

Computerized Interstate Check Posts of Gujarat State, India

A Cost Benefit Evaluation Study



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An Evaluation of Computerized Inter-State Check Posts in Gujarat

1.0 Introduction

Gujarat, situated in the western corner of India, is one of the most developed states in India. It has an extensive, well-laid out and maintained road network, which carries a large volume of commercial traffic. Major highway systems link Delhi (the capital of India) to Mumbai (the financial capital of India) and provide the principal link to the Kandla seaport on Gujarat's west - coast.

The Gujarat Motor Vehicles Department (GMVD) controls the road transport activity in Gujarat. While the broad policies are laid down by India's central government in the Indian Motor Vehicles Act, state governments are empowered to determine the penalties for infractions and procedures for enforcement. The transport companies, with an intention to maximize their revenue per truck, tend to load their trucks beyond permissible axle load, creating a serious safety hazard. It is estimated that about 70% of the commercial vehicles crossing the state borders are overloaded.

Check posts have been set up on the state borders by the state government to check if vehicles passing through these borders have paid all the road taxes, carry proper documents, and conform to the loading and dimensioning norms. The Regional Transport Offices (RTO) of the state's Transport Department manage these check-posts. The state of Gujarat has set up 10 check posts positioned at the border with three neighboring Indian states. The locations of check posts are marked on the map of Gujarat in Annexure-1. Nearly 25,000 transport vehicles pass these check posts on a daily basis.

The RTO Inspectors are authorized to check the weight of goods being carried and verify the correctness of the documents carried with the vehicle. They also impose penalties on the transporters for offences like broken or damaged headlights and non-standard license plates, etc. The drivers of the vehicles must present proper documents (Registration Book, Driver's license, Permit to enter the state or the National Permit, PUC: Pollution Under Control Certificate, insurance documents and delivery documents) and pay the penalty amount, if any, before leaving the check post. The main functions of a check post are given in Annexure-2.

The process of verification of documents, estimation of penalty amount and its collection at any traditional check post is manual, judgmental and time consuming. A schematic diagram of the traditional check post system, along with time spent in each task is presented in Annexure 3. Due to these lengthy and cumbersome procedures, the state governments have not been effective at reducing the number of overloaded vehicles. With the manual system, the inspection of 100% of commercial vehicles is impossible thus resulting in slippage and heavy revenue losses to the state. Due to manual intervention, it is perceived that truck drivers are harassed at the check posts, held up for several hours, and arbitrary penalty charges and speed money are collected from most of them.

In late 1999, to improve the situation at check posts, the transport department of Gujarat redesigned the processes at its check posts. Large yards were created at the check posts and

processes of inspection and estimation were mechanized by deploying electronic weighbridges, video cameras and computers. Such modernized check posts called the **Computerized Interstate Check Posts (CICP)** were created at all the 10-interstate sites.

CICP is expected to improve the processes of identification of vehicles and estimation of penalties using electronic weighbridges and computers thereby minimizing the inconvenience to the transporters. Above all, this technology is expected to plug the leakage and significantly increase revenues from the check post for the state government. A schematic diagram and the verification and penalty collection processes at the computerized check post are presented in Annexure 4.

The Governance Knowledge Sharing Program (GKSP) initiative of the World Bank commissioned the Centre for Electronic Governance at the Indian Institute of Management (CEG-IIMA) to carry out a cost-benefit evaluation study of the Computerized Interstate Check Posts (CICP) in Gujarat.

The objectives of the study are:

- Evaluating the benefits of CICP to the intended stakeholders.
- Assessing the impact of CICP on transparency, accountability and corruption at the check posts of Gujarat.
- Identifying the strengths and weaknesses of the implementation and providing suggestions for sustainability of such projects.

This report presents the details and findings of the CICP evaluation study carried out by CEG-IIMA in June-July 2002.

1.1. Scope

CEG-IIMA collected background details of CICP from the following sources:

- Interviews and discussions with the project champion, the erstwhile Transport Commissioner, state government of Gujarat, India.
- Data collected by CEG-IIMA in 2000-2001, for a case study, on CICP.
- Articles and papers published on the World Wide Web, newspapers, journals and magazines.

Based on the information collected, the stakeholders of CICP were identified as:

1. Truck drivers who regularly cross and re-cross the interstate check posts in Gujarat.
2. Government officials at CICP, who examine vehicles passing through the check post, identify defaulters, levy penalties for non-compliance of rules, and collect the penalty for the state government.
3. The trucking companies or transporters, who are in the business of ferrying goods from one location to another for their clients (manufacturing, trading or export-oriented companies).

4. The manufacturing or trading or other organizations which transport their goods with help from Transporters.
5. The Total Solution Provider, a private sector organization, that has developed, installed, implemented and is operating the system at all the 10 locations.

These 5 categories of people/organizations constitute the major players of the interstate transportation system. CICS is expected to benefit these parties and therefore they are considered as the focus group of the study.

6. The study team wanted to use as control group a non-computerized check post. However, as a non-computerized check post does not exist in Gujarat, truck drivers at the non-computerized check post in Rajasthan (a neighboring state of Gujarat) were included in the study and treated as the control group of the study.

1.2. Methodology

The study was carried out in two stages namely:

- a) Exploratory study of the check post at Shamlajee, located about 150 kms from Ahmedabad, on the Rajasthan-Gujarat border.
- b) Detailed Study of 4 check posts (Bhilad, Shyamalajee, and Shamkhiali in Gujarat and Ratanpur in Rajasthan).

The purpose of the exploratory study was to get a reasonable understanding of the system at the check post and the stakeholders' perceptions of the system. It was also used to test the initial versions of the survey instruments.

The detailed study consisted of a large-sample survey of the stakeholders through refined survey instruments.

2.0 Exploratory Study

A team consisting of two faculty members and two research staff from CEG-IIMA conducted the exploratory study. In May 2002, they visited the check post of Shamlajee, located about 150 kilometers from Ahmedabad, on the Gujarat-Rajasthan border.

At the check post, the CEG-IIMA team held discussions with:

- a. The erstwhile Transport Commissioner of Gujarat , who is the visionary and champion of the project.
- b. The Total Solution Provider (TSP) of the project who is operating the system at all the check posts of Gujarat.
- c. The RTO Inspectors who have contributed to the development of CICS.

These discussions provided useful insights on the current status and future plans of the project. The study team observed the various processes at the check post and interviewed the inspectors and computer operators at the check post. A few truck drivers, selected randomly, were spoken to, about their views and perceptions of the system, during the exploratory study.

The study team also recorded the time taken for filling up a questionnaire and the answering patterns of respondents with a view of fine-tuning the survey instruments for the detailed study.

2.1. Project Objectives

The erstwhile Transport Commissioner shared the envisaged objectives of the CICP project with the study team from CEG-IIMA. These objectives are stated as under:

- a. To check 100% of vehicles passing through check post for overloading.
- b. The checking of vehicles by RTO Inspectors should not cause any sort of harassment for the transporter or driver. It should be for their convenience as transporters are the 'customers' for the check posts.
- c. To prevent unnecessary detention of vehicle at the check post. In the manual system, often, a driver was detained at the check post, maybe at the whim of the Inspector or for some unexplained cause. The drivers fear government authorities, and hence were helpless in the situation. In CICP, the lanes are supervised from the Control Room and any non-routine activity can be spotted and questioned.
- d. Reduce processing time at the check post. With the help of sophisticated technology and re-engineering of certain processes, transaction times can be significantly shortened, proving to be quite convenient for the driver.
- e. As per conservative estimates, transporters overload 60 to 70% of vehicles. In addition, technology is enabling 100% checking of vehicles. Thus, collection of overload penalty can be a major source of revenue for the government. The objective is to steadily increase incomes from the check post, reaching about 500 crores within 5 years of implementation of CICP.

2.2. Observations

The interaction with the RTO team at the check-post gave an optimistic view of the effectiveness of CICP, which appeared to be a well-conceived system, developed and executed with the total cooperation of the RTO staff amidst tight deadlines.

The various technology components of the computerized system such as electronic weighbridge, video camera, video server, computer hardware, etc. appear to have been seamlessly integrated to fulfill the objectives of the project. Financial reports presented to the study team reveal that the revenue from the check posts has increased significantly within a year of implementation.

It is to the credit of the erstwhile Transport Commissioner that the project could be smoothly implemented. He ensured that all the government officials, who may have viewed CICP as a potential threat, were made parties to the implementation of the project right from its conception. They were given training on computers and some of them were involved in developing programming modules of the software. This process inculcated a sense of ownership of the computerized system in the RTO officials.

At the time of conducting the study (May 2002), the computer-based operations at the check post were running into a rough weather. After operating the system at the 10 check posts for more than a year, the TSP (total solution provider) withdrew its computer operators due to non-receipt of contractual dues from the state government. In addition, the contract to operate the check posts for the subsequent period was also awaited from the government. In the meantime, the operations at the Control Room at the main RTO in Ahmedabad were also affected. Consequently, the database (vehicle database) at the control room server could not be accessed and monitoring of lanes by the RTO control room in Ahmedabad has since been disabled. Thus the computers at the check-post counter were working only in stand-alone mode. The video camera was also inoperative and the computer at the check-post counter just registered the weight of the vehicle from the electronic weighbridge. The rest of the transaction was completed through manual data entry.

The drivers interviewed gave mixed responses on the impact of CICP. Most of them expressed satisfaction over the electronic weighbridge, which has become an integral part of check post operations. In the earlier system, often they had either to accept the estimates of the RTO staff or in case of a dispute, had to go to a nearby private weighbridge. The drivers found that the waiting lanes and parking lanes are spacious and comfortable now.

