Women Safety and Technology: Analysis of Women Distress Helpline for Efficient Technological Intervention

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Abstract

181 women distress helpline provides immediate assistance to women in distress and helps them overcome emotional and bureaucratic challenges. In this work, we present the detailed findings of our qualitative and quantitative studies conducted at a women distress helpline operational in Delhi, India. We perceive the helpline as a non-profit alliance which requires productive cooperation of callers, stakeholders, state government and other organizations for its success. The study amplifies our understanding of the helpline and presents an exhaustive outline of the technological practices in the present ecosystem of the helpline. Our analysis revealed numerous technological gaps in 3 vital areas: inter-organization collaboration, follow ups and preventing abandoned calls. The identified gaps can be filled by designing technological interventions keeping in mind the unique constraints of the helpline. These interventions can result in more efficient and effective use of the helpline. However, our findings are specific to the helpline under study, more case studies are required to gain generic understanding of such helplines.

This Thesis work is dedicated to my family for their endless love and support.

Acknowledgements

Declaration

This is to certify that the MTech Thesis Report titled **Women Safety and Technology: Analysis of Women Distress Helpline for Efficient Technological Intervention** submitted by **Parul Gupta** for the partial fulfillment of the requirements for the degree of *M.Tech.* in *Computer Science* is a record of the bonafide work carried out by her under my guidance and supervision at Indraprastha Institute of Information Technology, Delhi. This work has not been submitted anywhere else for the reward of any other degree.

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Introduction

In India, crime rate against women is steadily increasing every year [1]. The Indian government has been actively taking initiatives to help women in combating crime [2] like introduction of women specific acts, bills, programs, financial assistance schemes, women distress helpline, etc. [1]. Of all the initiatives, the women distress helpline, operational in Delhi, has gained more popularity owing to coherent utilization of technology in its day to day operations. It has received more than 12 lakh[1] calls in its life of over 2 years. There are multiple factors contributing to its success. Firstly, its outreach to the women belonging to weaker strata of society. Secondly, it offers its services round the clock and women do not have to bear any cost for availing them. Thirdly, it ensures women's complete privacy. Thus the helpline can be exemplified as a low-cost, widespread and easily accessible medium for women in crisis. The helpline is served by stakeholders who are responsible for providing personalized aid to women and regularly track the case progress.

Even though the helpline is immensely popular, we found a distinct lack of literature around technological practices at such helplines. This motivated us to examine the helpline to gain an in-depth understanding of its current technological practices. In our work, we present a detailed outline of the helpline, and identify challenges and probable technological design opportunities in 3 crucial domains - inter-organization collaboration, follow ups, and prevention of abandoned calls. During our study we also realized that the helpline reflects behavior similar to that of a non-profit organization. Our findings resulted from a qualitative study which was validated, wherever

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[1]1 lakh is equivalent to 100,000

1

possible, against the quantitative analysis of the data shared by the helpline. We believe, lessons learned from our case study are applicable to other similar helplines. We claim following research contributions of our work:

- To introduce the women distress helpline as a collaborative environment with main focus on technology usage spanning entire working of helpline.

- To identify probable design opportunities that can improve efficiency and effectiveness of the helpline.

- To introduce one of its kind helpline which has not yet gained appreciable attention of the HCI researchers.

2

Related Work

The helpline under study is run by Delhi government and does not seek any profit for itself. It also exhibits characteristics similar to a non-profit organization. Hence, we identify non-profit organizations and use of technology to serve women in crisis as two broadly distinct themes relating to our work.

2.1 Non-Profit Organizations

NPOs are a critical component of civil society because they serve the public good and social welfare, organized around such issues as healthcare, shelter, and environmental protection [3]. However, they face a unique set of challenges in achieving their goals. As pointed out by Dantec et al, these challenges stem from financial constraints affecting the long term technology planning, dependence on volunteers for filling critical roles and competition for acquiring grants and public funding [4]. Considering these constraints, various studies have been conducted to explore NPOs in detail. However, the focus of these studies was limited to particular aspects of NPOs such as deployment of technology, collaboration practices, and stakeholders. We present literature survey of these aspects in detail in following sections.

2.1.1 Technology In NPOs

Rapidly developing technology plays an important role in NPOs, enabling them to advertise services, communicate their mission, recruit volunteers and manage work related information [4, 5]. Merkel et al. assert that ICTs have great potential for

NPOs [5]. Yet despite these potential gains, ICTs are often underutilized. This under-utilization results from the limited resources at disposal of NPOs compared to their for-profit counterparts: limited budget for technology and training and limited access to technical expertise [5, 6, 7]. Apart from technology adoption, strategic technology planning has also emerged as a challenge for NPOs as a result of resource limitation [6, 8, 9]. Burt and Taylor found that NPOs used internet in a conventional manner to address administrative and operational issues than expanding its use for other strategic purposes [10]. Similar results were shown by Gilbert who found that email has wide scope for strategic growth by using it for distributing electronic newsletters [11].

