Chapter 19

Specimen Reports

Specimens to discussion are like deeds to words.

The chapter hereby, presents some specimen reports. The originals have been edited and modified, where necessary. You will notice that they succeed in being representative without being copious.

Report I is a survey report from a business and industrial organization. The dates and names mentioned in it are fictitious. The rigidity of pattern has sometimes been discarded to an advantage. This being a short report, the author has rightly dispensed with the *contents* and the *summary*, and combined *conclusions* and *recommendations*. The data were collected largely through personal contact in an unobtrusive fashion. And the conclusions reached, helped the organization to decide to manufacture a new brand of refined cooking oil.

Report II is based on a socio-cultural survey and has been submitted as part of a course on report writing and comprehensions. Here, the student has followed the pattern of a long, formal report. To save time and ensure a quicker response, the questionnaire was distributed personally and hence, it does not have any forwarding note.

Report III can be described as a technical one. It is based on a carefully designed experiment, patient observation and meaningful interpretation.

Report IV is a data-based report in a conventional form.

Report V is a letter report in which the writer analysis a given situation and makes recommendations for action.

In II and III *contents* as an element of the report is given. The headings before 'Introduction' are numbered with small Roman numerals whereas from 'Introduction' onwards with Arabic numerals.

I: REPORT FROM INDUSTRY

Introduction

Ghee and Oil have been the traditional cooking media in India. Ghee was mostly used by the richer sections of society whereas, the middle class (in certain areas) and the poorer classes cooked in oil. However, with shifts in income, increase in population, and urbanisation of society, a relatively new product, 'vegetable ghee' has increasingly replaced ghee as a cooking medium. The vegetable ghee has an edge over both ghee and oil inasmuch as it is cheaper than ghee and finer than oil.

If you need any explanation on any part of this report, please call us. Also if you decide to go in for a company-wide survey, we would be happy to conduct it for you.

Yours sincerely

Rachit Kumar
Senior Project Officer

COMMUNICATION CORE

The samples of reports presented here show that though the elements of structure are more or less the same, there is no rigidity in their ordering and presentation. The conventional sequencing is discarded if it is advantageous in making communication more crisp, pointed and economical. The structure of a letter report is different because here, though the approach to the matter is the same, the form in that of a business letter.

Report Number M 29

UTTAM VANASPATI CO. LTD.
RAHATPUR

A Report of a Survey on Refined Cooking Oil

Prepared
for
The Managing Director
by
Anil Chopra
Sales Manager

20 November, 2001

The company manufacturers *Uttam Vegetable Ghee.* It is worried on account of irregular output of its product owing to intermittent supply of its quota of edible oil for the manufacture of vegetable ghee. It is impressed by the fact that the Sunshine brand of refined oil has become popular and its manufacturers are fully exploiting the current uncertainly in the supply of vegetable ghee in the market.

The company wishes to explore the possibility of entering partially into the production of a new brand of refined oil.

The Managing Director, therefore, ordered a market survey with the following objectives:

(i) To find out the extent of the prospects of refined oil as a cooking medium.
(ii) To identify the reasons for the popularity of Sunshine refined oil.
(iii) To consider the feasibility of launching a new brand of refined oil.

Sample Selection

In October 2000 a survey was conducted among consumers in U.P., Punjab, Haryana and in the Union Territories of Delhi and Chandigarh. The questionnaire used for the survey was first tested among a few household consumers at Rahatpur. It was then distributed in certain districts selected arbitarily. Consumers belonging to different occupations, education level, age groups, strata of society and income groups were selected as respondents. A few retailers, *halwais* and hoteliers were also interviewed. The district-wise break-up of the respondents is given below:

Place	*No. of Respondents*
Delhi	150
Jullundur	30
Chandigarh	20
Agra	50
Lucknow	60
Allahabad	50
Karnal	15
Ambala	25
Total	400

Findings

Cooking Media and Comparative Extent of their Acceptance

Ghee Amongst different cooking media the first choice of every household is ghee. This is so because of the popular belief in its superior nutritive value. However, as it is very expensive, its consumption–and that too in limited quantities–is confined to the upper and upper middle classes of society. It is mainly used for spreading over *chapatis* and for frying *dals* and vegetable.

Vegetable Ghee Next in popularity comes vegetable ghee. It is favourite with all sections of society–the housewives, the halwais and the hoteliers. There are several reasons. One is its appeal to the eye–it looks like ghee. Its cost is considerably lower. It preserves the flavour longer than most other cooking media and is free from any odour such as oils have.

Oil The lower classes in U P. and Haryana use exclusively mustard oil as a cooking medium. The refined groundnut oil such as Sunshine is used only by upper and upper middle classes. Those who can afford it also use vegetable ghee on festive occasions.

Extent of Acceptability of Refined Oil as a Cooking Medium

(i) All sections of society prefer to use refined oil mainly because it is free from odour and can thus be used for all cooking purposes.

