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## **Role of Information Technology in the Economic Development of Bihar**

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### **ABSTRACT:**

Economic liberalization policy adopted by India in 1990s to boost international foreign investment, industrial production, and technology competitiveness opened the floodgate of economic development that led the overall growth of India. Many states took advantage of it and ameliorated their policies for the larger perspective of the development of the states. Information technology played important role in policy making and its implementation in the faster rate. It has made governance more responsive and efficient. It has made the management and delivery of government services (such as consumer rights, health services etc) very quick. However in Bihar, these policies were largely adopted by Nitish Govt after 2005. They framed many people centric policies and implemented many schemes using information technology. Their hard work gave fruitful result and Bihar's economic development is on the rise. This paper presents detailed analysis of the information technology based various schemes and programs adopted by Bihar Govt.

### **1.INTRODUCTION**

Any economy can be developed by means of Direct job creation, Contribution to GDP growth, Emergence of new services and industries, Workforce transformation and Business innovation etc.. Indian government focused on these sectors in association with state government and then as a result, India has started showing progress from dissatisfactory level to satisfactory level competing world economies. Some state government started going even out of India to invite global investors to investment in their states. The sense of competitiveness also among of Indian states have been developed which resulted Indian economy to

show as one of the fastest growing economies in the world. It has been growing at an annual average rate of 6.86 per cent during the two decades of economic reforms (1992-93 to 2009-10) as against 4.07 per cent prior to the four decades of economic reforms (1950-51 to 1991-92)[1-4]. Moreover, the growth of the economy scaled up particularly after the year 2000, with the growth averaging at an annual rate of 7.32 per cent during 2000-01 to 2009-10 and 8.46 per cent during 2003-04 to 2009-10. As per World Bank data India is now the 10th largest economy in the world by nominal Gross Domestic Product (GDP) which stood at US\$1377.26 billion in 2009 and the 4th largest



by purchasing power parity (US\$ 3808.44 billion in 2009). The country's GDP per capita (PPP) recorded at US\$ 2,993 (at constant 2005 international dollar) in 2009, as against US\$ 1831.66 in 2001 and US\$ 1232.19 in 1991.

The success story of the economy is mainly attributed to the rise in the quantum of investment during this period. The Gross Domestic Capital Formation (GDCF) stood at 36.5 per cent of GDP in 2009-10 as against 26 per cent in 1990-91 and gross domestic savings stood at 33.7 per cent of GDP in 2009-10 as against 22.8 per cent in 1990-91. The industry and services sectors continued to fuel the economic growth. Industry's contribution (including construction sector) to GDP has been steadily increased from 25.92 per cent in 1990-91 to 28.47 per cent in 2009-10, while services sector continued to contribute about 57 per cent to GDP in 2009-10. The economy has been doing well in the external sector, especially in trade, foreign investment, and accumulating foreign reserves. The volume of exports and imports recorded at Rs. 845534 crore and Rs. 1363736 crore respectively and the foreign exchange reserves stood at Rs. 1149650 crore in 2009-10. In all these good sign of development, role of Information technology is significant. Govt. can't be even think of these exemplary results without using information technology in their policy adoption and implementation at faster rate.

In contrary, Bihar's economy is **agrarian-based, and it majorly produces fruits and vegetables**. About half of Bihar's land area and three-fourths of the state population come under agricultural-based activities. Major points of concern are that agro based industry was never focused by Bihar govt and industrialist never thought of investing in Bihar. Therefore the

growth was dissatisfactory. Even after economic liberalization, Bihar failed to progress in comparison to other states because of many factors involved including lack of industry, weak infrastructure system (roads & electricity), bad law & order, plight of unskilled laborers, lack of skilled labors, Lack of capital and investment, Unfavorable governance environment.

After Nitish Led Govt. came to power with visionary schemes and plans in 2005, Bihar started witnessing the change in the last couple of years. Bihar govt did stepwise changes in the adoption of information technology based scheme and programs for the gradual development of the state which are mentioned below.

## **2. Bihar State's Information and Communication Technology (ICT) Initiatives**

### **2.A. Introducing ICT in government offices:**

Before introducing ICT reforms in the state administration, govt took several steps to carry out a comprehensive review of all ministries and departments. The secretaries identified their departments' responsibilities, assessed specific needs and constraints, and compiled a list of programs and projects currently under implementation. At the same time, they established a "**temporary call center**" to communicate with local governments regarding the nature and quality of public services across the state. This step enabled the team to quickly learn the statuses of departments, programs, and services and to decide how to allocate resources that would improve operations. Govt. started taking weekly cabinet meetings which was a transition from a non communicative [regime] to a communicative one. The political leadership became innovative and encouraged people to think creatively and implement new ideas.