2.1.2 Collaboration Practices in NPOs

NPOs deal with vast variety of cases which requires them to collaborate with others. In one case study, Ugarte et al. enumerate 21 different organizations that had to be involved in the identification, intervention, and subsequent rescue of a 15-year old victim of sex trafficking [12]. This demonstrates the importance of interorganizational collaboration for NPOs to effectively achieve their mission. Researchers have found social networking sites (SNS) an emerging platform towards this end[13]. SNS provide many useful avenues for public engagement such as low cost platforms, rapid information dissemination channels [14]. Even though a significant number of NPOs are utilizing SNS for public engagement, they are yet to reach their full potential [15, 16]. Several challenges such as ineffective measurement of social media performance, deficient organizational resources, and lack of control over work impede the engagement between NPOs and SNS [3].

2.2 Technology for Women in Crisis

In recent years, the HCI community has started exploring the potential of technology in personal environment. This contributes to understanding of how people use and relate to technology during times of personal crisis and upheaval. Conde et al. have presented a system which addresses the safety concerns of domestic violence survivors by warning potential victims and law enforcement organizations about the physical proximity of the aggressor [17]. Clarke et al. have explored potential of photography

in in rebuilding lives of victims after domestic violence [18]. Authors argue that the affirmation of new bonds, control in sharing the process of 'moving on', and supporting discursive negotiations of privacy are important considerations for design focused on interpersonal social processes around the use of digital technology [18]. The technologies provide survivors of violence social connections and public resources in time of isolation and change [19]. However, there exists a misalignment between perception of privacy and technical reality which can cause emotional trauma. For example, mobile phones can support a sense of security, yet they can also facilitate the continued control associated with abuse [20, 21]. Such situations exemplify a need for designers to consider physical and emotional safety along with functional usability [19].

3

Overview of the Helpline

In this chapter we will present a detailed outline of the helpline highlighting its history, current working, structure, etc.

3.1   Helpline Background

Delhi is the capital territory of India. It has a population size of 11 million making it the second most populous city in India [22]. It has seen an abrupt increase in the violence against women in recent years. Consequently, it has reported the highest crime rate against women at 146.8 during the year 2013 as compared to 52.2 crime rate at the national level [23]. Lack of quick access to police and other law enforcement agencies for reporting crime can be accounted for this rise. To ease this hurdle, the state government of Delhi launched a helpline named "181- women distress helpline" in December 2013 with 24X7 availability to provide immediate assistance to the women experiencing crime. The helpline is popular in the national capital and receives a variety of serious and non-serious cases including: human trafficking, abduction, harassment, rape, murder, domestic violence, kidnapping, quarrel, petty fights, eve teasing, etc. While serious cases have prolonged duration and require continuous monitoring, non-serious cases have short duration and are resolved quickly. Over the time, helpline's role has evolved from a helpline that would report matters to the police to the helpline that also helps in rehabilitating women and making their lives better. Impressed by the success of the helpline, the Telecom Minister

announced that they will provide single emergency number 181 to women across the country [24].

3.2 Helpline Hierarchy

The helpline employs in total 16 female stakeholders: 3 Supervisors, 6 Senior Callers and 6 Front Line Callers. All the stakeholders are headed by a female Senior Consultant.

3.2.1 Front Line Callers

Most of them are fresh graduates and are new to this type of work. In the helpline, they are the first point of contact for women. They are trained to quickly assess the basic needs of women and make a decision about either forwarding the case to higher authorities or providing assistance themselves. They are also skilled in filtering the illegitimate or prank callers.

3.2.2 Senior Callers

Senior callers are more experienced than the front line callers and have prior community service experience. They are thus liable for auditing progress of the cases forwarded by front line callers. Typically, they act as "*load balancers*" for the helpline as they provide assistance to the front line callers in handling calls in case of high incoming traffic or support supervisors in follow ups in case of accumulated backlogs. Resolving errors made by the front line callers and guiding them is also a part of their duty.

3.2.3 Supervisors

They are above senior callers in the helpline hierarchy and are better skilled than them. Due to their expertise, they supervise the cases that senior callers can't handle. They are mainly responsible for regular follow ups on cases and deal with the legal formalities required. They also assign senior callers the cases on which they have to work. An integral part of their duty is to guide front line callers and senior callers in nurturing their competence in dealing with cases.

