

## APPENDIX A

### Schedule for Women Construction Workers

1. Area of Work -  Rural  Urban (write locality)
2. Type of Construction -  Domestic  Commercial  Govt.  any other'.....
3. Type of Contract -  Daily Basis (Santhai)  Project (for that particular period or building)
4. Age -  <18  18-20  21-25  26-30  31-35  36-40  40-45  More
5. Marital status –  Married  Unmarried  Divorced  widow
6. Native –  native of Trichy  immigrant from another district for work sake
7. Residence -  urban(city)  Rural (village)  Semi urban (town)
8. Community –  FC  BC  MBC  SC
9. Other work done –  domestic worker  agricultural work  Working other job (tailoring...)  only construction
10. Only Earning member of the Family –  Yes  No
11. Number of dependants –  Nil  1  2  3  4  5  >5
12. Total Income of all the family members per month –  <1000  1001-2000  2001-3000  3001-4000  4001 – 5000  > 5000

### Work Qualification

13. Literacy level –  Literate(read and write)  Illiterate(Not able to read & Write)
14. Education –  Nil  3<sup>rd</sup>Std  5<sup>th</sup>Std  10<sup>th</sup>Std  12<sup>th</sup>Std  UG  PG
15. Entry into labor –  widow/ abandoned by husband- no other employment  Forced by Poverty  many family members in this job  parents died to look after younger ones  own choice
16. Working under a particular Contractor –  Remains the same  Change often
17. How many years of work experience do you have?  1-5  6-10  11-15  16-20  21-25  >25

### Work Remuneration

18. General Wages for Women per Day  51-60  61-70  71-80  81-90  91-100  any other.....
19. General Wages for Men (same category per day)  51-60  61-70  71-80  81-90  91-100  101-110  111-120  121- 130  131-140  any other.....
20. Your Wages per day -  51-60  61-70  71-80  81-90  91-100  any other.....
21. Wages Paid –  Daily  Weekly  Monthly  On completion of certain work.
22. Do you have to pay commission out of your wages to your Supervisor/Mason/Recruiter? –  Yes  No
23. If yes, how much?  <5  5-10  >10

### Awareness of Government Schemes

24. Have you heard about the union for construction workers? -  Yes  No
25. Are you a registered member of the construction workers welfare board? –  Yes  No
26. Reason for joining union? –  welfare activities  pension in old age  for crisis support  mobilize people for common good of const. workers
27. Have you claimed any benefit from government?  
 Insurance  Pension  Maternity  Accident compensation  Children's education  Other.....

28. Who encouraged you or informed you to register and avail these benefits? –  friends  relatives  trade union members  radio/tv news  masons  any other .....

**Workplace Conditions**

29. What are the types of harassment you face at work? -  Verbal Abuse  Eve teasing  Do not get regular employment  Unnecessary criticism of the Work  Physically beating  sexual harassment

30. What is the attitude of Contractors /Sub contractors and Colleagues?

Arrogant  Abusive  Friendly  Kind

31. Hours of work per day –  8 hr  9 hr  10 hr  More

32. How many days of month do you have work? –  0-5  6-10  11-15  16-20  21-25

33. Are you paid for overtime work –  Cash  Food  Nothing

34. Facilities in workplace –  Drinking water  toilet  Canteen  First aid

35. Children –  None  < 6 years  > 6 years

36. Who looks after your child during the day?

Govt. Crèche (Palvadi)  Relatives  Taken to workplace  neighbours  goes to school  grown up/Any other

37. Are wages paid in full and on time? -  Yes  No

38. Distance of workplace from home? –  >1km  1-5km  6-10km  11-15km  >15km

39. Mode of transport to workplace  walk  cycle  bus  lorry  van  accomodation

40. Do you spend your salary for any other way than on your family needs?

Drinking  Smoking  pan  cell phone  Others

41. How do you meet the expenditure during unemployment:

Take Loan  Husband/ parent is Working  saving  go without food – eating once a day  other.....

42. Habit and Behaviour of your Husband

Drinking  Wife Beating  Affair with another lady  Never care for Children  Continuously absent from home

gives no money  takes good care  Not married

**Work Prospects / Growth in career:**

43. What are the work you are assigned regularly?

load carrying (bricks/ mud/ stones/mortar)  breaking stones/ bricks  mixing mortar  digging with crowbar  laying bricks  concreting  leveling  plastering  operating mixer machine  any other

.....

44. What are the work masons do daily?

laying bricks for wall construction  concreting  leveling  plastering  operating mixer machine  any other .....

45. Have you ever tried mason work?  Yes  No

46. If yes, what are the masonry work you have done at least once?

laying bricks and constructing walls  concreting  leveling  plastering  operating mixer machine  laying tiles  any other .....

47. Have you seen any women doing mason work?  Yes  No

48. Are you willing to lay bricks and construct wall?  Yes  Not sure  No

49. Are you willing to do leveling?  Yes  Not sure  No
50. Are you willing to do plastering?  Yes  Not sure  No
51. When there are women police and women in other jobs, why do you think there are no women masons?  
 not given opportunity by contractor/coworkers  man's job  no training  difficult –will not be able to do it well  not tried – no motivation  men will not accept it  no ladies doing it  physically not fit  scared of working in heights  any other.....
52. Reason why you can do mason job  
 women perform well in many other professions  to earn more  to prevent exploitation  to stop female discrimination  any other .....
53. Do you think that not giving mason job to women is due to inequality of women?  Yes  Not sure  No
54. Do you want to earn more wages per day?  Yes  Not sure  No
55. Do you want to become a skilled mason and earn more?  Yes  Not sure  No
56. Would you like to receive training as a mason?  Yes  Not sure  No  
 If yes, what is your preferred method of training?  On the job  on off days  institutional
57. If you offer to do Mason job, will men accept you? –  Yes  Not sure  Do not know  will not accept

