

Ergonomics of Developing countries and Economic Development

Proceedings of the First International Conference on Ergonomics of Developing Countries by Shahnavaz, H. and Babri, M. (eds). Lulea, Centre for Ergonomics of Developing Countries, Institute of Human Work Sciences, Lulea University, 1983

Ergonomics is an inter-disciplinary subject aiming at relating people at work to various aspects of their environment in order to maximise efficiency, well-being, safety and productivity. There is, however, likely to be a conflict between these objectives, particularly the simultaneous achievement of safety of the people and productivity in the short run. There is no doubt that if safety is maximised in the short-run it will lead to more productivity in the long run. The above definition implies that some of the factors which ergonomics should take into consideration are, to use the words of H. Shahvanaz, human values, quality of life as well as quality of human capital.¹ Ergonomics, therefore, leads to a more efficient utilisation of human resources and technology. There is, however, a concern in both developed and developing countries that ergonomic aspects are hardly taken into consideration in the development process. The centre for Ergonomics of Developing Countries at the University of Lulea in Sweden had this view in mind when it organised the first international conference on Ergonomics of Developing Countries in June 1983. The aims of the conference were, inter alia, to stimulate discussion about the application of ergonomics as well as to develop a closer scientific cooperation with the universities and industries of both the developing and the developed world.² The book being reviewed is therefore a compilation of 10 papers presented at this conference on various aspects of ergonomics.

Papers by G. Olsson, H. Shahvanaz and others made an attempt, in some sections, to relate ergonomics to the concept of development. They strongly argued that ergonomics should be part and parcel of the development process because it will lead to improvement of the quality of life of the people. In the past, economic growth was considered to be synonymous with development; experiences in developing countries had, however, shown that economic growth did not necessarily lead to the improvement of the living standards of the people in general. The growth-oriented approach to development emphasises only positive aspects of production and very little attention is paid to the negative aspects of it; particularly in relation to man. The papers, therefore, implied that ergonomics should be an integral part of the development planning and policy in developing countries since increased productivity should not lead to "an impairment but an improvement of safety and health of the people".³ The papers rightly indicate that development should be viewed in a broader context which incorporates various factors including those which maximise the health of the people. In this approach, development is measured by its impact on the living standards of the people in general.

Another important aspect of ergonomics covered by the proceedings was the question of technology, particularly its transfer to the developing countries. This subject was covered by a number of papers including those by G. Olsson, A. Wisner and N. Sahbi. Olsson exposed the usefulness of ergonomics in making decisions about the choice of technology. He argued that the choice of technology should partly be based on the country's level of mechanisation. The paper by Wisner related ergonomics to

questions of technological transfer. He mentioned that human aspects are sometimes not taken into consideration when transferring technology from one country to another. Some countries simply transplanted factories from other countries without taking cognizance of the fact that the environment of the recipient country might require a modification of the technology used. He warned that uncritical transfer of technology might have adverse effects on the economic development of the receiving country since it may lead to low production, poor quality of goods produced as well as a higher depreciation of the machinery. A paper by Sahbi gave highlights on his research on "Anthropometric Measurements on Work Analysis Related to Modern Technology in the Tunisian Phosphate Mines". The paper stated that the type of equipment used in these mines was not at all suited to the type of mining in the country hence resulting in rapid depreciation of machines as well as increased costs of their maintenance. On the question of technology, the conference made a recommendation that the developing countries should be more critical about the kind of technology they received. These countries are expected to plan with a view to influencing the design of technology so that it could suit their requirements. The above statement overlooks the fact that most of the developing countries lack scientific capacities, hence they are not capable of being very critical about the kind of technology they receive.⁴ The improvement of the level of science and technology seems to be the crucial issue. It is a major factor influencing the capability of developing countries in their choice of technology. This implies that an attempt should be made to improve the level of science and technology in these countries. More emphasis should be put on scientific education so that the level of literacy in science can increase. This will not only enhance ergonomic aspects of development, but will also make the attainment of self-reliance and other goals of development much easier. The other important point is that the multi-national companies control most of the technology in developing countries. In most cases the technology they use is not quite appropriate to the conditions of developing countries. The multinational drug companies, for instance, use technology which requires an expenditure of about 3.4% on labour⁵ even though labour is more abundant than Capital in developing countries. These companies cannot easily agree to modify their technology to suit local conditions taking into consideration their interests and strength of bargaining. In fact, the developing countries have very weak financial, legal and labour institutions necessary to monitor and control the multinationals. This makes it quite difficult for them to bargain. Transfer of technology also occurs when aid is given to the developing countries. The donor countries normally make aid tied in order to influence the recipient countries to purchase goods from them. These goods may be inappropriate for the developing countries. In the light of the above, it can be argued that in order for the developing countries to succeed in influencing the type of technology they receive, there is need for a reform in many aspects of the economies of these countries including those in the field of international resource transfers.