(ii) The lower middle class which uses mainly mustard oil has a growing fear of possible adulteration at the hands of traders. It would prefer refined oil whose purity is guaranteed by the reputed manufacturers.

(iii) Halwais and hoteliers find refined oil suitable both for sweets and salty snacks. They are increasingly using it because of dearth of vegetable ghee. The only defect they point out is the fact that things prepared in oil smell rancid if they are kept for long.

(iv) The retailers corroborated the above mentioned reasons for the increasing acceptability of refined oil. However, they are not happy with its supply position. They can sell any quantity if it is regularly available.

Reasons for the Popularity of Sunshine Refined Oil

The consumers gave the following reasons for their choice of Sunshine as a cooking medium (in order of rating).

(i) Food cooked in Sunshine is light because of an even distribution of fat. It also contains less cholesterol than other fats; so its consumption is comparatively less harmful for the heart. Doctors have in fact advised its use in many cases.

(ii) Sunshine does not add unwanted fat to the body, and thus, helps those who care for their figure. This reason specially appeals to the younger generation who love a shapely appearance.

(iii) Food fried in Sunshine is tasty because it remains crisp and looks tempting.

Conclusions and Recommendations

Generally, all sections of society consider refined oil a suitable cooking medium though for different reasons.

Sunshine oil is gaining popularity with the upper class which normally is the trend setter. Another brand of refined oil having the same qualities will, therefore, be increasingly accepted by the middle and lower classes.

Because of the shortage of vegetable ghee, the halwais and hoteliers have found an alternative in refined oil. Large scale consumption of refined oil by them will reduce the demand for vegetable ghee and this will, in turn, ease the vegetable ghee supply position for household consumption.

An increase in the supply of guaranteed pure refined oil will be widely welcomed by the consumers. It is, therefore, recommended that a part of the manufacturing capacity be used for producing refined oil in packings of 16 kg, 4 kg, 2 kg and 1 kg. it may be given an attractive name such as *Bright Lotus.*

By manufacturing refined oil the company will not only earn for itself good profit but also fulfil a national need.

II: SOCIO-CULTURAL SURVEY REPORT

Summary

This report is based on the views of parents living in the BITS Campus regarding higher education for girls. The data were collected by means of a questionnaire.

The study reveals that there is no distinct correlation between the attitudes reflected and the sex, age, religion or mother tongue of the respondents. However, those with an income of less than

A Report
on
the Attitude of Parents
towards
Higher Education for Girls

by
Richa Verma

A report submitted in partial
fulfilment of requirements of
TA C312: Technical Report Writing

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Rs 1000 per month and having formal education only up to the higher secondary or high school level (Category A), show a markedly distinct attitude from the rest (Category B).

ACKNOWLEDGEMENTS

I would like to thank Sri R.T. Ramanan for encouraging me to undertake this study. I am also grateful to Sri R.K. Gupta and other members of the staff who helped me prepare the questionnaire. I specially wish to thank the parents without whose cooperation this report would not have been possible.

CONTENTS

All respondents think that higher education gives social and economic advantages and agree that girls should be educated up to the undergraduate level. However, under financial constraints, all Category A respondents would prefer to educate their sons rather than their daughters, whereas only one-third of Category B respondents subscribe to this attitude.

Category A respondents exhibit conservative attitudes. They do not favour postgraduate education for girls because they fear that it may lead to their mixing freely with boys and may result in inter-caste marriages. They further believe that the continuation of education of girls after marriage is not necessary.

Category B respondents show a more liberal attitude in these matters. They would like their daughters to go in for higher education up to the post-graduate level. They, however, do not consider engineering education suitable for girls and think that a Ph.D. degree is not necessary for them. They prefer to leave the question of continuation of studies after marriage to the choice of the husband and his family.

1. Introduction

Women in India has long been a neglected section of society. Though there are individual cases of women who have distinguished themselves in various spheres of activity, education of women has not been one of the main concerns of our society. Even today with equal opportunities, the number of women studying in colleges is much smaller than that of men. To find out the reasons for this phenomenon, a large scale survey would be necessary.

The present study is a micro-effort in this area. Its findings are of limited value inasmuch as it is based only on the views expressed by BITS campus parents residing in Pilani, a small town of Rajasthan. It must, however, be mentioned that BITS in an all, India institute. On its staff at all levels, both teaching and non-teaching, are people from different parts of India. And this gives even to the small sample on which this report is based a representative character, and to the findings a wider significance.

2. Method of Collecting Data

The views of the parents were ascertained by means of a questionnaire (Appendix). As far as possible, persons with different educational levels and belonging to different income, linguistic and religious groups were selected as sample. The questionnaire was personally distributed by the author. Of those approached, 70 parents accepted it but only 43 returned it after filling in the necessary details. The break-up on different bases is given below.

