JOB MAPPING FOR THE VISUALLY IMPAIRED

An Industry Study by American India Foundation

In partnership with the National Association for the Blind
(Centre for Blind Women and Disability Studies)
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About the American India Foundation
The American India Foundation is committed to disrupting poverty, catalyzing social and economic change in India, and building a lasting bridge between the United States and India through high-impact interventions in education, livelihoods, public health, and leadership development, with a particular emphasis on empowering girls and women to achieve gender equity. Working closely with local communities, AIF partners with NGOs to develop and test innovative solutions and with governments to create and scale sustainable impact. Founded in the wake of the Gujarat earthquake in 2001, at the initiative of President Bill Clinton following a suggestion from Prime Minister Vajpayee, AIF has impacted the lives of 2.5 million of India’s poor and aims to reach 5 million by 2018-19. Learn more at www.AIF.org.

About the Ability Based Livelihood Empowerment (ABLE) program
AIF is revolutionizing the industry paradigm by providing equal opportunity and access to employment for persons with disabilities, based on a simple belief—it is one’s ability, not disability that defines any individual. The Ability Based Livelihood Empowerment (ABLE) program trains persons with disabilities in fundamental and specialized skill-sets, and facilitates their entry into the job market through a robust advocacy platform for disability inclusion, promoting inclusive growth in India.

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Employment holds a significant place in the lives of people with disabilities, not just as a ladder to success, but for survival itself. It offers them, in the least, a chance to lead a dignified life and an opportunity to create an identity for themselves within the spheres of family, friends and society at large.

However, owing to a range of factors such as poverty, lack of proper education, inaccessibility, and inadequate training it has been a long and tough struggle to make employment possible for people with disabilities in India.

It has been observed that for people with visual impairment, it is even harder to find employment as the stigma and taboo associated with their disability are greater than with other common disabilities, which makes it that much more difficult to convince potential employers.

One of the major reasons for the unwillingness of employers is lack of awareness about the capabilities of persons with visual impairment, which stems from the fact that visually impaired persons are not commonly visible at workplaces performing routine tasks efficiently. This, in turn, further inhibits employers from offering opportunities to them, thus setting into motion a vicious circle of events.

Such is the case in other countries as well:

> A lot of people, when I tried to get into university and when I applied for jobs, struggled to see past the disability. People just assumed that because I had a disability, I couldn’t perform even the simplest of tasks, even as much as operating a fire extinguisher…. I think the main reason I was treated differently, since I set out to become a nurse, was probably that people were scared, because they’d never been faced with anyone like me before.
> — Rachael

There is a critical need to make the industry aware of the feasibility of employing people with visual impairment. This study is aimed at:

- Identifying trades and tasks in various sectors in the country that can be performed by visually impaired (VI) persons
- Identifying the barriers in the process
- Offering workplace solutions wherever possible
- Understanding and presenting first-hand insights of the industry imperatives in this context

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Last but not the least the staunch commitment and keen interest of the AIF leadership in ensuring employability choices for India’s PWDs has motivated AIF’s ABLE team to achieve challenging goals year after year. In India, there is a significant data gap that limits the understanding of employment patterns for persons with disabilities. To address this gap, AIF published a report on Best Practices in Employability of People with Disabilities in the Private Sector in India in 2014. The publication of this next report on Job Mapping for the Visually Impaired seeks to take forward AIF’s commitment to the sector. It is hoped that evidence-based research as well as workplace examples in this report will promote positive change.
# Contents

1 Introduction
   1.1 Research objective 7
   1.2 Research methodology 7
      1.2.1 Basis for industry selection 8
      1.2.2 Basis for selection of the organization for the field work 8
   1.3 Summary findings 8

2 The Hospitality Industry
   2.1 Premium hotel 9
      2.1.1 Tasks feasible for totally blind persons 9
      2.1.2 Tasks feasible for persons with partial vision 10
      2.1.3 Tasks infeasible for persons with visual impairment 11
      2.1.4 Tasks not examined for feasibility 12
   2.2 Mid-sized hotel 12
      2.2.1 Tasks feasible for totally blind persons 12
      2.2.2 Tasks feasible for persons with partial vision 12
      2.2.3 Tasks infeasible for persons with visual impairment 12
      2.2.4 Tasks not examined for feasibility 12
   2.3 Comparing Premium and Mid-sized Hotels in the context of Employing the VI 12
   2.4 Observations and Suggestions 13

3 Healthcare Sector: Hospitals
   3.1 Premium hospital 14
      3.1.1 Tasks feasible for totally blind persons 14
      3.1.2 Tasks feasible for persons with partial vision 14
      3.1.3 Tasks not examined for feasibility 14
   3.2 Mid-sized hospital 15
      3.2.1 Tasks feasible for totally blind persons 15
      3.2.2 Tasks feasible for persons with partial vision 16
      3.2.3 Tasks not examined for feasibility 18
3.3 Comparing Premium and Mid-sized Hospitals in the Context of Employing the VI 18
3.4 Observations and Suggestions 18

4 The Food Processing Industry 19
4.1 Canned Food: Tasks Feasible for the Totally and Partially VI 19
   4.1.1 Paprika section 19
   4.1.2 Peas section 20
4.2 Indian Sweets: Tasks Feasible for the Totally and Partially VI 21
   4.2.1 Chikki packaging 21
   4.2.2 Packing laddoos for Shatabdi trains 21
   4.2.3 Packing soan papdi 22
   4.2.4 Packing rasgullas 22
   4.2.5 Chopping vegetables 22
   4.2.6 Petha packing 22
   4.2.7 Sandwich making 23
4.3 Jams and Jellies 23
   4.3.1 Tasks feasible for totally blind persons 23
   4.3.2 Tasks feasible for persons with partial visual impairment 23
4.4 Summary of Tasks Feasible for the VI in Food Processing 24
4.5 Conclusions 24

5 The Electricals Manufacturing Industry 25
5.1 Tasks Feasible for the Totally Blind 25
5.2 Tasks Feasible for those with Partial Vision 30
5.3 Summary of Tasks in the Electricals Industry which are Feasible for the VI 31
5.4 Training Needs and Challenges 31
5.5 Adjustments that the Employer May Need to Make 31
Vocational training and employment for the visually impaired (VI) still remains a grave problem in India. While education has become more accessible, especially in urban areas where there is greater flexibility to study a variety of subjects at any stage, very few VI women are actually able to receive education due to the lack of residential facilities. Their participation in mainstream employment is also negligible, because of obsolete training and the absence of a gender sensitive support system.