## APPENDIX B

### Schedule for Men Construction Workers

1. Area of Work-  Rural  Urban (write locality)
2. Type of Construction -  Domestic  Commercial  Govt.  any other'.....
3. Type of Contract -  Daily Basis (Santhai)  Project (for that particular period or building)
4. Age -  <18  18-20  21-25  26-30  31-35  36-40  40-45  More
5. Marital status –  Married  Unmarried  Divorced  widower
6. Wife -  working in construction  working other job  Not working  Unmarried
7. Native –  native of Trichy  immigrant from another district for work sake
8. Residence -  urban(city)  Rural (village)  Semi urban (town)
9. Community –  FC  BC  MBC  SC/ST
10. Other work done –  agricultural work  Working other job also  only construction
11. Only Earning member of the Family –  Yes  No
12. Number of dependants –  Nil  1  2  3  4  5  >5
13. Total Income of all the family members per month –  <1000  1001-2000  2001-3000  3001-4000  4001 – 5000  > 5000

### Work Qualification

14. Literacy level –  Literate(read and write)  Illiterate(Not able to read & Write)
15. Education –  Nil  3<sup>rd</sup>Std  5<sup>th</sup>Std  10<sup>th</sup>Std  12<sup>th</sup>Std  UG
16. Entry into labor –  no other employment  father in construction  Forced by Poverty  many family members in this job  own choice
17. Working under a particular Contractor –  Remains the same  Change often
18. How many years of work experience do you have?  1-5  6-10  11-15  16-20  21-25  >25
19. Designation  chithaal  mason  centering labourer  other .....

### Work Remuneration

20. General Wages for Women per Day  51-60  61-70  71-80  81-90  91-100  any other.....
21. General Wages for Men (same category per day)  51-60  61-70  71-80  81-90  91-100  101-110  111-120  121-130  131-140  any other.....
22. Your Wages per day -  <70  71-80  81-90  91-100  101-110  111-120  121-130  131-140  141-150  161-170  171-180  181-190  190-200  200-210  210-220  220-230  230-240  240-250  >250
23. Wages Paid –  Daily  Weekly  Monthly  On completion of certain work.
24. Do you have to pay commission out of your wages to your Supervisor/Mason/Recruiter? –  Yes  No
25. If yes how much?  <5  5-10  >10

### Awareness of Government Schemes

26. Have you heard about the union for construction workers? -  Yes  No
27. Are you a registered member of the construction workers welfare board? –  Yes  No

28. Reason for joining union? – welfare activities pension in old age for crisis support mobilize people for common good of const. workers not applicable
29. Have you claimed any benefit from government?  
Insurance Pension Accident compensation Children's education Other.....
30. Who encouraged you or informed you to register and avail these benefits? – friends relatives trade union members radio/tv news masons any other .....

### **Workplace Conditions**

31. What are the types of harassment women (chithals) face at work? - Verbal Abuse Eve teasing Do not get regular employment Unnecessary criticism of the Work Physically beating sexual harassment
32. What is the attitude of Contractors /Sub contractors and Colleagues towards women workers (chithals)?  
Arrogant Abusive Friendly Kind
33. Hours of work per day – 8 hr 9 hr 10 hr More
34. How many days of month do you have work? – 0 -5 6 -10 11- 15 16 - 20 21-25
35. Are you Paid for overtime work – Cash Food Nothing
36. Facilities in workplace – Drinking water toilet Canteen First aid
37. Children – None  < 6 years  > 6 years
38. Who looks after your child during the day?  
Govt. Crèche (Palvadi) Relatives Taken to workplace neighbours goes to school grown up Any other
39. Are wages paid in full and on time? - Yes No
40. Distance of workplace from home? – 1km 5km 10km 15km More
41. Mode of transport to workplace walk cycle bus lorry van two wheeler
42. Do you spend your salary for any other ways than on your family needs? Drinking Smoking pan cell phone Others
43. How do you meet the expenditure during unemployment:  
take Loan wife/ parent is Working saving go without food – eating once a day other.....

### **Work Prospects / Growth in career:**

44. How long does it take for a man to become a mason once he joins construction work? 1 month 2 months 3 months 6 months 1 year  > 1 year Depends on person
45. When there are women police and women in other jobs, why do you think there are no women masons?  
not given opportunity by contractor/coworkers man's job no training difficult – will not be able to do it well not tried – no motivation men will not accept it no ladies doing it physically not fit scared of working in heights illiteracy any other.....
46. Reason why women can do mason job  
women perform well in many other professions to earn more to prevent exploitation to stop female discrimination any other .....
47. Do you think that not giving mason job to women is inequality of female? yes not sure no

If **yes/not sure**, how can you help them?

Motivate women to do mason job  give chance to women  give practical training  educate other supervisors/masons  any other.....

If **no**, why?  man's job  men will not accept it  no ladies doing it  scared of working in heights

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48. Do you think women can become skilled mason?  Yes  Not sure  No

49. Did you receive any training?  Yes  No

50. If yes, what is your method of training?  On the job (informal)  institutional (month)– diploma/certificate  attended training 2/3 days conducted by institutions (NIT, SIT..)  any other.....

51. If women offer to do Mason job, will you accept them? –  Yes  Not sure  No

52. Are you willing to train women as masons?  Yes  Not sure  No

## APPENDIX C

### Questionnaire for contractors for the study of women construction workers in Trichy District

Dear Sir/Madam,

The information collected through this questionnaire will be used only for academic purpose and kept confidential. Kindly extend your full cooperation. Please tick the appropriate box and fill it up.