(i) *Sex*

Men	23
Women	20
Total	43

(ii) *Income* (per month)

Upto Rs 5000	11
Rs 5001 to Rs 7500	08
Rs 7501 to Rs 10,000	07
Rs 10,001 to Rs 12,500	09

Rs 12,501 to Rs 15,000	05
Above Rs 15,000	03
Total	43

(iii) *Formal education*

Primary	02
Middle School	05
Higher Secondary and High School	11
College/University	25
Total	43

(iv) *Mother tongue*

Hindi	18
Punjabi	06
Bengali	06
Tamil	03
Marathi	02
Marwadi	03
Malayalam	02
Urdu	01
Gujrati	01
English	01
Total	43

(v) *Religion*

Hindus	26
Sikhs	08
Muslims	06
Christians	03
Total	43

The questionnaire was designed to find out what effects certain parameters have on the attitude of respondents. The variables on which information was sought are given in the questionnaire. Views were deliberately sought on certain programmes of education which have traditionally been considered to be the sole heritage of men.

3. Discussion

On the basis of attitudes reflected in the answers to the questionnaire, the respondents can be broadly classified into two main categories:

Category A Those with an income of less than Rs 10,001 per month and formal education up to the higher secondary or high school level.

Category B Those with a still higher income and with formal education up to the university level.

No clear correlation could be established between the attitudes and factors like sex, mother tongue and religion. This was expected. Category A respondents are people with a rural background drawn

from Pilani or nearby areas, whereas Category B belong to the educated middle class with an urban background drawn from different parts of India.

All respondents, however, agreed that girls should be given higher education to gain economic and cultural advantages. Category A respondents were in favour of education for girls up to the undergraduate level and Category B up to the post graduate level. The latter however did not favour girls going in for engineering education or a Ph.D. degree. The opinion reflects the influence of the traditional attitude that girls are not suitable for the engineering profession and that a Ph.D. degree is not necessary for them. It is significant to note that no such opposition to medical education was expressed by the respondents.

Category A respondents believed that husbands should have higher educational qualifications than their wives. They felt that if their daughters were very highly educated, it would be difficult to find suitable matches for them. Another reason was that they feared for which their community was not yet prepared. They were also opposed to girls continuing their education after marriage.

Category B respondents showed a relatively more liberal attitude in these matters. They expressed no hostility to the intermixing of the sexes, and about one-third who answered this question had no objection to inter-caste marriages. As to the continuing of education after marriage, they were of the view that it was preferable to leave it to the choice of the husband and his family.

Category A respondents considered the education of their sons as a necessary investment and expected them to contribute to the family income. Under financial constraints, they would choose to spend on the education of their sons rather than on that of their daughters. On this question there was a mixed response from Category B. One-third of the respondents favoured offering equal opportunities to their sons and daughters, another one-third if forced to make a choice, would prefer to educate their sons rather than daughters, and the rest did not have any definite opinion in this matter.

4. Conclusions

All parents favour educating their daughters, though they differ on the degree and level of education. However, those with lower incomes and less of formal education would educate their sons rather than their daughters, if the choice was forced upon them. All parents believe that higher education imparts social and economic advantages and increases the prospects for a better life. Those in favour of higher levels of education consider certain educational programmes such as engineering or a Ph.D. unsuitable for girls.

Appendix

The Attitude of BITS Campus Parents Towards Higher Education for Girls

Questionnaire

Note: Please tick ✔ in the suitable boxes except where asked to indicate your answers otherwise.

1. Please indicate your
   (a) Age _____ (b) Sex _____
   (c) Religion _____ (d) Mother tongue _____
2. Formal education level:
   (a) Primary ☐ (b) Middle ☐
   (c) High School/Higher Secondary ☐ (d) College/University ☐

3. If you have had no college/university education, what were the reasons?
   (a) Lack of finances ☐
   (b) Lack of interest ☐
   (c) Lack of opportunity ☐
   (d) Any other reasons (Please indicate below)

   _____

   _____

4. Family income (per month)
   (a) Up to Rs 5000. ☐
   (b) Rs 5001 to Rs 7500. ☐
   (c) Rs 7501 to Rs 10000. ☐
   (d) Rs 10001 to Rs 12500. ☐
   (e) Rs 12501 to Rs 15,000. ☐
   (f) Above Rs 15,000. ☐

5. Number of children (Please indicate the number)
   (a) Sons _____
      (i) School going _____
      (ii) College/University going _____
   (b) Daughters _____
      (i) School going _____
      (ii) College/University going _____

6. If you have school going children, do you intend to let your son(s) daughter(s) continue their studies after higher secondary?

   Sons Yes ☐ No ☐ Daughters Yes ☐ No ☐

7. Up to what level would you educate your daughter?
   Higher Secondary ☐
   Undergraduate (B.A., B.Sc., B.Com., B.E., etc.) ☐
   Postgraduate (M.A., M.Sc., M.Com., M.E., etc.) ☐
   Ph.D. ☐

8. If there are financial constraints and you have to choose between educating your son(s) daughter(s), who would you prefer?