Most VI persons in India continue to be trained for and employed in traditional occupations like candle making, book binding, light engineering and the like. In spite of good IQ levels and the availability of technical help for the VI, lack of awareness forces many parents to push their children into conventional skills like music and typing and enter occupations which have lost their market demand and economic value. Unemployable in the private sector, they end up hankering for the security of a government job which eludes most of them. Hence, there is a need to identify new avenues for training and employment to equip them with more relevant skills.

1.1 RESEARCH OBJECTIVE

The objective of this study is to:
- Conduct a job mapping exercise covering targeted industries in order to gain an insight into jobs where VI people get placement
- Make the industry aware of the existence of an additional pool of human resources
- Create a platform for their peer group at work to gain an insight about the life and capabilities of VI people
- Increase chances of employment in the future for VI people, with a focus on quality rather than quantity

1.2 RESEARCH METHODOLOGY

This report presents the findings of a study based on first-hand observation and trials with VI persons in real life employment situations in four industries—hotels, hospitals, electrical equipment manufacturing, and food processing. The objective was to identify areas where the totally blind and those with partial vision can be integrated into the workforce in these industries. Therefore, in the study the two categories were analyzed separately.

The study involved:
- Identifying sample companies, preferably those with staff strength of above 200, or companies that were already employing people with disabilities
- Visiting each company with a team of sighted and VI persons, aimed at identifying appropriate tasks for trial by VI people
- Identifying relevant volunteers for trials, with predetermined skill sets, education levels and aptitudes
- Conducting simultaneous trials in different departments.
- Preparing the final report along with an analysis of:
  a. Feasibility of working in a particular department or on a particular task
b. Identifying pre-placement and post-placement training needs.

1.2.1 BASIS FOR INDUSTRY SELECTION

- The selected industries can provide jobs to candidates with varied qualifications and skill sets. They offer scope for graduates, undergraduates and even uneducated candidates.
- A wide variety of tasks need to be performed in these sectors. While some demand manual labor, others involve skilled maneuvering or dexterity, and still others require social skills (making phone calls) or professional capability in handling software and working on the computer. Hence there are sufficient possibilities of finding suitable candidates.
- Many enterprises in these sectors are based on an assembly line system.

1.2.2 BASIS FOR SELECTION OF THE ORGANIZATION FOR THE FIELD WORK

Enterprises with an average workforce of around 200 and more were selected because they offered enhanced scope for VI candidates to find employment.

Both premium and mid-sized hotels and hospitals were surveyed so that comparisons could be drawn in terms of the opportunities available in each category. While premium properties have more potential for employing VI staff as they recruit more people and have more roles and better Corporate Social Responsibility (CSR) policies, mid-sized organizations have greater presence in lower tier towns and can provide opportunities to those otherwise excluded. On the flip-side, however, mid-sized establishments usually function with lower budgets, and tend to cut down on peripheral tasks and manpower; employees are encouraged to multitask. Therefore, there are fewer opportunities for the inclusion of VI persons in a mid-sized firm, considering the complexity of tasks they are required to handle. But again, mid-sized companies can be more conducive for a VI person since it is easier to orient oneself in smaller, more compact spaces.

1.3 SUMMARY FINDINGS

- Industries where presentation and customer interaction are vital proved to be very unaccommodating since there is a need for visual perfection. This was found to be the case in hospitals and hotels. There was higher resistance to integrating VI persons in these establishments, more so in the premium ones.
- Out of all the tasks identified in the four industries there are fewer areas where totally blind persons could work with prior training and more options for those with partial vision. Therefore, it is recommended that tasks that can be performed by totally blind persons be given to them to ensure their employment, since it is easier for people with partial vision to find jobs.
- Many manual jobs involving the assembly line were found feasible for VI persons, particularly in the electrical and food processing industries.
- High resistance to software sharing closes doors for VI trials at many computer-based jobs as speech software is required to enable the persons with visual impairment to work on computers.
- Jobs that require coordination are an option, but maintaining paper records is a challenge for VI persons.
- Lack of awareness about the capabilities of VI people with respect to working on computers, with fire, knives, etc., leads to biases and closed attitudes.
- Jobs involving team work proved feasible for VI persons.
- Workplaces with less manpower find it tough to accommodate VI persons as they are required to multitask, more so in the case of unskilled and semi-skilled work.
- Manual jobs could be explored, but accommodation and commuting challenges are high vis-à-vis the income.
- It was found that the greater the mechanization, lesser the manpower requirement and therefore lesser scope for employing VI people. Also, most of the mechanized work needs to be controlled with the help of a visual panel.
The hospitality industry makes for a relevant case study because it has a mix of white-collar and blue-collar jobs, offering scope for work at different levels. Since it is an industry where being presentable, personable, forthcoming and helpful in client interactions is of central importance, the level of resistance to integrating VI people is greater.

The two hotels surveyed were ITC M aurya in the premium 5-star segment and Lemon Tree in the 3-star mid-sized range. Both properties meet the eligibility criteria and already employ persons with disabilities.

2.1 PREMIUM HOTEL

2.1.1 TASKS FEASIBLE FOR TOTALLY BLIND PERSONS

Areas where VI persons were found to be successful in large hotels were:
- Cold kitchen
- Housekeeping
- Horticulture

The feasibility list drawn up at the end of the trials was much shorter than the list of tasks initially identified for VI persons in the hospitality industry. While one of the reasons was that there were fewer tasks that they could handle independently, some areas where they could work on a computer could not be explored due to resistance to software sharing or the high cost of assistive technology.

Cold Kitchen/Salad Kitchen

It was observed that the VI person deputed in the cold kitchen was more comfortable than the one in the bakery. As the name suggests, there is no cooking in such a kitchen and the work involves a lot of cutting, chopping, slicing, peeling and carving of vegetables and fruits, which depends, to a large extent, on practice. The detailed tasks were as follows:

1. Cutting vegetables in random pieces: Candidates were able to operate a knife and could easily chop vegetables in random shapes but of equal size. However, it is imperative to teach VI persons the correct technique of holding a knife to prevent them from harming themselves.
2. Cutting vegetables or fruits in shapes: The candidates showed potential to chop fruits and vegetables in the required shapes and sizes. They could gauge their shape and size by touching them.
3. Carving: Food carving, especially in the cold kitchen in any large or medium size setup, is a very important function. It was discovered that the candidate could acquire the skill if given time for in-depth observation and long hours of practice.
4. Machine operation: The sample kitchen had two types of electronic slicers for cold cut meats, cheese, vegetables,

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1This option is available only in premium hotels because in a mid-sized hotel there is usually no separate cold kitchen and the work forms part of a variety of tasks that are managed by the chefs and their qualified assistants.
and fruit. As observed, the candidate was able to slice the food product with ease. However, gauging the embossed numbers on the knobs meant for adjusting the thickness of the slices was difficult. Blades need to be handled with precision.