Thank you

Annette

1. **Type of Construction** undertaken -  Domestic only  Commercial only  Domestic and commercial  
 Govt.  any other .....
2. **Type of Contract with workers-**  Daily Basis  Project  Both daily basis and project
3. **Age** -  21-25  26-30  31-35  36-40  40-45  46-50  51-55  >55
4. **Marital status** –  Married  Unmarried  Divorced  widower/widow
5. **Wife** –  Not working  Working  Unmarried
6. **Monthly Income**–  <10000  10001-20000  20001-30000  30001-40000  40001 – 50000  > 50000
7. **Type of work** -  full time contractor  part time contractor
8. **Highest Qualification** –  SSLC  HSC  BA/B.com/BSc.  BE  Diploma/Polytechnic  
 M.Sc/M.Com/MA  ME  any other.....
9. **Why did you enter into construction field**–  father in construction  many family members in this job  own choice  
 any other .....
10. **Years of experience as contractor** -  1-5  6-10  11-15  16-20  21-25  >25
11. What is the **Wages you pay for Women construction workers per Day**  51-60  61-70  71-80  81-90   
 91-100  any other.....
12. What is the **Wages you pay for Men (same category per day)**  51-60  61-70  71-80  81-90  91-100   
 101-110  111-120  121- 130  any other.....
13. What is the **Wages you pay for masons per day** -  <100  101-110  111-120  121- 130  131-140   
 141-150  151-160  161-170  171-180  181-190  190-200  >200
14. **Periodicity of Wages paid to workers** –  Daily  Weekly  Monthly  On completion of certain work.
15. **Did you work as a supervisor before becoming a contractor?** –  Yes  No
16. If yes, how long?  < 1 year  1 – 2 years  2 -3 years  3 -4 years  4 - 5 years  >5
17. Are **workers who work under you registered in the construction welfare board?**  
 All  Some  few  No one
18. **Do you encourage them to register and avail benefits given by the government?**  Yes  No
19. Do you have **problems from union members?**  Always  Sometimes  Rarely  Never
20. Do **women construction workers (Chitaals) obey you or supervisors when working?**  
 Always  Sometimes  Rarely  Never
21. **Are women construction workers (Chitaals) sincere in their work?**  
 Always  Sometimes  Rarely  Never
22. **Are women construction workers (Chitaals) willing to learn (trainable) in their work?**  Always  Sometimes   
 Rarely  Never
23. **Hours of work per day** –  8 hr  9 hr  10 hr  More
24. **Is drinking water provided in workplace** –  Always  Sometimes  Rarely  Never
25. **Is toilet provided in workplace** –  Always  Sometimes  Rarely  Never

26. **Is first aid kit provided in workplace** –  Always  Sometimes  Rarely  Never
27. **Are you able to get skilled dependable workers regularly?**  Always  Sometimes  Rarely  Never
28. **Are you able to maintain a long term relationship (> 5 years) with the workers?**  
 Always  Sometimes  Rarely  Never
29. **How many supervisors** are employed under you?  None  1  2  3  4  5  >5
30. **How many women construction workers (chitaals)** are employed by you on the **average in a day?**  
 1-5  6-10  11-15  16-20  21-25  >25
31. **How many men construction workers** are employed by you on the **average in a day?**  
 1-5  6-10  11-15  16-20  21-25  26-30  31-35  36-40  41-45  46-50  >50
32. Do you provide the constructional workers with **training?**  Always  Sometimes  Rarely  Never
33. What is the **method of training for masons?**  On the job  formal – diploma/certificate  attend training 2/3 days conducted by institutions (NIT, SIT..)  Any other .....
34. What will improve **the quality of work done by workers?**  
 training workers  teamwork  employ experienced workers  increase wages  Any other .....
35. When there are women police and women in other jobs, **why do you think there are no women masons?** If more than one reason, please rank by order of importance.  no training  low quality work  man's job – cultural factor  difficulty of job  not given opportunity by contractor/coworkers  no motivation  men will not accept it  physically not fit  scared of working in heights  any other .....
36. **Do women have a scope for promotion/earning more money** – opportunity to undertake higher paid task in construction work? –  Yes  Not sure  No
37. **Reason why women can do mason job-**  women perform well in many other professions  to earn more  to prevent exploitation  to stop female discrimination  any other .....
38. Do you think that **not giving mason job to women is due to inequality of women?**  Yes  Not sure  No  
**If yes/not sure, how can you help them?**  Motivate women to do mason job  give chance  give practical training  educate other contractors/ supervisors/masons  any other.....
- If no, why?**  man's skilled job  difficulty of job  no women doing it  women are scared of working in heights  any other.....
39. Do you think **women can become skilled masons by proper training?**  Yes  Not sure  No
40. Will you provide **training for women constructional workers to become masons?**  Yes  Not sure  No
41. If **women offer to do skilled workers/mason job**, will you accept them? –  Yes  Not sure  No
42. What in your view is the **major problem of women constructional workers [chithaal]?**  
 no promotion  unskilled work  low wages  non cooperative husbands  harassment in the work place  poverty  exploitation due to illiteracy  child care  absenteeism  any other.....

**Any comments**

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## APPENDIX D

### OPERATIONAL DEFINITIONS

- 1. Gender discrimination (inequality):** Any distinction, exclusion or restriction made on the basis of sex which has the effect or purpose of impairing or nullifying the recognition, enjoyment or exercise by women, irrespective of their marital status, on a basis of equality of men and women, of human rights and fundamental freedoms in the political, economic, social, cultural, civil or any other field.
- 2. Unorganised sector:** Those who have not been able to organise themselves in pursuit of common objectives on account of constraints like casual nature of employment, ignorance and illiteracy, small and scattered size of establishments and position of power enjoyed by employers because of the nature of industry. Head loaders, agricultural workers, construction workers, rickshaw pullers, coolies, toddy tappers, home-based workers, self-employed are some of the categories of unorganised sector workers
- 3. Women Construction workers** denotes the women in the sample selected from the construction workers population of Trichy. They are referred to as *chitaal* in Tamil (literally means small people).
- 4. Men Construction workers** denotes the men in the sample selected from the construction workers population of Trichy.
- 5. Area** denotes the area of work of the construction workers. There are two categories which are rural area and urban area.
- 6. Type of Construction (const\_type)** denotes the type of construction where the construction workers are employed. The categories are Domestic, Commercial, Government and any other type.
- 7. Type of Contract (contract\_type)** denotes the type of contract under which the construction worker is working. The categories are Daily Basis (employment from marketplace/pick up point - *Santhai*) and Project (for that particular period or building).

