

Study and Reduction of Truck Turnaround Time in the Brewing Industry

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ABSTRACT

Truck turnaround time is the average time between a truck's arrival at any plant and its departure from the same. This indicates the efficiency of receiving and shipping processes. Production is meant for dispatch. If produced goods are not dispatched to the consumers at the right time, the buyer will be less interested to lift the material from the vendor and the same applies to the consumers. The consumers are the happiest when the cost of product is minimum which excludes all the detention charges. The organization is always willing to recycle the trucks that are used in the transportation of the goods while more trips can be planned. Reduction in bottleneck at the loading and unloading areas was suggested based on scheduling the truck arrival time, online tracking of the truck, depending on the availability of the truck and the distance the drivers had to travel. By implementing the above possible methods, truck waiting time, cost on detention charges and total turnaround time were reduced considerably.

Keywords: *bottleneck, excise check, loading, truck turnaround time, unloading*

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INTRODUCTION

The principle objective of all terminals is to reduce the truck's waiting time by smoothening the gate activities in order to prevent the gate from being a bottleneck. The time spent in waiting to enter the terminal is one of the major consequences for the port performance. Workstation operating systems with an integrated business intelligence solution enable the workstation executive to manage truck and container movements within the workstation, which integrates all the operations. Business intelligence solutions are designed especially for such

workstations, with right dashboards and key performance indicators that will help to analyze collective truck turnaround time which helps in reducing truck idle and delay times.[1-3]

Sites should focus on what costs are incurred by 'rising' to the challenge. To assess this, one needs to look at the disadvantages of managing an intermediate volume of trucks on a first come, first serve basis, such as:

- Driver wait times and delays due to the facility inability to load/unload trailers create the risk and inflate

transportation rates due to a poor reputation.

- Rescheduling of works from other operations affects the daily production and extra hours of working.
- Overtime of works is identified due to unexpected volumes at the end of a shift.

If a facility can evaluate the costs related to the disadvantages outlined above to be a few thousands per month, then a dock scheduling system will definitely provide a positive rate of interest immediately. Not only will the site save money, it will also have indirect gains in productivity due to visibility on the dock activity and reporting history for real key performance indicators.[4-5]

A powerful suite of tools that will completely transform the dock scheduling activities are as follows:

- Pre-appointment must be obtained with the availability of the docks.
- Customized constraints and rules to be applied where ever necessary.
- Communications must be automated at all possible locations.

METHODOLOGY

The in-plant logistics system that is practiced is prejudiced by the organization considering services like security gate, weighbridge, layout of loading bay and warehouse occupancy. The understanding and co-operation of truck operators in doing business also play a vital role in adopting and reforming the process. The result of all these components is the time the truck spends in the system. This single measure not only evaluates the total performance of in-plant logistics but also provides a prospect to quantify performance improvement as they were planned and implemented. In order to appreciate this measurement, data on truck arrival and departure were collected for a

span of 15 days and for 15 trucks. There was no specific reason for selecting this time period and this period was considered to be representative. The flow chart shown in Figure 1 indicates the movement of truck and their operations in the respective shop floor. The Gate 1, Gate 2 and Gate 3 indicate the entry, excise checking, and billing and exit, respectively. Table 1 indicates the operation cycle time which was organized as follows: reporting time at entry gate, reporting time at warehouse, loading time and exit gate reporting time. In addition, data were classified as the total cycle time and non-loading time to reflect the time spent by the truck in the system after loading.[6]

SECURITY AND LOGISTICS INTERFACE

In the organization, the role of security was widespread. Their responsibility includes material accounting, protection of the complex from fire and accidents, control of man and material movement, and traffic management. On an average, about two-thirds of the security forces were utilized. Initially, when the truck arrives, there are certain documents to be verified that account to the verification of the driver and vehicle details. Although the same vehicles are being reused, all the verification checks were made mandatory, which was found to be a non-value-added activity. This verification consumes about 15–20 min for every truck, and during the peak hours, the bottleneck near Gate 1 increases. Once the verification process is completed, the trucks will move to the loading section for the loading of crates. The truck that was loaded with empty bottles is to be unloaded. On an average, a total of 108 min was taken to load the truck manually with the filled bottles and the rest of the trucks were again in the queue for the loading process. This process consumed more time than usual because of its manual process, and an average of

about eight workers were involved in each truck. During the peak hours, workers from other operations were pooled in for the early loading process, due to which the operations in other process were slowed down so that the waiting time of the trucks can be minimized. This led to the mismatch in the operation around the shop floor and this increased the total turnaround time of the truck in the facility.

