Chapter 5.1
Cultural Dimension in the Future of Pervasive Computing

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ABSTRACT

The future of pervasive computers largely depends upon culture studies of human societies. This forms a challenging field of social research because cultural differences exist across societies for a varied acceptability of ubiquitous computing in everyday lives. Hence, it is highly necessary to study various cultures and cultural phenomena that can demonstrate human need patterns, individual experiences, as well as orientations for the use of various pervasive computers. The chapter emphasizes culture as the centerpiece for the advancement of pervasive computing technology in the coming days; as culture is the key determinant of any tool necessary for human development. The study of culture in this context is highly essential, whose meaning in the anthropological perspective has been explained. Technological growth as a cultural activity has been highlighted with a necessity of a cultural approach for its sustenance. A culture-centric methodology has been presented, which will enable manufacturers at local, as well as global levels, for the design of culture-specific appliances based on such technology; depending upon of the need and choice of consumers in various cultural segments which are largely influenced by the forces of globalization.

INTRODUCTION

Culture of a society is not limited to a set of activities connected with a heritage and artistic activities; rather is made up of all the characteristics that define the society or human group, viz., traditions, beliefs, value system, ways of thinking, technology, management, behaviors, models of economic and social organizations etc.

Every society assumes a societal culture which is a centripetal force binding on each individual. Even though the innate nature of culture is the continuance of the traditional customs and values, yet some change is inevitable with the passage of time. In this context, new technology influences culture, in as much as the new technology has to adapt to culture to become viable. Manufacturers of technological products are to customize their goods for different national cultures to be in demand. But, when new technology impinges our lifestyles, it certainly leads to changes in the existing national culture.

Pervasive computing represents an exciting new paradigm in human-computer interaction. The potential advantage obtained by these technologies are really tremendous, but without properly designed products and supporting infrastructure, people in a culture may not realize the full potential of these innovations. These designs should be more culture–specific in order to attract more consumers in that particular culture. The future of pervasive computing largely depends on its driver in the modern technological world. No doubt, technology is the main driver of pervasive computing, but people's behaviour is the ultimate determinant coming from their own cultural background. Besides, some of the cultural factors stimulate the use and adaptability of technology, whereas some others act as barriers as people embrace technology in different ways and incorporate it into their daily lives. Hence, the penetration of any technology depends mostly upon the societal culture of the people who use it. It is also important to understand the purpose of human action that makes the new technology convenient for the people using it. The point to be stressed is that pervasive computing will have a distinct form of adoption depending on how people behave socially and their need orientation. As pervasive computing offers ubiquitous access to information without requiring much user effort, its needs to occur differs from society to society depending on existing social and cultural systems. Bell, Blythe, Gaver, Sengers, and Wright (2003) stress that in order to understand how users experience technologies; researchers need to find out the social and cultural meaning of technology. In other words, one needs to know what a product means to a user and what it means in particular cultural context as well as its broad impact on the social and global environment.

The present chapter aims at discussing pervasive computing in human computer interaction (HCI) perspective highlighting the cultural dimension. This is due to the fact that culture is the centerpiece of any human activity and that activity becomes not only successful, but also sustainable if it is culture-specific. As per the guidelines of UNESCO's "World Decade for Cultural Development", culture is not only the origin but also the vehicle of any development initiative. Any developmental initiative should be in the framework of culture for its effectiveness as well as sustenance (Mangaraj, 2000a; UNESCO, 1987). Regional factors are to be considered even if one considers success at a global level (Mangaraj, 2000b). In this context, the chapter tries to highlight cultural understanding of societies as well cultural factors necessary in order to develop culture-specific devices for information exchange. It is found that in some societies, the adoption of pervasive computing may be characterized as interpersonal and domestic and in some other societies it may be interpersonal and social. Nevertheless, there are different approaches among cultures to achieving this goal of sharing (or not sharing) information effectively. At the same time, the nature social change is mainly dependent upon social structure and economic environment of the society. Hence, the social impact can be observed by focusing on the processes of social shaping including their development, diffusion, adoption, domestication and appropriation in domestic work and public settings.