   Son(s) ☐ Daughter(s) ☐

9. Would this choice be on the basis of a feeling that the education of the daughter will
   (a) add to your family income ☐
   (b) make her more independent financially ☐
   (c) improve her matrimonial prospects ☐
   (d) boost her social status ☐

   Note: You may tick more than one of the items given above. If there are any other reasons, please indicate below.

   _____

   _____

10. (a) If there are no financial constraints, would you give your son(s) and daughter(s) equal opportunity for higher education?
    Yes ☐
    No ☐
    (b) If the answer to the above question is *No*, who would you prefer?
    Sons(s) ☐
    Daughter(s) ☐
    (c) Give below reasons for your choice.

    _____

    _____

11. If you are not in favour of your daughter going in for higher education (postgraduate), is it because she would
    (a) be mixing with boys? ☐
    (b) be mixing with people belonging to other castes? ☐
    (c) possibly neglect her husband/children? ☐
    (d) not make use of her degree later in life? ☐
    (e) become 'modern' and reject family traditions and social customs and neglect religious duties? ☐
    (f) if there are any other reasons, please indicate below.

    _____

    _____

12. Which of the following branches of education would you like your son(s)/daughter(s) to pursue?

Branch	*Son(s)*	*Daughter(s)*
(a) Engineering	☐	☐
(b) Science	☐	☐
(c) Humanities	☐	☐
(d) Commerce	☐	☐
(e) Medicine	☐	☐

13. (a) If your daughter gets married before the completion of her degree, would you advise her to continue her studies after marriage?
    Yes ☐ No ☐
    (b) Give reasons in support of your answer.

    _____

    _____

THANK YOU

III. TECHNICAL REPORT

A Report
on

The Design of a Honeycomb Collector for a Solar Pressure Cooker

by
S.K. Handa
and
Bharat Bhushan

**A report submitted in
partial fulfilment of the requirements
of TA C312: Technical Report Writing**

27 December 2000

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CONTENTS

Abstract

Flat plate honeycomb collectors can be used successfully to get high plate temperatures. So far only glass and polymer honeycomb cores have been used to achieve this. This study shows that the use of paper drinking straws of a length to diameter ratio of 1 : 12 as honeycomb cores is not only more efficient but also more cost effective. We could achieve a maximum plate temperature of 203°C (during December) with a zero efficiency model. This high temperature effect can be utilized to generate medium high pressure steam. The steam so generated can be directed into a pressure vessel for cooking.

1. Introduction

With the ever-increasing demand for energy and rapid depletion of the existing conventional energy sources people all over the world are turning to the sun as a new source of energy. Scientists and engineers are directing their research efforts towards the utilization of this enormous and as yet untapped source of energy.

It has recently been realized that considerable overall saving in the consumption of energy can be effected by finding an alternative to the conventional sources of energy for cooking. In India, mostly firewood or kerosene oil is used for cooking. The individual household need for energy is small and hence, should be met by some simple and inexpensive mode of exploiting solar energy.

The present project was undertaken with this objective in view. A number of experiments were made to find out whether a flat plate honeycomb collector would yield better results than a simple flat plate collector to achieve a temperature high enough to generate pressure steam, which could be exploited for cooking.

The experiments were conducted on December 13, 19 and 20, 2000. The readings taken are given in Appendices A, B and C respectively. The data were monitored every 15 minutes. Manual heliostatic alignment and standard temperature measurement methods using thermocouples were employed for the collection of data.

2. Flat Plate Honeycomb Collectors

A simple flat plate collector consists of a thin sheet of metal of high thermal conductivity (mildsteel, aluminium etc.) painted a dull non-reflecting black. This acts as a black body. It is placed in an insulated wooden box convered with a thin glass sheet. Three types of heat losses–losses by conduction, convection and radiation–can be identified in this.

The honeycomb is a device used primarily to reduce these losses. The idea originated from the hexagonal honeycomb used by bees. These tubes (preferably hexagonal and of a thermally nonconducting material like glass, polymers, etc.) are placed in a core-like formation on the absorbing surface. The use of a honeycomb can effectively reduce the radiation losses from a solar collector. However, in the range of 150–200°C the natural convective heat transfer between the absorbing surface and the glass cover plays a dominant role. The honeycomb (under certain conditions) suppresses natural convection currents, thus reducing the convective heat losses as well. The conduction loss directly through the honeycomb can be made negligibly small by choosing the right material.

3. Experiments Conducted

3.1 Flat Plate Collector without Honeycomb A 28 gauge aluminium sheet (1 ft^2 area) was used as the absorbing surface. A temperature of 135°C was attained at 12–30 (two hours before the peak sun intensity time) and after that a fairly rapid decrease was observed. The rate of increase and decrease

was determined by the fact the aluminium has a high thermal conductivity and a very low heat capacity. After attaining a maximum temperature of 135°C the temperature gradient between the glass cover and the collector was very steep and the convective losses became large. Though the sun's intensity kept on increasing, the heat gain was largely offset by the large magnitude of convective losses.

