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**The Applicability of Operations Research Techniques in Developing Countries: A Cultural Perspective.**

**<sup>a</sup>SHONUBI A. O <sup>b</sup>Akintaro, A.A.**

<sup>a</sup> School of Postgraduate Studies Babcock University, Ilisan-Remo, Ogun State, Nigeria

<sup>b</sup> School of Postgraduate Studies Babcock University, Ilisan-Remo, Ogun State, Nigeria

*e-mail: bosak200020012000@yahoo.com*

**Abstract**

This paper takes a cultural perspective look at the differences between developed and developing countries in the practice of Operations Research. Utilizing the framework of socio-cultural and work culture dimensions, we shall identify several management behaviours which would be inappropriate in developing countries compared with developed countries. This will be done by examining some common American management practices and analyzing them in cultural terms. Within the context of our framework, the basic assumptions and values underlying these management practices will be identified. This will enable us to look for a match between the practices which have been so analyzed and the value configurations found in developing countries. As a result of this analysis, we shall be able to identify management practices which would be culturally inappropriate in developing countries, as well begin to gain some insight into the cultural aspects of appropriate indigenous management techniques.

**Keywords:** Culture, Management, Values, Operations Research, Socio-cultural, Behaviours.

**Introduction**

Modern Management theories and techniques have generally taken their roots in the developed countries (Operations Research inclusive), most notably the U.S.A and Britain. These theories and practices have been imported by developing countries to speed up their industrial development. However, many organizational practices and management training programmes in the developing countries are based on an uncritical adoption of the experiences of the economic growth model in the U.S.A and Britain, without any consideration of the fundamental differences

in socio-cultural constraints and local environmental conditions and circumstances. This uncritical use of Western Management theories and techniques has contributed not only to organizational inefficiency and ineffectiveness in the developing countries but to the resentment and other negative feelings associated with the perception of being subject to “**cultural imperialism**” i.e. being forced to adopt and accept practices which run counter to deeply held values and assumptions of the local culture. Countries in the developing world are advised, and feel themselves, that they must strive to adopt Western thought and practices to achieve economic prosperity within shortest possible time. Hence, many organizational practices and management training programmes in the developing countries in modern times are based on ‘an uncritical emulation and extrapolation from the experiences of the economic growth model of western countries, grossly disregarding the fundamental differences in socio-cultural constraints and local conditions and circumstances’ (Sinha & Kao, 1988).

### **Culture and Management**

The concept culture is described as a set of ideas shared by members of a group (Allaire & Firsirotu, 1984). The definition of culture from this perspective which we shall use is the following: “an individual’s theory of what his fellows know, believe and mean, his theory of the code being followed, the game being played” (Keesing, 1974). Culture is therefore not an individual characteristic but rather denotes a set of common theories of behaviour or mental programmes that are shared by a group of individuals. This is an “ideational” definition, as culture is seen as being a set of ideas. Furthermore, culture thus “resides” in the minds of the members of a cultural group.

With the foregoing perspective, one can also look at culture in terms of Schein’s (1985) three levels: basic assumptions and premises; values and ideology; and artefacts and creations. Basic assumptions and premises refer to preconscious and taken-for-granted assumption about such things as the relationship of man to nature, time, and space, and beliefs about human potential and social nature. These two levels are in a sense the ideational base of culture. They are reflected the components of the third level, cultural artefacts and creations (such as manifest behavior, language, technology, and social organization). It is the third level that is observable and that is the first arena in which management is played out.

The basic assumptions and values are the foundation on which actual values rest. They are also generally held subconsciously, meaning that if a person were asked what their assumptions were about, say, man’s malleability or creative potential they might find it difficult to articulate a response. In contrast, if they were asked whether it would be appropriate to send a clerk to a management training programme, they would be able to tell you and could explain their reasons for it.

