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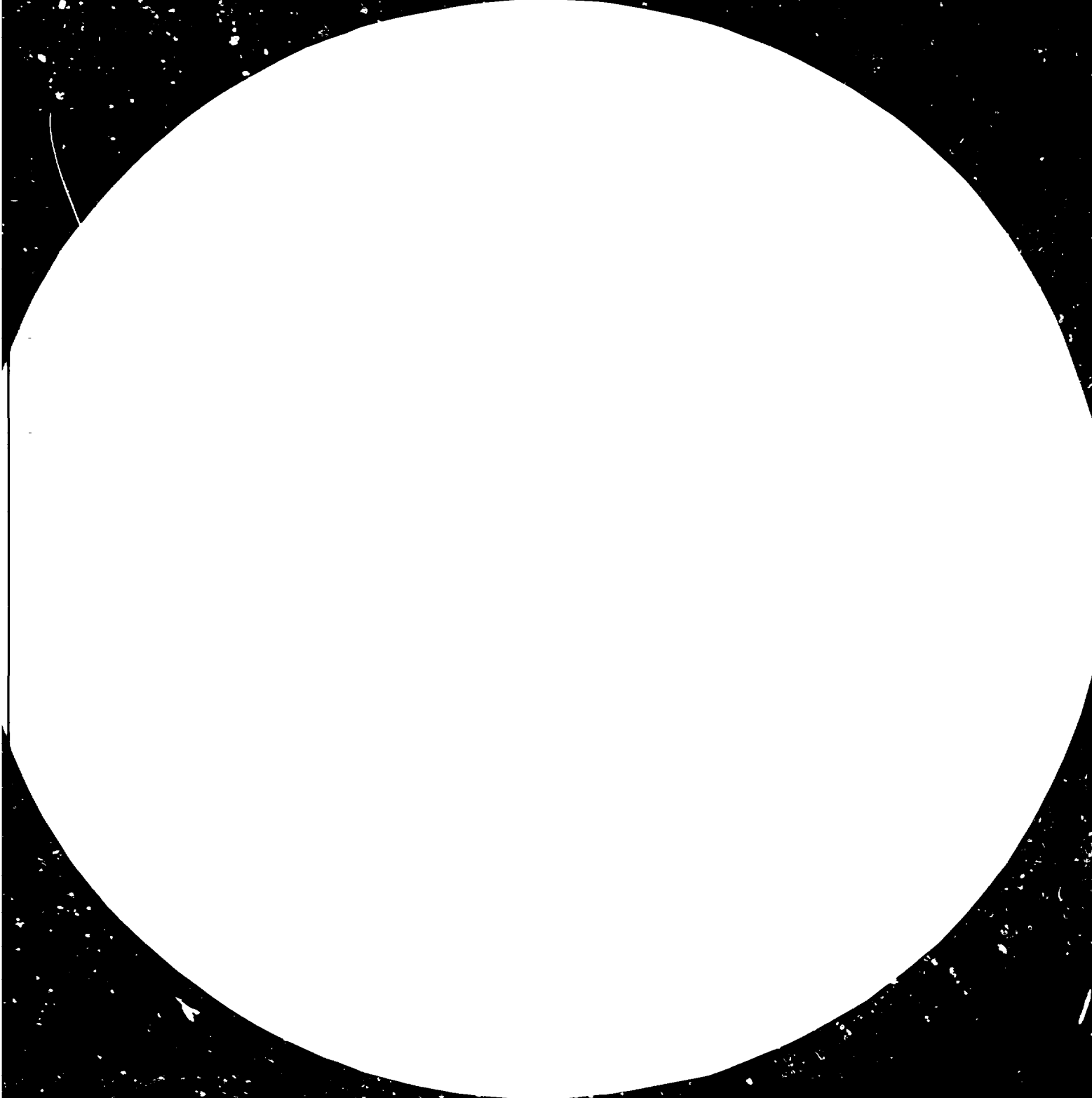
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2.8



3.2



3.6

4.0



Resolution Test Chart
1.0 1.1 1.25 1.4 1.6 1.8 2.0 2.2 2.5 2.8 3.2 3.6 4.0



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A CRITICAL LOOK INTO ASSEMBLY OF
TELEVISION RECEIVERS IN BANGLADESH*

by

B. Nasiruddin**

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** 68 Speed House, Barbican, London EC 2, Great Britain.