3.2 Flat Plate Collector with Honeycomb

3.2.1 Mildsteel Collector with Glass Honeycomb Two MS plates (1 ft^2 area, 0.25 in thickness) were welded together to form a hollow container. The total weight was 5.9 kg. The glass tube honeycomb had an L/D ratio of 9 and weighed 7 kg. A very slow increase in the temperature of the plate was observed. This was because of the enormous weight and the relatively high heat capacity of the collector. Further, the heat taken by the glass tubes was another factor of slow temperature increase. A maximum of 97.5°C was attained at about the normal peak time. A higher temperature could not be obtained because the total heat capacity of the system (collector + honeycomb) was so great that a large amount of heat was required per°C rise. The thickness of the glass tube (average thickness 2 mm) was another negative factor.

A temperature gradient of about 5°C was observed between the top plate of the collector and the bottom plate. This was because of the relatively non-conducting air gap between the two plates and the thickness of the MS sheets.

The results of the above test encouraged the continuing of experiments with the honeycomb model with some modifications.

3.2.2 Mild Steel Collector with Glass Honeycomb with Water Introduced in the Collector The model described above with water introduced between the collector plates was used. In this case a maximum temperature of 64°C was observed. The reasons given above apply here also; however, water further increased the heat capacity of the system. A continuous increase was observed, and the water extracted at the end of the day had a temperature of 64°C. This demonstrated that a 'solar pond' had been created and a method of storing the energy received, was available.

3.2.3 Aluminium Collector with Glass Honeycomb An aluminium plate (1 ft^2 area, 28 gauge) was used with the glass honeycomb described earlier. A fairly rapid increase in the temperature of the collector was observed. This was expected because of the low heat capacity of the aluminium sheet.

3.2.4 Aluminium Collector with Drinking-straw Honeycomb The above described aluminium sheet was used with drinking-straws forming the honeycomb core. The thickness of the straw was 0.05 on the L/D ratio about 1 : 47. No appreciable results were achieved. It has been observed that an L/D ratio of 1 : 15 gives the optimum results. Unless the honeycomb is aligned precisely in a way that the sun's rays reach the collector directly, no energy can be received. This is so because by the time a ray can travel down the length of the straw through a series of reflections, most of its energy is absorbed or reflected back, as the paper has an opaque surface with non-specular reflections.

3.2.5 Aluminium Collector with Drinking Straw Honeycomb The same model as described in the previous section was used with the modification that the straws were cut to give L/D ratio of 1 : 12. A significant rate of increase in temperature was recorded with the maximum of 203°C at 2.30 p.m. At the same time the wax from the straws had decomposed and condensed on the inside of the glass cover, thus greatly reducing transmitivity. It was also observed that the straws started getting charred at about 150°C. The wax on the straws helped it to char at a lower temperature than the normal. The conclusions from this experiment were that we should:

(a) 'dewax' the straws by placing them in an incubator under controlled temperature before using them, and
(b) separate the straws from the collector by raising the entire honeycomb core by about 0.25 inch.

3.2.6 Aluminium Collector with Drinking-Straw Honeycomb (Raised) The same aluminium collector with drinking-straw honeycomb of an L/D ratio of 1 : 12 was used. The straws were tied together in bundles and raised from the plate by chalk pieces acting as pillars. A maximum of 102.5°C was attained. It was observed that the chalk pieces had become very hot (almost baked). A good and uniform packing could not be achieved due to improper handling. The experiment was discontinued after a few hours because of the impracticability of the method.

3.2.7 Aluminium Collector with Drinking-Straw Honeycomb (Raised) The model described in the above section was used with a modification. The honeycomb core was separated from the collector plate by a thin glass sheet (3 mm thickness) resting on wooden supports of thickness 0.25 inch. Thus, an effective separation of 0.7 cm existed between the honeycomb core and collector. A maximum of 165.5°C was attained but the charring of straws and wax decomposition still occurred. The bottom glass sheet cracked due to a temperature gradient which resulted in non-uniform expansion of the glass. This gap also effected greater convective losses, thus explaining the low value of the maximum temperature.

We concluded that raising the honeycomb core so as to create a gap between it and the collector results only in the decrease of effective heat gain—an undesirable feature. 'Dewaxing' the straws and impregnation with some fire-resistant chemical is necessary. A proper material for the honeycomb is required. This material should have all the desirable features of thin walls, thermally insulating, proper L/D ratio, non-charring, etc. and should not have any undesirable property, like the waxing described above.

3.2.8 Aluminium Collector with Drinking-Straw Honeycomb The same model as described in the previous sections was used. The L/D ratio of honeycomb was 1 : 12. This time the model was fixed facing south and at an inclination of 33° to the vertical. No heliostatic alignment was followed. This was tried out with the understanding and anticipation that in the ultimate design, heliostatic alignment would create unnecessary problems and could also involve complications in design. The maximum temperature achieved was 148°C. The rate of increase and decrease was very steep. This was expected since the straw took up almost no heat except in the wax decomposition and charring process.

