Functionality Model as Basis for Technology Management (TM)

Literature Review

The literature review begins with a short background of the connection between Technology Literacy and Technology Management. This is considered as the most basic postulation which will be implemented in this research project. This also purposes for technology to be identified and understood in its variety of manifestations, practitioners and students of TM should have a holistic approach to technology, as well as its related functional characteristics. It is important upon TM to offer practical and theoretical tools to this end, doing so in terms of accepted research principles in the form of technological paradigm (Johnson & Philips, 2005).

A variation of the theme involving technology paradigms is the so-called techno-economic paradigm. It is a particular theme which became popular as a result of a school of thought which may be characterized as Neo-Schumpeterians. Among the thought leaders include Christopher Freeman, Giovanni Dosi, and Carlotta Perez, who stated a case regarding the reciprocity in between technical and economic change, as presented by different technological revolutions, including the associated formation regarding a distinctive paradigm involved in the theoretical analysis of the actual relationship (Peterson, 2003). Perez (2004) suggests implementing a series of revolutions in the techno-economic field, which is a theme added to the distinctive behavior of production and financial capital, respectively. With the age of communication and information technologies, now reaching maturity towards the end of the techno-economic revolutions.

The current focus of the shifts in literature review to a new era in technological progress observes the irruption as it continues to merge with the remnants of the techno-age. This literature review will further present a case involving convergent technologies in order to become the main focus of the study (Lucas, 2010).

Another issue that comes into picture is geography and technology. On one hand, this research appeals to the international character of both TM discipline as well as the discourse regarding this subject area. On the other hand, this study project is based in Africa, for Africa, as well as its peers amidst a bigger group of other developing economies. Aside from the fact that there is enough evidence which shows that the economies lack the absorptive capacity to take advantage of international transfers of technology (Wilmer, 2008), there is also available evidence that the southern part of Africa needs to further improve her competence in production, as well as generation of knowledge for technology transfers (Hipp & Benson, 2006). As a matter of fact, the entire discourse regarding the Digital Divide as it is shown in the developing economies a vindication of the mentioned views, as shown sufficiently by Losch (2008). Ultimately, however, selecting markets for gathering data highly depends on the particular research model, the data collection vagaries, as well as the data requirements.

It is Kohl (1964) who first introduced the paradigm, encompassing origin, progress, and evolution of Science. He is acknowledged generally as having been successful in formalizing different paradigms as competing and evolving rules and norms for research, even if he is accused for losing control over the term, and never really defining it accurately. As a response to the debate which followed, he further describes that a paradigm is a disciplinary matrix which is consist of symbolic generalizations, shared commitments or heuristics, concrete solutions to the problems, shared values, and the so-called exemplars (Rompins & Christianson, 2002).

When this is combined together with methods, theory and standards, all of these components offer researchers a map that can be used for research, and directions for map-creation. Even though Kohl presents his assertions almost exclusively, together with examples coming from paradigms, natural science, as well as their functioning which are now considered as omnipresent in various academic discourses across all disciplines and scientific endeavors outside the world of natural science. These have also benefitted significantly by paradigmatic outlines during the last half a century (Norton, 1989).

Technological change further transforms inputs and outputs in economy, generally leading to some cost effective approaches in use or production of services and goods. However, technology cannot solely be considered as the only economic means available, without considering the different levels of technological control and knowledge over technological processes. As a response to technological complexity and progress, management has to refine its tools in order to further understanding technology.

References

Hipp, L.P., & Benson, Y. (2006). Relationship between operations management and theory-driven research. Operations Management Journal, 15:45-56.

Johnson, F., & Philips, W.T. (2005). Sustainability assessment on technical systems: Systems analysis using EcoEffect Equipment. Stockholm: Stockholm Institute of Technology.

Kohl, T. (1964). Paradigm Shift: Paradigm Defined. New York, NY: ABS Press.

Lucas, M. (2010). The anatomy of technology – An Explorative Essay. Technology, Knowledge & Policy, 18(5): 127-145.

Losch, E. (2008). Managing and Measuring Technological Analysis. Management Review, Summer. 63-78.

Norton, T. (1989). Rating the Effectiveness of Management: with Case Studies in the field of Telecommunications. New Hampshire: McMillan Print.

Perez, C. (2004). Origins of technometrics: historical evolution and future condition. Social Change Journal, 74:945-980.

Peterson, Y. (2003). Modern Man and Modern Science. Florida: The Florida Press.

Rompins, Y., & Christianson, D. (2002). The New Technology in Development: IT Opportunities and Challenges. New York: ABC Press.

Wilmer, J. (2008). The theory of technology – change and continuity combined. Ohio: State University Press.