3.2.4 Senior Consultant

She is the highest authority in the helpline. Her main responsibilities include: assignment of responsibilities to all stakeholders, informing them about new laws passed by the Indian government, discovering and establishing tie ups with the service providers, fixing issues faced by stakeholders, ensuring effective working of the helpline, setting up guidelines for the helpline, etc.

3.3 Working of the Helpline

The helpline is a toll free helpline operating 24X7 in three shifts per day. Whenever a call lands on the helpline, front line callers are responsible for engaging with the woman at a quick pace. They collect all the necessary information consisting of her personal details and crime related information. If the case requires immediate action, they provide instant aid to her which may comprise of sending PCR(Police Control Room) vans, DCW(Delhi Commission for Women) counselling vans, ambulance, rescue operation teams, etc., otherwise they forward the case to supervisor for elaborate discussion. Typically, they strive to keep the calls short without compromising the feelings of women on call. Senior Caller SC3 explained the reason for this rush:

"Front line callers can not talk much to every caller as it will lead to unavailability of the helpline to other women. Their responsibility is to fulfill only the primitive needs of women. But in some serious cases, it is inevitable to hang up the phone and supervisors have to attend the call at front caller's line which results in extension of call duration and ultimately leads to abandoned calls."

The forwarded cases are handled by either senior callers or supervisors. They study the case report prepared by front line callers and decide the future course of action which may consists of: lodging FIR against the guilty and ensuring they are charged appropriately, making efforts to get serious cases in the Indian court for trials, arranging meetings between women and government officials, arranging shelter homes, etc. They primarily act as an intermediary between women and service providers and try to accelerate the case progress. In addition, they also provide in house counselling to women and offer them emotional and psychological support. This procedure is followed until the case is closed. However, their commitment does not end here. Often,

women call them up even after the case is resolved to women's satisfaction. Supervisor S2 described:

"*Many times, women call us and seek our guidance in decision making process. They need someone to discuss their thoughts. They have both questions and answers with them but need us to convince them.*"

4

Research Ethics and Values

Conducting research with women distress helpline demands paying special attention to research ethics and values. The authors are well versed with the code of ethics of ACM and strictly abide by it [25]. We took the required consent from the concerned authority of the helpline while conducting this research. We also ensured that our work did not interfere with the regular functioning of the helpline by conducting interviews of the stakeholders only when they were off duty. They were given an alternative of not responding to a question if they considered it to be inappropriate. Through our qualitative or quantitative data collection we did not try to access any compromising data of the callers, thus maintaining their privacy.

5

Data Collection an Analysis Techniques

In our exploration of the helpline, we seek to answer the following research questions: What are the current practices followed and technologies used at the helpline? What are the challenges in doing so? How the helpline collaborates with government and non-government service providers? What are the factors inhibiting the incorporation of sophisticated technology in day-to-day operations?

We conducted our study at a women distress helpline located in Delhi, India. The following factors influenced our choice of the helpline: 1) In the entire nation, highest crime rate against women was reported in Delhi in 2013 [23]. 2) Delhi is the national capital of India and is culturally rich.

During the study, we employed two different methods for data collection and analysis: 1) Qualitative Method 2) Quantitative Method. Supplementing qualitative method with quantitative method allowed us to establish more confidence in our findings.

This fine-grained understanding of helpline sheds light on coupling between stakeholders and technology, thereby offering us an opportunity to identify challenges and best practices for the helpline.

5.1   Qualitative Method

The qualitative method comprised of semi-structured telephonic interviews which were supplemented with observational visits. Our fieldwork began in May 2014 and continued till December 2014. Observational visits prior to the interviews helped us in gaining primary understanding of the helpline and helped us in preparing questionnaire for the interviews.

The observed and interviewed stakeholders were informed about the study individually. All the interviewees were the current stakeholders of the helpline and were offered an incentive of an online shopping voucher worth INR 200[1]. We grouped the interviewees into three categories as per their roles in the helpline. This division allowed us to concentrate on each group individually. Table 5.1 shows how many stakeholders appeared for the interviews and reasons for non-availability of others. On an average, the interviews lasted 1 hour each. Interview questions were framed after analyzing the data collected during the observational visits. Data collection and analysis followed ground theory approach, in which after first few interviews we identified important issues which we were not considering initially, as a result the questionnaire evolved throughout the study to encompass these advanced themes. Interview questions revolved around: working of the helpline, challenges faced in day-to-day working, technology usage and adaption, collaborations with the service providers, handling of cases and follow ups performed.