During the exploratory study, it was observed that a transaction (the process of weighing, penalty calculation and document checking) took about 2 to 3 minutes, which is much less compared to what it takes at a manual check post.

3.0 Detailed Study

Based on the exploratory study, it was decided to collect data (through the refined questionnaires) from 3 computerized check posts in Gujarat and 1 non-computerized check post in the neighboring state of Rajasthan for the purpose of evaluation.

Bhilad, located on the Gujarat-Maharashtra border (known as the 'Golden Corridor', as both states are among the most progressive Indian states), is the biggest check post of Gujarat, both in terms of traffic density and revenue collection. Hence, Bhilad was chosen as one of the sites in the sampling plan.

Shamkhiyali is the only interstate check post in Gujarat, not situated on the state border. This check post is strategically located, as all the dispatches from and to Kandla (the biggest seaport of Gujarat) have to go through it. Thus, this check post was included in the sampling plan.

Shyamalajee is the closest check post to Ahmedabad. It ranks second, in Gujarat, in terms of revenue collections at the check post. Data was collected from this place during the exploratory phase.

Ratanpur is the non-computerized check post situated in Rajasthan, the closest neighbor of Gujarat. This check post is just about 2 kilometers away from the Shamlajee check post, which was visited during the exploratory study. Collecting data from the stakeholders at this check post (which is nearest neighbor of the focus group, yet having a totally different system and set of rules) would help analyze the comparative costs and benefits of the system.

It was decided to collect the data during the peak hours, that is, from 8pm to 2am, to get a statistically relevant representation of the truck drivers, the main users of the system. The drivers would be randomly selected as vehicles generally pass non-stop, during this time period.

As it takes about 10-15 minutes to fill up a questionnaire, it was decided to either interview the driver, while he was in the lane, waiting for his turn, or after he cleared the check post, when he may stop for a break.

All the government officials (RTO Inspectors) present at the check post, at the time of data collection, would be administered the questionnaire. Typically, about 2 to 3 Inspectors are present at the check post during the peak hours.

3.1 Survey and Data Collection

In June 2002, a 4-member team, comprising of 3 research staff from IIMA and one independent data collector, visited the check posts at Bhilad and Shamkhiyali and collected data from the truck drivers and RTO inspectors at those locations. In all, 126 truck drivers and 5 RTO Inspectors were administered the questionnaires. In addition, a 2-member team from CEG-IIMA visited the check post at Ratanpur (a non-computerized check post in the neighboring state of Rajasthan), and interviewed 16 truck drivers and 2 RTO inspectors there, recording their responses.

The check post wise break-up of the respondents is given in the table below:

Location	No. of Drivers	No. of Inspectors
Bhilad	85	3
Shamkyali	36	2
Shamlaji	5	1
Ratanpur	16	1
Total	142	7

The next section, Section 3.1, presents the analysis of the data collected through the survey instruments (Annexure-5 for truck drivers; Annexure-6 for Inspectors) and the telephonic interviews conducted with transport companies and client organizations. The data includes responses to quantitative as well as open-ended questions.

3.2 Truck Driver Responses

The survey instrument presented in Annexure-5 has been used for collecting responses from the truck drivers. The section below provides the respondent profile, their perceptions in terms of awareness, convenience, corruption, amenities, and attitude of transporters and inspectors.

Almost 90% of the drivers interviewed are below 40 years of age. Out of the 142 drivers spoken to, 50% have a driving experience of 5 to 15 years. All of them are literate, with 60% having attended secondary school.

50% of all the drivers interviewed were not aware that the check posts are computerized. This includes 12 of the 16 drivers spoken to, at the non-computerized check post in Ratanpur, Rajasthan.

3.2.1 Check Post Services

The truck drivers were asked to state the average time taken for crossing the check post, and evaluate the different components in transaction processing (weighing, document checking, computation of penalty, obtaining receipts, payment of cash, etc), before and after computerization. An analysis of responses from the drivers reveals the following:

a. Processes at Check post

Drivers were asked to score their perceptions on each of the process parameters (presented in the questionnaire) on a 1 to 5 scale. The difference in the score of each process parameter after computerization and before computerization is computed for each respondent. A positive value of such difference conveys an improvement and a negative value conveys deterioration / dissatisfaction of the process parameter with reference to the respondent. These values are averaged over all the respondents to obtain the overall impact of computerization on each process parameter. The following table summarizes the analysis of observations. Sections below present an analysis of the results of each process parameter.

Perceptions	Process Parameters					
	Weighing	Payment Handling	Official Receipt	Document Checking	Document Depositing	Document Collection
Number of Respondents	110	86	73	64	59	58
Average SL Before CICP	2.33	3.00	2.67	2.70	2.73	2.71
% perceiving deterioration	21%	34%	5%	13%	10%	9%
Average SL deterioration	(1.52)	(2.10)	(2.50)	(2.38)	(2.50)	(2.40)
% perceiving no difference	24%	40%	64%	61%	61%	62%
% perceiving improvement	55%	27%	30%	27%	29%	29%
Average SL Improvement	2.77	2.45	2.91	3.00	3.00	3.00
Average SL After CICP	3.54	3.00	3.49	3.25	3.42	3.46
Overall Impact	1.22	-0.05	0.74	0.50	0.61	0.67
Control group Respondents	9	8	10	9	8	9
Average SL : control group	3.11	3.38	3.50	3.56	3.38	3.56

Note: SL refers to Satisfaction Level, which is measured over a scale of 1-5.

CICP refers to Computerized Inter State Check Post

Parentheses refer to negative value of the figures given.

As an example, the weighing process parameter (column) is explained below:

In the process parameter of weighing, the number of respondents is 110. They gave an average satisfaction level score of 2.33 to the manual system (before CICP). Thus, 21% of 110 respondents perceive deterioration in the weighing process. The average deterioration in satisfaction level is a negative score of 1.52. (Subtracting the average score of before and after CICP). 24% have perceived no difference in the weighing process, after computerization. 55% have perceived improvement in the process and the average satisfaction level score given to this process is 2.77 (on a scale of 1 to 5) The actual average score provided by the respondents is 3.54. Hence the overall impact of the weighing process after CICP is a positive figure of 1.22. The number of control group respondents totaled 9 and their average satisfaction level is 3.11 (on a scale of 1 to 5).

Based on these readings, the analysis for each process parameter is provided in the following sections.

i. Weighing

All the drivers were unanimous in stating that they were quite satisfied with the weighbridge provided at the check post. This is perhaps the only component in the system, which is perceived as adding maximum value for the stakeholders. In the absence of a weighbridge, drivers often have to go to a privately owned weighbridge, which was both cumbersome and time consuming. Only 20% of the drivers at the non-computerized check post felt the need of a weighbridge.

It may be noticed that 55% of 110 drivers, who responded, perceive an improvement of 2.77 in the weighing process at CICIP. 21% of the drivers expressed dissatisfaction over weighing process after computerization, while the balance 24% noticed no difference. The weighing procedure is clearly perceived as an improvement in the new system (an average score of 3.54) by the drivers, with an overall impact of 1.22. This compares favorably with the control group respondents, who have given an average score of 3.11 to the weighing process at the non-computerized check post.

Display of weight

The electronic display board meant for the drivers to know the overloaded weight and the penalty due is always switched off. This complaint has been voiced by 50% of drivers interviewed. The receipt given to them also does not carry the overloaded weight of the truck. The drivers opine that the receipt bearing the overloaded weight can be produced as an official document at check posts in other states, as well.

ii. Document Checking

61% of drivers have noticed no change in the checking of documents in CICIP, while 13% perceive a deterioration of 2.38. 27% of the responses indicate that there is a benefit to the drivers to the extent of 3.00, resulting in an overall average positive impact of 0.5. The control group respondents perceive an average score of 3.56, which is superior to the CICIP average of 3.25. Most of the truck drivers in the control group possess a pre paid card (Gold Card System), and hence document checking may not be needed.

iii. Document Depositing

In case a driver is short of money, he goes to his nearest office after depositing the vehicle documents with the check post Inspector, and collecting the receipt. 61% of respondents find no change in the document depositing process at CICIP. 29% of the drivers found an average improvement of 3.0, leading to an average positive impact of 0.61. The control group's average scores are 3.38, a bit lower than CICIP score of 3.42.

iv. Official receipt

64% drivers have found no difference in the issuance of official receipts in CICIP. A marginal group of 5% of respondents perceive deterioration while 30% have noticed an average improvement of 2.91. The overall impact is 0.74. Control group respondents have given an average score of 3.5, which is very close to the average score at CICIP (3.49). Thus this parameter is not effected, either way, due to CICIP and there is no difference with the control group, either.

v. Payment

It may be noticed that 40% of the 86 drivers, who responded, perceive no impact of CICIP on payment mode at the check post. 34% perceive an average deterioration of 2.10 in the payment process in CICIP. The overall perceived benefit is a small negative value of 0.05. The control group is more satisfied with the manual system giving an average score of 3.38, which is slightly above the average score of 3.00 of CCIP.

70% of drivers perceive that the Gold Card system in Rajasthan is a hassle-free method of collection of overload penalty. In the gold card system, the transporter pays a certain sum of money (Rs. 3000 to Rs. 5000) at the local Road Transport Office (RTO) and is issued a Gold Card. This card is affixed on the truck and the driver cruises through the check post, without halting even for a minute, as the card is visible on the truck itself. This card allows the vehicle to carry a certain overload for the validity period of the Gold Card. There are no mechanisms to check whether the vehicle is carrying the permissible overload or more, at the check post and is trust-based.

