

TOWARDS AN EQUITABLE DEVELOPMENT OF TELECOMMUNICATIONS SERVICES IN NIGERIA

by

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ABSTRACT

Present and future equitable development of telecommunications services calls for an immediate development of an indigenous telecommunications technology capability in order to effectively and efficiently utilize the services provided by the country's presently imported telecommunications systems while at the same time developing and manufacturing self-reliant telecommunications equipment suited to the peculiar needs of the country. This paper proposes the setting up of an autonomous communications agency for an effective control of the services development; the adoption of a graded telecommunications services delivery policy which emphasizes rural services development while at the same time allowing for the divergent levels of expectations, sophistication and thousand knowledge in the society; and an accelerated development of certain national special services.

1. INTRODUCTION

Telecommunications services such as telephones, television, radio, telex, postal services and so on, are a vital nucleus for the development of the other sectors of the economy of any nation, developing or developed. They regulate, among other things, the provision of an infrastructure for the operation of the nation's industrialized and diversified economy that depends on the exchange of vital information among several parties; they regulate even the provision of efficient distribution of goods such as food, clothing and essential services including medical, educational and legal needs. In many developed countries, telecommunications services are, in some cases, being substituted for travel (1).

The state of telecommunications services in Nigeria has, undoubtedly, been a subject of serious concern during the past decade, being fraught, among other things, with problems of reliability and efficiency, overwhelming unsatisfied customer demand and so on. The country's rapid growing economy has generated a sharp rise in the public demand for these services, thereby compounding the problems of their provision. All these have resulted in effective and efficient telecommunications services, more often than not, eluding us. It is, therefore, not surprising that the Federal Military Government embarked,

during its 3rd National Development Plan 1975-80, on a massive expansion and modernization of the existing telecommunications systems in the country in order to provide telecommunications services comparable to those obtainable in the industrialized or developed countries [2],[3]. Oddly enough, the present telecommunications development policy is geared towards providing telecommunications services primarily to those who can afford them, in other words, towards considering the services as an urban commodity for the industry, government and the relatively affluent few.

In order that telecommunications services can play their vital role in the development of any nation, they must be equitably developed. An equitable development of telecommunications services involves more than mere provision of services to the society, and much more than gearing these services to a section of the country. The society concerned should enjoy an effective and useful utilization of these services. In other words, the availability and accessibility, cost-effectiveness, reliability, technology-appropriateness and efficiency of these services should at least, be guaranteed. Implicit in all this is the existence of sufficient infrastructure in terms of indigenous manpower not only for forecasting, planning and administering the services but also for developing

self-reliant telecommunications technology suited to the social, economic and political needs of the society as a whole. Equitable development of telecommunications services is very urgently needed in developing countries such as Nigeria, to reduce to manageable proportions those very problems in the areas of public health and medical services, education and transportation and others which label a nation as developing rather than developed. This paper presents a care for an equitable development of telecommunications services in Nigeria. It argues that the urgent development of a local "baseline" telecommunication technology, establishment of an effective national telecommunications technology development "watchdog", and the choice of appropriate services from the maze of services offered by the currently imported telecommunications systems under the 3rd National Development Programme, would go a long way to effecting an equitable development of these services in the country.

2. BASELINE TECHNOLOGY DEVELOPMENT

The main problem in an equitable development of telecommunications services in Nigeria has been the absence of "baseline telecommunications technology", that is the absence of any developed indigenous telecommunications technology capability. Although this situation is to a good extent, true for most developing countries, the Nigerian situation is unique because its telecommunications development policy stresses leap-frogging through the frontiers of technology by wholesale importation of complex and altar-modern telecommunications systems, without first encouraging indigenous technological growth, as plausible solutions to the country's national and international telecommunications development problem. In our bid to modernize the existing telecommunications systems, we have not been patient enough or given ourselves time enough to develop the necessary baseline infrastructure on which a sustained advancement or utilization of new technologies can be based. The absence of this baseline preparedness robs the country of an effective participation in the complementary planning, engineering