5. Salad dressing: Herbs and different kinds of vinegar, mustard, creams, and mayonnaise, are used to make salad dressing. This is not impossible work for a non-sighted person. However, Braille or embossed names of ingredients would be essential. The quantity of ingredients can be gauged with a measuring cup or by using the cap of the bottle, and finally, by tasting the dressing.

6. Setting up the salad and cheese platter: This is another important area where the VI can operate well if given enough hours for learning and practice.

Since the ingredients are quite well defined for meat slices, vegetables and fruits cut in different shapes, whole fruits, cheese, the tasks do not require much detailing. This makes it easy for VI persons to feel the products and place them in the platter according to requirements.

Housekeeping

In the whole range of tasks undertaken in the housekeeping department in a large hotel, there were some small tasks that could be handled by VI people, such as folding garments, which could be perfected with some practice in handling different kinds of clothes. Room service was not considered feasible for VI persons in a premium hotel since it involves interaction with guests and therefore, presentation and perfection are priority.

Horticulture

It was found that a VI person was able to perform nearly all the tasks involved in gardening such as trimming the hedges, mowing, trimming the dry edges of a plant, weeding, sowing new plants and replacing broken pots. Those with total vision impairment can, therefore, assist in gardening, though not with respect to aesthetic aspects, which are important in a hotel.

2.1.2 Tasks feasible for persons with partial vision

There were two kinds of housekeeping activities which were found suitable for persons with partial vision:

1. Ironing: Clothes are ironed on industrial ironing beds, using coat pressing machines. In two of the four places where ironing was underway, one person was handling three ironing machines simultaneously, in an assembly line. A garment left for too long on the ironing bed could singe. Hence, this could be a tough task for the totally blind. Though the totally blind volunteer was able to perform the task (since he had prior experience of working with machines in a factory), this may not hold true for others. Partially sighted people can do this work relatively well.

2. Operating the tagging machine: The work involves sorting out garments sent to the laundry from the hotel rooms, cross-checking against the accompanying list, sticking tags on each garment to be laundered and taking them off before sending the garments back. Since most of the tasks require visual acuity, this work is not feasible for those with total visual impairment.
2.1.3 Tasks Infeasible for Persons with Visual Impairment

Bakery
Since bakeries involve both cold kitchen and hot kitchen operations, it was observed that the deputed blind candidates were not very comfortable in the surroundings. The main concerns were related to:

1. Safety
   a. The frequent movement of hot trays and bowls between the cold and hot areas
   b. ‘Free opening doors’, which always open outwards (this could hurt the VI person)
2. Creative and other operational aspects
   a. Confectionery: Working in a confectionery requires creativity and a good sense of size and direction, e.g. for cake decoration, tart and other dessert decoration. The mixing of cream is an important function since cream is a delicate food item and can curdle if mixed or beaten for longer than necessary.
   b. Bakery: The making of breads and other bakery products starts with mixing the right amount of ingredients for the dough using large open-faced mixers, which require machine operation. This is achieved by setting the speed with the help of numbered knobs, which, without embossed numbers or instructions on the machine, would be rather complicated for a VI person. There is a high chance of error, and the wrong setting could result in ingredients spilling over. Breads and bread rolls are made by weighing them on the weighing scale. It is very difficult for a non-sighted person to gauge the weight of the dough without a non-speaking weighing scale.

Housekeeping (Laundry)
1. Washing / drying soiled linen: This is done in a PNG-operated industrial washing machine which functions with the help of a visual panel with knobs and buttons. VI persons cannot operate these machines since the panel needs to be seen to know which process is going on inside the tumblers. Two people manage the machine in a shift, bringing the soiled linen to the machine in a trolley, loading and unloading it, and controlling the panel. Since most of the work is visual, having even one VI person on the team is not feasible.
2. Drying the linen: The issues are the same as above.
3. Dry cleaning: This function is handled only by the supervisor of the department due to the nature of the chemicals used.
4. Operating the calendaring machine: Contrary to initial perception, the task is not feasible for even partially sighted people. If the garment gets creased at any point on the conveyer belt, the VI attendant would not come to know. Also, the operators need to check for stains and wear and tear.

Horticulture
Indoor flower arrangements: While VI volunteers could work on a few tasks in this department such as cutting the stems of flowers or leaves, they cannot be expected to arrange them in vases, the task being primarily visual. Other tasks in the department involve placing, moving and removing flower arrangements from their respective places.
2.1.4 Tasks Not Examined for Feasibility

Some tasks that could not be tried due to resistance to software sharing or the high cost of assistive technology were:

- Control room coordination: Handling the help desk, room blocking on the computer
- Computer work on the housekeeping floor, especially billing
- Telephone exchange

2.2 Mid-Sized Hotel

2.2.1 Tasks Feasible for Totally Blind Persons

In mid-sized hotels, the totally blind could assist in kitchen stewarding, that is, wiping utensils, wiping dishes, wiping cutlery, stacking dishes on kitchen shelves, and so forth.

2.2.2 Tasks Feasible for Persons with Partial Vision

1. Laundry service: This task involves sorting out the garments that reach the laundry from the hotel rooms, cross-checking with the accompanying list, putting a sticker tag on the garment till it gets laundered and then taking it off the garment before sending it back to the guest. Since most of the task requires visual acuity, it is not feasible for a totally VI person.