## 2.B. Formation of BELTRON and Dept. of Information Technology

There were no separate department for information technology ; therefore the communication between the chief minister's secretariat and critical government departments (like finance, education, and health) were happening without the use of information technology applications. Procurement system was difficult for individual department. Therefore in early 2006, the GOVT. decided to **launch their first e-governance project** in the name of the Bihar State Electronics Development Corporation, called **Beltron**. **The main objectives of the BELTRON is to streamline its operations by creating a subsidiary, Bihar e-Governance Services & Technologies, to network government offices, establish a central database, and manage e-governance initiatives.** In the same year, Government established a separate **Department of Information Technology** to oversee the ICT upgrades throughout the government administration and guide the use of technology to improve the provision of public services. The department became fully operational in April 2007 and immediately began coordinating with Beltron on the implementation of ICT projects as well as electronics hardware procurement projects..

## 2.C. Introducing ICT systems in prioritized public services:

In 2006–08, the govt prioritized the implementation of ICT in three pressing areas: land registration, finance, and the Right to Information Act. It was decided to implement those reforms in two phases

- The first phase focused on boosting revenues and targeted the state's land registration, treasury and taxation systems.
- The second phase focused primarily on improving communication between government and citizens.

## 2.D. Land reforms by Dept of Registry and implementation of SCORE:

Through the collection of stamp duties, registration fees, and court fees, Bihar's land registration system was the state's second-largest source of internal revenue. But the land registration process was cumbersome and took several days, on average. A registering officer had to verify each deed, a land registry clerk checked the stamp duty, and another clerk revised the registration fee. Various details were entered by hand in different register books before the document could be endorsed and returned to the applicant. Poorly kept records, the complications of manual entry, and ownership disputes often led to long delays; and the registration process could take seven to eight years in some districts. Landowners also routinely deflated the market value of their holdings in an attempt to reduce their property taxes.

Looking at these problems, **National informatics centre(NIC)**, a unit of the Indian government's Ministry of Communications and Information Technology developed the new **System for Computerized Registration**, known as **SCORE**, at the registry office in the state capital, Patna[6-9]. This system captured details of deeds, identified and evaluated the minimum value of properties, and checked for payment of stamp duties and registration fees. To use **SCORE**, district registration offices could rent the required hardware—five computers, a printer, a webcam, and one scanner—and software at a low monthly cost from the center. The system recorded not only the value of the property and the details of the deed but also a photo and the fingerprints of the applicant. It issued applicants a tracking number, serial number, and deed number for every deed so that documents could be easily identified and retrieved. **SCORE** reduced the average deed processing time to less than an hour. After successful testing at Patna registration office, it was implemented to all of Bihar's land registration offices,



## **2.E. Information technology enabled Dept. of Finance and implementation of Comprehensive Treasury Management Information System(CTMIS)**

As decided, the govt then focused on the use of ICT to tighten control of the state's finances and reduce opportunities for corruption in the Treasury. In 2006, Bihar govt. adopted **Web-based revenue collection** so that they could learn what services to put online, what aspects of a service Bihar should automate, what to expect from citizens using the system, how to build civil servants' capacity, and how to monitor and evaluate the system.

In 2007, **Comprehensive Treasury Management Information System** was designed to provide real-time information for three Treasuries in Patna and one district-level sub-Treasury[10][11]. The system affected all Treasury related functions, including budget preparation, budget allocation, and cash management. It helped overcome manpower constraints and manual errors while increasing processing speed and transparency. This system played a major role in [streamlining] the financial system in Bihar, Using this, highest officials became able to see the amount flow in real time and it became possible to manage and control the funds allocated. Even though, the automated Treasury management system had some shortcomings. the pilot was viewed as a success. The Treasury management system had cut the three-month budgetary planning process to just two weeks.

In May 2008, the administration decided to scale up the **Treasury management system**. With the help of the IT department and Beltron, the Finance Department purchased 1,200 computers and trained data entry operators in 38 districts before installing the system in all 59 Treasury offices across Bihar.

## **2.F. Establishment of Software Technology Parks of India (STPI) and Big Companies Branches**

The talented people from the state are serving across India and making their presence felt in the IT industry, it was surprising to see Bihar going unnoticed and not getting leveraged with the IT growth in the past. As many of its industries have been agriculture based, it left the IT industry lagging behind the peer states. Amidst the stupendous growth recently across industries in Bihar, IT industry is no exception and has seen growth in terms of good number of investments being made in the region. With the set up of Software Technology Park of India (STPI) way back in 2008, Bihar has been on its way to emerge as a next IT hub in the eastern region.

