

Application of Manpower Requirement Approach to Educational Planning in Developing Countries

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ABSTRACT

Manpower requirement approach to educational planning gained widespread use in the 1960s and 1970s to project the manpower needs of the newly independent African countries after long period of European domination, oppression and exploitation. There was enthusiasm among these countries to develop indigenous manpower to develop their own economies. Based on this approach education systems are designed to respond to the quantity of manpower and skills required by each sector of the country's economy. This paper shows the stages employed by educational planners following this methodology, its application in selected developing countries, the problems it faces and appropriate recommendations. The paper was exclusively developed on the account of existing secondary sources on the dominant theme; namely books, articles, legal policy statements among others.

INTRODUCTION

Educational planning is the application of a rational, systematic analysis to the process of educational development with the aim of making education more effective and efficient in responding to the needs and the goals of its students and society^[1]. It's thus a future and goal oriented activity that employs different methods or approaches to achieve its primary purpose. Three approaches are widely accepted for use in educational planning process. These are: Manpower approach, Social demand approach and Cost benefit analysis or rate of return analysis.

Economic growth is the mainspring of a country's overall development and should be primarily considered in allocating the scarce resources. It however, requires not only physical resources and facilities but also human resources to organize and use the former (ibid). Educated or skilled manpower is thus a prerequisite to economic development and a shortage can be a serious setback to a country's efforts. To avoid shortages or surpluses, planners have sought to identify future requirements of skilled manpower and to design education systems that produce necessary workforce.

The term "man power requirements approach" implies the use of statistical inputs from economic sources in order to establish present and future need for manpower by educational and occupational categories. This data is then compared with the output expected from the supply of manpower to the labor market. The difference indicates either a surplus, or need to cut back on education or training in selected subjects or a deficiency requiring further investment in relevant areas of manpower development.

Origin and Development

Manpower requirement approach or model first came into widespread use in the Organization for Economic Cooperation and Development (OECD's) Mediterranean regional project (MRP) in the early 1960's. Since then, manpower forecasting became a common practice to a large number of economic statisticians, social researchers and educators with claims that indicated an ability to determine the manpower requirements of each occupational area for a particular city, region or country. Such forecasts were and are still used to influence labor and educational policies at national and or regional levels and played a major role in justifying expenditures.

Objectives of Manpower Approach

The main objective of manpower approach is to avoid shortages in manpower in the labour market, considered as a setback

to economic development. It assumes that objective manpower requirements exist and in order to meet them, only training the corresponding number of people is needed. It thus aims at forecasting an economy's manpower requirements. The education system output is intended to meet future manpower needs. Abbott states that manpower creates wide gaps and imbalances in the output pattern of the education sector; putting to doubt its viability as an approach to planning an effective education system^[2]. He however agrees that manpower gives stakeholders in the education sector a useful guidance on how to keep labour force educational qualifications balanced to alleviate future crises. Nevertheless, this approach unreliably forecasts manpower requirements.

As an approach used in educational planning it aims to:-

- i. Estimate the required number of graduates by education level in the economy.
- ii. Estimate the number of teachers at different levels and types of education.
- iii. Asses the existing curriculum and give recommendations for change.

Stages in Manpower Approach

While using this approach, the planner attempts to answer the following questions:-

- i. How many jobs will be vacant in the economy by the end of the target year?
- ii. What kind of skills will be required in the economy by the end of the target year?
- iii. How many students are required in the education system in order to produce the required number of human resources to fill the vacancies available by the end of the target year^[3]?

These give rise to the following steps:-

- i. List the number of workers by sector or industry, education and occupational class for the base year.
- ii. Project the size of the total labour force required by the end of target year. This can be determined by population projections based on gender, age distribution in the population in order to determine participation rates within the labour market.

Participation rates of labour are estimated based on the past trends and anticipated changes in the socio-economic environments, which include increased participation of married women in the labour market, liberalization of retirement benefits.