Besides the preliminary data analysis performed at the data collection time, we also used open coding [26] to discover emerging themes and their characteristics. For each theme, we then performed a detailed line-by-line analysis [26]. Once we identified the core themes, we analyzed our field notes and collected data using axial coding for more insights.

5.2   Quantitative Method

Rigor is a challenge for any qualitative study[27]. To ensure trustworthiness in our results, we used data triangulation. The helpline shared with us an anonymous segment of their recorded data of 3 months, from Feb, 2015 - Apr, 2015. This data en-

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[1]Equivalent to $3.2, as per rupee to dollar conversion rate on 07/07/2015

abled us to verify few claims made by the stakeholders during their interviews and also provided us with the directions to explore design opportunities.

Group	Total Number Of Stakehold- ers	Number of Stakeholders Appeared for the Interviews	Reason for Not Appearing
Front Line Callers	6	5	Not Available
Senior Callers	6	6	Not Applicable
Supervisors	3	1	Not Interested

Table 5.1: Number of Interviewees Appeared

6

Results

After analyzing the collected data, we observed 3 central themes that stood out. In this chapter we present current practices, challenges and design opportunities for each theme.

6.1 Inter-Organization Collaboration

To serve at risk women population, the helpline requires aid of different government and non-government service providers such as child shelter homes, counsellors, police force, etc. The helpline depends on the service providers because of numerous factors such as:

- Limited resources.

- Exhaustive variety of cross-disciplinary services required.

- Wide geographical distribution of crimes faced by women.

The sole purpose of this collaboration is the benefit of women reaching the helpline, than personal growth or sustainability. Such collaborations are identified as victim-centric mode of collaboration [28] and is a general characteristic of non-profit organizations.

However, to avail the services of a service provider, first step is to identify them. According to Thellufsen et al. [29], cognizance of potential collaborators is termed as existence awareness and is "simply an internal awareness of other organizations in the

interorganizational network". The helpline addresses this issue by maintaining an up to date dictionary of allied service providers. SC1 described:

"*We have landline numbers of the service providers which rarely change. However, if there is any change in the contact numbers, either they themselves inform us about that or we use internet to get their details.*"

The helpline continually strives to expand the dictionary. Each stakeholder contributes voluntarily towards this end via their personal and professional connections with the service providers. Many times, existent service providers are an unexpected but favourable source of information for the helpline. F2 recalled:

"*In case a service provider does not have internal ability to serve a woman, it furnishes us with details about other similar service providers as potential collaborators.*"

This also plays a key role in growth and upkeep of the dictionary. As a result the helpline has an ample number of service providers to serve women. Yet, they feel vulnerable serving calls originating from other states. SC2 explained:

"*As the helpline was conceived as a state level women safety helpline, we have a strong foothold in the national capital but over the time the helpline has evolved as a national helpline and we receive calls from across the nation. At moment we are not perfectly adept to serve these women but we make our best efforts to help them.*"

To serve the women from other states, helpline needs access to local service providers or government officials. Lack of appropriate information causes difficulties in successful location and collaboration with service providers. To address the challenge, researchers may consider a platform facilitating collaboration between helpline and service providers a potential solution. We visualize the platform as an online portal accessible to helpline where service providers can register themselves and offer their services for use. Such portal can also be used for development and maintenance of online dictionary of service providers.

However, the helpline can not trust any service provider with publically available information. It needs to be cautious about trusting service providers to save women from unpleasant situations. History of trust between the two is established over time. Also our field notes read collaboration and coordination between helpline and other service providers is not dependent on person of contact in either organizations. Hence, the helpline is always open to new service providers and is not bound to specific inter-organizational networks.

6.1.1 Relationship between helpline and service providers

After discovering the service providers, supervisors at the helpline are responsible for initiating communication with them. Stakeholders at each level of helpline hierarchy have access to different service providers. The helpline shares cordial relationships with service providers and find service providers to be caring and considerate towards women but occasionally they also exchange some sour experiences with each other. F6 appreciated them:

"Whenever we inform them about the woman who requires their help, they try to contact her at the earliest. If they do not find her at the location, they get worried and contact us again and inform us that they can not find her. They also care about her and want to help her just like us. Also it is their duty to help her."

On the contrary, SC2 described,

"Often, the helpline faces backlash from women because of the service provider. They do not provide their services in timely manner or in worst situations do not offer their services at all without keeping us in the loop. Women seeking their service blame us that we are not doing anything and taints our reputation."

This situation is exacerbated by repeated calls of the women demanding updates on the status of service. Their calls land on front line callers disrupting their services to other women reaching the helpline. Researchers can design technological interventions offering potential solutions for such scenarios. We suggest implementation of an automated system which tracks the progress of service providers and updates the helpline and women regularly. This intervention will have two-fold benefits:

- reduction of load of unnecessary calls on front line callers

- helpline can control its reputation affected by inaction of service providers.