The government of Bihar has taken many initiatives to promote the industry by establishing the Bihar Information Technology Authority (BITA) and Information Communication Technology (ICT) policy. Apart from this district e-governance societies (DeGS), National Informatics Center (NIC) played significant role to implement e-governance at district level.

In addition, govt. took serious effort to bring big players of IT **industry like TCS, Infosys, and HCL** into service related sector to the Bihar govt. The very basic services like acquiring driving licenses, residential certificates, passports that used to take ages, have now gone online and services can be availed with no more hustle.

## **2.G. Jankari (Right to Information act)**

Govt modernized Right to Information Act 2005, which required the central and state governments to disclose public information and build transparency and accountability. Under the law, citizens could seek information on the management of public funds, on administrative decision making, or on delays in service delivery. A citizen could visit a government office to file an application, pay about Rs10 (20 US cents) to a public information officer, and, within 35 days, receive the information requested. In Bihar, implementation of the act had fallen short of expectations. Filling out





forms required a moderate level of literacy; the process for filing a request was unclear and burdensome; transportation costs to file a request were onerous for the rural poor; and government officials sometimes harassed applicants.

In January 2007, the government of Bihar **launched Jaankari**, a telephone hotline designed to help overcome those problems. The necessary hardware and software, and the government outsourced operations to a private call center. Jaankari used trained call operators rather than civil servants to help citizens make requests under the Right to Information Act and to answer citizens' questions[12][13]. In this system, Operators speak with callers, determine their request needs, and forwards any complaints to the Home Ministry for immediate action. In the same way, callers receive unique reference numbers, and operators forward copies of formal request letters to the appropriate public information officer for action. Though the telephone application cost the same as the paper one but it doesn't require applicants to travel to an office or to be literate. For quality control, the Jaankari system recorded conversations and spotchecked operators. In late 2007, gov. moved Jaankari to the General Administration Department, a regulatory department within the chief minister's secretariat, with Beltron providing technical expertise. The move provided better coordination and monitoring and eliminated the cost of the private call center. By June 2010, Jaankari had received nearly 60,000 calls from citizens across 38 districts.

## **2.H. Scheme Implementation through Training civil servants**

To support the launch of ICT systems for improved service delivery, it was necessary to train those officers first who are directly involved in the implementation of schemes.

Starting in 2008, the government of Bihar began to work with UK development agency DFID to train both existing and incoming civil servants. DFID also helped provide basic computer training for higher-level civil servants who often

relied on subordinates to handle computer-related tasks[14-17]. The government also worked with DFID to recruit and train assistants to work in blocks, or sub districts, with local clerks who had never worked on computers or ICT-enabled systems. It was a great success.

## **2.I. Web based Commercial tax collection system**

In November 2008, encouraged by early progress in the finance and land registration departments, Govt. launched the Bihar Governance and Administrative Reforms Program under the purview of the General Administration Department. With technical assistance grants of US\$29 million from DFID and the World Bank, the government implemented two projects: a **Web-based commercial tax collection system** and a mobilephone-based reporting system that would monitor service delivery in rural areas[18-19].

First, with the help of Beltron, the Commercial Taxes Department set up a Web portal that enabled businesses to pay taxes online. Combined with a flat tax for small and micro enterprises, the initiative aimed to simplify the tax payment process for businesses and boost revenues. The portal let business owners register, file returns, and pay their tax bills via links to online banking, thereby saving time and money on transportation. Users also could ask questions and track the progress of their applications. The online payment system enabled the tax department to deal effectively with large numbers of taxpayers, better identify and manage errors, manipulate data, and compare payments from one year to the next.

Second, in 2009, the administration introduced a **monitoring system called mobile technology** that used existing mobile phone technology to transmit data and reports about program implementation and public service delivery across Bihar. Text messaging (also called SMS, for short message service) required only access to a mobile phone and functioned even in areas that had patchy electrical service. The state government asked officials in each subdistrict,



or block, to send a standardized text message from a mobile phone, provided by the state government, to a central server address at the end of every workday. Distinguished by unique number codes, each message furnished the local implementation status of critical services or programs such as benefits provision, housing and food subsidies, education, child and maternal health services, bicycle and school uniform distribution, land transfer, and rainfall updates. A computer program compiled the SMS data into a daily statewide status report that was accessible by both government officials and citizens. Training teams visited each block, the smallest administrative unit in the state, to instruct local staff on how to compose and send the short, standard-format messages. At its peak in 2010, the SMS monitoring system was taking in a daily average of 4,000 messages.<sup>35</sup> Over time, however, departments broke away from the centralized system and began developing their own, customized systems better suited to unique sectoral needs.