2. Upkeep and cleanliness of rooms
   a. Dusting the doors and other wooden furniture with a dry cloth and wiping the steel handles and lights with a wet cloth, changing soiled linen
   b. Making the beds
      i. Changing pillow covers, quilt covers, bed sheets
      ii. Spreading the bed sheet evenly and tucking it under the mattress in a particular manner
      iii. Arranging the pillows and quilt on the bed in a particular manner
   c. Setting up the coffee table
      i. Dusting the table with dry and wet cloth
      ii. Placing the glasses and coffee mugs on the table in a particular manner
      iii. Cleaning the hot water kettle from inside and outside
   iv. Replenishing amenities like tea bags, coffee sachets, milk powder, regular sugar and sugar-free sachets
   v. Arranging the items in the respective trays
   vi. Replacing old newspapers with new ones and arranging them in a specific way
   vii. Emptying the trash bin
   d. Cleaning and upkeep of the bathroom
      i. Replacing soiled towels with fresh ones and arranging them in a particular way
      ii. Using different types of chemicals while cleaning the wash basin and toilets
      iii. Replenishing the toiletries and arranging them in a particular pattern
      iv. Ensuring the absence of water marks from the wash basin and toilet area
   e. Vacuuming and mopping the room
      i. Dry mopping of the room and bathroom floor
      ii. Vacuuming the carpets
      iii. Wet mopping of the room and bathroom floor

2.2.3 Tasks Infeasible for Persons with Visual Impairment

It is not feasible to have VI persons work in the horticulture department in a mid-sized segment hotel since the facilities are smaller and not many people are engaged in their maintenance.

2.2.4 Tasks Not Examined for Feasibility

Some tasks that could not be performed due to resistance to software sharing or paucity of time were:

- Front office: Attending to customers, handling the back-end tasks on the front desk, blocking rooms on the computer
- Room service

2.3 Comparing Premium and Mid-Sized Hotels in the Context of Employing the VI

Premium

- Front areas are unapproachable in premium segment hotels.
• Since greater manpower is employed in premium hotels, jobs are more specialized, and therefore, there are more possibilities for VI persons.

Mid-Sized/Low Budget Hotel
• Certain adjustments are possible, though there is some resistance to trying out VI persons as employees.
• Low budget hotels need less manpower, leading to a smaller staff, which is expected to multitask, thereby reducing the scope for employing VI persons.

2.4 OBSERVATIONS AND SUGGESTIONS

Across both categories of hotels it was observed that the VI could be gainfully employed in:
• Wiping
• Stacking
• Upkeep and cleanliness
• Folding
• Horticulture (only in the premium segment)

VI persons could be successfully employed in a medium or large size bakery which is involved in catering. This kind of work demands continuous hours of working on one task, including packing, mixing, folding, shaping, setting, enabling VI persons to specialize in different tasks and improve their precision. VI employees would prove to be more efficient and useful in catering kitchens—like flight or hospital catering, since such kitchens work on bulk packing and delivering. The work is continuous, which would improve their efficiency. There is a need to instill the willingness to learn and hone the ability to multitask amongst VI employees. Specific needs for training at different levels are:
• White-collared jobs
  o Communication skills
  o Good computer skills
• Manual jobs
  o Orientation and mobility training
  o Practice
  o Alertness
  o Self-defense
The hospital business, particularly in the premium category, is one that combines the glamour quotient of hospitality with the criticality of healthcare service imperatives. There is no room for error; lives depend on a person’s efficiency and decision-making capabilities. Many hospitals outsource their housekeeping and kitchen management to external agencies for smoother operations.

This study surveyed Fortis in the premium segment and Umkal in the mid-sized range. Umkal already had a VI employee at the time of the study, whose case could be studied to explore further job opportunities for VI persons.

3.1 PREMIUM HOSPITAL

3.1.1 TASKS FEASIBLE FOR TOTALLY BLIND PERSONS

It was not possible to conduct a hands-on trial with a totally blind volunteer for any activity in the premium hospital for the following reasons:

- Software was not shared for computer-based tasks.
- Volunteers were not allowed into the kitchen without being properly vaccinated. There were also reservations about VI persons working with knives and around fire.
- Other work, such as housekeeping, could be carried out by the partially VI but not the totally blind since there was too much multitasking and perfection required.

3.1.2 TASKS FEASIBLE FOR PERSONS WITH PARTIAL VISION

A person with partial vision could work in the housekeeping area with practice, since the work is done in a sequence, like a drill.

The work involves:

- Cleaning of the bed(s)
- Changing soiled linen
- Spreading fresh linen on the beds in a specific manner
- Cleaning the side tables, fittings, furniture, windows
- Emptying the trash and replacing trash bags in dustbins
- Cleaning washrooms—wash basins, the toilet area, replacing essential items such as towels, cotton rolls, etc.

3.1.3 TASKS NOT EXAMINED FOR FEASIBILITY

- The front office area was not considered for trials owing to greater footfall, and the variety and complexity of roles to be performed at the front desk.
- In a premium hospital, there are areas such as the call center, preventive health check, lab report collection, that could be feasible but could not be explored because of resistance to software sharing.
- Others, such as counseling of patients (e.g., those undergoing treatment in the oncology department) or in the Central Sterile Supply Department (CSSD) seemed feasible but could not be considered because the work is totally based on expertise or involves sensitive areas concerning the safety of patients.
3.2 MID-SIZED HOSPITAL

3.2.1 TASKS FEASIBLE FOR TOTALLY BLIND PERSONS

In a mid-sized hospital it was found that totally blind persons could work at the front office, in the kitchen and in the physiotherapy department.

1. Front office: The reception area in a hospital is the first point of contact between patients and care givers, serving a rather significant purpose. The work of the front office staff in the sample hospital entailed tasks such as greeting and attending to patients, listening and solving their queries, directing them to the relevant departments, sharing information, fixing appointments, and billing. In a mid-sized hospital, most of this work can be done by a blind person trained to use computers and telephones. VI persons could handle tasks such as:

   a. Calling
   b. Fixing appointments
   c. Directing the patients to the relevant department with the help of an office assistant

2. Kitchen: The hospital kitchen offers several small, repetitive tasks for a totally VI person, as found in the case of hotels. Feasible tasks include:

   a. Washing of vegetables and fruits
   b. Chopping (can be done along with a co-worker)
   c. Making chapattis
   d. Kneading
   e. Serving food in dishes with the help of measuring spoons or cups
   f. Packing the dishes using cling film or foil
   g. Washing dishes
3. Physiotherapy: There are many VI persons trained as physiotherapists, who can be placed in hospitals as assistants.

3.2.2 Tasks Feasible for Persons with Partial Vision

1. Kitchen: Arranging dishes in trays can only be managed by a partially sighted person since it needs to be done as per the specifications given by the dietician.