The Gold card system was introduced in Gujarat during 1998 and the check post revenues went up by 80% (from Rs. 30 crores to 55 crores). Although this system minimizes the harassment of the drivers, the government felt that it would not plug the leakage completely and thus it decided to introduce 100% checking through computerized electronic weighbridges. However the current payment system at CICP needs significant improvement, to enhance the customer convenience, perhaps through electronic payment systems.

vi. Document Collection

62% of drivers find that collection of documents is the same in the new system. 29% perceive an improvement of 3.00 and an overall positive impact is 0.67. The control group's average score stands at 3.56, which is slightly better than the CICP average of 3.46.

b. Process Efficiencies

Drivers were asked to specify the amount of time spent for the check post transactions before computerization and after computerization. The difference in this duration for each type of transaction after computerization and before computerization is computed for each respondent. A negative value of such difference conveys an improvement and a positive value conveys deterioration according to the respondent. These values are averaged over all the respondents to obtain the total impact of computerization on each parameter. The following table summarizes the analysis of observations. Sections below present an analysis of the results of type of transaction.

Perceptions	Transaction Processing Duration		
	Waiting	Weighing	Payment
Number of Respondents	76	61	59
Average WT: Before CICP	46.6 minutes	38.8 minutes	22.4 minutes
% perceiving deterioration	42%	13%	36%
Average increase in WT	(54) minutes	(38.6) minutes	(28.1) minutes
% perceiving no difference	20%	7%	41%
% perceiving improvement	38%	80%	24%
Average reduction in WT	60.7 minutes	42.2 minutes	35.2 minutes
Average WT after CICP	42.7 minutes	9.5 minutes	26.4 minutes
Overall Improvement in WT	0.4 minutes	28.8 minutes	(1.6) minutes
Control group Respondents	13	6	7
Average WT for control group	45.8 minutes	24.2 minutes	15.7 minutes

Note: WT: is Waiting Time' CICP is Computerized Inter state Check Post

i. Waiting

38% of drivers find that the waiting period has reduced significantly by an average of 60.7 minutes, while 42% perceive that they have to wait more (by 54 minutes) in the new system. 20% perceive no change in the waiting time at the check post. The overall improvement in waiting time is a marginal 0.4 minutes with the introduction of CICP. The drivers perceive that

they have to wait an average of 42.7 minutes with CICIP. This is slightly better than the average waiting time at the non-computerized check post of 45.8 minutes.

To the open-ended questions, 75% of drivers have stated that only one lane is operational, even during the peak hours at night. This increases the congestion and queue length. While moving up the queue, often, the truck gets accidentally into a minor collision, which leads to broken headlights. Lack of properly functioning headlights is an offence and the drivers have to pay this penalty also, as a result of being in the queue for a longer time. As all the check posts provide a facility of at least 4 lanes, the drivers feel that other lanes should also be made operational to reduce the waiting time and queue length.

10% of drivers perceive that the operations are done more speedily at Gujarat, than in other states.

ii. Weighing

80% of drivers perceive that the time taken to weigh the vehicle has gone down significantly by 42.2 minutes, over the earlier system. At CICIP, it now takes 9.5 minutes on the average. 13% of drivers find that it takes longer by 38.6 minutes and 7% perceive no difference with CICIP. The average waiting time for the control group is 24.2 minutes. Thus the waiting time for weighing is significantly reduced in CICIP (9.5 minutes), in comparison to the control group as well as the old system.

iii. Payments

36% of drivers perceive a decline in the time taken to process payments by 28.1 minutes. 41% perceive no change, while 24% have noticed an improvement in the processing time by 35.2 minutes. At the non-computerized check post, the Gold Card facility is available, which leads to lower waiting time (15.7 minutes) that is significantly lower than the CICIP figure of 26.4 minutes.

c. Corruption and Transparency

Drivers were asked to score their perceptions on each of the corruption and transparency parameters (unaccounted collections, check post bypassing and transparency) on a 1 to 5 scale. The following table summarizes the analysis of observations. Sections below present an analysis of the results of each process parameter.

Perceptions	Corruption and Transparency Parameters		
	Unaccounted Collections	Check post Bypassing	Transparency
Number of Respondents	85	49	59
Average SL Before CICIP	2.87	2.73	2.46
% perceiving deterioration	14%	4%	10%
Average SL deterioration	(2.17)	(3.00)	(1.50)
% perceiving no difference	61%	73%	56%
% perceiving improvement	25%	22%	34%
Average SL Improvement	2.81	3.27	3.20
Average SL After CICIP	3.25	3.38	3.44
Overall Impact	0.39	0.61	0.93
Control group Respondents	9	6	6
Average SL : control group	3.33	3.00	3.33

Note: SL refers to Satisfaction Level, which is measured over a scale of 1-5.

CICIP is Computerized Inter state Check Post

i. Unaccounted Collections

61% of drivers have responded that payment of 'additional' money to RTO staff continues to be the same, post CICP. 14% have responded that they have to pay more money now giving an average decline of 2.17, while 25% opine that CICP has resulted in an improvement by giving a positive impact of 2.81. Overall, there is a positive shift of 0.39 in this dimension of processing at the check post. The control group average works out to 3.33, which is slightly better than the CICP average of 3.25. Possibly the drivers in the control group may be paying lesser additional money, as compared to drivers passing through CICP – in the absence of accurate estimation of weight of the trucks and other control procedures.

Almost all the drivers interviewed told the study team that an unofficial 'entry fee' of Rs. 20 to Rs. 50 has to be paid by them irrespective of the weight of the goods being carried by them. Once the Inspector does the weighing and penalty estimation process, the driver is given an option to pay the 'official' or 'unofficial' sum of money (the former goes to the Government treasuries and the latter gets unaccounted).

The table below summarizes the pattern of penalty collections at the surveyed computerized check posts:

Penalty Amounts paid by drivers <i>N = 106</i>	Given Receipt		Unaccounted Collection	
	Over Weight	Over Dimension	Along with OD or OW penalties	In lieu of OW or OD penalties
No. of Vehicles	54 (50%)	12 (11%)	15 (14%)	36 (33%)
Total Amount (Rs.)	61995	16225	570	4100
Average per vehicle (Rs)	1148	1352	38	114

It can be seen from the table that about 50% of the vehicles paid penalty for overloading and 11% of the vehicles paid penalty for over dimensioning. The average penalty per vehicle for overloading is Rs.1148 and for over dimensioning is Rs.1352.

However, 33% of the vehicles although are either overloaded or over dimensioned, were not charged official penalty and were let off by collecting an average of Rs.114 per vehicle, which went unaccounted. Thus creating a clear leakage of government revenue to the extent of $Rs.1250 \times 36 = 45,000$ with a corruption amount of Rs.4, 100.

In addition to the above, unaccounted money of Rs.38 per vehicle was collected from 14% of the vehicles, which were given official receipts for either overloading or over dimensioning. Thus even with CICP, unaccounted money was collected from 47% of the vehicles passing through the check post.

An interesting facet, on the use of the weigh- bridge, came into light, during the study. In the traditional system, weighing was not an exact procedure, due to non-availability of weigh-bridges at the check post. The inspectors used to stop only some suspect vehicles and estimate the overload weight visually and by experience and collect penalty charges from them.

With the introduction of the weighbridge, the exact weight is known for all vehicles. Neither there is a locking mechanism (where once a vehicle gets weighed through the electronic weigh-bridge, the system logs the transaction and does not permit non-payments for over loading) existing nor is the monitoring mechanism in place. Thus, CICIP has offered a greater opportunity for 'leakage'. Inspectors now randomly bypass the system and collect a smaller 'unofficial' amount in lieu of the large official penalty charges. Unwittingly, technology has become a useful and perfect tool in the hands of the corrupt.

Possibly, introduction of suitable locking mechanisms and elimination of cash collection (by using electronic means of payment like debit cards, etc.) at check posts may improve the situation.

70% of the drivers complained that Inspectors habitually harass them (in spite of paying the due amounts), sometimes even going to the extent of manhandling them.

ii. Check post By-passing

At times, for some reasons, truck drivers may not want to go through the check post. They may chose some other route, which would by-pass the check post. This practice was quite common in the manual system, though the introduction of mobile checking squads has controlled this practice to a large extent.

73% of drivers have responded that there is no impact of the new system on the trend of drivers bypassing check posts. 4% of them see degradation to the extent of 3.0 in the new system, while 22% perceive an improvement to the extent of 3.27. The overall positive impact is 0.61. The control group average is 3.00, which compares unfavorably with CICIP average of 3.38. Thus, the infrastructure at CICIP must have contributed to preventing trucks from bypassing the system.

iii. Transparency

56% of drivers perceive no difference in the transparency levels of both the old and new system. 10% perceive a decline of 1.50, while 34% of drivers have noticed an average improvement by 3.2. The overall positive impact is 0.93. The control group score is 3.33, which is a bit higher than the CICIP score of 3.44. Thus the drivers perceive the computerized check post to be somewhat more transparent in its processes.

3.2.2 Check Post Amenities

The drivers were asked to score their perceptions on the amenities at the check post (presented in the questionnaire) on a 1 to 5 scale. The drivers have responded to the questions related to only two amenities namely waiting lanes and parking facilities. The following table summarizes the analysis of observations and the sections below present an analysis of the results of each amenity.