- iii. Forecast total employment per sector or industry. Determine the size of the labour force required in each sector within the set period.
- iv. Allocate employment by industry among the different categories of occupations such as engineering, Agriculture, Teaching, Nursing, Legal profession, Medics among others.
- v. Determine the type of Education in terms of curriculum content and structure required to develop the desired manpower.
- vi. Estimate the future labour supply by type of Education. This involves analysis of the current labour supply and demand in future in order to use the difference to project future labour force.
- vii. Compute the required change in annual outflow internally and externally through retirements, possible occupational mobility and deaths.
- viii. Determine size of any migrant labour groups, and their origin by region i.e. expatriates, missionaries, volunteers, foreign universities.
- ix. Compute the required enrolments in each type of education to ensure a balance of entrants and outflow of the manpower annually to guard against shortfalls and surpluses in manpower supply.

Man Power Projection Methods

Rules of the thumb

It is also called the historical approach. It involves analyzing data on past trends to quantify the relationship between aggregate and per capita output; and the pattern of manpower usage. The presence of a stable relationship permits the projection of such trends into the future. This method assumes that high level manpower should grow twice as fast as the target rate of economic growth and the intermediate manpower should grow three times as fast. However, these rules are not based on any evidence or analysis but judgment yet the future is unlikely to be a simple extension of the past. Also there is a difference in the content of the past data and of future projects.

Employer's estimates

This involves collection of information from various firms or sectors as to how they expect output and employment to behave

over the period of forecast. It's easier to use this method for some occupations where the government is the major employer. These estimates are however unreliable due to:-

Lack of guidance on assumptions employers should make about price and wage levels, demand for their products or their own show of market and hence end up making mutually inconsistent assumptions. Indeed most firms are more familiar with adapting their input requirements to actual or expected supply conditions rather than to estimating changes in the supply conditions themselves. Individual employers thus find it difficult just like governments to make accurate forecasts^[4]. Information derived from surveys of employers throws some light on the assumptions and techniques of forecasting.

Structural approach

This approach compares the pattern displayed by the most advanced sector or economies. It can be divided into international comparisons and industrial comparisons.

The international comparisons assume that to achieve faster economic growth, less developed countries should copy the structures of countries with higher national income (ibid). It's based on the idea that some countries have certain manpower growth paths in common and that to achieve a higher level of output, a developing country must increase the number of qualified workers employed until the proportion resembles that of a more advanced country. However this is dependent on the following conditions:-

- i. Future pattern of demand in the poor country would need to correspond to that at present existing in the advanced country.
- ii. It would be necessary for input combinations to be determined in the same way.
- iii. It would be necessary to have a rate of capital accumulation with respect to income similar for two countries.
- iv. It would be necessary to have knowledge of and access to technological processes developing in the same way.
- v. It would be necessary to have either foreign trade or both economies have access to the markets for relative prices vary in the same way in each of the economies as income increases.

In industrial comparisons, the assumption is that the less developed sectors in future will tend to reproduce the pattern currently exhibited by the most advanced firms or industries. However, this results in incomplete coverage because:

- i. It does not help predict the future behavior of the best firms themselves.
- ii. It does not make allowance for entry of new firms.
- iii. It's not possible to precisely tell how fast the existing firms will grow.
- iv. It assumes that all firms have equal opportunities.

Manpower: population ratios

It concentrates on the ratio between one type of manpower and a particular population parameter. It's mostly used in areas where the educational qualification of the required manpower are known and mostly controlled by the governments. This may include teachers, doctors, policemen and military.

Forecasts for the demand for teachers based on teacher: pupil ratios and forecasts for doctors based on doctor: population ratios rely on demographic forecasts and the staffing norms. This approach faces the following challenges:-

- i. Inaccurate demographic forecasts especially in developing countries.
- ii. It's compounded by many special factors for example forecasts of school population depend on wastage, repetition, the proportion of the age group choosing to enroll on voluntary education and other factors that must be analyzed separately, although information is often scanty and inaccurate.
- iii. Technological change may cause substitution of capital for labor or one kind of labor for another.
- iv. Changes in relative prices or wages may also cause substitution and may change the balance between closely related types of manpower.

