

# Exploring the potential of development of Information Technology industry in a South African city

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Information Technology (IT) is increasingly influencing every aspect of the human life and functions of cities across the world. Particularly, it is progressively influencing the socio-economic and spatial development of the cities (Das and Sonar, 2013; Jae-pyo, 2017; Pradhan, Arvin, Norma, Bele, 2014). Consequently, it has contributed significantly to the economy of those cities (Das and Sonar, 2013; Jae-pyo, 2017; Pradhan, Arvin, Norma, Bele, 2014). However, development of IT industry in a city has diverse implications. For example, IT industry can bring economic opportunities, in terms of employment opportunities, earnings from both domestic market and exports and domestic and foreign investment as well as create a unique image (Das, 2016, Florida, 2003, 2005; Latif, mengkec, Danish, Latif, Ximei, Pathan, Salam, Jianqiu, 2018). On the other hand, such industry can be located and would thrive in the cities, which have adequate urban infrastructures, such as transportation, built up space, energy, housing, recreation facilities, etc., that can attract knowledge workers (Das and Sonar, 2013; Yigitcanlar, Baum, and Horton 2007; Yigitcanlar, O'Connor, and Westerman, 2008; Pradhan, Arvin, Norma, Bele, 2014). Moreover, the performance of IT industry suffers in cities with inadequate urban infrastructural facilities. Further, location of IT industry in a city impacts the land use patterns, city skylines, travel behaviour of people, social interactions and environment. It also causes the expansion of urban areas, decentralisation of location of functions, and the amalgamation of adjoining rural areas to cities, which influence the growth and change in urban systems. Further, it can also engender influx of people, increase the demand of houses, road and other civic infrastructure leading to the rise in land and real estate property values. Although, both literature and experience have evidenced that location of IT industry in the cities have both positive and negative impacts, it is argued that such industry can transform or revitalise the cities through its contribution to the economy, infrastructure and image building.

As a consequence, many countries including South Africa and India have framed policies and strategies both at country and city level to develop IT industrial cities and make them nationally and globally competitive. The policies generally focus on- to attract foreign investment, to create adequate infrastructural facilities and social amenities, which would facilitate growth of IT industry in the cities and reinforce economic growth (Abraham, and Mario, 2015; De Silva and McComb, 2012; Francis, Babajide & Niki, 2014). Besides, incentives such as lower corporate taxes, land at affordable rates, single window system and scrapping of licencing systems also have been provided. Consequently, emergence of new IT cities and strengthening of existing IT cities and IT industry have been experienced. However, the potential and opportunities for development of IT industry in South African cities have not been explored. Further, with the South African economy in transition and the decline of mining and manufacturing industry, an argument has emerged to explore new ways to revitalise the medium and large cities of the country. This argument has become more important for cities which do not have much of the natural, mining resources and industrial activities for their economic vitality.

Therefore, by using the case study of Bloemfontein city, the study examined the perspectives of the development of IT industry in South Africa cities. In other words, it examined whether the city has the potential to develop as an IT industrial city and the various factors that can assist in developing IT industry in the city so that economic prosperity can be engendered. The development of IT industry was examined by the behaviour of the various parameters such as earnings from the IT industry (turn over), growth of knowledge workers, ratio or gap between the supply and demand for houses of specific qualities suitable for IT industry personnel and built up space for the IT industry.

A survey research method and System Dynamics modelling approach were used. Findings suggest that the city has the potential to emerge as an IT industrial city, however, there exist challenges with regards to infrastructure such as housing, built up space and energy and attracting the knowledge workers to the city. However, appropriate policy interventions to reinforce these infrastructures that can assist to attract the knowledge workers, will enable enhancement in the earning from the IT industry. The development of IT industry and consequent investment for it will strengthen the housing and built up infrastructure for the IT industry as well as will enhance the number of knowledge workers in the city. In other words, development of IT industry in the city strengthens the infrastructure and vice versa showing strong two-way causality between infrastructure and IT industry as well as with the human resource.

The study contributes in terms of establishing interlinkage among infrastructure, human resource and IT industry and their causal feedback relations, that needs to be considered while developing policy interventions for development of IT industries in South African cities.

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## **Biography**

**Prof. Dillip Kumar Das** is a Ph. D in Urban and Regional planning with Civil Engineering and City Planning background. Currently he is engaged in teaching, research and community engagement activities as an Associate Professor in the Department of Civil Engineering of Central University of Technology, Free State, South Africa. Also, while in academics he has worked in different Universities of India and Ethiopia. Before joining academics in 2001, he has worked for several years as an engineer and planner in the consultancies and in the Government sector in India. He has taught and guided both undergraduate and post graduate students of Civil Engineering, Urban Engineering, and Architecture and Urban Planning. He is active in supervising Master and Ph. D students. He has also supervised doctoral students under Southern African Young Scientist Summer Programme (SA YSSP) 2013-15 and currently working as a supervisor for Ph. D scholars for South African Systems Analysis Centre (SASAC). He has worked in various research projects in the areas of sustainable urban & regional development, and transportation planning. At present he is jointly leading a research group on sustainable urban, road and transportation at his current university and engaged in investigating two research projects funded by funding agencies such as National Research Foundations (NRF), South Africa. His research and consulting interests include systems analysis, system dynamics modelling, infrastructure planning, smart cities, and transportation planning, He has co-authored two books and published about 100 peer reviewed journal and conference research articles.

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