production and maintenance, and adaptation of new technologies for our local needs. In effect, our self reliance in telecommunications development's stifled. As long as this situation continues, Nigeria will continue to find it necessary to avail itself of imported and "imposed" technology, the implementation of which depends largely on alien expertise. Since the development of such technology is invariably based on models in the industrialized world, the efficient and cost-effective utilization of the technology for our peculiar needs would therefore be an illusion, making an equitable development of telecommunications services difficult to achieve. But it is often argued that telecommunications technology is like an "international language", and since the technology has been equitably applied to developed countries, it should be equally applicable to a developing country such as Nigeria. While there may be little disagreement about the universal nature of telecommunications technology, there is little doubt that the adoption and adaptation of the systems or machines of telecommunications technology is solely a "localized language", and the absence of the baseline infrastructure makes any new technology an "imposed" one. Historically imposed technologies are always beset with difficulties of effective and efficient implementation as can be borne out by looking at our electricity supply, our airways, our agricultural mechanization schemes and so on. This is in sharp contrast to the situation in the developed countries where these technologies are indigenous. It is therefore imperative that Nigeria adopts a pragmatic self-sustaining telecommunications technology development policy which places top priority on indigenous development effort in order to make the country at least self-reliant in some area of telecommunication technology. There is no reason whatever, for example, why some simple system components like the solid state power amplifiers, modulators and converters for the Nigerian aerostat borne systems could not be designed and manufactured in the country.

The required indigenous technology development could be greatly fostered by:

A. Encouraging our local Universities and other research, and development organizations with adequate funding for telecommunications research towards developing cheaper components and systems more akin to our environment. The Federal Government and the higher institutions should collaborate closely with a view to reducing sufficient graduates with adequate and proper industrial exposure needed for the high level technical and managerial functions required to support modern telecommunications development programmers, and in carrying our joint research in telecommunications technology. Adequate student training and proper engineering exposure would involve among other things constant review of engineering curricula in the institutions with a view to meeting changing needs and national objectives, and infusing self-confidence in the students through actual participation in basic engineering practice during their engineering education. In this respect the development of Centres of Work Experience recommended by UNESCO [4] would be of immense help. Establishing the said close link would further assist: in the optimal utilization of the available manpower and telecommunications systems in the country; in setting standards and guidelines needed for overall system design and planning for future development programmes; in providing the necessary research data such as the badly needed statistical data on the effect of our local environmental conditions on the performance of the imported systems; and in helping to modify or redesign any imported components/systems for better performance. It is pertinent to mention that the current federal Military Government effort to mass-train middle level technical staff abroad seems clearly geared to principally alleviating some of the problems concerning the acute shortage of maintenance and service staff but not to changing appreciably the baseline technology.

B. By setting up an adequate number of telecommunication ancillary industries where telecommunications equipment could be locally designed and manufactured. In this venture

equipment could be designed without any foreign support out with a view to complement the already existing imported system and/or satisfying future development programmes. The guiding principle could be to produce reliable and efficient communications gadgets that would not necessarily be sensational but would be competent and consistent in operation and thus confidence inspiring. On the other hand, local production can be started by using available indigenous components in modified imported designs. In this respect, the Federal Government needs the co-operation of the multinational companies currently handling its telecommunications projects or failing this, should have it as a "conditional clause" in any future contract agreements with the telecommunications systems suppliers and manufacturers.

For the envisaged ancillary industries to be competitive, the country should place sufficient confidence in its indigenous talents, lower its expectations in terms of expected equipment sophistication and should exhibit patience and restraint during the early stages of development. The indigenous engineers concerned should, on the other hand, show extreme self-discipline and unreserved devotion to the painstaking efforts needed to succeed. Although it is much easier to start from designing and manufacturing simple gadgets, there is no doubt that with adequate financial backing and time, the indigenous engineers could readily design, build and field-test, for example, cheap, reliable and functional domestic satellite earth stations for future development programmes even though these may not be as sophisticated as the ones being currently established in the country.

3. CONTROL OF TELECOMMUNICATIONS SERVICES DEVELOPMENT

The development of the baseline telecommunications technology capability, and hence equitable development of telecommunications services, would be further enhanced if a firm sense of direction is given to the development of telecommunications technology. It is not sufficient to import the latest foreign-designed equipment or embark on locally designed ones simply for expansion and modernization of the services only without having a firm

control, for example, on how best these systems should be applied to meet the special needs of the different sectors of the country. We should be able to map out a comprehensive expansion plan for services for any development period. This would help predict accurately the number of services delivered in any required development phase, thereby helping to avoid significant adjustment of planned targets in the midst of development periods. We should be able to control the standards of manufacture of the locally designed equipment, and insist on what standards to be met by any future imported ones; we should be able to maintain reliable equipment inventory and assignment records. The Ministry of Communications admits that "the absence of a comprehensive expansion plan covering a reasonable period into the future has made standardization of equipment impossible to achieve" [3], and one may add that this stems from lack of an effective control over the development of the telecommunications services in the country.