## **2.J. Implementation of Right to Public Service Act & Ensuring service delivery**

Aiming to address corruption, inefficiency, and lack of transparency in government affairs, govt. passed a **Right to Public Services Act**, in Aug 2011 and established a procedure for citizens to demand specific services such as land title transfers; birth, caste, and marriage certificates; and pension payments [20-22]. Moreover, the law required government agencies and civil servants to provide the services within set time frames. The act prioritized (1) services that affected the largest number of Bihar's citizens regardless of economic, ethnic, or other distinctions and (2) services that the government had the greatest capacity to deliver. The law placed strong emphasis on services that filled basic needs involving education, finances, and food, including scholarships, pensions, and ration (food) cards, which were essential for accessing other benefits.

The act required government agencies to deliver services within predetermined time frames. Civil servants who failed to meet the deadline for issuing a certificate or processing a scholarship payment had to explain the reasons in writing. Penalties for missing deadlines included fines of Rs500 to Rs5,000 (US\$10 to US\$100) and possible dismissal for egregious behavior.<sup>37</sup> Many civil servants insisted that because of circumstances that were beyond their control, they could not be held liable for failed service delivery. This Web-based application is also used for major services, including caste, income, and residential registration certificates, which accounted for about 70% of all applications in Bihar.<sup>38</sup> Citizens also could use a help line modeled on Jaankari to file applications, track their status, and connect to public grievance officers. Members of the Bihar team continued to improve the systems after the rollout.

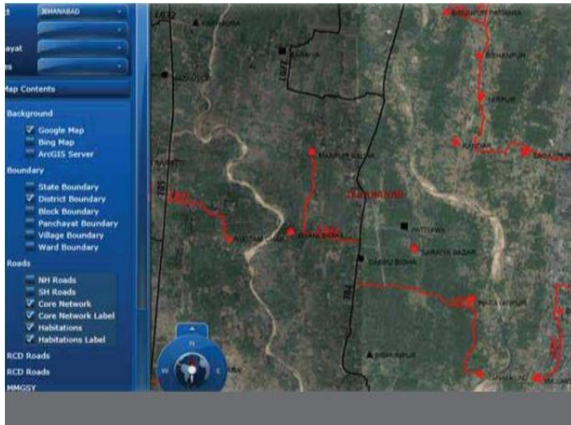
## **2.K. Implementation of I-BHUGOAL (Bihar Infrastructure Mapping GIS Project)**

I-Bhugol was implemented under a joint initiative of the IT Department, Government of Bihar and National Informatics Centre, Bihar.

The main aim of this project is to establish "Bihar GIS" as a tool to represent resources (natural as well as man-made) for location specific planning, decision-making and monitoring [5]. Bihar State Spatial Data Infrastructure was established for Multi-Layer GIS for planning and e-Governance by taking advantage of existing & available data. This project integrates GIS, GPS, and Satellite Imagery to capture location specific information. GIS project now integrates "Mobile based e-Governance Services" to access and update e-Governance applications through Mobiles/Tablets.

Mobile technology has been introduced to bring about easy access to applications and increase the reach of applications to remote locations. The Mobile-based framework established integrates MIS, GIS and Mobile Technology





## 2.L. Implementation of SEITRA [Smart Energy Infrastructure and Revenue Administration System]

Smart Energy Infrastructure and Revenue Administration System (SEITRA) is an integrated framework of web, mobile and GIS technologies to manage electrical infrastructure and produce energy bills for the consumers. ICT based solutions have been implemented for Mobile and GIS based modeling of electrical infrastructure mapping and planning, survey of connected and unconnected households for electricity infrastructure planning, project monitoring, handling grievances, and monitoring & execution of projects, tracking the habituated defaulters in bill payment thus enhancing the revenue collection, spot electricity billing through Mobile App, building up appropriate Management Information System (MIS) for monitoring revenue collection in its totality, thus helping decision making and establishing modern web-based interface for greater transparency between the Electricity Board & its consumers.