Applications of Manpower Requirement Approach to Educational Planning in Selected Developing Countries

In Kenya, the colonial government in collaboration with the missionaries offered Africans Christian teachings and education to prepare them for work in the racially differentiated socio-economic order. The Phelps Stocks Commission Report of 1925 and the resultant education policy emphasized vocationalisation of education for all Africans and education for improving village conditions. Orr J. R, as quoted in says that Government or mission schools were established in each district Elementary education... together with workshops for industrial training. The object of the workshops was to enable them to introduce improved housing in the villages and to have some means of earning their living in townships. The system provided many boys vocational training as

medical apprentices, carpenters, builders, tailors among others. Through apprenticeship and indenture, the missionaries trained farm pupils in agricultural skills. Carpentry shops, quarries and hospitals were erected outside some mission stations where pupils were trained and finally became employed.

The continued denial of Africans higher education was disadvantageous in that in the dying years of colonial rule, there were desperate attempts by the colonial government to educate and train personnel ready to take up decision making roles in the nation. Ad hoc programmes of educational expansion and provision were engineered to relieve the manpower needs in the formal sector of the economy and the public administration ^[5]. The policy of accelerated Africanization in which assumption was made that where expatriates occupied a high proportion of skilled posts it was possible to replace them by producing a corresponding number of citizens with matching qualifications. Thus during this time, academic education directly led to wage and salaried employment. Experience was acquired on the job especially in administration. Technicians went through apprenticeship or vocational training depending on the urgency of replacement of the expatriate. Within a short time after independence, the employment market in Kenya was almost completely Africanized except for a number of technical posts and noticeable progress made in other sectors of the economy. In almost every case the replacement was virtually smooth. Vocational education was thus all about getting a job when opportunity is available.

At independence, the National Education report of 1964/65 and the change of curriculum was made when manpower needs were at its peak to replace the massive exodus of British civil servants. This paved way for Kenyanization of the civil service, administration and the economy ^[6]. The curriculum laid emphasis on formal non-technical education to facilitate direct employment. Opportunities existed as long as one had a certificate of education at primary or secondary level.

The Koech Report of 1999 recommended the increase of teacher's salary to arrest the teacher's departure to lucrative jobs in the private sector and in the civil service. This was an effort to maintain manpower within the teaching profession. Since then, teachers have had to call strikes through their unions to demand for better pay.

The Bessey report of 1972 recommended the broadening of primary and secondary school curriculum to be adaptable and resourceful. These Commissions thus emphasized the human capital theory linking the products of educational system to the manpower needs in the modern sector economy and suggested an increase in the efforts of schools to orient students towards needed careers. Indeed the Development Plan of the 1960-1970 emphasized organizing the educational system to meet the manpower needs of the country and high priority was given to the expansion and diversification of the secondary school system.

Expansion in education was however not related by a similar expansion in employment opportunities. Thus there was an overproduction of school learners in relation to the available jobs in Kenya. The presidential working party on the second university of 1981 which drafted the 8-4-4 system of education hoped to provide practical oriented curriculum that would offer a wide range of employment opportunities. It put emphasis on technical and vocational education, thus ensuring that students graduating at every level have some scientific and practical knowledge that can be utilized for self-employment, salaried employment or further training. (Ibid).