Realization of an effective control of the development of the services calls for the establishment of an effective national telecommunication technology development watchdog. We propose an autonomous National Communications Agency (NCA) which should collaborate with the Ministry of Communications, the Universities and other higher institutions, research and development centers and the local ancillary industries to see that effective, efficient, cost-effective and reliable services are developed and that available services from the imported telecommunications systems are fully utilized. Specifically, the Agency should, among other things: serve as a bureau of standards for telecommunications; regulate and standardize the necessary equipment; determine the relevance and priority of communications project proposals; Co-ordinate, review and monitor all telecommunications requirements and facilities throughout the federation; control telecommunications for Civil Aviation, the Armed Forces Railways, Meteorology Electricity Supply Authorities and so on; study on-going telecommunications projects monitoring their progress and conformity with contract

specifications; provide coherent co-ordination of communications resources, such as manpower resources, to the effective satisfaction of the most critical needs in emergency situations; develop a suitable tariff or pricing structure for telecommunication services such that the services are within reach of the majority of the consumers who need them instead of the very few who can afford them. It must be emphasized here that until the country develops its own baseline technology capability and ensures an effective control of its telecommunications development, the tariffs for the services would always be outside the reach of the majority of the consumers. The reasons are obvious from the above discussions. The absence of local technology capability development and of locally based equipment manufacturing facilities (as is presently the case in the country) would mean wholesale dependence on the world market for the manufactured equipment, the prices of which are dictated by the manufacturers and the world market inflator trends. These in turn make the cost of providing the services, and hence the tariff structure, too high for the majority of the consumers. A look at the new tariffs announced by the Ministry of Communications [5] clearly illustrates this point. Surely a hundred naira charge for telephone installation is not aimed at more than 80% of the population of this country. And the Ministry's contention that "the new tariffs now bring the cost of such telecommunications services in Nigeria more in line with international practice and the true costs of providing services", stresses our present total dependence on equipment importation and the urgency for the immediate take-off of our indigenous telecommunications development and control, without which the application of the international practice criteria is meaningless. Perhaps, one has to be reminded that the international practice is synonymous with the practice in developed countries where telecommunications technology is indigenous and where its development is under strict control. The result is that the true costs of providing telecommunications services are

relatively low and within reach of large section of the citizens.

4. DELIVERY OF APPROPRIATE SERVICES

Nigeria is, without doubt, a society widely diversified in terms of levels of development, expectations and outlooks. In urban areas, one has little problem providing with foreign equipment forests that have been greatly influenced, if not shaped, by foreign factors. In the rural areas, comprising over 80% of the total population, and where most people live on subsistence agriculture, there is hardly any such thing. The people have for generations' treasured person-to-person contact and have very clearly defined time-honored social patterns. They do not readily perceive the need for new-fangled services especially when they can ill afford the cost. For them, therefore, private telephone development, for example is unsuitable, nor can they individually afford the cost of private ownership of television or radio services. Although, the present Nigeria communications systems are capable of providing varied services, the priority on the services delivery is not unfortunately, geared towards the rural development. Yet it is the rural population that should be principally mobilized for appropriate development if the national programmes on health-care, agriculture, literacy, national awareness and so on, are to succeed.

For an equitable development of telecommunication services, therefore, the country's socio-economic diversification should be taken into account. This calls for an alternative approach to the present telecommunications services development and delivery in the country. In other words, telecommunications technology development priorities should be re-examined and an appropriate concept of service-delivery adopted [6]. We propose here the adoption of a Graded Telecommunications Services Delivery Policy, in this policy, the country should be divided into these areas:

i. REMOTE RURAL - comprising sparsely of populated and scattered (sometimes inaccessible) villages.

ii. CENTRAL RURAL - comprising densely of populated and closely

clustered villages.

iii. URBAN RURAL (or SUB-URBAN) - comprising of towns.

iv. URBAN - comprising of cities; for the purposes of delivering telecommunications services to the areas in decreasing order of priority.

Furthermore, emphasis on the type of services delivered would vary as discussed below for some of the envisaged services.