6.2 Follow Ups

After serving women with emergency services, front line callers forward the cases having prolonged timelines or requiring counselling to supervisors. The forwarded cases are flagged green, as shown in figure 6.1, to distinguish them from non-forwarded cases. Supervisors regularly track progress of these cases, assess the needs of women and act as a liaison between them and service providers, deciding the future course of

action. However, number of cases for follow ups are highly disproportionate as compared to number of supervisors. To combat this issue, supervisors seek help from senior callers by allocating them few cases as well.

In addition to women's needs, supervisors also take into account women's preference for time while initiating the follow ups. In many cases women are comfortable discussing their issues at any time while in few cases, they wish to initiate contact with the helpline themselves because of their disagreeable personal conditions. These inbound calls for follow ups are routed via the front line callers. Because front line callers are engaged in call forwarding, they are unavailable for other calls. This unnecessary consumption of front line callers deprecates efficiency of the helpline. Ideally, follow up calls should be routed to supervisors directly by the helpline system. Thus, the current system offers a design opportunity for the researchers to design novel systems to avoid this undesirable load on the front line callers. To overcome this challenge, one probable solution could be an introduction of a filter in the existing system at helpline, having the capability of differentiating registered telephone numbers from new telephone numbers and routing calls directly to supervisors.

Figure 6.1: Follow Up Cases are Marked Green

Another challenge faced during this phase is that even though, supervisors are adequately equipped with individual case histories and progress reports to handle the cases, many times, women on call wish to communicate with a particular supervisor. When questioned about women preferring one supervisor over other, SC4 shared:

"Women think only a particular supervisor is aware about their complete case history although that is not true. Their personal bonding with the supervisor is another factor which influences their preference for a particular supervisor."

In such cases, supervisors cajole women to discuss their cases with them. Most of the times, women are persuaded, but, it gets challenging when women don't agree. Supervisors have to then inform the requested supervisors personally or by writing messages on a whiteboard installed in the work premises. The current team at helpline is small enough to operate from a single floor. Thus, supervisors can easily pass messages face -to- face or by writing them on whiteboard. However, as the workforce will increase, the system will be rendered inefficient. Although, to aid supervisors in their follow up procedure, the helpline utilizes an alarm system which serves variety of purposes such as:

- scheduling meetings with government officials or service providers not available after office hours.

- informing the supervisors on duty in morning shift about follow ups for emergency cases reported during the night shift[1].

Reminder is set to display case ID at scheduled date and time repeatedly until resolved by supervisors or senior callers. The cases are also assigned priorities(low, medium or high) as per the severity of the case. But this system can not be personalized for every supervisor. Thus we need a custom solution to update supervisors when they are specifically requested by women for follow ups. To overcome this challenge, we envisage a system of personalized queues to store the requests received for each supervisor. When a supervisor logs in, she will receive a notification for follow ups forwarded by her colleagues.
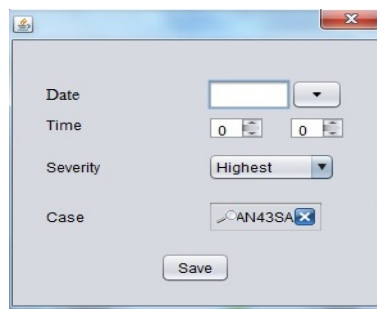
Figure 6.2: Alarm Setting Screen

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[1]No supervisor is on duty during the night shift. A senior caller assumes the supervisory role.

Another difficulty faced by the helpline is irregular follow ups. Because stakeholders are short staffed, supervisors find it challenging to conduct follow ups regularly. Serious cases experience less delay whereas a delay of nearly 15-20 days is introduced in non-serious cases. This causes unrest among women and the helpline has to face criticism. Furthermore, the cases for follow ups are selected at random without involving any predefined mechanism. Thus, the helpline needs a technological intervention to streamline its follow up process. We ascertain that a system could be built to schedule follow ups according to timestamp by creating an appropriate mix of serious and non-serious cases. This will ensure, all the cases receive adequate attention without much delay.