The other aspect covered by the papers was the impact of ergonomics on the health of the people. The subject was touched by many papers including those by A.R. Sen, I Kuorinka and B.T. Davies. They indicated that ergonomics ensures that the environment as well as tools and machinery are made suitable to the health of people so that unnecessary stress can be avoided. The discussion also touched on the impact of harsh climatic conditions and diseases on the ability to perform work. I Kuorinka, for instance, discussed how an adverse thermal environment can hinder productivity. He suggested that ways of decreasing thermal loads should be explored in developing countries. New designs of buildings should be encouraged so as to reduce the problem of high thermal loads. On the issue of tropical diseases, the authors saw the need to take them into consideration when planning for safety because they have a negative

impact on physical performance. These diseases, notably malaria and schistosomiasis, reduce psychophysiological capacity which in turn leads to poor physical performance and productivity. The authors suggested that when planning for safety there is a need to take into consideration the effects of these diseases. On the whole, the discussion should have added to their papers the information on the kinds of diseases or impairments likely to be caused by poor ergonomic management. However, the view that ergonomics should be promoted in developing countries so as to minimise diseases or impairments is indeed well supported. In most developing countries, the design of work systems only marginally takes into consideration safety measures. Ergonomic management should, therefore, not be limited to the industrial sector only but it should be extended to other sectors as well, such as agriculture.

There was also a discussion on industrial development and strategies. K. Ostron made an attempt to relate ergonomics to industrial development strategies whereas S. Ohlund discussed the role of the Swedish bodies in promoting industrial development of the Third World countries. K. Ostron rightly mentioned that ergonomics was part and parcel of production activities and that it was influenced a great deal by industrial development strategies. He summarised the industrial development strategies of some of the developing countries. However, he did not say much about the relationship of these strategies to ergonomic development. S. Ohlund only discussed the contribution of the Swedish Government in the industrial development of the Third World. He did not sufficiently relate the discussion to ergonomics of developing countries.

The view of some scholars, that ergonomics is not a luxury for the developing countries is supported here. Those who view development in a narrow fashion are likely not to agree because they are more concerned with growth, irrespective of its content. They argue that the developing countries should do away with ergonomics because of their concern of more urgent problems such as food shortage. They do not realise that ergonomics has a major contribution in the solution of these problems. For example, it is likely to influence countries to adopt efficient means of production of goods. The conference also recommended that this subject should be included in syllabuses of the institutions of developing countries. Indeed such a step in the educational field will contribute in making development more meaningful.

Footnotes

1. Shahnavaz, H. "Ergonomics of Developing Countries - A Conceptual Approach" Proceedings of the First International Conference on Ergonomics of Developing Countries by H. Shahnavaz and M. Babri (eds.) Lulea, Centre of Ergonomics of Developing Countries, 1983.
2. Shahnavaz, H. and Babri, M. (eds.) Proceedings of the First International Conference on Ergonomics of Developing Countries, Lulea, Centre of Ergonomics of Developing Countries, 1983.
3. Olsson, G. "The Role of Ergonomics in Practical Work System" Ergonomics of Developing Countries. Ibid p.51.
4. Singer, W. "Transfer of Technology", Leading Issues in Economic Development by Gerald Meier. New York Oxford University Press, 1976, p. 399.

5. Muller, R. "The Multinational Corporation and the Underdevelopment of the Third World" *The Political Economy of Development and Underdevelopment* by C.K. Wilber, New York, Random House, 1973, p.132.
6. Ibid, pp.125-126.

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