- 8. Age** denotes the age of the men/women construction workers of the sample. The categories of age are from less than 18 years to more than 45 years with an interval of 5.
- 9. Marital status** denotes the marital status of men/women construction workers of the sample. The categories are married, unmarried, divorced and widow/widower.
- 10. Native** denotes the nativity of men/women construction workers of the sample. The categories are native of Trichy and immigrant from another district for work sake.
- 11. Residence** denotes the residence of the men/women construction workers of the sample. The categories are urban (city), rural (village) and semi urban (town)
- 12. Community** denotes the community of the men/women construction workers of the sample. The categories are forward caste (FC), Backward Caste (BC), Most Backward Caste (MBC) and Scheduled caste (SC).
- 13. Other work** denotes the other work done by the men/women construction workers of the sample. The categories are domestic work, agricultural work, any other job (like tailoring) and only construction.
- 14. Only Earning** denotes whether the men/women construction worker is the only earning member of the Family. The responses are yes and no.
- 15. Dependants** denotes the number of dependants on the men/women construction workers of the sample. The categories are no dependents, one, two, three, four, five or more than five.
- 16. Income** denotes the total income of all the family members per month. It ranges from less than Rupees (Rs) 1,000 to more than Rs 5,000 with an interval of Rs 1,000 for the men/women construction workers of the sample. It ranges from less than Rs. 10,000 to more than Rs 50,000 with an interval of Rs 10,000 for the contractors of the sample.
- 17. Literacy** denotes the literacy level of the men/women construction workers of the sample. The categories are literate and illiterate.
- 18. Education** denotes the education level of the men/women construction workers of the sample. The categories are no education, 3<sup>rd</sup>Std, 5<sup>th</sup>Std (Primary), 10<sup>th</sup>Std (SSLC- Secondary School Leaving Certificate), 12<sup>th</sup>Std (HSC – Higher

- Secondary School Leaving Certificate), Under graduate (UG) and Post Graduate (PG).
- 19. Entry why** denotes the reason for entry into construction of the men/women construction workers of the sample. The categories are widow/ abandoned by husband - no other employment, forced by poverty, many family members in this job, parents died to look after younger ones and own choice.
  - 20. Contractor Type** denotes whether men/women construction workers of the sample are working regularly under a particular Contractor or do they change often and work under different contractors.
  - 21. Experience** denotes the years of work experience in construction of the men/women construction workers of the sample. It ranges from five years or less than five years to more than 25 years with an interval of 5 years.
  - 22. Wages women** denotes the daily wages for women according to the men/women construction workers of the sample. It ranges from a minimum of Rs 50 to 60 to more than Rs 250 with an interval of Rs. 10.
  - 23. Wages men** denotes the daily wages for men according to the men/women construction workers of the sample. It ranges from a minimum of Rs 50 to 60 to more than Rs 250 with an interval of Rs. 10.
  - 24. Your Wages (wage)** denotes the daily wages for the men/women construction workers of the sample. It ranges from a minimum of Rs 50 to 60 to more than Rs 250 with an interval of Rs. 10.
  - 25. Periodicity Wages** denotes the periodicity of wages paid for the men/women construction workers of the sample. The categories are daily, weekly, monthly and on completion of certain work.
  - 26. Commission** denotes whether the men/women construction workers of the sample pay commission out of their wages to their Supervisor/Mason/Recruiter. The responses are yes and no.
  - 27. Rs. Commission** denotes the amount the men/women construction workers of the sample pay commission out of their wages to their Supervisor/Mason/Recruiter. It ranges from less than Rs.5 to more than Rs. 10 with an interval of Rs.5.

- 28. Union aware** denotes whether the men/women construction workers of the sample have heard about the union for construction workers. The responses are yes and no.
- 29. Union member** denotes whether the men/women construction workers of the sample are registered member of the construction workers welfare board. The responses are yes and no.
- 30. Union Reason** denotes the reason for the men/women construction workers of the sample for joining the union. The categories are for welfare activities, pension in old age, for crisis support and to mobilise people for common good of construction workers
- 31. Union Benefit** denotes the benefit claimed from the construction welfare board for the men/women construction workers who are union members of the sample. The categories are Insurance, Pension, Maternity, Accident compensation, Children's education and any other.
- 32. Union inform** denotes who encouraged or informed the men/women construction workers who are union members to register in the welfare board and avail these benefits. The categories are friends, relatives, trade union members, radio/tv news, masons and any other.
- 33. Eve teasing** denotes in the opinion of the women/men construction workers of the sample whether women construction workers face the eve teasing harassment at work.
- 34. Verbal Abuse** denotes in the opinion of the women/men construction workers of the sample whether women construction workers face the Verbal Abuse harassment at work.
- 35. No regular employment (no\_reg\_emp)** denotes in the opinion of the women/men construction workers of the sample whether women construction workers face the harassment of not getting regular employment at work.
- 36. Criticise work (criticism\_work)** denotes in the opinion of the women/men construction workers of the sample whether women construction workers face the harassment of being constantly criticized at work.