Perceptions	Amenities at the Check Posts	
	Waiting	Parking
Number of Respondents	83	83
Average SL: Before CICIP	1.66	1.66
% perceiving deterioration	4%	0
Average SL: deterioration	(1.67)	-
% perceiving no difference	23%	8%
% perceiving improvement	73%	92%

Average SL: Improvement	2.92	2.86
Average SL after CICIP	3.94	4.33
Overall Impact	2.08	2.61
Control group Respondents	16	16
Average SL : control group	1.31	1.31

a. Waiting Lanes

73% of drivers find the convenience of having a well laid out waiting lane quite significant, a score of 2.92 out of 5. Hence, the overall average positive shift works out to 2.08, with 23% finding no difference and with only 4% of the 83 responses being negative. The respondents of the control group perceive this amenity as not satisfactory, giving an average score of 1.31. Thus this amenity is significantly enhanced both after computerization and in comparison with the control group.

b. Parking Space

92% of drivers are satisfied and perceive a major shift in the parking amenities. Only 8% opine that there is no change and there are no negative answers. Hence this factor has the highest positive shift of 2.61, and can be clearly considered a significant by-product of CICIP, providing a much-needed amenity to the weary driver. Control group respondents are not satisfied with the parking amenity and the average score works out to 1.31.

3.2.3 Inspector Behavior

Drivers were asked to score their perceptions on the RTO inspector's behavior (politeness, fairness and efficiency) at the check post on a 1 to 5 scale. The following table summarizes the analysis of observations. Sections below present an analysis of the results.

Perceptions	Attitude of Inspectors		
	Politeness	Efficiency	Fairness
Number of Respondents	106	106	99
Average score before CICIP	2.14	2.29	2.34
% perceiving deterioration	5%	8%	6%
Average deterioration	(1.60)	(1.88)	(1.17)
% perceiving no difference	82%	67%	77%
% perceiving improvement	13%	25%	17%
Average Improvement	2.14	2.41	2.88
Average score after CICIP	2.44	2.84	2.89
Overall Impact	0.21	0.47	0.42
Control group Respondents	11	10	11
Average score for control group	3.09	2.70	2.64

a. Politeness

82% of drivers perceive no change in the behavior of inspectors. The status quo is maintained. 5% of drivers perceive deterioration in this parameter and 13% find an improvement amounting to an average of 2.14. The overall impact is marginally positive (0.21). The average score for the control group is 3.09 and that for CICIP is 2.44. Thus, respondents at the non-computerized check post find the inspectors more polite, although there is a small improvement at CICIP, pre and post computerization.

b. Efficiency

67% of drivers have opined that there is no significant change in efficiency levels of Inspectors. 25% of the respondents have stated some improvement (average score of 2.84), which leads to an overall positive shift of 0.47. The control group perceives that the inspectors at the non-computerized check post are marginally less efficient, with an average score of 2.7 as against the CICIP score of 2.84. Thus, CICIP has slightly enhanced the efficiency levels of inspectors.

c. Fairness

77% drivers perceive no change in the inspectors, with respect to fairness in dealings. 17% have perceived improvement of 2.88, which reads into an overall positive shift of 0.42. The average score for the control group is 2.64 and that of CICIP is 2.89. Thus the inspectors at CICIP are perceived to be more fair and transparent, both in comparison to before computerization and with a non-computerized check post.

3.2.4 Transporter Preparedness

The drivers were asked to score their perceptions of transporters on a 1 to 5 scale. The difference in the score of each parameter (overloading, documentation, tax compliance, license plate compliance, providing adequate cash) after computerization and before computerization is computed for each respondent. A positive value of such difference conveys an improvement and the negative value conveys deterioration / dissatisfaction on the attitude parameter with reference to the respondent. These values are averaged over all the respondents to obtain the overall impact of computerization on the attitudes of the transporters. The following table summarizes the analysis of observations. Sections below present an analysis of the results of each attitude parameter.

Perceptions	Transporter Preparedness				
	Overloading	Documentation	Road Tax Payments	License Plate	Adequate Money
Number of Respondents	106	96	97	92	100
Average score before CICIP	2.79	3.16	3.46	3.45	3.49
% perceiving deterioration	7%	1%	0%	0%	2%
Average deterioration	(2.00)	(2.00)	-	-	(1.00)
% perceiving no difference	71%	91%	99%	99%	92%
% perceiving improvement	23%	8%	1%	1%	6%
Average Improvement	2.22	2.75	4.00	1.00	2.17
Average score after CICIP	3.09	3.35	3.48	3.43	3.53
Overall Impact	0.33	0.21	0.04	0.01	0.11
Control group Respondents	8	8	8	8	8
Average score for control group	3.25	4.00	4.00	4.00	4.00

a. Overloading

71% of the drivers perceive that there is no change in the pattern or routine of overloading by transporters, post-computerization. 23% of drivers perceive some improvement and only 7% perceive deterioration (by a score of 2.00). Overall shift is positive at 0.33. The average score for the control group is 3.25, higher than the CICIP score of 3.09. Thus the attitude of transporters towards overloading post computerization has improved marginally. An improvement here signifies that transporters are more careful now and do not overload their vehicles indiscriminately. The presence of accurate weighing mechanisms at the check post has made them more cautious. However, at the non-computerized check post transporters are perceived as more careful in overloading of goods.

b. Documentation

91% of respondents perceive no difference in the documentation provided by transporters to them. 8% have perceived an average improvement of 2.75, with an overall positive shift of 0.21. The average score for the control group works out to 4 which is far higher than 3.35 of CICIP. This is possibly due to simple document checking procedures at non-computerized check post as the drivers carry Gold Cards, and Inspectors know they would only be provided the cards if their documents were in order and up-to-date.

c. Road Tax Payments

99% of drivers perceive no difference in payment compliance of road taxes after computerization. The average score for the CICIP works out to 3.48, which is less than 4.00 of the control group. This is again possibly due to simple document checking procedures at non-computerized check post.

d. License Plate Standard Compliance

99% of drivers have perceived no difference in the attitude of transporters towards compliance to license plate norms. None of the respondents have found any deterioration in the new system either. The average score for the CICIP works out to 3.43, which is less than 4.00 of the control group. This is also possibly due to simple checking procedures at non-computerized check post. The computerized check posts insist on standardization as they are expected to capture the license plate information through video cameras.

e. Providing Adequate Cash to Drivers

92% of drivers have perceived no difference in the attitude of transporters in terms of equipping them with adequate cash. 2% perceive deterioration with an average deterioration of 1.0. 6% of drivers perceive an average improvement of 2.17. The average score for the CICIP works out to 3.53, which is less than 4.00 of the control group. This is possibly due to minimum cash requirement at the non-computerized check post (due to gold card system).

3.2.5. Overloading and Over Dimensioning Patterns

The goods carried by the truck drivers have been classified into 7 main types as given in the table below. A vehicle normally carries more than one type of consignment. Therefore the 126 drivers interviewed carried 205 consignments. The average overloading and over dimensioning figures of each type of goods is given in the table below:

Type of Goods	No of Consignments	% Over loaded	Average Overload (Tons)	Nos. Over Dimensioned
1. Chemicals, fertilizers, petrol, diesel, explosives, CP Oil	39(2)	51 (50)	4.55(2.0)	0
2. Perishables, food grains, edible oils, mutton, animals	23 (2)	43 (0)	2.22 (0)	0
3. Engineering goods, metal, industrial goods, lignite	57 (8)	68 (50)	3.85 (9.0)	3
4. Clothes, wood, thread, cotton, plastic, paper	38 (3)	58 (0)	3.64 (0)	3
5. Glassware, TV glass	7 (0)	43 (0)	3.33 (0)	1
6. Vehicles, tyres	5 (1)	0 (0)	0.00 (0)	3 (1)
7. Mixed consignments, containers	36 (7)	33 (14)	4.17 (1.0)	2
Total	205 (23)			12

Note: The figures in brackets indicate the values for the control group

A large number of consignments (68%) having engineering goods, metal, industrial goods, lignite (type3) are overloaded to the tune of 3.85 tons per consignment. The consignments having type 4 goods (Clothes, wood, thread, cotton, plastic, paper) rank the second with 58% of consignments over loaded by an average of 3.64 tons per consignment. The consignments carrying chemicals, fertilizers, petrol, diesel are also overloaded (51% of consignments with an average of 4.55 tons per consignment). However, the consignment having vehicles and tyres are never overloaded.

The type 1 and type 2 goods are not over dimensioned. All other types of goods are over dimensioned.

The overloading and over dimensioning pattern is same for the control group.

3.3 Government Official Responses

The study team of CEG-IIMA team interacted with the former transport commissioner (who conceived and executed the CICP project) and other RTO officials to get their perceptions about the computerized interstate check posts. The following sections give an analysis of the data collected.

3.3.1 Transport Commissioner

When the transport commissioner took over his position in 1998, on a random observation of the check post operations recognized the need for improvement in the estimation and collection systems at the check posts in order to plug leakage of government revenues.

To start with, the commissioner introduced the Pre-paid Card System in 1998, allowing a transporter to voluntarily pay Rs. 1200 per month for overloading. This scheme allowed the vehicle to overload up to 20% of the permissible weight. This scheme proved to be quite popular and revenues jumped by 82% in that year (from Rs. 31 crores to 56 crores – see the table below).

a. Project Motivation

There were no mechanisms to check 100% of vehicles passing the check post for over loading. Typically it takes about 30 minutes for a RTO Inspector to manually examine and determine overload penalty. Hence in a shift of 8 hours, he can check a maximum of 20 vehicles. The number of RTO Inspectors has remained the same over the past decade and has in fact reduced, over the years. Hence, the Transport Commissioner was convinced that immense potential exists at the check post for revenue collection, provided there is a mechanism in place to check all the vehicles passing the check posts.

b. Project Execution

Computerization along with development of necessary infrastructure at check post locations (waiting lanes and parking zones, electronic weigh- bridges etc.) was all conceived and executed in period of 9 months. An amount of Rs19 crores for the equipment and software and an amount of Rs. 44 crores on the infrastructure development were spent, in total. It is to the credit of government of Gujarat and Transport Commissioner that the project was smoothly implemented.