4. Conclusions

The use of a honeycomb type flat plate collector is a very economical method of achieving high temperature.

We were able to get a maximum temperature of 203°C using a honeycomb of paper drinkings straws (L/D = 1 : 12). But the straws got charred due to the high temperature. Separating the honeycomb from the collector plate did not help as it reduced the useful heat gain.

Basically, for the honeycomb to be effective, the tubes used should have an L/D ratio of 12 : 15 and should possess low thermal conductivity a small diameter and thin walls.

This study indicates only the first stage of the design of an economical and convenient solar cooker. The next stages will involve the designing of a suitable honeycomb type flat plate collector, design of a simple heliostatic aligning mechanism, design of a pressure vessel and mechanism of transportation of steam from collector to the pressure vessel.

Evidently, a solar cooker using honeycomb flat plate collector is possible. Further research and development is required to improve the design and to reduce the cost.

Appendix A
Readings Taken on 13 December

Date: 13 December 2000
Model: Hollow mild steel collector (1 ft^2) with honeycomb of glass tubes (L/D = 9). The glass tubes rested on the collector plate.
Thermocouple used: Fe/Con
Position: Heliostatic aligning
Weather: Clear Sky

Time (IST)	*Pot. Meter Reading (mV)*	*Plate Temperature (°C)*	*Ambient Temp. (°C)*
11.52	4.50	85.0	23.0
12.01	4.70	89.5	23.0
12.15	4.90	93.0	23.0
12.30	5.05	96.0	23.0
12.45	5.15	98.0	23.5
01.00	5.20	99.0	23.5
01.15	5.25	99.7	24.0
01.30	5.20	99.0	24.0
01.45	5.12	97.5	24.0
01.52	5.14	97.8	24.0
02.00	5.10	97.0	24.5
02.15	5.00	95.0	25.0
02.30	4.90	93.5	24.5
02.45	4.72	90.0	24.0
03.00	4.51	86.0	24.0
03.15	4.39	84.0	23.0
03.30	4.05	71.5	23.0
03.45	3.96	76.0	23.0
04.00	3.73	71.5	22.0
04.15	3.60	69.0	22.0

Appendix B
Readings Taken on 19 December

Date: 19 December 2000
Model: Aluminium collector (1 ft^2) with no honeycomb.
Thermocouple used: Fe/Con
Position: Heliostatic aligning
Weather: Clear sky

Time (IST)	*Pot. Meter Reading (mV)*	*Plate Temperature (°C)*	*Ambient Temp. (°C)*
11.45	7.00	132.0	23.0

(Contd)

12.00	7.10	134.0	23.0
12.15	7.13	134.2	23.5
12.30	7.17	135.0	24.0
12.53	7.12	134.1	24.0
01.00	7.12	134.1	25.0
01.15	7.12	134.1	24.0
01.30	6.98	131.0	24.0
01.45	7.02	132.0	24.0
02.15	7.01	132.0	23.0
02.30	6.94	130.5	25.0
02.45	6.75	127.0	23.5
03.07	6.70	126.0	22.5
03.24	6.58	124.0	22.0
03.45	6.40	121.0	22.0
04.00	6.14	116.0	22.0
04.15	5.73	109.0	22.0

Appendix C
Readings Taken on 20 December

Date: 20 December 2000
Experiment Model: Aluminium collector with honeycomb of paper drinking straw (L/D = 12). The straws were resting on the collector plate.
Thermocouple used: Fe/Con
Position: Heliostatic aligning
Weather: Clear sky

Time (IST)	*Pot. Meter Reading (mV)*	*Plate Temperature (°C)*	*Ambient Temp. (°C)*
10.54	3.48	67.0	22.0
11.00	3.84	73.5	22.5
11.06	3.93	75.1	23.0
11.14	3.93	80.3	23.0
11.22	5.11	97.5	23.5
11.26	5.40	102.5	24.0
11.35	6.20	117.3	23.0
11.45	6.67	126.0	23.0
12.00	6.90	130.0	23.0
12.43	7.04	132.5	24.0
12.50	7.32	137.5	24.0
01.00	7.51	141.0	24.0
01.06	7.84	147.0	24.0
01.15	7.88	147.5	24.0
01.45	8.75	163.5	25.0
02.00	9.49	177.0	24.0
02.05	10.03	186.0	24.0
02.06	10.35	192.0	24.0

(Contd)