People’s assumptions, beliefs, and values are shaped by the culture to which they belong. Basic assumptions and premises are fairly deeply rooted in an individual and one must therefore assume, at least in the short run, that culture cannot be changed to meet the demands of management. In the case of national or ethnic cultures, they are also usually supported by a

complex and long-established social system which has a vibrant existence outside the context of a business organization. Thus, we must take the position here that individuals' behaviour in an organization will in the main be guided by the outside culture from which they come. Members of an organization in a given cultural environment therefore would share a common set of assumptions, beliefs, and values which originate from the local environment. One assumption implicit in most work in the area of comparative or cross-cultural management, and one shared by the writer, is that organization is indeed an 'open system'. These cultural values from the environment are brought into the work place and have a very strong impact on the behaviour of persons within the organization.

To understand better how culture can impact on management behaviour in a practical sense, we can review how culture affects the interaction of individuals. On the one hand, culture facilitates certain behaviours. Members of a cultural group share complementary behavioural programmes which regulate their interaction. Associated with these programmes are values and ideology which provide a guide and a meaning to what they are doing. Implicit in this view is the fact that a culture also inhibits other behaviours, behaviours which one counter to the values or practices of the culture. A culture also provides a guide for perception and attribution of others' behaviour. Thus, within a cultural group, certain behaviours will generate a feeling and response that is positive while others will generate a negative feeling and response.

The practical impact of culture on management practices will therefore be twofold. First, it will influence management behaviour which might be said to be occurring 'naturally'. Thus, management behaviour will reflect the values of the local culture. It will not include behaviour which runs counter to the culture. Second, culture will influence the perceptions which individuals in organizations have of the world around them. This will include their perceptions of both the internal and external organizational environments (Negandhi, 1983), i.e. what is happening in the organization as well as what is happening outside it. Culture will influence what is perceived and what is not perceived or noted. It will also affect the evaluation of what is perceived. With respect to the external environment, culture will have the greatest influence on where and what the greatest attention is paid. With respect to the internal environment, culture will affect the perception and evaluation of behaviours of individuals in the system. It is this process that will result in resistance to counter-cultural management behaviour.

### **Characteristics of Developing Country Cultures**

Developing countries can be characterized as generally higher on uncertainty avoidance, higher on collectivism (i.e. lower on individualism), higher on power distance, higher on feminine orientation (i.e. lower on masculine orientation), and relatively lower on abstractive thinking (i.e. higher on associative thinking). It should be pointed out that these characterizations represents overall trends and may not hold for every developing country on every dimension. Nevertheless, they reflect a perceived mean norm for the two groups and are presented as a broad framework for the purposes of analysis and discussion. The reader will be left to judge whether or not they

are appropriate for the particular country or situation which may be of interest and should modify the conclusions arrived at accordingly.

Comparing the cultures of developed and developing countries, one notes that they differ with respect to the assumptions regarding the nature of causation and control over outcomes (pleasant and unpleasant) that one experiences in life. Can people be dominant over their environment or are they subjugated by it? Most Western industrialized societies generally see themselves as being in control of nature and of events. In contrast, developing societies see themselves more as being at the mercy of events in the environment. Thus, in developing countries, the notion of context dependence will be more to guide behaviour in organizations.

Another difference in cultural assumptions which affects behaviour in work organizations concerns beliefs about human potential and malleability. Within organizations in developing countries, human capabilities are often viewed as more or less fixed with limited potential. In developed countries, it is believed that individuals are malleable and have unlimited creative potential. Thus, one expects more attention to be paid to training in developed country organizations.

The temporal focus of life is one of the major assumptions along which cultures can be differentiated (Kluckhohn & Strodtbeck, 1961). Societies can be classified as being oriented to the past, the present or the future. Developed countries tend to have more of a future orientation. Future-oriented cultures have relatively less regard for past social or organizational customs and traditions and base their decisions on their possible implications for the future. Developing countries tend to be more present or past oriented. Past-oriented cultures believe that life should be guided by the customs and traditions of the society. Past experiences should be the guide to any change. Present-oriented cultures tend not to be guided by tradition or to plan for the future but live for the moment (Adler, 1986). In an organizational context, this results in a more short-term orientation to activities.