The government approved the project and gave all clearances in record time. The commissioner ensured that all the RTO officials, who may have viewed CICP as a potential threat, were made parties to the implementation of project from the conception itself. They were given training on computers and some of them were involved in developing programming modules of the software. This process inculcated a sense of ownership of the computerized system in the RTO officials.

The penalty charge in the traditional system was Rs. 2000 per ton. This was significantly reduced to Rs. 250 for the first ton of overload and Rs. 150 from the 2nd ton onwards.

The study team has observed that after the smooth implementation and running for about a year, the Transport Commissioner was transferred within one year of the execution of the project. Though installed, monitoring mechanisms are not being utilized. Maintenance and service contracts were not cleared even after a period of one year due to which the service provider withdrew his people. This provided an opportunity for the RTO staff to misuse the system (see section 3.2.6 above).

3.3.2 RTO Inspectors

7 RTO Inspectors from 3 computerized check posts were interviewed during the data collection phase. All the Inspectors are over 40 years of age. 6 of them are diploma holders in Automobile Engineering and one in Mechanical Engineering. None of them have been at the check post for more than 3 years.

a. Perceptions

The RTO Inspectors opine that there are shorter queues after computerization and much time is saved. The inspectors perceive that 25 to 30% of vehicles are overloaded and there is no shift in this pattern even after computerization.

Due to transparency introduced by the system, Incidents of conflicts with the drivers have also reduced considerably. They perceive a reduction in their workload, after the introduction of the computerized system.

The Inspectors were asked to grade the processes before and after computerization, on a scale of 1 to 5 (1 being the lowest grade).

i. Impact on Processing

The Inspectors perceive that there is a significant shift (from 2 to 4 on the 5 point scale) in all the components in processing, post computerization. That is, weighing and computing, collection of fine, issuing receipts, transparency, workload, and overall effectiveness has all improved to a great extent. However, 2 of the inspectors have stated that workload has remained the same or increased with the introduction of the computerized system.

Activities	Average perceived difference (After-Before)
Weighing & Computing Bill	+2.0
Collection of Penalty Amounts	+2.5
Issuing Receipts	+2.0

Checking Documents	+1.5
Transparency	+3.0
Workload	+1.0 (range from -4 to +2)
Overall effectiveness	+3.0

About 700-800 vehicles are checked in a span of 8 hours, at each check post. In the manual system the inspectors were able to check only about 15 to 20 vehicles in a shift of 8 hours.

The average time taken for weighing of vehicles, bill preparation, and checking of documents was about 1.5 to 2 hours, on an average, in the traditional system. In CICP, as per the feedback from RTO Inspectors, it takes about 5 to 10 minutes to accomplish the same tasks.

Average Duration	Before (minutes)	After (minutes)	Improved by (minutes)
Weighing	35	2.6	32.4
Receipt preparation	15	3.6	11.4
Document checking	6	4	2
Daily accounts closing*	60	10	50

* At the end of the day, daily ledgers are prepared which took more than an hour earlier but takes only about 10 minutes now at the Syamalajee check post only. However, at Bhilad and Samkhiyali check posts, the closure of accounts is still a manual process and hence, does not offer any benefit on closure of accounts.

ii. Impact on drivers

The inspectors perceive that the impact on drivers is also quite favorable. The confidence of drivers in the system rose from 1 or 2 to 4 or 5 (on a scale of 1 to 5) in the new system. One Inspector has stated that preparedness (payment, etc) of drivers has come down somewhat, in the new system.

Impact on Drivers	Average perceived difference (After-Before)
Confidence on system	+2.0
Compliance to rules	+2.0
Preparedness	+1.0 (range from -2 to +4)

iii. Coping with Change

The 3 inspectors interviewed at Bhilad feel that the targets set for them are higher than what is achievable.

The Inspectors at Shamkhiyali have complained that though the system (the weighbridge is completely destroyed) was badly damaged in the earthquake of January 2001, the repairs are yet to be done. This check post was established after computerization, and is the only check post in the interior of the state (the remaining 9 are on the border of Gujarat). This check post is quite inhospitable as it is in the middle of thick under-growth, yet there were no amenities constructed

at the check post there, by the government. The Inspectors put in their own funds to construct a cabin at the check post.

That the maintenance of the infrastructure at the site is quite poor, is the opinion of all the Inspectors. The weighbridge develops 5-6 serious problems in a year. There has been no maintenance of the equipment in the past 1 year.

70% of the trucks, which pass through this check post, are over loaded. The inspectors experience that when the traffic density is high, 3-4 lanes are made operational and during such periods, having only one cashier is turning out to be a severe bottleneck.

It may be noted that there is considerable discrepancy between the perception of the drivers and inspectors, as brought out by this study. While a natural difference is expected, the significant discrepancy that emerges here is important. This may be attributed to the tendency on the part of Inspectors to exaggerate the positive elements of the system while ignoring the customers' (truck drivers) viewpoint. At times the truck drivers may also be quite critical of the system, especially if they have experienced inconveniences at CICP.

3.4 Responses from Clients of Transport Companies

The manufacturers, traders or other companies, which have to dispatch their goods (inter-state) were interviewed, telephonically, for their views and perceptions on the CICP. In all 8 companies shared their views with the study team, with 3 organizations declining to participate in this process.

The composition of the organizations that shared their views is as under:

Textiles(1), Chemicals (3), Pharmaceuticals (1), Milk marketing and distribution (1), Heavy Engineering (1), Electronics (1).

All of them are medium to large sized companies. They all dispatch 4 to 10 truckloads of material each day, on an average.

Each company has a transporter allocated to a particular route.

3.4.1 Perceptions

All the companies interviewed, except one, said that they were not aware of the computerized check posts or the overloading penalties. They opined that the transporter does not overload the vehicle at their premises, so they do not know about such occurrences.

Only one medium sized chemical exporter opined that the transporter is more vigilant now and has become a stickler for rules. His perception is that the tendency to overload the vehicle has reduced now.

3.5 Transporter Responses

An important category of stakeholders in CICP is the transporters. The transporters decide the overload to be carried and through their powerful state level association are able to influence the government on determining the penalty charges for overloading.

When the project was conceived, the erstwhile Transport Commissioner had sought and obtained full participation from the transporters. They were kept abreast of the project at all stages and the transporters participated in the installation of the system at all the check posts.

During the survey, transporters were interviewed telephonically. In all, about 7 transporters were spoken to. Out of these, 2 are large national level transport companies, 4 are medium sized and the remaining 3 are small transport companies.

At the beginning of the telephonic interviews, transporters were hesitant to talk about overloading and payment of penalties. They did not wish to be perceived as lawbreakers or create any sort of controversies, as they perceived this survey as government sponsored.

The big transport companies have stated that they do not need to overload their vehicles. They have their regular customers (large industrial houses), who supply them with regular business. It is economically infeasible for them to overload their vehicles.

The medium and small sized transport companies tend to overload their vehicles. The primary (and probably the only) cause of overloading is the severe competition amongst them. Their rationale for overloading is that a vehicle can carry larger consignments and hence, they can offer competitive prices to their clients. Ultimately, it is the client who has to bear the penalty amount.

3.5.1 Perceptions

a. Weighing

The transporters have found the weigh- bridge to be quite useful. It helps in accurate weighing of the vehicle, thereby avoiding ugly confrontations between the drivers and check post officials. 50% of transporters stated that they are more careful in weighing the consignments while loading the truck. The practice of making 2 lading bills, has also stopped now, as they know that weighing will be accurate at the check post.

b. Payment System

The transporters interviewed were somewhat dissatisfied with the payment system at the check posts. Over and above the official penalty amount, their drivers have to pay up additional money. Since it is unaccounted, they are not sure about the exact money paid and have to reimburse the driver whatever money he claims to have paid.

All transporters are unanimous in their strong desire for smart cards to be deployed for payment procedures, to prevent malpractice and for their convenience.

3.5.2. Problems and Suggestions

Transporters have stated that corruption and harassment at the check post are going on as before. In particular, they opine that paying additional money does not hurt as much as the harassment caused to the drivers at the check post.

The transporters are quite satisfied with the computerized system and take pride in the technological advancement. However, they are unanimous in suggesting that the whole system

can be modified so that human interface is minimized and all stakeholders are benefited significantly. 4 transporters suggested that a Card System may be re-introduced, whereby transporters pay a lump sum amount periodically and are issued a Card, which can be shown by the driver at the check post. This amount can be paid on the basis of overload normally carried by them.

3.6 Total Solution Provider Responses

The study team interviewed the primary functionary of the Total Solution Provider (TSP) organization for their feedback on their contractual participation in the project, problems faced in the implementation and day-to-day operations, and learning.

The TSP started development of the system in September 1999. The work entailed seamless integration of the various technology components at all the 10 check posts (totaling to 58 lanes) and development of the software application for the computers at the check post and the Control Room.

Implementation at the first check post was completed in March 2000 and by July 2000 the remaining 9 check posts were commissioned

3.6.1 Project Contract

A 'build and maintain' contract was drawn up for 1 + 15 years. That is, one year of warranty period of equipment and 15 years of maintenance by TSP. The exact maintenance charge was not specified in the contract.