2. Ward coordination: The position requires some experience in delegating responsibilities and supervising accordingly. A totally VI person would not be suitable since the work involves a lot of mobility. A partially VI person can work with the help of support staff in the wards. The work involves a lot of interaction with patients, and eye contact helps in making patients comfortable. There is also some file work that needs to be supervised. Tasks include:
   a. Ensuring the upkeep and cleanliness of rooms in the ward
   b. Ensuring that the equipment is in order
   c. Ensuring that essential items such as cotton and disposables are available in the room
   d. Attending to patients’ grievances
   e. Delegating work to the housekeeping staff
   f. Maintaining patient records, both using the computer and filing of documents

3. General duty assistant: The position of general duty assistant has been created to minimize the time spent by patients in the hospital by hand holding them through hospital processes if the duration of their stay is short; for instance, getting a battery of tests done smoothly.
Since the work requires some visual acuity (checking the equipment) and mobility (guiding the patient), it is not feasible for a totally VI person. However, a partially sighted person could learn and be able to work quite independently, with a little support from co-workers. Tasks such as register maintenance can be managed with the help of a computer, making it easier for the hospital to keep track of patients. Other tasks, such as receiving calls, giving information about the doctors’ availability, can be done easily by maintaining a log recording the doctors’ arrival and departure. The responsibilities include:

a. Ensuring that instruments and equipment are in order
b. Attending calls and handling the OPD desk
c. Record maintenance: Arrival and departure of OPD staff and doctors, maintaining the bill book, etc.
d. Attending to patients
e. Getting basic tests done and filling out forms

4. Housekeeping: With some practice, a person with partial vision can work in the housekeeping area of a mid-sized hospital since the work takes place in a sequence, like a drill. The work involves:

a. Cleaning the bed(s), replacing soiled linen
b. Spreading new linen on the beds in a specific manner
c. Cleaning the side tables, fittings, furniture, windows
d. Emptying the trash and replacing trash bags in dustbins
e. Cleaning the washroom—wash basins, the toilet area, replacing essential items such as towels, cotton rolls, etc.
3.2.3 Tasks Not Examined for Feasibility

Tasks such as counseling of patients seemed feasible but could not be considered for trial because the work is totally based on expertise, and involves sensitive areas concerning the safety of patients.

3.3 Comparing Premium and Mid-Sized Hospitals in the Context of Employing the VI

Premium
- Interpersonal skills are critical for patient interface jobs
- Some medical knowledge is important for administrative jobs
- Preference is given to people with prior work experience
- Minimal training time

Mid-Sized
- Mid-sized hospitals offer a more VI-friendly space
- Presentation is not the highest priority
- Expertise / skills for manual jobs, coordination and the ability to multitask are the main requirements
- The qualifications for many jobs are not too high
- In-house training is a possibility

3.4 Observations and Suggestions

1. What worked: Activities that were found suitable for VI persons were related to:
   a. Phone calls
   b. Coordination
   c. Addressing patient queries
   d. Basic tests/check-ups
   e. Billing
   f. Housekeeping
   g. Kitchen activities
   The categorization of tasks by degree of visual impairment and nature of activity is provided in Table 3.1.

<table>
<thead>
<tr>
<th>Impairment</th>
<th>White-collared tasks</th>
<th>Manual tasks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Totally blind</td>
<td>Reception handling</td>
<td>Kitchen</td>
</tr>
<tr>
<td>Partial vision</td>
<td>Reception handling</td>
<td>Housekeeping</td>
</tr>
<tr>
<td></td>
<td>Ward coordination</td>
<td>Kitchen</td>
</tr>
<tr>
<td></td>
<td>General duty assistant</td>
<td></td>
</tr>
</tbody>
</table>

2. What didn’t work
   a. Due to lack of awareness about the abilities of the VI, there was a lot of resistance to letting them use knives or scissors.
   b. The VI volunteers were not allowed access to computers due to software confidentiality.
   c. VI volunteers could not try the role of a counselor to the patients due to the specialized skills required.
   d. The idea of offering the VI any role that involves patient interaction, say at the reception or front desk, was considered a business risk and not received with enthusiasm.
   e. Premium establishments have no time to train special employees.
   f. In these establishments most manual tasks related to the kitchen or housekeeping are being outsourced. Hence, a lot of sensitization is required—among the hospital staff as well as with the third party contractor—to run trials for such jobs.

3. Where training could help
   a. Customer interaction
      i. Communication skills
      ii. Alertness
      iii. Proactive attitude
      iv. Basic knowledge of medical terminology and names of tests
      v. Quick decision-making and response
      vi. Problem solving ability
      vii. Orientation to the hospital premises
      viii. Excellent computer skills
      ix. Multitasking—attending calls, using the computer to search for information
   b. Backend
      i. Skills for kitchen work and housekeeping
      ii. Lots of practice
The food processing industry has certain features that make it ideal for employing the VI. Much of the work happens in teams working in the assembly line. There are many simple, repetitive, manual tasks that can be performed by VI persons. The secondary food industry generally involves items from the cold storage and ovens/furnaces are not required. VI persons have a certain comfort level with such tasks as safety concerns are low.

There are, of course, some challenges. The primary food industry deals with perishable goods and hence speed is of the essence so that work is not carried forward to the next day. Certain risk-prone areas consist of slippery floors or tasks that involve large cooking vessels mounted on equally large stoves. Furthermore, the industry is getting progressively mechanized and machine operations are based on observing the visual display panels. Such tasks are not possible for the VI to accomplish.

Under the study, three food processing companies were surveyed:
- Midland Fruits & Vegetable Products Pvt. Ltd.: The company is involved in supplying canned processed food to hotels and institutions, as well as for export.
- Bhuira Jams: Bhuira Jams is a cottage industry initiative producing jams and jellies, with a production capacity of 50 tons. Around 50 women from Rajgarh village have been trained to do all the work, from receiving the raw material to packaging the final products.
- Bikano Pvt. Ltd.: Bikanerwala Foods Pvt. Ltd. manufactures Indian sweets, sherbets, namkeen, papad and vegetarian food north Indian, south Indian, continental and Chinese cuisines. The company’s production capacity is 20 tons per day.