The sessional paper number 1 of 2005 states that for a country to achieve the desired economic growth targets and social development, a high priority needs to be placed on the development of human capital through education and training by promoting technical and vocational training as well as the teaching of sciences and information technology ^[7]. While echoing this, the Kenya vision 2030 has proposed the following to be addressed in the education system:-

- i. Expansion of university education. The government has increased the number of public universities namely University of Nairobi, Moi, Kenyatta, Egerton, Maseno, Jomo Kenyatta University of Agriculture and Technology and Masinde Muliro University of Science and Technology as well as encouraging the private sector to offer university education. These include Catholic University of East Africa, Daystar, Baraton, Kenya Methodist University, and Strathmore University among many others. The existing universities are being encouraged to expand their capacities to accommodate more students. Innovations such as Distance Open Learning, School-based Programmes and Privately Sponsored Students' Programme (PSSP) are common in public universities.
- ii. The government has increased the number of vocational training colleges. Village and Youth Polytechnics have been upgraded to Technical, Vocational Education and Training (TVET) and National Polytechnics. Plans to provide for access to higher education and training TVET graduates up to degree level have been actualized.
- iii. The Higher Education Loans Board (HELB) is offering loans to students in both public and private universities. Plans have also been finalized to extent the loans to students taking Diploma studies in the middle level colleges.
- iv. The secondary school curriculum has been restructured to accommodate new technology. Computer studies is an added subject, computers are being supplied to secondary schools and capacity building to impart ICT skills in serving teachers and primary school teacher training will include ICT component. Use of scientific calculators is now allowed in mathematics.
- v. The government continues to support affirmative action to enhance gender equity in access to university education

and hence in employment. This also goes a long way in achieving the Millennium Development Goals of promoting gender equality and empowering women. Indeed, even the New Constitution of Kenya accords adequate and equal opportunities for appointment, training and advancement at all levels of the public service to men and women^[8].

Today, Kenya's educational goals are geared towards the realization of the country's development plan vision 2030 that aims at attaining among others the industrialized status^[9]. Consequently, the focus is on Science, Technology, Engineering and Mathematics STEM to develop the much needed manpower in response to the vision demands. Wanjala states that Kenya roughly requires 30,000 technologists, 90,000 technicians and over 400,000 craftsmen to attain the mega projects under the Vision 2030^[10]. This has ignited the government's desire to include Technical, Vocational Education and Training (TVET) as a key component of the education system. The country is also engaged in a total overhaul of the 8-4-4 system of education and replaces it with the 2-6-3-3 characterized by emphasis on formative years of learning; a more skills-based curriculum and subject specialization at senior secondary education to create a specialized and more competent workforce in the areas of individual talent, skills and interests (ibid).

In Nepal, secondary education stressed manpower requirements and preparation for higher education. National Development goals were emphasized through the curriculum. Due to shortage of teachers, by 1976 the Institute of Education, part of the Tribhuvan University organized distance learning programmes for prospective teachers. Developments in telecommunications were geared towards providing new educational options in order to respond to the manpower needs by the country.

In Cambodia, manpower supply is lower than the demand by industry. Thus there's overreliance on the foreign workers in the production process of the country. This has put pressure on the government to develop policies and plans to modify the economic policy from a socialist-planned economy to a more liberal market-oriented and economic relation with its neighboring countries. The Ministry of Education, Youth and Sports was charged with the responsibility to provide the overall direction and guidance for skills training and development. It's thus established and continually reviews an educational plan to establish an operational mechanism for human resource development which plays a dynamic and strategic role in the newly developing market-oriented economy in line with the changing needs of the society.

In Zimbabwe, the Structural Adjustment Programmes (SAPs) provided a departure from internal market focused production to more export-oriented industries. Thus demand for manpower is higher in export sectors than in the less efficient domestic sectors. The government through the Ministry of Education encourages institutions to provide more outreach services locally and to specialize in those areas that service the local area.

Therefore, the vocational training centers in Zimbabwe provide short term courses to upgrade skills of employees already in industry to assist them obtain skilled workers status. The Post and Telecommunications Corporation has established two training centers in Belvedere (Harare) and near Gweru, which primarily provide training for its own personnel. Zimbabwe College of Forestry also offers certificate and Diploma level courses and short refresher courses for employees in the industry.