Furthermore, activity or task orientation ranges from doing or action to being (Kluckhohn & Strodtbeck, 1961). Cultures which are action oriented, such as those of the developed countries, stress measurable accomplishments and encourage a proactive stance in dealing with a given task. People in action-oriented cultures are doers and they live to work. For people in being-oriented cultures such as can be found in many developing countries, the focus is on experiencing life and on the quality of their life experience. They work to live. This leads to comparatively more passive or reactive responses to tasks in organizational situations.

The success of people is often judged in developed countries using pragmatic results of their endeavors. In the developing countries, success has more to do with the maintenance of the well-being of the group.

Finally, in developed countries one is more likely to find an abstractive mode of thinking, resulting in the use of abstract principles, contextual forces in guiding behaviour. In developing

countries, in contrast, the influence of contextual forces may often negate principles in determining individual or organizational behaviour when the two are in conflict.

### **Operational Research in Developing Countries**

Unless the kind of operational research we are practicing is appropriate for our situation, we cannot say we are practicing operations research. Appropriateness is in terms of characteristics of our situation vis-à-vis operational research technique. Operational research developed from the advanced countries and it has features of these countries in terms of the appropriateness of their technology, economy, political stability, etc. Operations research is a practical subject and has to be practical with special reference to the characteristics of the system of the countries in question.

The issues that come up for operational research application in developing countries are:

- **Types of Problem:** The advanced countries are characterized by different problem situations from those of developed countries. The developing countries are characterized by cultural problems i.e. trying to maintain their tradition whether it is rational or not. The advanced countries always aim at achieving rationality and objectivity at all times unlike the developing countries. Since in the developing countries the level of development and systems of government are not absolutely objective all the time and operational research depends on objectivity, it is difficult to practice Operations Research in developing countries very effectively. Nevertheless, there are some problems that are universal; therefore, Operations Research can be applied always and anywhere.
- **Data Status:** In advanced countries we have accurate, reliable and easy access to data and data banks. In developing countries data are hardly available. They are either distorted or unreliable. Since they are very important in the practice of Operations Research, it is difficult to practice it in developing countries.
- **Technology:** There is a high level of technological setup in the advanced countries e.g. sophisticated electronics and mechanical equipment. The technology of the developing countries is still in an infant stage. As such it cannot be relied upon for high level mathematical modelling.
- **Extent of Scientific Culture:** This has to do with how far the people have acquired the culture of science as against traditional means of doing things. Operations Research is based on science and developing countries are not highly scientific and as such it is difficult to practice it in them.
- **Expertise Status:** This refers to the availability of experts. The experts available in the developing countries are in short supply and are even over stretched in such a way that it is difficult for them to have time to develop sophisticated mathematical models and implement them.

- **Political Stability:** The political structure of the place, power interplay, interest groups, and so on that is obtainable in the country in question needs to be considered. The politics of the developing countries are not backed up with rationality and objectivity. An Operations Research recommendation is that conflict with the subjective interest of the general manager will make it difficult to operate.
- **Administrative Competence:** This refers to the extent of administrative rationality for the purpose of Operations Research implementation. There has to be rational and objective administrative set up. In the developing countries there are irrational administrative setups hence poor Operations Research implementations.

## Conclusion

Managing organizations is a complex act. Every organization has an internal work culture of its own which influences the behaviour or practices of both the management and the workers. The organizational work culture represents a form of organizational reality that shapes both the micro-level individual processes (day-to-day practices and behaviours of organizational members) and macro-level organizational processes (design of organizational structure, technologies employed and strategic activities). In developing the appropriate coping strategies, organizations must be sensitive to environmental constraints and opportunities. Such sensitivity implies identifying and responding to three major aspects of the environment: (a) economic and technological, (b) political and legal, and (c) socio-cultural. Since the external environment of organizations in the developing countries is different from that of the Western industrialized countries, management theories and practices developed in the developed country context may have only limited applicability in the context of the developing world. If one accepts the above premise, it becomes clear that there is a need to develop indigenous management theories and practices for use in the developing country context which will incorporate its socio-cultural perspective.

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