and not as external elements of the system. Such a user centric problem definition is a crucial aspect of design thinking. The holistic understanding of the problem is necessary to analyse and deduce viable long term solutions.

### **Problem Statement Generated**

A precise definition for the problem can be viewed in the figure below. Reducing dependency is not only beneficial as a health benefit but also as a means of better economical well being.

This statement clearly emphasis the need to develop immediate action plans to intervene into this system.



**Figure 4.** Problem statement generated from the Empathy map.

## **IDENTIFICATION OF LEVERAGE POINTS THROUGH SYNTHESIS AND ABSTRACTION OF DATA**

We use Design Thinking principles to identify the leverage points in the system [3, 4]. While many areas in the systems can be intervened to bring about a significant difference in the customers well being, our design research is focussed towards our research question; how do we reduce the dependency on the existing food bank system. Design thinking entails 3 key factors.

### **Empathy**

By interviewing the various stakeholders associated with the food bank system we are able to draw upon a suitable context which is user centric. This user defined problem defining is essential to design thinking principles.

### **Creativity**

Idea generation requires the given problem statement to go through a creativity process to generate targeted solutions and tackle designs problems.

### **Rationality**

Designs that are generated need to be fit to the context of the problem by prototyping and testing. This stage also includes creative elements to test against various factors and scenarios. Sketching, role playing, using low cost material [2] are few ways though which we can carry this process.

Based on the factors mentioned, we use design research to better understand the dependency needs of the food bank client.

**Step 1.** The problem statement was defined using the empathy problem map, as seen in the previous section. The following insights were generated:

- 1.)most of the cases are dependent owing to financial strain,
- 2.)an immediate plan to address employment is needed,
- 3.)lack of awareness of existing services is another hurdle to job search,
- 4.)incentives to direct the more critical cases in order to direct them to appropriate services,
- 5.)motivation is key.

**Step 2.** The next step involves:

- using the problem statement to design creative solutions,
- a means of prototyping, testing and applying the solutions to the given system.

The designing for our given problem statement is explained further in the text.

A layered chart is designed to get a better sense of our client needs and application areas. This prototype was developed to tackle the issue of unused jobs skills, as this was our key leverage point. By classifying the clients into a multilayer system, we are able to test different alleviation strategies.

It is important to note that each of the cases differ from one another, and while addressing them on a case by case basis would yield more results, the purpose of this study was to provide a useful template that is cost and time effective. Therefore, categorizing the client needs and backgrounds gave the study more structure to identify and work with our leverage point.

### **Job Centric**

After careful examination, the study identified a distinct set of individuals who are motivated to find work; however the sheer difficulty of landing something stable and long term comes in the way of pursuing something worthwhile. The immediate action plan for reducing dependency should be directed towards this category of individuals. This is the most volatile layer in terms of transience.

Given the vast majority of existing career and employment services in the city, a plan to direct them towards finding quality employment is key.

### **Counsel Centric**

While staying motivated gets difficult, given the inflexibility of the job economy, one cannot be unmindful of the complicated conditions some of the clients have lived or are living through. This issue is denser than simply directing or administering them to appropriate job openings. However, we need to carefully take these cases into consideration in order to understand what best way we can approach these individuals. While some might require trauma counselling and a mental health expert intervention would be more befitting, there are several others which might not need that level of counselling.

### **Deep centric**

This category entails individuals whose dependencies are deeply rooted and justified. Their financial and social well being is directly related to their dependency on the food bank. Taking them off the food bank requires a long term action plan coupled with various intervention schemes as these cases are very critical. Hence, their dependency on the food bank system need not require immediate address.

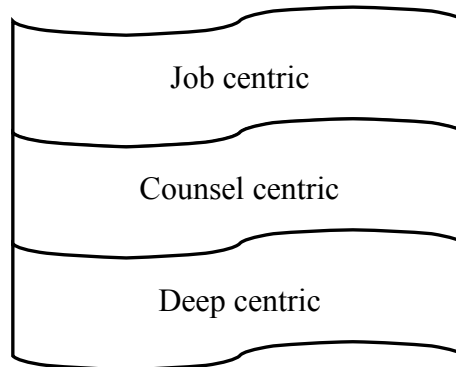
## **GROUP MODEL BUILDING WITH PARTICIPANTS TO DETERMINE THE NATURE OF CAPACITY/SOLUTION TO ADDRESS THE ISSUE**

The rationalisation aspect of design thinking is applied at this level of our pilot project. It includes elements of the creativity module as well as rationalisation module, together tested for feasibility with the various stakeholders. The method involved is group model building. It is an exercise developed specific to the system needs. In the case of our food bank scenario, in order to address the layered client data base, designing and structuring of solutions is required.

Group modeling building brings together stakeholders closely associated with the food bank system, policy makers, and donors to participate in a training environment or workshop

which runs on systems dynamics methodologies. This creates an environment to holistically understand the problem statement at hand and develop effective solutions for it.

The nature of capacity building or leverage action also needs to be agreed upon. Hence, having a multidisciplinary participant database helps work through the barriers and several stagnant mental models. This makes the prototyping and testing of chosen solutions easier on the project coordinators as well as on the system.



**Figure 5.** Schematic diagram representing different layers of the client database.

## CONCLUSION

Systems Thinking is a phenomenal tool to which can be applied to various real life scenarios. Be it technical or social in nature, any system which entails elements, interrelations and a function can be viewed through the systems lens. Embracing the culture of systems thinking will rejuvenate our understanding of real life problems as we can observe through our case study with a food bank. Systems thinking methodologies aid the process of deriving solutions based on feasibility and long term improvement. Concept maps reflect segments of an organisation which are generally hidden or remain underscored due to overshadowing factors. Once the real problem statement is defined, it becomes easier to determine the intervention capacity. In conclusion, systems thinking specifically the concept of design thinking has tremendous advantage and by adhering to such an approach, organisations will soon be able to identify and replicate innovative models across several disciplines. Our disciplines have become far too disciplined and there is a need to break the barriers between them.

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# **PRIMJENA MIŠLJENJA O SUSTAVIMA ZA ISPITIVANJE I SMANJIVANJE OVISNOSTI O BANKAMA HRANE**

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## **SAŽETAK**

Systems thinking is the art of understanding interconnections between various disciplines thereby unwinding the existing complexity. Most of the real world problems are complex, take for the example the increasing dependency rate on food banks. While various factors contribute towards it, not much has been done to bring the take off the number of dependents. By viewing this system from a holistic systems thinking lens, one explores the issue in depth. We realise the universally acceptable solution is not alleviating the problem in the long run. By applying systems thinking principles several hidden factors are brought to attention and subsequently can be dealt with more aptly. A movement that transcends disciplines results in delivering better solutions.

## **KLJUČNE RIJEČI**

mišljenje o sustavima, banke hrane, dizajniranje, društveno inženjerstvo