4.1 REMOTE RURAL

The concept at Remote Rural telecommunications services' delivery involves the provision of centralized Television viewing, central two-way radio-telephones linking the villages and government agencies such as hospitals, co-operative depots etc., and limited postal services. Emphasis here is to develop small scale community centers akin to the traditional way of life of the villagers. The facilities in each village should be managed and sustained through low levies by the villagers and should be centrally located so that each villager can easily visit the station to utilize the services. The Services should, for example, aid the users in discussing and organizing their affair regularly, socializing, obtaining information on health, education, agriculture and available goods, while at the same time fostering fast interaction among themselves and neighboring villagers. Village heads, chiefs or the emirs may then find that they can communicate with their subjects more effectively by radio instead of by village criers. Enhanced utilization may be obtained, if desired, by the addition of a radio transmitter for disseminating emergency information.

4.2 CENTRAL RURAL

Here the concept of larger community communications centers development is advocated. The service-delivery would involve the provision of community telephones (conveniently placed in village halls, churches and mosques, etc.), postal services, community television serves - the tariff being defrayed by community levy.

4.3 URBAN RURAL

The services envisaged include private telephone installation

facilities plus several coin-operated public telephones located at strategic positions such as shops, petrol stations, schools, major street intersections and so on; postal services, telex and gentex services, little or no community television-viewing services (since the urban rural dwellers are largely expected to afford their individual television sets). The services should be financially self-supporting.

4.4 URBAN

For the urban areas, sophisticated telecommunications services (including the latest innovations) are proposed to satisfy the refined tastes of the inhabitants. National and international services - as are currently being developed - are envisaged. Emphasis should be on private ownership of these services, although adequate number of coin operated telephone services should be provided. It is highly recommended that the strong revenue-earning services be developed for the urban and urban rural, to ensure reasonable financial rates of return on the capital investments on telecommunications systems, while at the same time ensuring that the appropriate services are within reach of the majority of the citizens who need them thereby aiding the future growth of telecommunication in the country.

Some of the advantages of adopting the above policy for the country are as follows:-

1. It accepts the present inadequate level of infrastructure, man-power and know-how, and would project realistic growth patterns in these areas.
2. It recognizes the different levels of expectations, knowledge and sophistication existing in different levels of society and allows for the catching up or acclimatization of the most peripheral groups.
3. Since the emphasis is on rural telecommunications services, it would induce the other developing sectors of the economy to shift towards the rural areas and thereby help, to reverse the migratory trend to the cities.
4. Since more than 80% of the population is rural, such a policy would help the people to maintain their essential traditional

values, while at the same time, accepting the realities of modern amenities and ways of life in the advanced or developed countries.

5 SPECIALIZED SERVICE

In addition to the above policy, the country should identify certain specialized national services for accelerated development. These services include Meteorological Communications services, National Security Communications Services, Air-Traffic Communications Services and Educational Television (ETV) Services. Although considerable attention is currently being given to the above services except the ETV services, more emphasis on their development is needed for successful planning of future telecommunications facility requirements. We shall now look briefly at the importance of these services.

5.1 METEOROLOGICAL COMMUNICATIONS SERVICES

The importance of acquiring weather and related meteorological data has long been recognized in the economic and social development of any nation. Such data transmitted from remote locations of Nigeria would provide more accurate weather forecasting in the country than is currently possible, minimize the effects of natural disasters such as flooding, aid agricultural development, aid air traffic control and so on. If neighboring countries participate in such a development, the value of the service could be greatly enhanced. Because of the massive data involved and enormous distances to be covered, satellite systems complemented by the Aerostat-borne systems where necessary are considered apt for this purpose.

5.2 AIR TRAFFIC COMMUNICATIONS SERVICES

Air travel is becoming increasingly fashionable in Nigeria nowadays, and the volume of traffic has increased tremendously over that of a few years ago. With our present rate of development, it is likely that air traffic congestion with its attendant increase in air-traffic accidents, will soon be with us. A far more efficient and safer use of air space than is currently possible can be

obtained by providing reliable and continuous communication coverage along all the major corridors in the country. These corridors could, for example, be easily linked to a single national air traffic control centre via a satellite. Such a system coupled with the existing network would permit direct and instant voice communications with any air craft flying along the air corridors. Thus a satellite system would be appropriate.