In this paper an attempt will be made to review some of the major problems related to assembly operations for television receivers in Bangladesh, and discuss some of the possible solutions. Many of the comments related to the television assembly can also apply to similar operations in the third world for other consumer electronic products.

1. The Market

Bangladesh, with its fairly comprehensive television broadcasting coverage, a flat terrain with an extremely high population density, makes for an ideal market for television receivers. Since television broadcasting started about fifteen years ago several attempts have been made to assemble television receivers in the country chiefly in order to bring the price within the means of the average TV viewer. But such assembly has almost always resulted in a higher unit cost of the product to the consumer, and TV receiver ownership is still very small (though it is likely to increase over the next several years at a faster pace). Though Bangladesh does have colour transmissions, it is expected that due economic considerations over 90% of the receivers will be black and white for the next ten years; all comments about television assembly therefore, relate to black and white TV receivers only.

Currently the assembly capacity in Bangladesh is for about 20,000 TV receivers a year, and it is proposed to increase this to about 60,000 units per year in the near future. These capacities however, are somewhat hypothetical in that the numbers actually produced depend upon the import licence constraints. If full proposed assembly capacity were reached in short order, there might also be problems regarding marketability of the product due to the relatively high selling price.

Currently a black and white television receiver with 50cm screen would be retailing in Bangladesh for about 200/250 dollars - this has to be related to the

average monthly earning of typical prospective purchaser of between 75 and 100 dollars per month. The CIF cost of an assembled set if imported in bulk would be in the region of about 70 to 80 dollars. As will be discussed in subsequent parts of this papers, whatever the merits of doing something locally, it is clear that if such a process prices the thing out of reach of the average buyer then the whole project becomes merely academic.

2. The case for an assembly plant

The following points are generally made in justifying local assembly of any industrial equipment; we will examine the case here for assembly of television receivers. The possible benefits in such operations are likely to be:

- a) Creation of employment
- b) Technology transfer
- c) Foreign exchange saving
- d) Overall cost benefit to consumer

Let us now examine the above four considerations

Employment: For a medium size factory (say 50,000 sets per year) the work force is likely to be about 250; an equal number probably would be employed in sales and service infrastructure directly attributable to the assembly plant; as more than half of the employment so created involve reasonably modern skills which in many cases are transferable to other similar areas, the consideration of employment is a considerable plus factor. This is so specially when related to the rather modest investment involved in setting-up such a plant.

Technology transfer: Quite much is made of possible transfer of technology which comes to the receiving country when it starts assembly of any industrial product. While there is some obvious truth in this, the actual transfer of technology involved in any meaningful sense is quite insignificant in the context of TV receivers assembly, principally because of the extremely rapid pace of development in the electronics industry.

A similar production team say twenty years ago would have had to know much more about electronics in producing simple radio sets than they have to today in producing even colour TV receivers, not to speak of black and white. Most of the assembly work would involve essentially in inter-wiring a few circuit boards - many of them with prewired integrated circuits; only deflection circuits and power supply might require handling of discrete components. Knowledge in depth of the operating principles involved - a key to technology acquisition - is no more required or likely to be needed than say of an old lady in Hongkong assembling digital watches. Indeed as techniques become more sophisticated, one needs to know less about how things work, and a good assembly supervisor must be willing to get things done following a rigid set of disciplined instructions.

The real value in technology transfer would be in developing organisational knowhow. Here a licensing agreement would be useful and inspite of the problems encountered in modifying conceptions based on high technological approach to simple layout, there would be a substantial gain to the recipient in acquiring skills that need not be related to the production of a specific item.

Another handicap in taking up assembly of high technology items is that once the assembly system is set-up, there is also very little incentive to updating the product, partly because the seller has a tied market, and also because the generally small turn over inhibits any product improvement that requires additional investment.