6.3 Preventing Abandoned Calls

Ideally, the helpline aims to serve every call that reaches it. Inherent is the implication that call is served in the first attempt and women do not have to reach the helpline repeatedly. However, reality is far different from the ideal case. According to the stakeholders, the helpline at present, is inadequate to serve all the call traffic and experiences massive call abandoned rate. We found multiple reasons that could be accountable for it, such as:

6.3.1 Illegitimate Callers

The helpline is plagued with illegitimate calls. These include blank or irrelevant calls and abnormally large number of calls from few numbers. Traffic generated from the illegitimate calls causes unavailability of helpline for legitimate traffic. According to he stakeholders they frequently receive these illegitimate calls, thereby reducing the efficiency of the helpline. We hypothesize few possible sources of these calls to be intruders attacking the helpline intent on damaging its reputation or operators wanting to turn a profit illegally. Figure 6.3 shows that nearly 40% of the calls received by the helpline were blank or irrelevant.

Researchers can explore different design opportunities to combat the problem of repeated calls from the same number. We suggest a system based on segregation mechanism which allows the front line callers to flag the calls as crank calls and block them from reaching the helpline in future. Such technology would aid the helpline
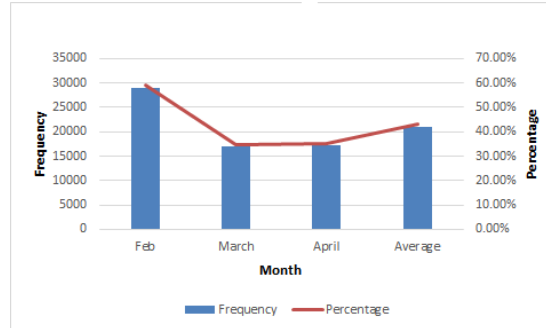
Figure 6.3: Percentage of Blank and Irrelevant Calls Received

in receiving more genuine traffic. However, it is nearly impossible for stakeholders to identify the blank or irrelevant calls without engaging with them. To resolve the issue, front line callers are trained to identify blank or irrelevant calls in shortest time possible.

6.3.2   Efficiency of Stakeholders

Success of a non-profit organization depends on intrinsically motivated employees [30]. All the stakeholders at the helpline are highly enthusiastic about their job and motivated to serve women. SC3 explained: "*Helping women is my passion since a very long time. I had prior working experience in the same area but never had an opportunity to work in a helpline that helps women in resolving their issues. Working at the helpline has been a life changing experience for me.*"

Whereas, S2 narrated:

"*I always wanted to help victimized women but did not have required resources. The helpline is run by state government having a good reputation and outreach to various service providers. I feel proud to be a part of the helpline.*"

However, during the interviews, stakeholders expressed desire for incentive mechanisms. They directly linked incentives to their performance and believed that incentives will boost their performance.

F2 quoted: " *Whenever any woman whom we have helped calls and appreciate us for our concern and help, we all feel proud and satisfied. Appreciation from our seniors also boost our morale.*"

However, literature exists describing the positive [31] and negative impacts of incentive mechanisms [32]. We also observed similar opinions held by the stakeholders. While F6 recognized the morale boosting as an effect of incentives: "*In my opinion incentive mechanism should be there. If someone is working so hard, she should get recognition. It will not only motivate her but will also motivate others to work harder.*"

SC1 is concerned about the discrimination it may cause:

"*At the helpline everyone is trying their best to help victims. Rewarding a single stakeholder may hurt others. We all work with same enthusiasm and are highly motivated towards our work. So rewarding only a single employee is not fair.*"

These contrasting views indicate that we require a balanced and indiscriminate incentive mechanism thereby improving productivity of stakeholders. [33] have shown that employees of a non-profit organization may not always be motivated by monetary rewards only. Stakeholders at helpline hold a similar opinion. As shared by SC1.

"*I believe reward is not about money, appreciation from callers and colleagues is more important.*"

Productivity of stakeholders is also a direct result of environment at organization and their workload. While organization relates workload to productivity, employees view it as an investment of time and energy [34]. It is challenging to achieve balance between the two to optimally meet organizational objectives and personal expectations. During our interviews we realized, the stakeholders suffer from stress while working at the helpline. S1 explained:

"*We receive a huge call traffic, due to which often we do not get time to have our meal. We are continuously on telephone receiving and registering cases. The workload affects our health badly.*"

Continuous complaints from the stakeholders about their heavy workload directed us in finding other probable factors that may have reduced productivity of stakeholders. We identified few such factors:

- **Static Shifts-** Three shifts at helpline have fixed timings and are served by fixed number of employees everyday. However, the helpline receives varying traffic at different days and time. Thus employing static shifts and fixed number of employees in every shift may impact stakeholders' efficiency. From the

data shared by the helpline, we analyzed the pattern of call traffic on the helpline across all days of the week and various times of the day. The results are summarized in Figure 6.4 and 6.5. The helpline receives more traffic during the weekdays compared to weekends and from 12 pm to 12 am every day. These findings indicate the need of a system which predicts the number of stakeholders required in a shift by learning from historical data. This system will decide the timings of shifts and number of stakeholders required per shift.
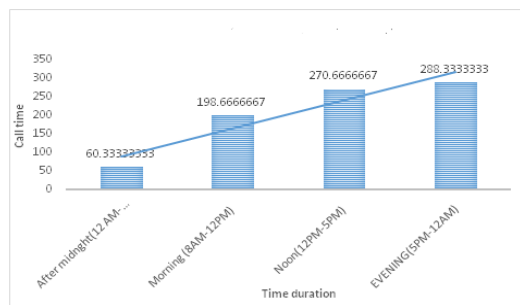
Figure 6.4: Average Number of Calls At Different Time

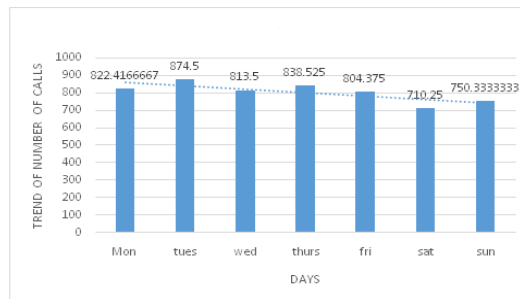**Figure 6.5:** Average Number of Calls At Different Days Of Week

- **Environment at the Helpline-** A few stakeholders blamed their bonding with others at the helpline as a reason for their reduced work efficiency. According to F3:

  "We do not share any personal bonds with each other. We just come here as our workplace. This sometimes disturbs me and impacts my performance negatively."

They also complaint about the resources they are provided at the helpline. According to SC2:

"*We work in a small close room and feel suffocated in the room. Also the hardware devices provided to us are not of good quality which many times impede our work.*"

6.3.3 Absenteeism of Delay Announcement System

Research has shown that introduction of delay announcement enhances user satisfaction [35] and manages to retain users for longer durations [36, 37]. However, the helpline does not use any such system to inform women about their expected waiting time. Asthana et. al [38] have already demonstrated the benefit of introducing one such delay announcement system in a women distress helpline. Motivated by the existing literature, we believe there exists a wide scope for developing various delay announcement systems specific to women distress caller helpline.

7

Discussion

Technology plays a crucial role in efficient operation of organizations. Many studies have been conducted to study how technology can be intertwined in for-profit [39, 40] and non-profit [4, 5, 6, 41] organizational settings. In one of the studies, Brudney et al. [42] identified that the conventional technologies followed by for-profit organizations can't be applied directly in non-profit organizations as human workforce and their work practices in both type of organizations is vastly different. In another study, [33] have concluded "managers and workers at a non-profit organization may be much more reluctant to accept a new technology if they feel that it inhibits their personal ability to enact social change". Even though the helpline under study operates like a non-profit organization, our findings are in contrast with [33]. The stakeholders are amenable towards technology and its adoption as shared by F3:

"We have always appreciated technological advancements in the helpline and will continue to do so. We can learn to use them efficiently if we are properly trained. We have managed to do it so far and would be able to do it in future as well."

From our interaction with the stakeholders we identified the reason for this drift. The stakeholders are motivated towards their personal growth and learning. This motivation has directed technological adoption at the helpline over the time. SC4 stated:

"In its life of over 2 years, the helpline has advanced technologically. As a result, we got to learn many things which we did not know earlier like operating a computer, talking and typing in English fluently, filling excel sheets, etc. This personal learning not only boost our confidence but also encourages us to learn more technological solutions."

Driven by the positive standpoint of stakeholders towards technology advancement at the helpline, researchers can freely craft innovative technological solutions for the helpline. However, incorporating technological solutions alone is not sufficient, the helpline should be self sufficient in managing and developing solutions for itself as recognized by [5]. Currently the helpline relies on external sources to meet its technological demands. However, stakeholders at helpline are able to identify with helpline objectives more than external sources and have a better understanding of its culture and work practices. But, because of their non- technological background, they are unable to express their requirements adequately to external organizations. We believe, this necessitates empowerment of in-house IT team for helpline to meet its technological demands, leading to more productive and efficient solutions.

8

Limitations

While we believe that our findings revealed valuable insights about the design opportunities and challenges associated with them, we need to acknowledge our limitations as well. Because of the dynamic nature of the helpline, there is no specific road map to serve women. Therefore the practices followed and the obstacles faced may be different than other similar helplines. Hence, our study can not be generalized for every women distress helpline.