02.07	10.40	193.0	24.0
02.08	10.50	195.0	24.0
02.09	10.60	197.0	24.0
02.10	10.65	197.5	24.0
02.12	10.72	199.0	24.0
02.14	10.72	199.3	24.0
02.23	10.76	199.7	24.0
02.25	10.87	202.24	24.0
02.30	10.95	203.24	24.0
02.45	10.33	193.0	24.0
02.52	10.24	190.5	24.0
02.58	10.00	186.0	24.0
03.02	9.84	183.0	24.0
03.09	9.46	176.5	24.0
03.15	9.20	171.5	24.0
03.20	9.08	169.0	24.0
04.06	7.00	132.0	24.0
04.15	6.30	119.0	24.0

IV: INTERPRETIVE REPORT

A Report on Employment Trends in Selected Industries

Prepared for
The Director

by
T.K. Hazarnavis
Registrar

Sahu Institute of Technology & Science
Nagpur

10 January, 2001

Acknowledgements

I am grateful to prof. Y.K. Sawant, Placement Officer and his staff for helping me in the collection of data for this report. My thanks are also due to Sri S.C. Soni, Assistant Registrar, for organising the data and Sri M.L. Prasad, Demonstrator, for assistance in preparing illustrations and Sri. P.K. Pande, Senior Officer Assistant, for word processing the report promptly.

Abstract

This report presents the placement pattern of students in electronics, software, pharmaceutical and construction industries in 1996, 1997 and 1998. The analysis shows that there was a continuous increase of placements in software industry whereas a continuous decline in pharmaceutical and construction industries. In electronics industry, though there was a significant fall in 1997, the number of placements in 1998 remained almost the same as in the previous year.

1. Introduction

There is a growing need for people with technical skills in various spheres of science and technology. The competitive world of today requires people who are trained in specific areas. To meet this need there has been a rapid growth in the institutes which offer specialized education. This Institute, right from its inception in 1975 has been running degree programmes in Engineering and Pharmacy disciplines. The Engineering stream includes the disciplines of Electronics, Software and Construction.

Technical Institutes periodically analyse the job-opportunities that exist in different fields so that they can reorient their programmes accordingly. The present report attempts to give an overview of the employment pattern of our students in 1996, 1997 and 1998 in selected industries, namely, Electronics, Software, Pharmacy and Construction. The data for this report was collected from the records of the Institute's Admission and Placement Division. It is hoped that the analysis and conclusions drawn would help bring about a change in the institute's plan for growth. Since the report analyses the trends for only three years, it cannot suggest a definite course of action. Moreover, in the ever-changing world of technology, it is difficult to foresee the demands of the industry even two or three years hence.

Besides Introduction the report contains six sections. Section 2 gives an overview of the employment pattern, the next four analyse the trends in different industries while the last two sum up the discussion and show the results of the study and significant trends.

2. Overview of Employment Pattern

During the last three years there have been variations in the number of students employed by the industries as shown in the Table 19.1.

Table 19.1 Table Showing the Placement of Students

Industries	*Years*		
	1996	*1997*	*1998*
Electronics	210	183	180
Software	240	268	302
Pharmaceutical	85	79	58
Construction	65	70	60

The variations as indicated by the data presented above are corelatable to the demand in the employment market of different industries and the degree of competition because of expansion of particular sectors. In the discussion that follows, the trend in individual industries has been analysed.

3. Electronics

There has been a decline in the number of students employed in electronics companies. Whereas 210 students were employed in this industry in 1996 only 180 students got jobs in 1998. On interviewing the officers of a few leading companies, who came here for conducting campus interviews, it was found that they were not very happy with the course structure followed in the institute. As a result they were seeking employees from other institutes which satisfied their requirements. The courses like Power Electronics, VLSI design, Robotics and Fibre Optics, they felt, were essential in today's technology-dominated world but these are not included in the Institute's B.E. (Electronics) programme.

4. Software

There has been a growth in the number of students recruited in the software industry. This can be attributed to several reasons. Firstly, the software market is increasing exponentially during the last four to five years. Moreover, the Institute has changed its software course pattern to incorporate in-demand subjects and topics like C^{++}, Oracle and Java. The students too are aware of this demand and are increasingly opting for the software courses.