4. CANNED FOOD: TASKS FEASIBLE FOR THE TOTALLY AND PARTIALLY VI

4.1 PAPRIKA SECTION

1. Washing: Candidates were asked to wash fresh, big-size chilies in three big tubs filled with water. The task required two workers on the first tub and one person each on the other two tubs. Five kilograms of chilies were to be washed in each tub consecutively. The candidates were able to complete the task with ease. They could also make out which chilies were rotten by feeling them.
2. Cutting the stem: This task was done in a main assembly line format with approximately twenty-five workers on the line. The stem of the chili needed to be cut. Candidates were able to perform this task with great ease and success.
3. Cutting into pieces mechanically: Candidates were asked to place the sorted and washed chilies without stems in the cutting machine. They found it easy to place the chilies in rows for the conveyor belt.
4. Filling the paprika in cans: The candidates were able to perform this task.
5. Placing the lids: Lids needed to be placed on cans filled with hot brine. The candidates were expected to take the cans out of the sterilization machine, place the lids, and pass them on to the other assembly line to seal the lid.
6. Cooling the cans: The candidates were asked to transfer the cooled cans from the tub to the soap water tub in a tray. This did not require any mobility.
7. Cleaning the cans with soap and clean water: The candidates could perform this task with ease.
8. Wiping the cans dry: The candidates were expected to wipe the cans using a dry cloth. They were able to perform this task with no difficulty.
9. Oiling the cans: The candidates successfully managed to oil the cans with a sponge filled with oil.
10. Cleaning the cans again before dispatch: The candidates were expected to wipe the oil off the cans, which they managed to do.

4.1.2 PEAS SECTION

This section deals with the canning of peas for export.
1. Sterilizing empty cans using steam and water: The candidates were asked to place empty cans in the steam clean machine which keeps revolving slowly. They were able to perform the task.
2. Filling empty (small and big) cans with peas: The candidates were able to perform this task with great ease since they had to fill the cans to a certain level, which they gauged using their fingers.
3. Transferring the cooled cans to the table: The candidates were able to perform this task.
4.2 INDIAN SWEETS (CHIKKI, LADDOO, SOAN PAPDI, RASGULLAS): TASKS FEASIBLE FOR THE TOTALLY AND PARTIALLY VI

4.2.1 CHIKKI PACKAGING

1. Filling the boxes: The candidate was able to arrange the chikki symmetrically in plastic boxes.
2. Assembling cartons: This task requires dexterity and a sense of alignment. Cartons can be easily folded into shape by feeling the creases.
3. Filling cartons with chikki boxes: This is an easy task and could easily be performed by a totally blind person.
4. Sealing the box with tape: The candidate could easily perform this task.
5. Packing exclusive chikki (rose petal, pistachio and cashew) in small poly packets: Each 4cm x 4cm piece of chikki needs to be wrapped in polythene. This has to be done in a specific way for maximum efficiency. The candidate could easily perform the task with continuous practice.

4.2.2 PACKING LADDOOS FOR SHATABDI TRAINS

1. Shaping laddoos: The candidates found it easy to shape the boondi laddoo they only needed to be careful about the size.
2. Placing each laddoo in a small box: The candidates managed quite easily to place each laddoo in a small box, which was then to be sealed with tape.

4.2.3 PACKING SOAN PAPDI

1. Placing lids on plastic boxes filled with soan papdi: The task was easily and successfully executed by the candidates.
2. Filling silver-labeled foil packs with soan papdi boxes: The candidate was able to perform this task with no difficulty.

3. Sealing packets using a heat sealing machine: This task was performed by a totally blind candidate. Since it involves heat, it needs practice and precision. It was observed that initially, many packets were not sealed properly, resulting in wastage of branded silver foil packets. This happened mainly because both ends of the packet were not held properly between the fingers; there was also some hesitation in working with heat. A person with partial vision was able to perform the task with ease. This was true not just of soan papdi packets but of any food item that needed to be sealed.

4. Assembling boxes: The candidates easily managed to fold the boxes into shape by feeling the creases.

5. Filling the sealed soan papdi boxes into cardboard cartons: This was an easy task for the candidates; they just had to ensure that the correct side was facing upwards, which they managed by feeling the lid of the box.

6. Filling small bowls with soan papdi: Candidates could accomplish the task with ease.

4.2.4 PACKING RASGULLAS

1. Placing lids on sealed rasgulla cans: the candidates could easily perform this task.

2. Placing rasgulla cans in big cartons: The candidates easily managed to fill the cartons and seal them with tape.

4.2.5 CHOPPING VEGETABLES

1. Chopping potatoes into small pieces and at odd angles: The candidates were able to perform this task but there was some difficulty in getting the angle right. The work requires practice and expertise in cutting vegetables. This skill can be acquired with practice.

2. Chopping vegetables for the stuffing that goes into various food items like samosas and kachoris: This task is easy for VI persons to perform, though practice helps.

3. Making dough balls for gol guppa, matthi, papdi: The candidates were able to perform this task with ease.

4.2.6 PETHA PACKING

Filling plastic boxes with petha: The candidates performed this task with great ease.

1. Sealing the top of the box with a plastic sheet using heat: The candidate could perform this task under the supervision of a sighted person. One needs to ensure that the box is sealed properly. Also, it was observed that some expertise would be required to restart the machine, in case it stops midway.

2. Placing lids on plastic boxes: The candidates were able to perform this task with great ease.

3. Placing the sealed plastic boxes in labeled cartons (same as with soan papdi): The candidates were able to perform this task with ease.
4.2.7 Sandwich Making

1. Applying butter on bread slices: The candidates were able to execute this task with ease.
2. Packing sandwiches in plastic bags and then in cartons: The candidates did not face any problem while performing this task.

4.3 Jams and Jellies

4.3.1 Tasks Feasible for Totally Blind Persons

1. Peeling and de-seeding fruits: The candidate was able to peel the fruits and de-seed them.
2. Cutting the fruit in shapes: The candidate showed potential in cutting the food products in the required shapes and sizes by feeling them. Speed is one factor that VI person would need to keep in mind since in a mid-sized unit like Bhuira, it is imperative to execute the task with precision and efficiency. Also, prior experience in kitchen operations is a prerequisite, including the ability and technique of handling a knife in a safe manner.
3. Washing bottles: This can easily be done by a VI person since the bottles are new and just need a good rinse.
4. Pouring: This can be done with the help of a funnel, while being careful about heat in case of ready jams.
5. Fixing the lid with a hand press: A VI person could achieve this with the help of a hand press machine. The glass bottle needs to be handled with precision to ensure that the lid is sealed properly.
6. Wiping the bottles: The bottles need to be wiped to get rid of any stickiness. The candidate was easily able to perform this task using finger dexterity.
7. Keeping the bottles upside down: This task is very simple since the worker only needs to upturn all the sterilized bottles and place them on the table for vacuum check and leakage check.
8. Sealing the bottles with plastic caps: This task requires precision and care. The thin plastic cap needs to be sealed using heat, with the help of an electronic hand dryer. It was observed that the VI candidate was able to perform the task with sufficient practice.
9. Wrapping each bottle in a thin carton sheet: This task is simple, but requires care and precision. The candidate managed it with ease.
10. Packing the bottles in cartons: The VI candidate easily managed to pack twelve bottles in each carton.
11. Sealing the cartons with tape: The candidate was able to perform this task.