On the balance therefore in so far as transfer of technology is concerned there is some minor gain, and surely this could not be held as a justification for doing this type of thing specially if outweighed by disadvantages in other areas.

Foreign Exchange savings: Regrettably this is generally put up as the most compelling reason for any local operations and indeed quite often leads to, in real sense, in negative savings. In any industry whatever the nature, unless there is a genuine local value addition, the apparent foreign exchange savings could be illusory, and in the long run counter productive. In case of television receivers, if all electronic components, including the picture tube, are imported, the net foreign exchange saving can turn out to be insignificant if not negative. The reasons are:

- a) Freight saving for component kit over complete sets is small as the picture tube still accounts for most of this cost.
- b) Components tend to be purchased from licensors, eliminating price competitiveness
- c) Relatively large capital in foreign exchange is tied-up in component inventory - this is true specially when scale of operation is modest by international standards.

So the foreign exchange saving cannot be held as justification for TV receiver assembly when most electronics, including the picture tube are imported.

Cost Benefit to Consumer: Experience based on past and current operations in Bangladesh indicate there is no cost benefit to the consumer through this type of assembly operations. The real benefit accrues to the assembly operator who works under partial monopoly umbrella, and some also to the licensor who has a tied market. Not all cost increase following local assembly can be laid to higher prices and mark-ups charged - quite a bit is due to inherent high unit cost in low volume assembly with high labour content and no significant local value addition.

In comparing the end costs of assembled versus imported sets, one should note that even when all relevant taxes (as they operate now) are taken into account an imported set could sell for about 30% less than a locally assembled one.

So, when the four main justifications are analysed, it appears that a typical assembly operation as envisaged above has little to recommend as an industrial policy.

3. A possible course

Since the picture tube largely determines the foreign exchange cost of components (fob as well as freight), and also the end selling price, one should seriously look into local manufacture of these tubes in the context of TV receivers assembly.

Can a picture tube plant be justified on investment grounds?. If there is a demand of 50,000 sets/year, even after allowing import of material required for the tube manufacture, a saving in foreign exchange of nearly a million dollar per year would be possible. The plant costs charged to the tube (in addition to the direct costs) would probably make its price higher than CIF cost, but even so the end price of a completed set would be comparable to that of imported units.

There are other major gains, apart from the conventional ones of foreign exchange saving etc., if such a project were implemented. Some of these are:

- a) Innovative Technology: Obviously, a modern fully automated picture tube plant will not be practical or cost effective; the relatively low output, and the social need to use labour wherever possible, would require such a plant to be organised quite differently.

Here, the country supplying the technology, and the country putting the plant up, can get together to work out a solution which will require an innovative approach. This lateral, rather than vertical technology transfer is of much greater value to the receiving country; it could act as a catalyst in developing skills in a number of associated disciplines.

- b) Development of Skills: A picture tube plant will create employment both at skilled workers' as well as technical supervisory levels. Production steps, quality control, end product testing and handling would develop initiatives and attitudes which are unlikely in conventional assembly by rote.

- c) Future Prospects: Acquisition of precision glass fabrication combined with electronic metalware technology will provide access to the large and developing industry of display tubes of all types, including colour tubes when needed. As the basic hardware of the electronic industry move further away from the reach of all but the most advanced countries, the only way third countries can get a share of the enormous market is to get in on large discrete components - and picture tubes could make for a good start in this direction.

4. Conclusions

We have attempted to highlight in this paper some of the considerations which tend to be overlooked when setting up of prestige making assembly oriented projects, and the risk in assuming automatically that any such project could be beneficial to the country.

One needs special caution in the electronic industry sector; its high technology image can cloud the real issues and commit limited national resources in largely unproductive areas.

In case of the TV receiver, fast becoming a nonluxury item in poor countries where very few means of diversion and access to information exist, the interest of the consumer must be one of the principal criteria in deciding whether to import or assemble; and we feel that the approach suggested in this paper combines optimum advantages to the consumer and the country.