- 37. Beating** denotes in the opinion of the women/men construction workers of the sample whether women construction workers face the harassment of being beaten(violence) at work.
- 38. Sexual harassment** (`sex_harrass`) denotes in the opinion of the women/men construction workers of the sample whether women construction workers face sexual harassment at work.
- 39. No harassment** (`no_harrass`) denotes in the opinion of the women/men construction workers of the sample whether women construction workers face harassment at work.
- 40. Contractor Attitude** denotes in the opinion of the women/men construction workers of the sample the attitude of the contractor towards women construction workers. The categories are arrogant, abusive, friendly and kind.
- 41. Hours work** denotes the hours of work per day for the men/women construction workers of the sample. The categories are 8 hours, 9 hours, 10 hours and more than 10.
- 42. Days work** denotes the number of days of month the men/women construction workers of the sample have work. The categories are less than and equal to 5 days till 25 days with an interval of 5 days.
- 43. Overtime wages** denotes the payment made to the men/women construction workers of the sample if they work overtime. The categories are cash, food and nothing.
- 44. Drinking water (Facility\_water)** denotes whether Drinking water facility is provided to the men/women construction workers of the sample in the workplace.
- 45. Toilet (Facility\_toilet)** denotes whether toilet facility is provided to the men/women construction workers of the sample in the workplace.
- 46. Canteen (Facility\_canteen)** denotes whether Canteen facility is provided to the men/women construction workers of the sample in the workplace.
- 47. First aid (Facility\_firstaid)** denotes whether First aid facility is provided to the men/women construction workers of the sample in the workplace.

- 48. Children** denotes the age group of the children of the men/women construction workers of the sample. The categories are none, less than 6 years and more than 6 years
- 49. Children care** denotes who looks after the children of the men/women construction workers of the sample. The categories are Government Crèche (*Palvadi*), Relatives, taken to workplace, neighbours, goes to school and grown up.
- 50. Receive wages** denotes whether wages are paid in full and on time for the men/women construction workers of the sample.
- 51. Distance home** denotes the distance of home from workplace of the men/women construction workers of the sample. The categories are less than 1km, 1-5km, 6-10km, 11-15km, more than 15km and accommodation provided.
- 52. Transport** denotes the mode of transport to workplace of the men/women construction workers of the sample. The categories are by walk, cycle, bus, lorry, van, two wheeler and accommodation.
- 53. Drinking** denotes whether the men/women construction workers of the sample spend their salary for drinking alcohol other than basic needs.
- 54. Smoking** denotes whether the men/women construction workers of the sample spend their salary for smoking cigarettes other than basic needs.
- 55. Pan** denotes whether the men/women construction workers of the sample spend their salary for eating pan other than basic needs.
- 56. Cell phone** denotes whether the men/women construction workers of the sample spend their salary for cell phone other than basic needs.
- 57. Basic needs only** denotes whether the men/women construction workers of the sample spend their salary only for their basic needs and the rest for family needs.
- 58. Unemployment** denotes how the men/women construction workers of the sample meet the expenditure during unemployment. The categories are taking Loan, husband/ parent is working, saving, go without food – eating once a day and any other.
- 59. Husband Drinking** denotes whether the husband of married women construction workers of the sample drink alcohol.

60. **Husband Beating** denotes whether the husband of married women construction workers of the sample beat them.
61. **Husband Affair** denotes whether the husband of married women construction workers of the sample have an extramarital affair.
62. **Husband care children** denotes whether the husband of married women construction workers of the sample take care of their children.
63. **Husband absent home** denotes whether the husband of married women construction workers of the sample take care of family needs or is continuously absent from home.
64. **Husband good care** denotes whether the husband of married women construction workers of the sample take care of family needs
65. **Husband no money** denotes whether the husband of married women construction workers of the sample give money to take care of family needs.
66. **Women Work Load Carrying** denotes the work the women construction workers of the sample are assigned regularly at work site is load carrying.
67. **Women Work breakstones** denotes the work the women construction workers of the sample are assigned regularly at work site is breaking stones.
68. **Women Work mixing mortar** denotes the work the women construction workers of the sample are assigned regularly at work site is mixing mortar.
69. **Women Work digging** denotes the work the women construction workers of the sample are assigned regularly at work site is digging with crowbar.
70. **Women Work laying bricks** denotes the work the women construction workers of the sample are assigned regularly at work site is laying bricks.
71. **Women Work concreting** denotes the work the women construction workers of the sample are assigned regularly at work site is concreting.
72. **Women Work leveling** denotes the work the women construction workers of the sample are assigned regularly at work site is leveling.
73. **Women Work plastering** denotes the work the women construction workers of the sample are assigned regularly at work site is plastering.
74. **Mason Work laying bricks** denotes the work the mason do regularly is laying bricks in the opinion of the women construction workers of the sample.

- 75. Mason Work concreting** denotes the work the mason do regularly is concreting in the opinion of the women construction workers of the sample.
- 76. Mason Work leveling** denotes the work that mason do regularly is leveling in the opinion of the women construction workers of the sample.
- 77. Mason Work plastering** denotes the work that mason do regularly is plastering in the opinion of the women construction workers of the sample.
- 78. Mason Work mixer machine** denotes the work that mason do regularly is operating mixer machine in the opinion of the women construction workers of the sample.
- 79. Mason work tried** denotes whether the women construction workers of the sample have ever tried to do masonry work.
- 80. What work tried** denotes the masonry work that the women construction workers of the sample have tried at least once. The categories are laying bricks and constructing walls, concreting, leveling, plastering, operating mixer machine, laying tiles, and any other.
- 81. Women mason** denotes whether the women construction workers of the sample have seen any women doing masonry work.
- 82. Laying bricks willing** denotes the willingness of the women construction workers of the sample to lay bricks and construct wall. The categories are Yes, Not sure and No.
- 83. Leveling willing** denotes the willingness of the women construction workers of the sample to do leveling. The categories are Yes, Not sure and No.
- 84. Plastering willing** denotes the willingness of the women construction workers of the sample to do plastering. The categories are Yes, Not sure and No.
- 85. No opportunity** denotes the barrier for women masons when there are women in other jobs in the opinion of the men/women construction workers of the sample.
- 86. Man's job** denotes the barrier for women masons, when there are women in other jobs in the opinion of the men/women construction workers of the sample.
- 87. No training** denotes the barrier for women masons when there are women in other jobs in the opinion of the men/women construction workers of the sample.