## 2.M. CHANAKYA [ICT based solution for Registration and Examination System] 2007

This is a web enabled, role based & work flow based software solution for the Universities/ Educational institutions to accomplish enrolment, registration and examinations task which offers a better solution to improve the productivity and efficiencies of the manpower

and for the entire system covering Registration & Examination Branch of the University/ Educational Institute. The entire system covers Registration & Examination Branch of the University/ Educational Institute. All modules of the system sit on the same database, meaning no messy, troublesome interfaces and real-time integration with error free results. In the process of transforming the University into the 'Centre of Excellence' Chanakya has potentially powerful enabling tools for registration and examination system.

## 3. ASSESSING RESULTS OF THE HARDWORK & DISCUSSION

Bihar's ICT-related reforms earned national and regional recognition. In 2007, SCORE, the online land registration system, received the **Indian Prime Minister's Award for Excellence in Public Administration**. The Jaankari call center received **the government of India's gold medal in the Outstanding Citizen-centric Programs category in 2008**, and a year later, the **Manthan Award South Asia, an annual ICT award for development initiatives**. The project I-Bhugol won the **"GOLD Medal" in National eGovernance Awards** in the "Innovative use of Technology" category.

“In December 2005 there were no computers. But slowly govt built the IT infrastructures. The entire secretariat is now connected. Most departmental communications are now through e-mails and Web systems. Videoconferencing is the normal means of communicating with field officers. They connected all the blocks [sub districts] with broadband infrastructure, and the blocks are on Internet phone also.” The Treasury reforms merged the government's fiscal processes into one unified system, which improved decision making, cash flow management, and fund utilization. By 2010, all 59 Treasuries were digitally linked to the accountant general's office, making information sharing easy, accurate, and timely. The new system also allowed for real-time expenditure tracking and prevented leakage.



When the project started in 2009, only 149 businesses in Bihar filed tax returns electronically. In February 2013, 78,000 businesses filed returns online. In 2013, Bihar's tax revenues totaled US\$3.06 billion compared with US\$800 million in 2006. More than 90% of tax payments were made online in fiscal year 2013. Govt invested the increased revenues in other sectors like roads, hospitals, electric power lines, and social sector programs. Bihar's ICT reforms also enabled citizens to better hold government accountable for service delivery. Jaankari recorded a fourfold increase in the number of calls after its inception in 2007. The Right to Public Services Act help line received more than 65,000 calls in the two years of its operation from August 2010 to 2012.

External agencies such as the OneWorld Foundation India, an organization that uses ICT to promote sustainable development and human rights, mentioned the Right to Public Services Act in a 2011 document on best practices, stating that "the primary achievement of the program has been to encourage citizens to demand public services from government." During the 10 months that ended in June 2012, the government received 17 million applications under the Right to Public Services Act, according to a DFID annual report on support to Bihar. Nearly all (94%) of the applications were completed, 89% of them within the set timelines. In June 2014, the government reported that it had received a total of 72 million applications since the inception of the services act in August 2011 and had completed 66 million.<sup>46</sup> Citizens had filed 175,000 appeals, and the government had imposed 733 penalties on civil servants for not complying with the act. of the respondents to a 2012 DFID-funded citizen report card on eight basic services in Bihar, 76% stated that service delivery had improved after implementation of the act.<sup>48</sup> Although studies pointed out that improvements in performance might be linked as much to increased resources as to the services act,<sup>49</sup> the speed and quality of public service delivery rose remarkably given Bihar's capacity constraints.

It can be said that ICT reforms improved monitoring and transparency in service delivery.

Computerized accounting and fiscal management systems introduced checks at the higher levels of government that made it harder for top officials to skim off public funds. More funds started to move down to the block level. Concurrent reforms in health, education, and pension plans also increased allocations to those sectors and gave the frontline civil servants in charge of implementing programs at the village level access to larger flows of money.. A 100-rupee (US\$2) pension benefit for the elderly wasn't reaching the villages [earlier]. Now even if 30 or 35 rupees are not reaching them, they are still getting 65 rupees. This is the biggest advantage Bihar has got in implementing ICT based schemes.

Also , there has been an unprecedented growth in the basic infrastructures, real-estates, and transportation facilities along with the burgeoning malls & multiplexes in the northern Indian state. The state has attracted various investments across industries from Manufacturing, Services, Health Care to Education owing to the conducive environment in the recent time. Thanks to the positive outcomes of Information technology related schemes for faster implementation with transparency. Finally we can conclude by saying that Bihar has just started IT based reforms in the implementation of many schemes and programs of Govt. of Bihar. The fruitful result has started coming. If it continues further, it will surely give astounding results in the future which will make path for developed state of the Indian union.

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