In Botswana, the government spends more than 30% of public resources on education, according to the sector high priority. This is because it's hoped that an informed and educated society would turn to a productive, prosperous and innovative society. Major emphasis is to incorporate science and technology in the system.

After 10 years of guaranteed primary education, half of the school population proceeds to secondary education for two years. After leaving school, students attend one of the six technical colleges in the country, or take vocational training courses in teaching or nursing. The best students enter the University of Botswana, Botswana College of Agriculture and the Botswana Accountancy College in Gaborone. Many other students join the numerous private tertiary education colleges around the country.

Problems Facing Manpower Demand in Developing Countries

The application of manpower approach to education planning faces various setbacks which makes it unrealistic. This is attributed to the following factors:

- i. **High demand for education:** The demand for formal education is far beyond the government supply. This makes it difficult to plan for manpower requirements. This is exacerbated by the increase in youth population and it's now estimated that Kenyans spend 80 billion shillings annually in foreign universities.
- ii. **Unemployment levels are too high:** This is even set to rise unless there are practical measures adopted to solve the crisis. If manpower planning is to be used it raises a question of whether education and training should continue in the wake of the crisis. However, unemployment can be tackled if the education and training skills acquired by graduates match the job descriptions or the job market. Also reducing the cost of investment and access to credit may help solve the problem by enhancing self-employment and diversification.
- iii. **Retrenchment:** Laying off some categories of workers may mean that these jobs are not desirable in the economy. Whether they will be relevant in the future is unknown. Planners are therefore not able to decide whether to plan for them or not.

- iv. **HIV/AIDS:** The disease is killing many Kenyan employees including potential employees (i.e. students and job seekers). This makes it difficult to project the manpower supply.
- v. **Reliance on expatriates:** and migrant labour from foreign countries.
- vi. **Huge earning disparities:** There exist greater disparities in earnings among the different categories of workers (professions). Though the teacher's salaries constitutes one of the largest wage bills on the government, individual teacher earn peanuts compared to other civil servants and other employees in the private sector. Many teachers continue leaving the job for greener pastures, adding to the already acute teacher shortage. This puts planners in a dilemma. How best do we pay a teacher to enhance job satisfaction and achieve quality services? This imbalance also applies to other sectors thus compounding the problem to man power planning.
- vii. **Lack of labour market information flow to the education system:** This deficiency means inappropriate skills, and knowledge are indicated into learners due to uninformed curriculum
- viii. **Technological advancements:** These changes, for instance computer systems application, alter the skill demand and number of workers needed in a country.
- ix. **Raising age of retirement:** increases manpower supply consequently reducing demand for labour at entry age.

Advantages of Manpower Requirement Approach

Chiuri and Kiumi support the use of manpower requirement approach because of the following:

- i. It gives an important guidance on the evolution of the educational qualifications of the labour force. This enables planners to convert occupational pyramids of labour force into educational structure indicating the level of formal educational requirement in each category of occupation.
- ii. It aims at self-sufficiency in manpower resources which is essential for manpower requirement; we plan for the whole country and not particular regions.
- iii. It enables educational planners to examine the gaps and imbalances in the education output pattern against the available jobs in the labour market. Therefore, planners are able to identify where there's either overproduction or underproduction of Labour force. This enables planners to divert allocation of resources from educational programmes whose skills are in low demand to those whose skills are in short supply in the labour market.
- iv. It enables planners to evaluate whether and how the education system is meeting the requirements of trained personnel in the development of different sectors of the economy and also identifies changes to be introduced in the system so as to fill any required gap.
- v. The approach offers a useful guide on the required changes in the educational system and especially the curriculum so as to avoid the production of residual and irrelevant labour force.

Disadvantages of Manpower Requirement Approach

Based on the following reasons Chiuri and Kiumi are skeptical about the use of manpower demand approach.