- 88. Difficult** denotes the barrier for women masons, when there are women in other jobs in the opinion of the men/women construction workers of the sample.
- 89. No motivation not tried** denotes the barrier for women masons, when there are women in other jobs in the opinion of the men/women construction workers of the sample.
- 90. Men don't accept** denotes the barrier for women masons, when there are women in other jobs in the opinion of the men/women construction workers of the sample.
- 91. No ladies** doing it denotes the barrier for women masons, when there are women in other jobs in the opinion of the men/women construction workers of the sample.
- 92. Physical limit** denotes the barrier for women masons, when there are women in other jobs in the opinion of the men/women construction workers of the sample.
- 93. Scared of heights** denotes the barrier for women masons, when there are women in other jobs in the opinion of the men/women construction workers of the sample.
- 94. Reason women mason** denotes the reason why there can be women masons, when there are women in other jobs in the opinion of the men/women construction workers of the sample. The categories are women perform well in many other professions, to earn more, to prevent exploitation, to stop female discrimination and any other.
- 95. Inequality women** denotes whether gender discrimination or inequality of men and women is the reason why mason job is not given to women according to the opinion of the men/women construction workers of the sample. The categories are Yes, Not sure and No.
- 96. Earn more** denotes whether the women construction workers of the sample want to earn more. The categories are Yes, Not sure and No.
- 97. Women skilled mason** denotes whether the women construction workers of the sample want to become a skilled mason and earn more. The categories are Yes, Not sure and No.

- 98. Training** denotes whether the women construction workers of the sample are willing to receive training as a mason. The categories are Yes, Not sure and No.
- 99. Method training** denotes the preferred method of training of the women construction workers of the sample. The three methods are On the job, on off days and institutional.
- 100. Men mason acceptance** denotes whether in the opinion of the women construction workers of the sample they offer to do Mason job, men will accept them as masonry workers. The categories are Yes, Not sure and No
- 101. Wife working (Wife\_work)** denotes where the wife of the men construction workers of the sample are employed. The categories are working in construction, working other job, Not working and Unmarried.
- 102. Job title** denotes the job title of the male construction workers of the sample. The categories are *chithaal* (small people), others (painter, carpenter), centering labourer, periyal (big people), manvettiyal (digging people) and mason.
- 103. Men mason time** denotes the time taken by men to become masons in the opinion of the male construction workers of the sample. The categories are 1 month, 2 months, 3 months, 6 months, 1 year and more than a year.
- 104. Inequality yes** denotes that there is gender discrimination and what can be done to empower women to become masons in the opinion of the male construction workers of the sample. The categories are motivate women to do mason job, give chance to women, give practical training and educate other supervisors/masons.
- 105. Inequality no** denotes that there is no gender discrimination and the reason for no women masons in the opinion of the male construction workers of the sample. The categories are man's job, men will not accept it, no ladies doing it and scared of working in heights.
- 106. Women mason acceptance** denotes whether the male construction workers of the sample are willing to accept women as masons when women offer to do Mason job. The responses are Yes, Not sure and No.

- 107. Willing train women** denotes whether the male construction workers of the sample are willing to train women as masons when women offer to do Mason job. The responses are Yes, Not sure and No.
- 108. Work Type** denotes whether the contractors in the sample are full time contractors or part time contractors.
- 109. Qualification** denotes the qualification of the contractors in the sample. The categories are SSLC, HSC, BA/B.com/BSc., BE (Bachelor of Engineering), Diploma/Polytechnic, M.Sc/M.Com/MA and ME (Master of Engineering).
- 110. Supervisor** denotes whether the contractors in the sample worked as supervisors before becoming contractor.
- 111. Supervisor years** denotes the number of years of experience as supervisors of the contractors in the sample. It ranges from less than 1 year till more than one year till 5 years with an interval of 1 year.
- 112. Union workers** denote whether workers who work under the contractors in the sample are registered in the construction welfare board. The categories are all, some, few and no one.
- 113. Encourage membership** denotes whether the contractors in the sample encourage the workers to register and avail benefits given by the government.
- 114. Union problem** denotes whether the contractors in the sample have problems from union members. The options are Always, Sometimes, Rarely and Never.
- 115. Women obey** denotes if the women construction workers working under the contractors in the sample obey the contractor or supervisor when working. The options are Always, Sometimes, Rarely and Never.
- 116. Women sincere** denotes if the women construction workers working under the contractors in the sample are sincere in their work. The options are Always, Sometimes, Rarely and Never.
- 117. Women Trainable** denotes if the women construction workers working under the contractors in the sample are sincere in their work. The options are Always, Sometimes, Rarely and Never.

- 118. Workers regular** denotes if the construction workers working under the contractors in the sample are skilled dependable workers who are regular in their work. The options are Always, Sometimes, Rarely and Never.
- 119. Long term workers** denotes if the construction workers working under the contractors in the sample maintain a long term relationship with the contractor. The options are Always, Sometimes, Rarely and Never.
- 120. Supervisor number** denotes how many supervisors are employed under the contractors in the sample. The options are none, 1, 2, 3, 4, 5 and more than 5.
- 121. Women number** denotes how many Women construction workers are employed under the contractors in the sample. The options are 5 and less than 5 till more than 25 with interval of 5.
- 122. Men number** denotes how many men construction workers are employed under the contractors in the sample. The options are 5 and less than 5 till more than 50 with interval of 5.
- 123. Qtraining workers** denotes whether training will improve the quality of work done by workers in the opinion of the contractors in the sample.
- 124. Qteamwork** denotes whether teamwork will improve the quality of work done by workers in the opinion of the contractors in the sample.
- 125. Qexperienced workers** denotes whether teamwork will improve the quality of work done by workers in the opinion of the contractors in the sample.
- 126. Qwages increase** denotes whether wages increase will improve the quality of work done by workers in the opinion of the contractors in the sample.
- 127. Promotion women** denotes whether there is scope for promotion for women construction workers in the opinion of the contractors in the sample. The responses are Yes, Not sure and No.
- 128. Problem no promotion** denotes whether no promotion is the major problem for women construction workers in the opinion of the contractors in the sample.
- 129. Problem unskilled work** denotes whether performing unskilled work is the major problem for women construction workers in the opinion of the contractors in the sample.