Although we tried to present an accurate picture of the helpline, our dependence on interviews makes it possible that some bias may have distorted our data. Future work will hopefully rationalize our findings using different methods. Furthermore, small number of interviewees limited our ability to provide deeper and broader insights. Another major setback for our study was caused due to sensitive nature of the helpline as a result stakeholders were reluctant to freely communicate during the interviews. This impeded our ability to uncover additional insights about the helpline.

9

Conclusion and Future Work

Our motivation behind the study was to explore a popular women distress helpline and to identify potential technological gaps in its current working. From our study, we perceive the helpline as a collaborative system which operates like a non-profit organization. Non-profit nature of the helpline helped us in understanding psychology of the stakeholders and resource constraint nature of the helpline whereas the collaborative nature enabled us to understand the existing coordination practices among stakeholders, service providers and women being served.

Our analysis revealed ample design opportunities in 3 vital areas: inter organization collaboration, preventing abandoned calls and improvement of follow up procedure. The identified opportunities can be fulfilled by designing innovative yet simple technological interventions incorporating the unique constraints of the helpline. Developing such stakeholder centric technologies can offer 2 fold benefits:

- alleviation of day-to-day working of the helpline.

- enhanced satisfaction of women served by the helpline.

We believe, these interventions will make the helpline more efficient and effective. However, more case studies on similar helplines are required to gain a generalize understanding of challenges and design opportunities for such helplines. At present, the helpline functions as a standalone organization operating only in the national capital of India. We feel, it holds a huge potential for expansion nationally where culturally aware localized divisions can serve local women but can also collaborate with other divisions to fulfill their unmet requirements.

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Appendices

Appendix A

Letter of Information and Consent Form

Project title: Women Safety and Technology: Analysis of Women Distress Helpline for Efficient Technological Intervention.

Researchers: Parul Gupta, Pushpendra Singh and Siddhartha Asthana (IIIT Delhi, India)

Purpose: To identify current practices and challenges faced by the employees of a women distress helpline. After gaining deep insight into the present working of the helpline we would like to explore further intervention of technology that can improve the overall working and efficiency of the helpline.

You will be participating in a semi-structured interview.

The duration of the interview will not be longer than 60 mins and there may be follow-up studies in case the researchers feel the need to collect some more information from you.

Participation is voluntary and you are free to withdraw at any time. You can choose to not answer a question if you find it to be objectionable or if it makes you feel uncomfortable.

The entire interview will be recorded for the research purpose and will not be misused for any other cause.

Privacy of the callers of the helpline will not be compromised and no personal information will be collected. Only the researcher will have access to this data and will

solely be used for research purposes. There are no foreseeable secondary uses of the data.

You will be given a mobile recharge coupon or an e-gift voucher of an online shopping website of upto 200 Rs. on completion of the entire interview.

Your signature below indicates that you have understood all the above clauses and will abide by them.

Your signature below indicates that you have read this Letter of Information and have had any questions answered to your satisfaction. Please keep a copy of this letter for your records.

Name:

Date:

Signature:

Telephone Number:

Preferred Date and Time of Interview:

Appendix B

Sample Survey Questions

Ques-1. What is the your education and job background?

Ques-2. In which language do you prefer to read/write in your personal life?

Ques-3. What is your current designation at the helpline?

Ques-4. Since when are you working in the helpline?

Ques-5. Why do you work at the helpline?

Ques-6. What are your responsibilities at the helpline?

Ques-7. Explain the working of the helpline and challenges faced.

Ques-8. When do you close a case?

Ques-9. What do you think is the reason that women come to you instead of going to the police?

Ques-10. What are the services provided by the helpline?

Ques-11. Did it ever happen that a woman asked for a particular service and you were unable to fulfill it? What did you do in that case.

Ques-12. What is the difference between supervisor and senior caller?

Ques-13. How are follow ups performed?

Ques-14. How frequently do you follow up a case?

Ques-15. How do supervisor know which case requires follow up?

Ques-16. Explain process of identification and establishing relations with the service providers?

Ques-17. How do you maintain and manage their information?

Ques-18. What type of relations do you share with them?

Ques-19. If a supervisor/employee in the service provider's organization leaves does it impact the relationship?

Ques-20. How is the environment at the helpline?

Ques-21. Do you share your experiences with each other? If Yes: Explain the communication practices and impact of it on your performance.

Ques-22. Are you satisfied with your job?

Ques-23. Do you think an incentive mechanism in the helpline will affect your performance?

Ques-24. How has helpline evolved technologically over the time?

Ques-25. Are you open to adapt new technologies, if implemented, in the helpline?

Ques-26. Do the callers complain anything about the helpline?

Ques-27. Would you like to suggest any technological changes in the current working of the helpline?