- i. It tends to confine itself to the high level manpower needed in the modern sector of the economy ignoring the educational requirement of the unskilled and semi-skilled labour force, which forms the bulk of the labour force. This category of labour force should however not be neglected as they are mostly employed in the informal sector which is the largest and fastest growing sector in third world countries. Tanzania for example decided in the early 1960's to stabilize its primary school participation rate at about 50 per cent in order to give temporary priority to levels of education directly tied to economic manpower needs.
- ii. It tends to limit education to strictly producing manpower while ignoring optimum resource allocation, cost benefit analysis and social aspects of education. Education is not only an investment commodity but also a consumption service. People may pursue education for non-financial or employment gain for example to enhance their social status or ability to converse in a foreign language.
- iii. It ignores the consideration of costs involved or the capacity of their country to finance its labour development. For instance the 8-4-4 system in Kenya intended to impart technical and vocational skills that could make learners at all levels self-reliant/employed, acquire salaried employment or further training. The government laid the burden of constructing and putting up the extra classrooms and workshops on the parents and Members of Parliament in their constituencies. Harambee meetings were held everywhere to raise funds with some people donating willingly and others being made to pay by coercion and undue pressure. Sifuna was quoted in argues that "the exercise is still in progress with different districts recording varying degrees of success ^[11]. Less economically productive districts in particular those in semi-arid and arid areas have lagged behind in fundraising. The situation is not likely to change since construction of classrooms is only one of the basic facilities and not many schools have been able to go further to provide additional facilities such as workshops".

- iv. The approach relies on existing labour market rather than on the optimal use of the available human resource. It may thus over estimate labour needs in a situation where the available labour is not being utilized optimally.
- v. The approach relies on borrowed employment classification and educational requirements for each job category from the Western world. These classifications may not necessarily reflect the situation in the developing nations. For instance the educational qualification of a teacher, doctor or engineer in the developed world may not be the same as in the developing countries. Also the manpower, population ratios for various countries may differ.

These shortcomings support the conclusion by Educare which states that quantitative estimates of educational requirements based solely on labor force demand ten to fifteen years ahead would underestimate a country's over-all educational needs [12].

RECOMMENDATIONS

To overcome the inherent weaknesses of manpower requirement approach to educational planning, this paper recommends:

- Due to high demand for education, manpower planners should consider equity, access, poverty as well as production efficiency, economic efficiency and technical efficiency. Education and training should be general rather than skill specific.
- To reduce unemployment, closer links should be established between industry and educational institutions. This should be broader than the current student placement (internship). Employers need be more actively involved in curriculum advisory committees and teaching staff need to gain regular experience of the working conditions in the industries for which they are preparing their students.
- Need to have a balanced understanding of the realities of labour market demand and government obligations to respect social expectations.
- Manpower planners should be firmly grounded in analytical techniques and data collection methods to be able to assemble, store, retrieve relevant data, analyze the contents to determine significance, and interpret the results for appropriate policy formulation.
- Supply of labour market information such as unfilled vacancies, unemployment, expatriates, students going abroad, applications for training places in relation to the number of places, the impact of training on earnings overtime.
- Improve the facilities, relevance and standards of skills training for indigenous trainees; providing comprehensive career guidance to new entrants in the workforce and making employers aware of the long term benefits to productivity of engaging indigenous workforce.
- Impart relevant skills, knowledge and attitudes in the learners to have practical ability to work in a rapidly changing society with information communication and technology and avert the negative effects of HIV/AIDS.
- Motivate workers by offering satisfactory payments and minimizing wage gaps between different occupations. Also make the job more challenging to encourage lifelong learning.

CONCLUSION

In view of the above discussion, it would be feasible to apply manpower approach to educational planning with precaution. Educational planning should not only consider the numerical estimates of manpower needs but also the patterns of manpower utilization and its sector demand in order to ensure efficient and optimum development and use of manpower. Also, to overcome the inherent weakness of this approach, other approaches such as cost benefit analysis and social demand approach should be used to supplement each other to ensure provision of education to all citizens which will indeed meet the aspirations, goals and objectives of the country's economic, social and political development.

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