- 130. Problem low wages** denotes whether low wages is the major problem for women construction workers in the opinion of the contractors in the sample.
- 131. Problem non cooperative husbands** denotes whether non cooperative husbands is the major problem for women construction workers in the opinion of the contractors in the sample.
- 132. Problem harassment in the work place** denotes whether harassment in the work place is the major problem for women construction workers in the opinion of the contractors in the sample.
- 133. Problem poverty** denotes whether poverty is the major problem for women construction workers in the opinion of the contractors in the sample.
- 134. Problem exploitation** denotes whether exploitation is the major problem for women construction workers in the opinion of the contractors in the sample.
- 135. Problem child care** denotes whether child care is the major problem for women construction workers in the opinion of the contractors in the sample.
- 136. Problem absenteeism** denotes whether absenteeism is the major problem for women construction workers in the opinion of the contractors in the sample

## **APPENDIX E**

### **TOOLS OF ANALYSIS**

#### **ECONOMETRICS**

Econometrics is concerned with the tasks of developing and applying quantitative or statistical methods to the study and elucidation of economic principles. Econometrics combines economic theory with statistics to analyze and test economic relationships.

Although many econometric methods represent applications of standard statistical models, there are some special features of economic data that distinguish econometrics from other branches of statistics. Economic data are generally observational, rather than being derived from controlled experiments. Because the individual units in an economy interact with each other, the observed data tend to reflect complex economic equilibrium conditions rather than simple behavioral relationships based on preferences or technology. Consequently, the field of econometrics has developed methods for identification and estimation of simultaneous equation models. These methods allow researchers to make causal inferences in the absence of controlled experiments. Early work in econometrics focused on time-series data, but now econometrics also fully covers cross-sectional and panel data.

Data sets to which econometric analyses are applied can be classified as time-series data, cross-sectional data, panel data, and multidimensional panel data. Time-series data sets contain observations over time; for example, inflation over the course of several years. Cross-sectional data sets contain observations at a single point in time; for example, many individuals' incomes in a given year. Panel data sets contain both time-series and cross-sectional observations. Multi-dimensional panel data sets contain observations across time, cross-sectionally, and across some third dimension. For example, the Survey of Professional Forecasters contains forecasts for many forecasters (cross-sectional observations), at many points in time (time series observations), and at multiple forecast horizons (a third dimension).

The two main purposes of econometrics are to give empirical content to economic theory and to subject economic theory to potentially falsifying tests

## TWO INDEPENDENT SAMPLES T-TEST

An independent samples t-test is used when you want to compare the means of a normally distributed interval dependent variable for two independent groups.

## PEARSON'S CHI-SQUARE TEST

**Pearson's chi-square ( $\chi^2$ ) test** is the best-known of several chi-square tests – statistical procedures whose results are evaluated by reference to the chi-square distribution. Its properties were first investigated by Karl Pearson.

It tests a null hypothesis that the frequency distribution of certain events observed in a sample is consistent with a particular theoretical distribution. The events considered must be mutually exclusive and have total probability of one.

The first step in the chi-square test is to calculate the chi-square statistic. The chi-square statistic is calculated by finding the difference between each observed and theoretical frequency for each possible outcome, squaring them, dividing each by the theoretical frequency, and taking the sum of the results.

$$\chi^2 = \sum_{i=1}^n \frac{(O_i - E_i)^2}{E_i}$$

where

$O_i$  = an observed frequency;

$E_i$  = an expected (theoretical) frequency, asserted by the null hypothesis;

$n$  = the number of possible outcomes of each event.

The chi-square statistic can then be used to calculate a p-value by comparing the value of the statistic to a chi-square distribution. The number of degrees of freedom is equal to the number of possible outcomes, minus one.

Pearson's chi-square is used to assess two types of comparison: tests of goodness of fit and tests of independence. A test of goodness of fit establishes whether or not an observed frequency distribution differs from a theoretical distribution. A test of independence assesses whether paired observations on two variables, expressed in a contingency table, are independent of each other – for example, whether people from different regions differ in the frequency with which they report that they support a political candidate.

A chi-square probability of 0.05 or less is commonly interpreted by applied workers as justification for rejecting the null hypothesis that the row variable is unrelated (that is, only randomly related) to the column variable. The alternate hypothesis is not rejected when the variables have an associated relationship.

## **ANOVA**

In statistics, analysis of variance (ANOVA) is a collection of statistical models, and their associated procedures, in which the observed variance is partitioned into components due to different explanatory variables.

In practice, there are several types of ANOVA depending on the number of treatments and the way they are applied to the subjects in the experiment:

One-way ANOVA is used to test for differences among two or more independent groups. Typically, however, the One-way ANOVA is used to test for differences among at least three groups, since the two-group case can be covered by a T-test (Gossett, 1908). When there are only two means to compare, the T-test and the F-test are equivalent; the relation between ANOVA and  $t$  is given by  $F = t^2$ .

One-way ANOVA for repeated measures is used when the subjects are subjected to repeated measures; this means that the same subjects are used for each treatment.

