Geographic Information Systems Application in Sustainable Business Intelligence Analysis

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Abstract-**Today, the corporate growth and development requires planning and taking the right decisions at the right time.In order to be excellent and be above in service delivery and gaining of competitive advantage over other competitors, available information has to be well analysed. Engaging the cutting edge and the driving force of Information Technology to overcome barriers around business growth and development through adequate data collection, storage and analysis is therefore vital for business success. In addition, the need to engage in sustainable businesses cannot be overemphasized because of their intimate connection to healthy economic, social and environmental systems. These businesses create economic value and contribute to healthy and vibrant ecosystems in addition to building stronger communities. *GIS: (Geographic Information System)*is an "organized collection of computer hardware, software, geographic data and personnel designed toefficiently capture, store, update, manipulate, analyze and displayall forms of geographically referenced information" This paper considers the role of Geographic Information Systems in Business development,Sustainable businesses, awareness level about Geospatial data utilization in Nigeria. Information Technology application is therefore necessary in business intelligence analysis to harness the full economic and environmental benefits**

Key words: Sustainable Businesses, Business Intelligence analysis, GIS in Business, development Economic and environmental benefits

I.   INTRODUCTION

Information Technology has been observed to change the pace and ways businesses are being done most recently. The role of Information Technology particularly Geographic Information Systems in solving the plethora of problems associated with successful business operations cannot be overemphasised.Both intra and international business dealings and outreaches has been significantly affectedthrough   the application of instrumentality of cutting edge and the driving force of Information Technology to overcome barriers around business growth and development.GIS has greatly contributed to Business intelligence through adequate data collection, storage, analysis and display of spatially referenced data to enhance qualitative decision making, whichis vital to business development and success. Effective service delivery and

gainingofcompetitive advantage over other competitors is rooted in engaging the adept potentials of Information Technology to overcome barriers around business growth and development. GIS supports mapping, data visualisation and a better understanding of data which is important to business success.

Geographic Information Systems (GIS) could be defined as organized collection of computer hardware, software, data, procedure and personnel efficiently organized to capture, manage, analyse, store, retrieve and display spatially referenced data. Data collection and analysis plays a very significant role for organisations to fulfill their roles and objectives. 'Businessintelligence is a priority for organisations interested in gaining a competitive advantage' ESRI (2012).In addition, GIS enhances adequate and intelligent analysis of underutilized data in ways not typically seen in traditional Business intelligence applications to generate qualitative decision supports output. We are able to understand data more through adequate visualization and analysis of key business data.

II.   AREAS OF GIS APPLICATIONS

GIS has a place in nearly every field of human endeavours, Government, Engineering, Agriculture, Environmental management, security and other areas with inherent benefits. In addition, its ability to perform integrated analysis of locational data together with social economic data sets that may be of different scale, age and origin makes it a good planning and decision supports tool. Additionally, Geostatistical analysis with robust modeling capability of GIS makes it a veritable tool to enhance its predictive capability.

A. Location Analysis: Adequately answering the question of where to site a business, factory, offices warehouse etc. is one of the main success factors in business operations and growth, Information about best customers location, customer locations and distribution over space, understanding of changes in trend of customers demand and request on a regional basis, would go a long way in effective production and for excellent service delivery.For a business to thrive well. Location analyses, also known as suitability analyses, use overlay and Boolean logic

to perform queries whose results are locations that meet very specific sets of criteria Juliana Maantay, John Ziegler (2006).GIS provides the ability to see people and opportunities in better, clearer and well informed ways.It has the ability to perform integrated analysis of data sets that may be of different sources, scale and time to answer the questions of what? , Where? , When? And If.

B. Transportation and Network Analysis: Nearly everything that we do exists in space. According to (AngelaIonita, Marcel Foca and Marius I.(2016) GIS is becoming a part of mainstream business and management operations around the world in organisations as diverse as cities, state government,utilities,telecommunications, railroads, civil engineering ,petroleum exploration, retailing,vehicles routing,site selection, research and analysis.

C. Planning: Planning involves the assessment of trends and development patterns in both space and time and the formulation of plans to address future problems and opportunities "Maantay and Ziegler (2006).GIS could be used to predict the most viable and profitable land uses, define sales territories,support decisions making based on the spatial distribution/locations of consumer needs anddemand. With analytical capacity of GIS, location intelligence could be effectively combined with Business intelligence for routing and logistics, effectivecustomers service, fleet management, facilities and assets management, Risk management and insurance, Retail and marketing, Telecommunication andreal estate development. With application of GIS, development costs and risk could drastically be reduced and more informed decisions are made faster.

III. SUSTAINABLE BUSINESS

A. Business practice that is socially responsible, economically viable, and environmentally friendly could be regarded as being sustainable.The need to engage in sustainable businesses cannot be overemphasized because of their great impact and connection to healthy economic, social and environmental systems. Sustainable businesses create and enhance economic value and contribute to healthy and vibrant ecosystems. Inaddition toconstructive human development andbuilding of strongercommunities. Business and trade opportunities involving the sales of endangered species must be discouraged, illegal lumbering activities has a negative toll on environmental protection. GIS has been found to be useful in biodiversity conservation and environmental impact assessments. Also, sustainable business development involves the application of sustainability principles to business procedures and operations

B. Geospatial Data Utilization in Nigeria: The awareness about GIS utilization is increasing in Nigeria. Government establishments that supposed to generate and be a custodian of usable data to enhance public infrastructural planning and resource management needs to be fully involved in data collection, analysis and provision of access to GIS outputs to enhance business sustainability and orderliness in the society. Many constrains to GIS development in developing countries were identified to be caused by   lack of appreciation of the technology, limited understanding of GIS principles and associated methodology and inadequate organizational commitment to ensure continuity of these spatial decision support tools Onosemuode Christopher and Dare Olaniyi Timothy(2010).

III.   CONCLUSION

Information Technology application is therefore necessary in business intelligence analysis to harness the full economic, social and environmental benefits inherent in it.

REFERENCES

[1] ESRI 2012:Esri Location Analytics for   business Intelligence
[2] Juliana Maantay, John Ziegler (2006) : GIS for the Urban Environment
[3] Angela Ionita, Marcel F,Marius I. (2016): GIS in Business Processes (https://geospatialworld.net/paper/Application/ArticleView
[4] Onosemuode Christopher and Dare Olaniyi Timothy (2010): Environmental Research   Journal, Volume: 4, Issue: 2 page No 187-194.