Although it was not specified in the contract, the TSP also undertook the system operations at all the check posts, for more than a year, to keep the project running successfully.

In the meantime, an independent authority, which was engaged to estimate the maintenance charges for the systems, has pegged the maintenance cost at 8% of the total system cost, which works out to Rs.1.5crores. This was accepted by the TSP. Yet, the contract was not executed.

3.6.2 Problems

Procedural delays (where the files were moving back and forth between departments) have held up the signing of an operating and maintenance contract between the TSP and state government. This is compounded by the fact that the Transport Commissioner has changed 4 times during this period of eighteen months. In spite of these delays, the TSP operated the systems for more than a year and subsequently withdrew his operating staff. Thus, operations at the check post are affected (as observed by the study team and mentioned earlier in the report) and most of the equipment remained unutilized at all the check posts. Even 1 year and 4 months after expiry of warranty period the contract has not been finalized, for operations and maintenance of the CICP, thus demonstrating lack of ownership and seriousness on the part of the state government.

3.6.3 Suggestions

Based on the experiences of operating a large and technologically sophisticated e-governance project, the TSP strongly opines that the following factors must be taken into consideration in developing e-governance projects:

- a. The contract between a private TSP and the government should be for a minimum of 4 years (1 year of warranty and 3 years of annual maintenance contract). The percentages and amounts should be worked out at the beginning itself. The contract should also take care of upgrading of technology as usually the equipment gets obsolete after 4-5 years.
- b. The manpower operating the check posts should be drawn from the government departments and trained adequately.
- c. Independent bodies should carry out regular Technical Audits of such projects to ensure proper utilization of systems, check the misuses (like using weighbridge to collect unaccounted money) and assess the impact and sustainability.
- d. Creation of databases must be carried out on a war footing and in parallel to the development of the project. Lack of appropriate and complete databases hinders the day-to-day running of the system, as data entry operators may register inaccurate data, deliberately or as a genuine mistake.
- e. The government departments should take ownership of the project and monitor its working and performance on a consistent basis. This is perhaps one of the most important elements to ensure sustainability.

4.0 Financial Costs and Benefits

The financial costs at the check post can be attributed to two main components - technology equipment and infrastructure build-up. Technology equipment includes the weigh- bridges, computers, printers, video cameras, video servers, database servers and other such hardware. Infrastructure refers to the development of lanes, construction of small cabins and installation of traffic and flood- lights at the check post.

4.1. CICP Costs

	Cost Per lane	Total Cost	Remarks
Electronic Equipment at CP (58 lanes in 10 check posts)	Rs. 38 lacs	Rs. 19 crores	Includes Rs. 78 lacs spent on control Room at Ahmedabad : Rs. 38 lacs for construction of Control Room Building and Rs. 40 lacs for hardware procurement at the Control Room.
Civil works (Widening of highway, etc.)	Rs. 75 lacs	Rs. 44 crores.	Does not include cost of acquiring land.

4.2. CICP Revenues

The installation of CICP has given a scope for enhancing targets for revenue collections at these check posts. In the first year of implementation, the revenues increased by another 66% to Rs. 94 crores.

The following table presents a summary of penalty collections from 1997 to 2002:

Revenues	Check Post Revenues (Rs. Lacs)	Growth over previous year as %	Remarks
1997-1998	3110	-	
1998-1999	5660	82%	Pre-paid card system
1999-2000	9380	66%	Computerized
2000-2001	16650	78%	
2001-2002	23739	43%	

It can be seen that the revenue collection levels have gone up remarkably from Rs.56.6 crores to Rs.237.4 crores over a period of three years, although the number of vehicles may have increased only by about 6 to 7 percent.

5.0 Summary and Conclusions

This section summarizes the analysis of the study.

1. The government of Gujarat, specifically the erstwhile chief minister deserves commendation for the political will demonstrated through the speedy approval of the project. This is perhaps the most crucial element for any governmental project to gain acceptability. This project was conceived at a time (98-99) in the state when e-governance was yet to take off. However, the same degree of seriousness was not exhibited subsequently during the maintenance phase of the project to ensure its sustenance. Signs of decline due to this apathy are already and clearly visible.
2. The project champion, the erstwhile Transport Commissioner, deserves commendation for conceiving and executing such a complex project in a period of nine months. Obtaining the various government clearances, developing the road and building infrastructure, importing equipment, getting the software developed, and involving and training the internal staff have all been accomplished remarkably well.
3. The Total Solution Provider has efficiently configured the system, integrated the various components and executed the project on time. In spite of not having a formal contract, the company has extended operations support to the project for a year. This ensured the stabilization of operations at all check posts in the initial period of implementation.
4. Computerized Interstate Check Posts were created with multiple objectives of enhancing government revenues by improving efficiency of check post operations, plugging revenue leakage and minimizing harassment of transporters. Surprisingly, the project objectives did not include remedial measures to minimize overloading/overdimensioning trends and improve safety of the truck traffic. The system design did not include the database creation or alert mechanisms for habitual violators of norms.
5. The main stakeholder of the system, the state government, has benefited quite significantly from the project. The technology at CICP has enabled 100% checking of vehicles and remarkably enhanced the revenue collections from Rs.56 crores to Rs.237 crores in three years, although the number of vehicles seems to have gone up only by 7%. Thus, it can be said that one of the main objectives of the system is well accomplished. However, the government did not seem to have plans to invest these collections for corrective actions or improvement of the amenities for the drivers / transporters.
6. While the revenues from each check post have shot up, the leakage has apparently not been plugged totally. Unaccounted money is still collected from check posts from about 36% of vehicles by collecting less than 10% of official penalty charges. This indicates poor monitoring and misuse of technology.
7. Harassment of truck drivers continues. Around 11% of the drivers who paid the official charges for overloading / over dimensioning, were also made to pay some (Rs.38 on average per vehicle) unaccounted money. Most of the drivers mentioned that this percent is much more. The display panel showing the weight and penalty details of the vehicles to the drivers is always switched off, there by not letting the driver to see the measured value.

8. While a majority of truck drivers feel that the overall attitude of the inspectors continues to be negative even after computerization, a few perceive that the fairness of treatment given to them at check posts has improved slightly.
9. Drivers find the electronic weigh- bridge at the check post a major value addition. Disputes over weight have been taken care of and transporters are careful at the loading point itself, to indicate the accurate weight. Thus, the weigh- bridge is a useful piece of equipment. However, the total time taken to cross a check post remained the same or has increased slightly.
10. The truck drivers find that the two amenities at the check posts namely waiting lanes and parking sites are quite comfortable and a value addition in the new system.
11. The RTO inspectors are able to check all 100% vehicles at CICP. They however feel shortage of cashiers during peak hours. They take pride in the computerized system. They concerned about lack of maintenance of systems.
12. The transporters are happy with the integrated electronic weighbridge at the check posts. They are however uncomfortable with the payment system at CICP. They still feel that corrupt practices and driver harassment exist at CICP. Most of them prefer electronic payment systems to avoid money leakage. There is some perceived improvement in the documentation by the transporters. Since the weight of the vehicle will be accurately checked by the weighing system at the check post, the transporter are now careful and record genuine weight figures in their documents before dispatching the consignments.
13. The bigger clients of transporters do not perceive any difference to the transportation processes or costs due to computerization at check posts. The medium and small industries have experienced some improvements in the practices of transporters. Some feel that double documentation is now eliminated and transporters are now careful about overloading the vehicles. Some others complained that the costs have gone up with computerization as they perceive that the transporters are using the computerization as an excuse to charge extra by about 5 to 10%
14. The government has failed in ensuring the sustenance of the project. The project manager, the Transport commissioner was transferred with in a year of the commissioning of the project. With in a subsequent period of 18 months, four commissioners were posted and transferred. The maintenance and operations contracts were not renewed on time. Monitoring mechanisms to ensure that the technology is not misused were not put in place. These lapses have resulted in defeating the objectives. The study team has observed the bypassing of technology by RTO staff at all the three check posts surveyed. The databases are not fully created and maintained at the control room. Video cameras are switched off at the check post preventing monitoring from control room.
15. The technology deployed is not fully utilized in this system. The total computerized operations should be re-started at every check post. Towards this, the contracting process at the state government level should be expedited. A comprehensive contract should be drawn up, for a minimum of 3 years, to operate and maintain the equipment at the check posts. The Control Room should be re-activated, as it is the nerve centre of CICP, allowing monitoring and supervision of the activities at the check posts. This is a

crucial factor, without which CICP cannot be totally successful. Electronic payment system should be introduced in CICP. This will streamline the payment process and remove redundancies and inefficiencies of payment process (waiting at the cashier window, unaccounted collections etc.).