Factorial ANOVA is used when the experimenter wants to study the effects of two or more treatment variables. The most commonly used type of factorial ANOVA is the



2×2 (read: two by two) design, where there are two independent variables and each variable has two levels or distinct values. Factorial ANOVA can also be multi-level such as 3×3, etc. or higher order such as 2×2×2, etc. but analyses with higher numbers of factors are rarely done because the calculations are lengthy and the results are hard to interpret.

When one wishes to test two or more independent groups subjecting the subjects to repeated measures, one may perform a factorial mixed-design ANOVA, in which one factor is independent and the other is repeated measures. This is a type of mixed effect model.

Multivariate analysis of variance (MANOVA) is used when there is more than one dependent variable.

The F-test is used for comparisons of the components of the total deviation. For example, in one-way, or single-factor ANOVA, statistical significance is tested for by comparing the F test statistic

$$F = \frac{\text{variance of the group means}}{\text{mean of the within-group variances}}$$

## **MULTIPLE REGRESSION ANALYSIS**

Multiple regression, is employed to account for (predict) the variance in an interval dependent, based on linear combinations of interval, dichotomous, or dummy independent variables. Multiple regression can establish that a set of independent variables explains a proportion of the variance in a dependent variable at a significant level (through a significance test of  $R^2$ ), and can establish the relative predictive importance of the independent variables (by comparing beta weights).

The multiple regression equation takes the form  $y = b_1x_1 + b_2x_2 + \dots + b_nx_n + c$ . The b's are the regression coefficients, representing the amount the dependent variable y changes when the corresponding independent changes 1 unit. The c is the constant, where the

regression line intercepts the y axis, representing the amount the dependent y will be when all the independent variables are 0. The standardized version of the b coefficients are the beta weights, and the ratio of the beta coefficients is the ratio of the relative predictive power of the independent variables. Associated with multiple regression is  $R^2$ , multiple correlation, which is the percent of variance in the dependent variable explained collectively by all of the independent variables.

- The *regression equation* takes the form  $Y = b_1*x_1 + b_2*x_2 + c + e$ , where Y is the true dependent, the b's are the regression coefficients for the corresponding x (independent) terms, where c is the constant or intercept, and e is the error term reflected in the residuals. Sometimes this is expressed more simply as  $y = b_1*x_1 + b_2*x_2 + c$ , where y is the estimated dependent and c is the constant (which includes the error term).
- *Dependent variable*. The dependent variable is the predicted variable in the regression equation. Dependents are assumed to be continuous, interval variables, though it is common to use ordinal data in linear regression.
- *Independent variables* are the predictor variables in the regression equation. Predictors are assumed to be continuous, interval variables, though it is common to see use ordinal data in linear regression.

## LOGIT ANALYSIS

In dummy regression variable models, it is assumed implicitly that the dependent variable Y is quantitative whereas the explanatory variables are either quantitative or qualitative. There are certain type of regression models in which the dependent or response variable is dichotomous in nature, taking a 1 or 0 value. Suppose one wants to study the labor-force participation of adult males as a function of the unemployment rate, average wage rate, family income, education etc. A person is either in the labor force or not. Hence, the dependent variable, labor-force participation, can take only two values: 1 if the person is in the labour force and 0 if he or she is not.

A unique feature is that the dependent variable is of the type which elicits a yes or no response. There are special estimation inference problems associated with such models. The most commonly used approaches to estimating such models are the Linear Probability model, the Logit model and the Probit model.

### The Logit Model

Logit regression (logit) analysis is a uni/multivariate technique which allows for estimating the probability that an event occurs or not, by predicting a binary dependent outcome from set of independent variables.

#### FORMAL MATHEMATICAL SPECIFICATION

Logistic regression analyzes binomially distributed data of the form

$$Y_i \sim B(n_i, p_i), \text{ for } i = 1, \dots, m, \quad \dots(1.16)$$

where the numbers of Bernoulli trials  $n_i$  are known and the probabilities of success  $p_i$  are unknown. An example of this distribution is the fraction of seeds ( $p_i$ ) that germinate after  $n_i$  are planted.

The model proposes for each trial (value of  $i$ ) there is a set of explanatory variables that might inform the final probability.

These explanatory variables can be thought of as being in a  $k$  vector  $X_i$  and the model then takes the form

$$p_i = E\left(\frac{Y_i}{n_i} \middle| X_i\right). \quad \dots(1.17)$$

The logits of the unknown binomial probabilities (*i.e.*, the logarithms of the odds) are modelled as a linear function of the  $X_j$ .

$$\text{logit}(p_i) = \ln \left( \frac{p_i}{1 - p_i} \right) = \beta_0 + \beta_1 x_{1,i} + \cdots + \beta_k x_{k,i}. \quad \dots(1.18)$$

Note that a particular element of  $X_i$  can be set to 1 for all  $i$  to yield an intercept in the model. The unknown parameters  $\beta_j$  are usually estimated by maximum likelihood.

The interpretation of the  $\beta_j$  parameter estimates is as the additive effect on the log odds ratio for a unit change in the  $j$ th explanatory variable. In the case of a dichotomous explanatory variable, for instance gender,  $e^\beta$  is the estimate of the odds ratio of having the outcome for, say, males compared with females.

### **MERITS OF LOGIT MODEL**

1. Logit analysis produces statistically sound results. By allowing for the transformation of dichotomous dependent variable to a continuous variable ranging from  $-\alpha$  to  $+\alpha$ , the problem of out of range estimates is avoided.
2. The logit analysis provides results which can be easily interpreted and the method is simple to analyze.
3. It gives parameter estimates which are asymptotically consistent, efficient and normal, so that the analogue of the regression t-test can be applied.

### **DEMERITS**

1.  $N_i$  (sample size) has to be fairly large for all  $X$  (dependant variable) and hence in small sample: the estimated result should be interpreted carefully.
2. As in any other regression, there may be problem of multi-collinearity if the explanatory variables are related among themselves.
3. As in Linear Probability Models, the conventionally measured  $R^2$  is of limited value to judge the goodness of fit.