4.3.2 Tasks Feasible for Persons with Partial Visual Impairment

Receiving Area

1. Weighing: Fruits are weighed with the help of an industrial weighing machine. It is not feasible for a totally VI person to perform this task without a talking weighing scale, but a partially VI person can do it as long as she/he can read the measurement.
2. Washing: The fruits need to be segregated into fresh and foul fruit; any mud, dust or other blemish needs to be washed off. This work is not feasible for totally VI persons since it requires clear vision.

Kitchen Area

1. Sterilization of empty bottles (stage one): Empty glass bottles need to be placed on a tray in sets of twelve. The oven needs to be set at the required temperature, and the tray needs to be placed in the oven. Since this task requires careful handling and visual acuity, it is not feasible for a totally VI person. However, a partially VI person can perform it with extra care.
2. Sterilization of empty bottles (stage two): The steamer needs to be prepared by filling it with a bowl of water, and then leaving it for ten minutes to allow steam to build up. Once the steam builds up, the twelve bottles on each tray need to be placed in the steamer for fifteen minutes, and the steamer temperature needs to be set. Since this task requires careful handling and involves heat, it is not feasible for a totally VI person, but it can easily be delegated to a partially VI person.
3. Pouring the jam into bottles: This procedure just entails the pouring of contents into jam bottles with the help of a jug and a funnel, which can be learnt with practice by a person with partial vision.
Packaging

1. Labeling the bottles: For this, one needs to first recognize the kind of jam the bottle holds and then stick the correct label (big and small) on the bottle. This task requires good practice, even for a sighted person. Therefore, in order to maintain the quality standards of the company, it can be performed by a person with partial vision instead of a totally blind person. A magnifying glass would be helpful for persons with partial vision.

2. Stamping logos on the cartons: Since this is the final stage of packaging and readying the carton for delivery, it is imperative to meet the quality assurance standards. While it is not a feasible task for a totally VI person, it can be performed by a person with partial vision who is able to read and write.

4.4 SUMMARY OF TASKS FEASIBLE FOR THE VI IN FOOD PROCESSING

Areas where handling fire, ovens, furnaces, and other cooking vessels are involved, are not feasible for VI persons. However, they can contribute in the following areas with some basic training on improving speed and efficiency:
- Washing without sorting
- Cutting, peeling, chopping, de-seeding
- Filling
- Sealing and packaging
- Initial cleaning up of cans and bottles
- Cooling of cans
- Cold food preparation—dough balls, sandwiches

4.5 CONCLUSIONS

1. Totally VI candidates can work in food processing plants and look after primary products with ease. However, speed is of the essence since the main focus of companies processing primary food (e.g., tomato ketchup, tomato puree, peas, paprika) is on meeting their production targets. Slow production would increase the risk of spoilage. Therefore, in such plants the pace of work is faster than in secondary food production plants.

2. It has been observed that while there are several tasks in a food production plant that can be performed by totally VI or partially VI persons, there are still many that they are unable to perform due to the use of heat.

3. Mobility is a big factor to be kept in mind in the food processing industry.
THE ELECTRICALS MANUFACTURING INDUSTRY

Though the electricals manufacturing industry was perceived to be a high risk work environment, work in this industry proved eminently feasible for the VI. Several tasks are routine and repetitive and can be mastered through repeated practice. In this way, the sector provides ample scope for the totally blind to find employment. Many manual operations need to be performed within the assembly line, which the VI could undertake with some training, particularly because the roles do not demand that the operator move from place to place. The work flows to one’s workstation in the natural course of things and it has to be pushed to the next stage after the required operation has been performed. Training for this sort of repetitive, routine work can be very easily imparted to VI persons.

Two companies were studied as part of the survey—Havell’s and C&S Electric.

5.1 TASKS FEASIBLE FOR THE TOTALLY BLIND

1. High Rupture Capacity (HRC) Fuse Assembly
   a. Putting caps on the fuse: The task is simple; however, some practice is required to balance the cap on the hole before pressing it in with a hand press.
   b. Packing each piece separately in polythene

2. Rewirable switches
   a. Fixing the washer on the edge of the switch box which requires only manual dexterity and practice to achieve the desired speed
   b. Hand press operation to fix three washers on two sides of the switch board, which again requires manual dexterity and speed
   c. A lot of small activities could be done in an assembly line, such as inserting screws into terminals

3. Kit Kat Fuse Line: This assembly involves several small tasks, and since the product is relatively small and uncomplicated, VI persons can easily learn and attain the desired speed.
   a. Manually inserting washers and screws into the fuse
   b. Fixing the base strip
   c. Terminal tightening
   d. Fixing the terminals in gauges
   e. Fixing the L-strips

4. Euroload changeover switches: Some of the tasks in this assembly line can be performed by VI persons, including affixing small parts, assembling the frames of switch boards and making labels.
   a. Inserting a double net and putting a cap on it
   b. Hardware assembly of the channel box
   c. Manually labeling the handle by inserting labels in the plastic slots
5. Distribution Boards  
   a. Wire sub-assembly
      - Tightening screws: The totally VI candidate was able to tighten the screws with a pneumatic screwdriver. There is a click sound when the screw is fastened tight enough, making this task quite simple.
      - Plastic fitting: Square-shaped plastic grooves need to be fitted on to both ends of a bar made of brass. This is done either by applying pressure with the fingers or using a hammer. Since the task requires manual dexterity, the totally VI candidate was easily able to manage it.