RESULTS AND DISCUSSION

It was found that the work was split and there was no consumer focus. Much non-value-added activities were identified such as repeated checking of the documents all the time for the same truck that arrived and which was not communicated for the further verification. This led to the duplication of work at every point. Apart from the time that was delayed during the loading of trucks, the dispatch of these trucks needed several documents that were interrelated within the facility which was not executed appropriately led to the additional waiting time at the exit which further added to the increase in the total turnaround time. Repetition in work complicated the information sharing and such processes led to poor performance.

A simple procedure that can be obtained is to seamlessly automate the activities. This would ensure data reliability and a one-time reduction in the time taken.

Tables 1 and 2 indicate the actual and improved cycle time of the operations in the respective points. For an example, 292.2 min was taken to load the vehicle, which includes the loading and to prepare the excise documents for the particular load, i.e. 106.2 min for loading and 186 min for preparing excise duty. This is due to improper flow of the document and information that causes delay in the operation and the trucks being waiting for the exit permission after loading. Figure 2

After introducing the gate card, the total time take for loading and the excise duty in Gate 2 was reduced by 79.2 min. This is due to the gate card that will indicate the employee about the truck and its capacity. Further, the employee communicates to the inventory department to know the batch details of the commodity that will be loaded and starts with the preparation of necessary documents. In addition, if any details regarding the truck are required, the same can be obtained from the security. This will ensure the smooth process of loading. As the loading process is completed, the excise document is also completed, if required, an addition of 20–30 min will be taken by the employee for the same to complete the process in Gate 2, and it was observed that it might not exceed 30 min. Henceforth, more than 60–80 min was reduced in Gate 2 and reduced the truck waiting time in Gate 2. The gate card on the completion of the process was approved and sent to Gate 3, where the driver has to report the exit time and the truck is ready for the delivery. On the whole, the overall truck turn round time was reduced to an average of 65 min. The improved cycle time for each operation is shown in Figure 3.

Gate card was introduced along with the database within the facility. This database helped the security to upload all the details about the driver and the truck only once, and the same can be verified using the unique ID of driver and truck that will be updated in the gate card along with the login time. The gate card will help the smooth movement of the truck by reducing the waiting time from 15 to 4 min during the entry. This gate card further will be submitted to the billing department, i.e. Gate 2, during the loading and tarpaulin process, which eliminates the time taken at Gate 2.

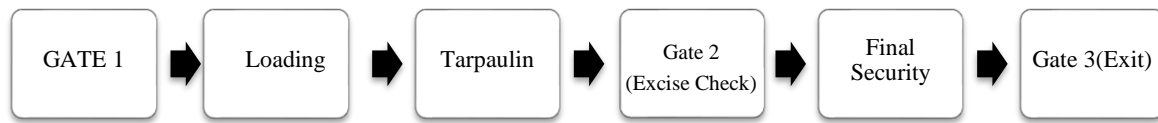


Fig. 1. The movement of truck and their operations.

Table 1. Actual cycle (min) time for each operation.

Sl no	1	2	3	4	5	6	7	8	9	10	11	12	23	14	15
Gate 1	12.5	16	11	10	17	14	16	14	13	12	12	10	11	10	16
Loading	106.2	94	103.6	168	131.6	100.2	90.2	84	96	104	92	114	106	117	118
Gate 2	186	250	210	90	123	123	198	255	246	210	180	198	138	210	180

Table 2. Improved cycle time (min) for each operation.