6.0 Recommendations

Based on the lessons learnt from the Computerized Interstate Check post project in Gujarat, India, the study team has the following recommendations for future e-Governance projects:

1. The model of project conceptualization and execution through private public participation (PPP) adopted in this project by Gujarat Government is desirable for projects of this complexity. This model has fetched good results in a remarkable time frame and perhaps at a low cost in case of the check post project.
2. The project objectives must be much broader than minimizing leakage and increasing the government revenue. They must address the main problem of the tendencies on the part of transporters to violate the norms on permissible truckloads. Since 100% checking is possible with technology, development of databases and alert systems must be given equal importance in improving the loading practices, there by improving the safety of the truck traffic.
3. It is important to invest certain percentage of revenue collections in improving the amenities for the stakeholders of the system. This would demonstrate the government's interest in the well being of the stakeholders.
4. The design of projects that are aimed at preventing corruption or plugging leakage must be reviewed thoroughly before implementation, to examine the mechanisms through which current corrupt processes are detected and controlled through the new system. Such review must also examine the possibilities of misuse of the new system and how the system is designed to be tamper-proof. Without such reviews, the technology would not succeed in reducing or eliminating corruption. Instead, it might help bring in new methods of corruption, while reducing old practices only partially.
5. The project design must include tight monitoring mechanisms of the computerized processes. They must be sound (difficult to bypass) and put in place right from the cut-off date. Lack of flawless monitoring systems and political will to enforce them strictly would place the powerful technology in the hands of vested interests for misuse and exploitation as in this case.
6. The process of change over (from builder to operators) must be well defined and well managed. If the system has to be managed in house, environment must be created for the builder to transfer control to internal staff. Staff must be well trained to own the system. All control systems must be in place to ensure that the systems are neither bypassed nor misused.
7. Contracts for maintenance / operations must be executed on time to ensure that the service providers can plan their activities and staff. A longer period of indecision demoralizes the service providers and threatens the sustainability of the project. Implementing projects at lightening speed without seriously incorporating maintenance and operating arrangements would hurt their sustainability.

8. Since technology is changing rapidly, the project must plan to benefit from the adoption of latest technological components from time to time. The project plan must include upgrade of technology periodically (every 2 to 3 years).

Annexures

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Annexure 1: Map of Gujarat with Check Posts



Check Post Location	Number of Lanes	Yearly Traffic *	Bordering State
1. Shamlaji	12	7,70,000	Rajasthan
2. Palanpur	6	4,38,000	Rajasthan
3. Deesa	6	3,46,000	Rajasthan
4. Tharad	2	40,100	Rajasthan
5. Ambaji	2	36,500	Rajasthan
6. Shamakhilai	6	5,56,000	Inland (Port)
7. Bhilad	12	8,03,000	Maharashtra
8. Songadh	6	5,11,000	Maharashtra
9. Dahod	6	4,01,000	Madhya Pradesh
10. Zalod	2	73,000	Madhya Pradesh

* As captured by the computerized system from August 2000 to July 2001

Annexure 2: Functions of a Check Post

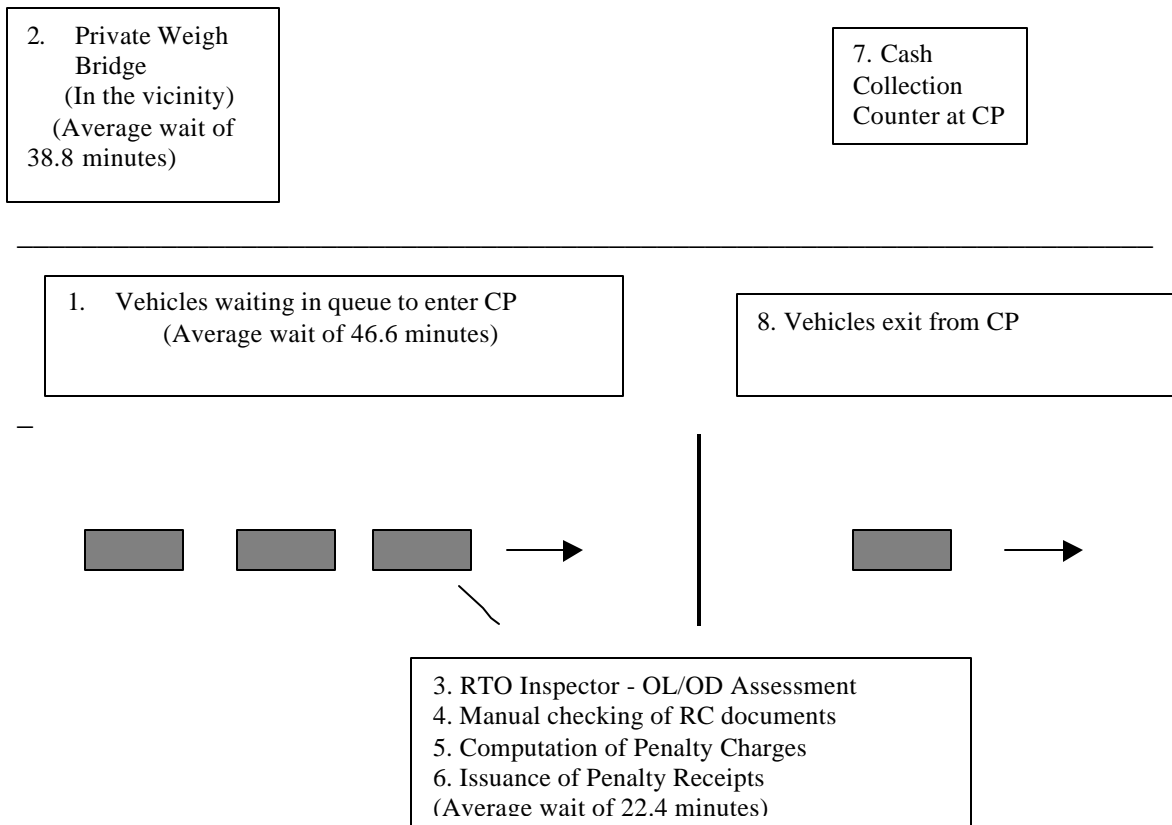
Inter state check posts exist in all states of India. Their functions are almost the same everywhere.

The primary function of a check post is to stop a vehicle and check whether road tax has been paid for the particular vehicle. The taxes are computed on the tonnage capacity of the vehicle. They can be paid at the local Regional Transport Office or at the check post itself.

The secondary function of a check post is to check vehicles for overloading, and accordingly compute the penalties.

The RTO Inspectors stationed at the check post are authorized to check the weight of goods being carried and also examine the vehicle documents. They can also penalize for offences like broken or damaged headlights and non-standard license plates. Inspection of the value or type of goods is not in their scope of duties.

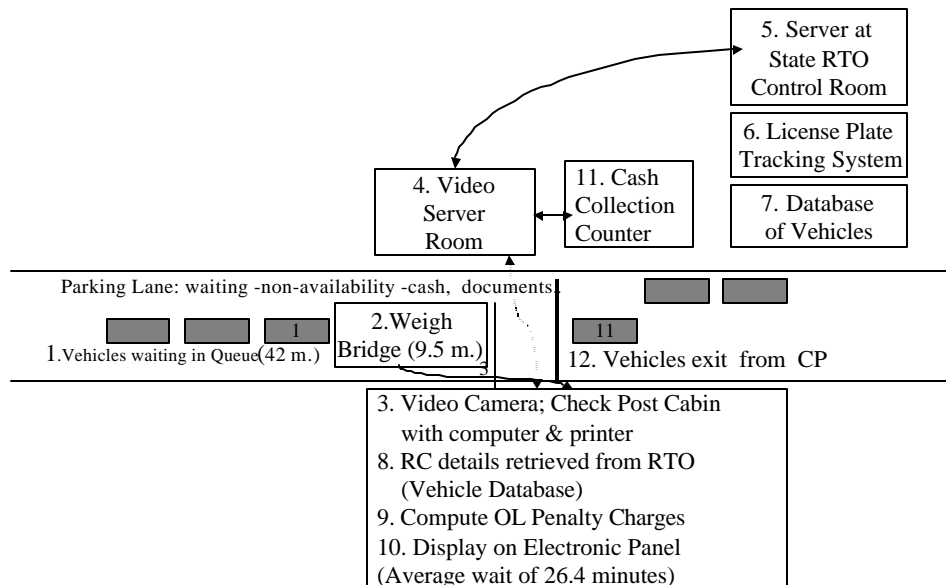
Annexure 3: Traditional Check Post



Each box in the diagram represents a process or set of processes carried out at the check post. The average time period taken for the process is also provided in the box. A brief explanation of each process is provided below:

- 1: A suspect vehicle is flagged to a stop and stands in queue at the check post (CP).
- 2: By visually inspecting the truck, the Inspector determines the probable overload. For better weight estimation (in case of doubt/dispute), vehicle sent to a privately owned weighbridge, close by.
- 3: RTO Inspector assesses over dimensional vehicles, also and the over weight carried by the vehicle.
- 4: The RTO Inspector checks the documents of the vehicle (Registration book, national permit, and driver's license).
- 5: The penalty is computed on the basis of charge per ton of over weight carried. Overload is determined by subtracting the permissible weight from the actual (over loaded) weight of the vehicle.
- 6: A Penalty receipt is issued to the driver, which shows the amount of penalty to be paid.
- 7: The driver pays the money (by cash) at the Cash Collection Counter.
- 8: After completing all the formalities the vehicle exits from the check post.

Annexure 4: Computerized Interstate Check Post



Each box in the diagram represents a process or set of processes carried out at the check post. The average time period taken for the process is also provided in the box. A brief explanation of each process is provided below:

- 1: All vehicles come to a stop at the check post and wait in queue for their turn.
- 2: The vehicle is weighed on the weigh- bridge. The weight is transmitted to the computer in the cabin located at the CP.
- 3: The license plate number of the vehicle is captured by the video camera located at the check post. This is transmitted to the Video Server.
- 4: In the Video Server Room located at the CP, the license plate number is converted from image to text form and transmitted to the Control Room at Ahmedabad, via dedicated telephone lines.
- 5: In the computerized process, all the check posts in Gujarat are monitored from a central location at the Regional Transport Office in Ahmedabad. This central location is called the Control Room. Details of the vehicle are accessed from the central database stored in the Control Room's server, with the help of the license plate number.
- 6: The License Plate Tracking System is the software application which converts the video images into text, for accessing the database of vehicles stored on the server in the Control Room at Ahmedabad.