   b. Neutral assembly
      - Fitting a thimble: A round thimble needs to be fitted around the ends of a bunch of copper wires. The task is easy and requires manual dexterity, but continuous practice is imperative in order to ensure consistency.
      - Compressing the thimble: This task involves pressing the thimble using a power press machine. Constant practice is required for good speed and for the correct placement of the thimble under the machine. It can easily be performed by a totally VI person.
- Cutting plastic strips: Long strips of plastic need to be cut in the required size, using a cutting machine with a foot press. The task is easy and totally VI persons can perform it with enough practice on a pre-set machine (setting for size demarcation).
- Pushing busbar into plastic strips: Plastic strips with side grooves need to be placed on the side walls of a busbar. The task needs manual dexterity and can easily be performed by a totally VI person.
- Sealing: The worker needs to pack the product in plastic squares, which need to be sealed in the form of small bags with the help of a sealing machine. Since the machine contains a hot blade-like instrument, one needs to exercise caution and practice continuously in order to get it right. A totally VI person can perform this task with a moderate level of caution.
d. Packaging assembly: Three-person assembly line
   - Making cartons: Small boxes need to be assembled according to the fold-marks on the cardboard. Manual dexterity and precision are required in order to fold the sides in the right manner. A totally VI person can easily pick it up with practice and achieve precision.
   - Placing the final product in small boxes (cartons): Each of the sealed products is to be placed in small boxes in a uniform, specified way. The correct orientation can be easily gauged through touch. It is important to be alert when placing it as incorrect handling can hamper the quality and uniformity of the final product. This can be done independently by a totally VI person.
   - Sealing the boxes with tape: The cartons need to be sealed with tape. This is easy for a totally VI person.

e. Hardware assembly: The side plate is fixed with the help of screws and screwdrivers. The task is relatively easy for VI persons to perform.

6. Press shop: All kinds of bending and piercing happen in this department and most of the tasks can be managed by VI people:
   a. Cutting
   b. Bending
   c. Punching
   d. Marking
   e. Tapping
   f. Stamping
   g. Piercing
   h. Manual tasks including riveting and magnet grinding
7. Cut-out assembly
   a. Riveting
   b. Screw fixing
   c. Bolt fixing

8. Air Circuit Breakers Assembly
   a. Shutter assembly: An insulated barrier is placed between the live part and ground part for safety. This assembly is an important part of the cradle assembly and is quite easy for a VI person to work on.
   b. Neutral assembly: A live connection is made by placing a copper strip between the breaker and cradle. This task involves assembling and fixing some parts together, quite feasible for VI persons.

9. Switch Fuse Unit
   a. Switch disconnector: This is a no-load operating switch with a molded body part and a conductive copper part. Though it is a lengthy process, a totally VI person can perform the assembly with practice.
   b. Changeover assembly: A changeover switch is used for a changeover between two electricity lines (generator and main line) one by one to a load of two switch disconnectors in parallel which need to be assembled. This task can be performed by a VI person with practice.
   c. Switch accessories riveting: This task primarily involves riveting on a hand press machine and is easy for a totally VI person to perform.
   d. Pole assembly: This is a part of the switch. One side of a pole assembly has a fixed terminal and the other has a moving terminal. This task can also be performed by a totally VI person.
   e. Enclose assembly: A switch needs to be placed inside an enclosure box. This task can be performed by a
5.2 TASKS FEASIBLE FOR THOSE WITH PARTIAL VISION

1. Distribution boards
   a. Printing: This task can be performed by a partially VI person while keeping in mind the precision required in rubber-printing the logo on MCB covers/doors. The branding needs to be placed near the lower right-hand corner of doors of different sizes. This task involves handling the printing machine, removing and cleaning the ink pad/plate, setting the machine for the required size of the print. Though it is not feasible for a totally VI person, it can be executed by a partially VI person.
   b. Riveting machine: This task involves attaching rivets on to a metal plate with the help of a riveting machine. The only tricky part is that the rivets need to be balanced on the metal part till the machine fixes them on it. A minor modification in the machine would not only make it possible for a person with partial vision to do this easily, but also be useful for a sighted operator.

2. Molding
   This work involves picking the raw material—mostly Bakelite, DMC, BTMC—weighing it and putting it in the die in the molding machine. The machine closes with the push of a button and molds the material into a particular shape. The two restraining factors are the visual panel and the weighing machine. A person with partial vision would be able to manage the task, but with suitable accommodations, e.g. help from a colleague and an audible weighing machine. The sequence of work is as follows:
   a. Pick the raw material
   b. Weigh it
   c. Put the dye in the molding machine
   d. Push a button to close the machine
   e. Pick up the finished product after the machine opens (automatically)
   f. Finish the edges

3. Secondary shop
   The secondary shop comprises of drilling, tapping, hydraulic and orbital riveting, and induction brazing machines. Any kind of drilling, tapping, and riveting work that needs to be done anywhere in the factory is sent to the secondary shop. Therefore there are a variety of tasks to be performed. A partially sighted person can work in this section. Drilling and orbital riveting machines can be handled by totally VI people as well. Some help would be needed to check the pressure. The scope of the work is as follows:
   a. Drilling
   b. Tapping
   c. Hydraulic riveting
   d. Orbital riveting
   e. Induction brazing machine

4. Air circuit breakers assembly—Cradle assembly
   In this process, a cradle or the outer body of the air circuit breaker is assembled with the help of screws, bolts, springs, and washers. This task can be performed by VI persons, but would be quite challenging, given the variety of components to be fitted at different locations. Another tricky area is locating the hole to insert the screw while two metal parts are being attached together. Not much time could be spent on the trial for this task since it was part of an assembly line and would delay the finishing of the product. A lot of practice is needed to achieve the requisite speed and precision. The steps for this are as follows:
   a. Holding metal parts of the cradle together in the proper manner
   b. Aligning the holes
   c. Fixing the correct screws, washers, springs, and bolts at the correct locations
5.3 SUMMARY OF TASKS IN THE ELECTRICALS INDUSTRY WHICH ARE FEASIBLE FOR THE VI

- Assembling gears
- Packing and sealing
- Labels
- Machines operations: hand press, molding, power press

5.4 TRAINING NEEDS AND CHALLENGES

- Training is required for operating the hand press and power press machines.
- A high degree of accuracy and precision has to be acquired within limited training time.
- The products can pose risks if they are not handled carefully.

5.5 ADJUSTMENTS THAT THE EMPLOYER MAY NEED TO MAKE

- It is imperative that the employer is willing to integrate different kinds of people in his/her organization.
- The intent of the employer to employ persons with disabilities has to be communicated to all the departments in the workplace to ensure acceptance and proactive support.
- VI persons need to be integrated into teams for different tasks, while encouraging division of work on the basis of ability.
- Workplace solutions may be required to improve accessibility: assistive devices, technology, audible weighing machines, hardcopy to softcopy format, additional help at visual panels, etc.
JOB MAPPING FOR THE VISUALLY IMPAIRED

An Industry Study by American India Foundation

In partnership with the National Association for the Blind
(Centre for Blind Women and Disability Studies)