5. Pharmaceutical

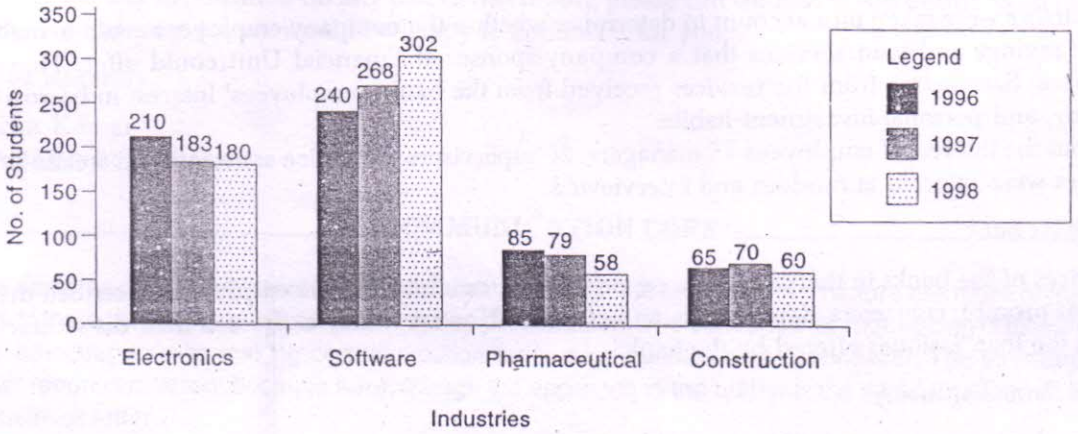
There is a steep decline in the placement of students from 85 in 1996 to only 58 in 1998. However, it is observed that, though intensive research is going on in the field of Pharmaceuticals, it is not as popular as the other fields. A smaller number of students are opting for degree Courses in pharmacy and so there is a decrease in the number of students getting jobs in this area. The Institute provides a very good programme in pharmacy, and companies are satisfied with it, but students tend to go in for more easily available lucrative jobs in the new emerging areas.

6. Construction

The scenario in the Construction employment market is as fluid as the construction business itself. A profession like construction solely depends on the state of the real estate business. When the real estate market is good, the companies flock to take up students from the construction-stream. This is noticeable in the year 1997, when the construction business was in full swing; it attracted the maximum number of students. However, the number of students who have been going in for construction as a profession is the lowest as compared to other fields. Understandably students cannot trust their future with a dicey profession like this. Thus, even if the companies want to recruit construction students, they fail to get them because of lack of interest on their part. Further, construction now-a-days is dependant on software tools and methods, and companies, therefore, prefer software engineering personnel who can later be tuned to the required construction skills.

7. Overall Pattern

The overall pattern that emerges from the above discussion is presented in the bar graph given below. The year-wise pattern of employment in different industries comes out clearly. The inferences we can draw from it are given in the conclusions.



8. Conclusions

The report has brought out a distinct pattern in the placement of students who graduate from the Institute every year. There has been shifts from one industry to another each year. The Software industry has been offering maximum number of jobs, whereas, the Pharmaceutical industry shows a distinct decline in recruitment. The other two industries do not exhibit any significant variations. There are two main reasons for this pattern. The first is the new demands of industries, making the current course structure inappropriate. The second is the shift in the interests of students. Given a choice, currently their order of preference is software, electronics, construction, pharmaceutical. A further study of the market trends, a detailed review of the existing programmes, and feedback from students can throw more light on factors affecting placement patterns and can subsequently help the Institute modify its programmes so as to make them more meaningful and relevant to the needs of industries.

V: LETTER REPORT

Apex Management Consultancy Services
Trimurthi Marg
New Delhi-110003

Reference : FUP/97

28 December 2000

Sri R.K. Kashiwal
Financial Manager
Modern Garments Manufacturing Co. Ltd.
New Pandala Industrial Area
Delhi-110049

Subject: *Finding Employees' interest in self-supported Financial Unit sponsored by the Company.*

Dear Sri Kashiwal

As desired by you in your letter No. PFC/423-K dated 20 November 2000, we conducted a sample survey for finding the interest of your employees in establishing a self-supported, company-sponsored Financial Unit. The results of this survey are given below.

Problem and Method

Several factors were taken into account to determine whether the company employees could benefit from the savings and loan services that a company-sponsored Financial Unit could offer. These factors were: Satisfaction from the services received from the banks, employees' interest in borrowing money, and personal investment habits.
To find out the interest of employees 15 managers, 20 supervisors, 10 Office assistants and 5 class IV employees were selected at random and interviewed.

Services of the Bank

The services of the banks in that area were reported to be satisfactory. The employees described the services as prompt, courteous, dependable, and efficient. However, they expressed their dis satisfaction with the loan facilities offered by the bank.

Interest in Borrowing Money

Of the employees interviewed, 93% showed keen interest in borrowing money for investment. And 75% of the employees reported that high interest rates on loans had little or no effect on their decision to borrow money.

Investment Habits

With the rising cost of living and fluctuations in the prime lending rate, it is not surprising that the employees' investment habits were found to be unstable. Only 44% of the employees have savings accounts in banks. The remaining 56% expressed willingness to invest if it would assure them a return of atleast 20%. Almost one half of them would then invest between Rs 500 and Rs 1000 per month. A break-up of the proposed monthly savings investment is shown in Table 19.2.

Table 19.2 Table Showing Proposed Investment

Monthly Investment (in Rs)	*Number of Employees*
above 2000	2
1001 to 2000	4
500 to 1000	24
below 500	20
Total	50

The number of investers and the quantum of investment would go up in due course if the investments continue to fetch the expected returns.

Recommended Action

This sample of 50 employees showed a definite interest in establishing a self-supported Financial Unit. However, before arriving at a decision, we recommend a company-wide survey to determine how many employees would support such a Unit and identify the financial services it would provide them.