- 7: The database of vehicles is stored in the Database Server located in the Control Room. Database of all transport vehicles registered in Gujarat has already been created. Online addition of additional vehicles is also possible directly from the check post. In case of any default in payment of taxes, the database displays an appropriate message on the check post computer, for the vehicle being processed.
- 8: The vehicle details are accessed from the vehicle database and displayed on the computer at the check post. The permissible weight allowed for the particular vehicle type is also displayed.
- 9: The software computes the overload penalty based on the permissible weight, actual weight being carried and the charges per ton of overload. The computer generates a receipt, which is handed over to the driver
- 10: To enable transparency in the process, the overload weight, the permissible weight and the penalty amount are displayed on an Electronic Display Board, positioned outside the computer cabin. This is quite beneficial to the driver, as he knows the exact overload status of his vehicle. If the driver is not carrying sufficient cash or does not have all the documents of the vehicle, he parks the vehicle in the parking lane and goes to the nearest office of the transporter to collect the money. In the meantime, he deposits the vehicle documents at the Check Post. At times, it may even take 2 to 3 days for clearance of the truck, as the office of the transporter may not be situated close by.
- 11: The overload penalty charges are paid by the driver based on the amount given in the computer-generated receipt, at the cash collection counter.
- 12: The vehicle exits the check post after completing all the formalities at the check post.

Annexure 5: Survey Instrument A: Questionnaire for Truck Drivers

Check Post Location: _____ Interviewer: _____
 Check post computerized? **Yes/No** If yes, is it used for this driver?

General:

1. Name of driver: _____ Age: _____ Education: _____
2. Driving Experience: a) No. of years: _____ b) No. of Kms. _____
3. At the time of interview: (At this check post):
 - a) Working for (Transporter): _____
 - b) Route (s) Plying: _____
 - c) Type and Size of Vehicle: _____
 - c) Goods in the Truck:
 - i) Type _____
 - ii) Weight _____
 - iii) Overloaded by: _____
 - iv) Fine paid: _____
 - v) Waiting time here: _____
4. Experience with check post crossings:

	Avg. Wait	Avg. per week	per month	per year
Check posts crossed all over				
Gujarat check posts				
Computerized				
Manual (comp not used)				
Side-stepped				

Goods

1. Which type of goods you have carried, so far?

	Overloading %
Chemicals / Fertilizers	---
Petrol / Diesel / Inflammables /Explosives	---
Perishables goods	---
Food grains	---
Glassware / delicate items	---
Edible oils / water	---
Engineering goods / cement	---
Mixed consignments	---
Others (specify)	---

Check post Crossing:

1. Time taken to complete the check post crossing:

Minutes

- Checking documents
- Estimating Overload
- Making payment
 - With adequate cash
 - Without adequate cash
 - Depositing documents
 - Contacting Transporter
 - Getting money
 - Making payment (re-joining queue)
- Obtaining the official receipt

2. Amount paid at the crossing (in Rs.)

- Overload Penalty Amount -----
- Over dimension Penalty -----
- Road Tax -----
- Other Payments made (specify) -----

Perceptions of the Check post System:

		Before Computerization (in the scale of 1-5)					After Computerization (in the scale of 1-5)				
1.	Processing:										
	Weighing	1	2	3	4	5	1	2	3	4	5
	Payment	1	2	3	4	5	1	2	3	4	5
	Official receipts	1	2	3	4	5	1	2	3	4	5
	Document checking	1	2	3	4	5	1	2	3	4	5
	Depositing documents	1	2	3	4	5	1	2	3	4	5
	Collecting documents	1	2	3	4	5	1	2	3	4	5
	Additional money	1	2	3	4	5	1	2	3	4	5
	By-passing system	1	2	3	4	5	1	2	3	4	5
	Transparency	1	2	3	4	5	1	2	3	4	5
2.	Amenities:										
	Waiting lanes	1	2	3	4	5	1	2	3	4	5
	Drinking water	1	2	3	4	5	1	2	3	4	5
	Toilets	1	2	3	4	5	1	2	3	4	5
	Lodging	1	2	3	4	5	1	2	3	4	5
	Restaurant	1	2	3	4	5	1	2	3	4	5
	Medical	1	2	3	4	5	1	2	3	4	5
	Telephone	1	2	3	4	5	1	2	3	4	5
	Parking	1	2	3	4	5	1	2	3	4	5
3.	Attitude of Inspectors										
	Polite & Helpful	1	2	3	4	5	1	2	3	4	5
	Efficient	1	2	3	4	5	1	2	3	4	5
	Fair & Transparent	1	2	3	4	5	1	2	3	4	5

4.	Average time taken Waiting in the queue Weighing Payment handling	(Time in mts)					(Time in mts)				
5.	Attitude of Transporters Over loading Providing documents Road tax payment License plate Adequate money	1	2	3	4	5	1	2	3	4	5
6.	No. of Accidents/ Vehicle breakdown										

Date and Time:

Venue of interview: Near the check post / At the check post / Away from the check post

Number of people present during interview including interviewer(s):

Overall, how did respondent come across in terms of: (1= negative and 5 = positive)

Reaction

Clarity

Consistency

Sincerity

Annexure 6: Survey Instrument B: Questionnaire for Inspectors

Check Post Location:

Check post computerized? **Yes/No**

Interviewer:

If yes, is it used currently?

Name:

Age:

Education:

1. Duration of posting at this check post:
2. Total experience as inspector at check post (in years):

Inspector's perceptions

		Before Computerization (in the scale of 1-5)	After Computerization (in the scale of 1-5)
1.	Processing: Weighing & computing Collection of fine Issuing receipts Checking documents Collecting documents Returning documents Transparency Work load Office Ambience Overall effectiveness	1 2 3 4 5 1 2 3 4 5 1 2 3 4 5 1 2 3 4 5 1 2 3 4 5 1 2 3 4 5 1 2 3 4 5 1 2 3 4 5 1 2 3 4 5 1 2 3 4 5 1 2 3 4 5	1 2 3 4 5 1 2 3 4 5 1 2 3 4 5 1 2 3 4 5 1 2 3 4 5 1 2 3 4 5 1 2 3 4 5 1 2 3 4 5 1 2 3 4 5 1 2 3 4 5 1 2 3 4 5
7.	Impact on Drivers Confidence on system Compliance to rules Preparedness	1 2 3 4 5 1 2 3 4 5 1 2 3 4 5	1 2 3 4 5 1 2 3 4 5 1 2 3 4 5
8.	Average time taken Weighing Bill preparation Document checking Document collection Returning documents Closing of daily accounts Others (specify)	(Time in mts)	(Time in mts)
9.	Vehicle Statistics (daily) Nos. checked by inspector Nos. over loaded Overload fine collection Road tax collection Any other collections Total inspector's target Target achieved so far	(Rs.) (Rs.) (Rs.) (Rs. pa) (Rs. pa)	(Rs.) (Rs.) (Rs.) (Rs. pa) (Rs. pa)

Problems Faced:

Nature of Problem	Frequency (Number of times)					
	This month		This quarter		Year-to-date	
	No.	ATR	No.	ATR	No.	ATR
Power Supply breakdown						
Connectivity breakdown						
Slow response time						
Computer HW failure						
Weigh bridge failure						
Electronic display board						
Software failure						

ATR: Average time to rectify (in hrs)

Date and Time:

Venue of interview: Near the check post / At the check post / Away from the check post

Number of people present during interview including interviewer(s):

Overall, how did respondent come across in terms of: (1= negative and 5 = positive)

Reaction

Clarity

Consistency

Sincerity

Annexure 7: Technology Status at CICIP

Technology Component	Purpose	Status at check post		
		Bhilad	Shamlajee	Shamkhiyali
Video Camera, Video Server, License Plate Tracking System (Located at CP)	Capture images of lanes, license plates – Transmit to Control Room via leased lines connected to the Video Server and using the License Plate Tracking system software.	Implemented and used for a year. Currently not in use.	Implemented and used for more than a year. Currently not in use.	Components not physically seen.
Central Database Server, and the Database (Located at Control Room in Ahmedabad)	Retrieve vehicle details from database using the license number. To be transmitted via leased lines. Implemented at RTO, Ahmedabad.	Used initially for monitoring lanes of all CPs and creating databases of vehicles. Currently all operations at the Control Room have been shut down.	Used initially for monitoring lanes of all CPs and creating databases of vehicles. Currently all operations at the Control Room have been shut down.	Not implemented
Electronic Display Panel (Located at the CP)	Displays the permissible weight, overload weight and penalty amount for the driver's convenience	Installed and used regularly for more than a year. Currently usage is seldom.	Installed and used for more than a year. Not being used currently.	Physically present but not operational.
Electronic Weighbridge (Located at CP)	Weighs the vehicle standing atop. The weight is captured by the computer for checking overloading	Installed and in use regularly almost all the time.	Installed and in use regularly almost all the time.	Installed and used initially. Currently is badly damaged during earthquake and not used.
Computers & Printers (Located at each lane of the CP)	Receives the vehicle details from central server, weight from weighbridge and computes penalty, if any, for non-payment of tax and overload. Penalty receipt is prepared and printed at the end of processing.	Installed and operational. Used regularly for a year. Used sparingly now.	Installed and operational for a year. Not used currently.	All computers are stored in a room. Not used at all.
Sensor controlled barriers	Allows exit of vehicle after completion of check post transaction	Installed but never used.	Installed but never used.	Have not been installed.