5.3 NATIONAL SECURITY COMMUNICATIONS SERVICE

In order that Nigeria's national security system could be regarded as secure, the system should be effectively administered and be able to react to unanticipated continuing requirements and individual emergencies. This requires reliable, rugged and highly transportable telecommunications facilities which in turn must provide a direct communication link to nerve centers responsible for the nation's security. A national security network system should therefore be emphasized. The system should, apart from providing tactical voice quality circuits (which could be encrypted for secure communications), be capable of providing other services such as telex and the television reception which could be valuable for field training and entertainment of the security personnel. Here again, the satellite system has a unique application.

5.4 EDUCATIONAL TELEVISION (ETV) SERVICES

Economic studies [7] have shown that the rate of return to a nation from investment in education is far greater than from any other form of investment. An increase in the level of appropriate education in any nation manifests itself not only in an increase in productivity and improved earnings but also in the ability to acquire new skills, apply better methods, interact more and even influence the pace of inventions - all principal contributors to increasing the gross national product which, in turn, improves the standard of living. In a rapidly developing country, like Nigeria, the shortage of well qualified teachers currently hinders the achievement of the desired high

level of education. Providing ETV services in the Country can alleviate this situation since ETV does not require a fully qualified teacher in every classroom. In addition, an ETV system will supplement the existing educational radio system in serving the needs of the adult population for agricultural improvement, vocational training and public health information and in serving as a means for the government to reach the remote villages to make them feel a part of the nation. The aerostat or domestic satellite system provides the cheapest method for providing ETV services.

6. DESIGN CONSIDERATIONS

We have seen that the telecommunications services in villages should at least facilitate communication between the villagers within the areas as well as between them and the area administrative centers. Although a careful planning of terrestrial systems can provide the sort of community grouping required in such cases, a satellite or aerostat system should provide greater flexibility. Emphasis on the services should include guaranteed accessibility, ease in usage, reliability and cheapness. Accessibility to the services provided should be guaranteed to the majority of the people and this does not necessarily mean, individual ownership of the services. In this respect, the present telecommunications development indicator should be re-examined. For example, in the case of telephones, the present development indicators usually correlate with the urban development and ignore the vital question of access to the rural population. Emphasis, therefore, should shift from urban or city statistics to rural ones, and we should start considering the required number of telephones per village or community. The services provided should, of necessity, be easy to use, taking into account the background of the user. Functional, simple rugged and easy to operate equipment should be designed. Since local operation and possible maintenance of the equipment will be needed, modular equipment design procedure should be followed to help easier isolation and replacement of modules. The service should be reliable. It is, for

example, hard to expect the villagers to support the utilization of telephone services in which the call completion is subject to long delays and interruptions or which is subject to noisy conversations. Similarly, no matter how excited they may be for a central television viewing facility, their interest would soon wane if the reception is constantly fuzzy. No amount of convincing will make them continue to contribute to the operation and maintenance of such a system. On the other hand, the cost of using the services should be within the means of the users. A good development strategy should minimize the cost of the rural services in order to stimulate use and also reduce the disparity with urban areas where the high demand and usage for the services would help to reduce the cost of their delivery.

7. CONCLUSION

Nigeria is depending on a wholesale importation of telecommunications equipment in order to affect the expansion and modernization of its telecommunications systems. In order to achieve an equitable development of the services provided by these systems and any locally designed ones, the present policy on the telecommunications technology in the country should be re-examined. This paper calls for the development of an indigenous telecommunications technology capability to effectively and efficiently utilize these services while at the same time provide the required technological infrastructure for any future telecommunications services development. Towards this end, emphasis should be placed on: encouraging research on telecommunications towards developing functional and cheaper components and systems that are not necessarily sensational but are more akin to our environment; setting up ancillary industries where some of the equipment could be locally designed and manufactured; constantly restructuring the engineering curricula in the country with a view to meeting changing needs and national objectives. The paper further argues for an effective control of the development of telecommunications services needed in the country by setting up an autonomous National Communications Agency (NCA) to act as a national

watchdog on any future development. The adoption of a Graded Telecommunications Services Delivery Policy is proposed. This policy should emphasize rural development and should allow for the divergent levels of expectations, knowledge and sophistication existing in the different levels of the society. It is argued that, in implementing the present telecommunications services development and in planning for future telecommunications facility requirements; the country should identify certain special national communications services for an accelerated development.

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