Sl no	1	2	3	4	5	6	7	8	9	10	11	12	23	14	15
Gate 1	4	3	6	3	5	4.5	7	3	6	4	5	2	5	7	4
Loading	93	90	90	110	110	80	92	90	85	95	80	96	102	98	91
Gate 2	120	145	132	136	123	148	180	147	126	190	150	139	125	168	148

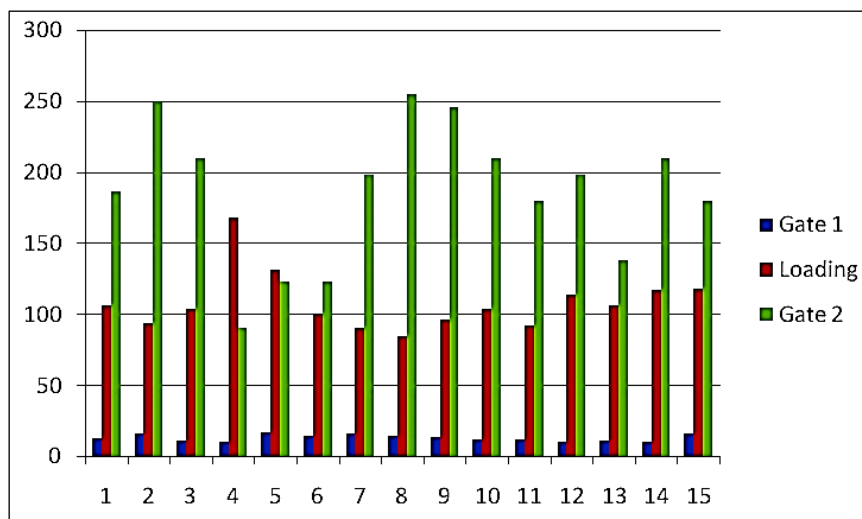


Fig. 2. Actual cycle time for each operation.

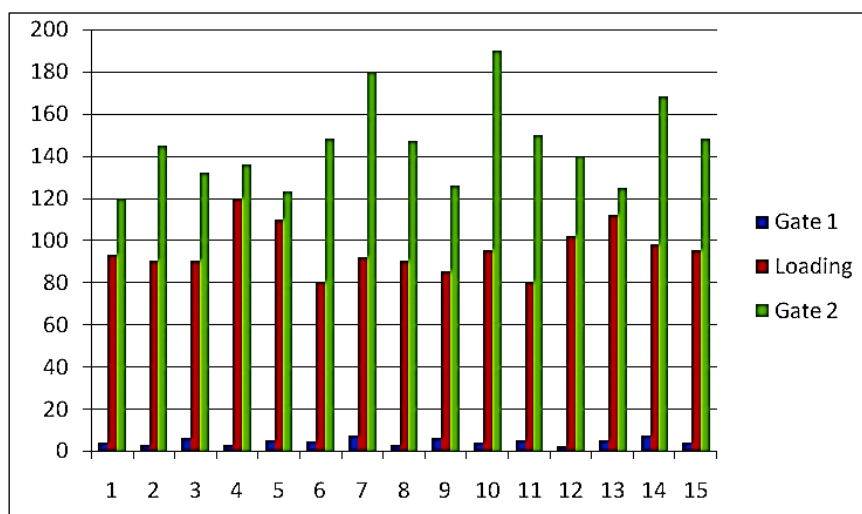


Fig. 3. Improved cycle time for each operation.

Hence, the revised process has multiple objectives and ensures efficiency in them by bringing changes in the gate entry process, loading operations and invoice generation, which are simplified in order to reduce the waiting time at respective locations.

In the proposed scheme, the security check of trucks would be automated and the entry ticket would be generated by an automation process at the entry point; this will be updated accordingly on loading and move to commercial office electronically that will be physically available at the exit gate. This will give the complete history of the driver and the truck about the loading and unloading in the facility.

CONCLUSION

The present system and procedures were studied to inspect a truck including its operations and complete the commercial formalities that are designed with a target truck turnaround time. The investigations led us to understand and analyze the significant reasons for the delay in truck turnaround time. In order to overcome the delayed timings and to remove the non-value-added activities like the unnecessary document verification for the same truck all the time and waiting of the loaded truck to complete the excise duty and again re-verifying the document during the exit.

By introducing automation and redefining the process of work, the truck turnaround time has been reduced from 294 to 234 min. This reduction helps the truck to have an early exit and deliver the goods to the customer on time and also reduces the cost that occurs on waiting the truck that is loaded.

In loading section, a conveyer was suggested in order to reduce the loading time and to avoid the involvement of the workers from other operations. This will lead to the reduction in workers and reduce the loading time.

This work has helped us to understand how redefining the process helps to increase the productivity of the resources that are available within the facility.

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