

DESIGNING SMART LABORATORY WORKFLOW STRATEGIES



To Improve Wellness Screening Test Turnaround Time (TAT)

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Background

The ability to provide accurate and fast laboratory reports translates into improved patient care, operational efficiencies and organizational quality. Getting it right the first time will become the mantra for successful laboratories.

Objectives

To evaluate whether designing smart laboratory workflow and autoverification could actually improve the turnaround time of screening tests for Wellness Centre, resulting in better customer satisfaction and financial outcomes.

Method:







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1. Patients waiting at Wellness Centre, 1st floor.
 - 2. Our phlebotomist stationed at Wellness Centre from 8.00 am till 11 am and draws patients' blood.
 - 3. Despatch staff collects the samples every hourly and brings it down to the laboratory at Lower Ground Floor. The clerk proceeds with the registration.
 - 4. Specimens are sorted by 2 sorters using 2 small centrifuges and samples are sent to designated sections for testing.
 - 5. Tests are carried out at specific analyzer.
 - 6. Results are verified by the validator and the completed results will be printed automatically at Wellness Centre printer.

Figure 1: Screening Test workflow from Wellness Centre

Our team conducted a one month study to identify workflow bottlenecks and resources constraints in pre-analytical and post-analytical phases of the testing process as shown in Figure 1. By using the Pareto Chart (Figure 2); we prioritized the significant problems as illustrated in Figure 3.

After the study period, we implemented workflow strategies by streamlining pre-analytical processes based on Pareto chart findings and then introduced auto-verification procedure to improve post analytical TAT. Autoverification is computer releases results by certain criteria. After that, we measured and analyzed pre and post implementation strategies effectiveness. We also conducted a survey to fifty Wellness customers on the waiting time, staff professionalism and hand hygiene to access their satisfaction level with our service.

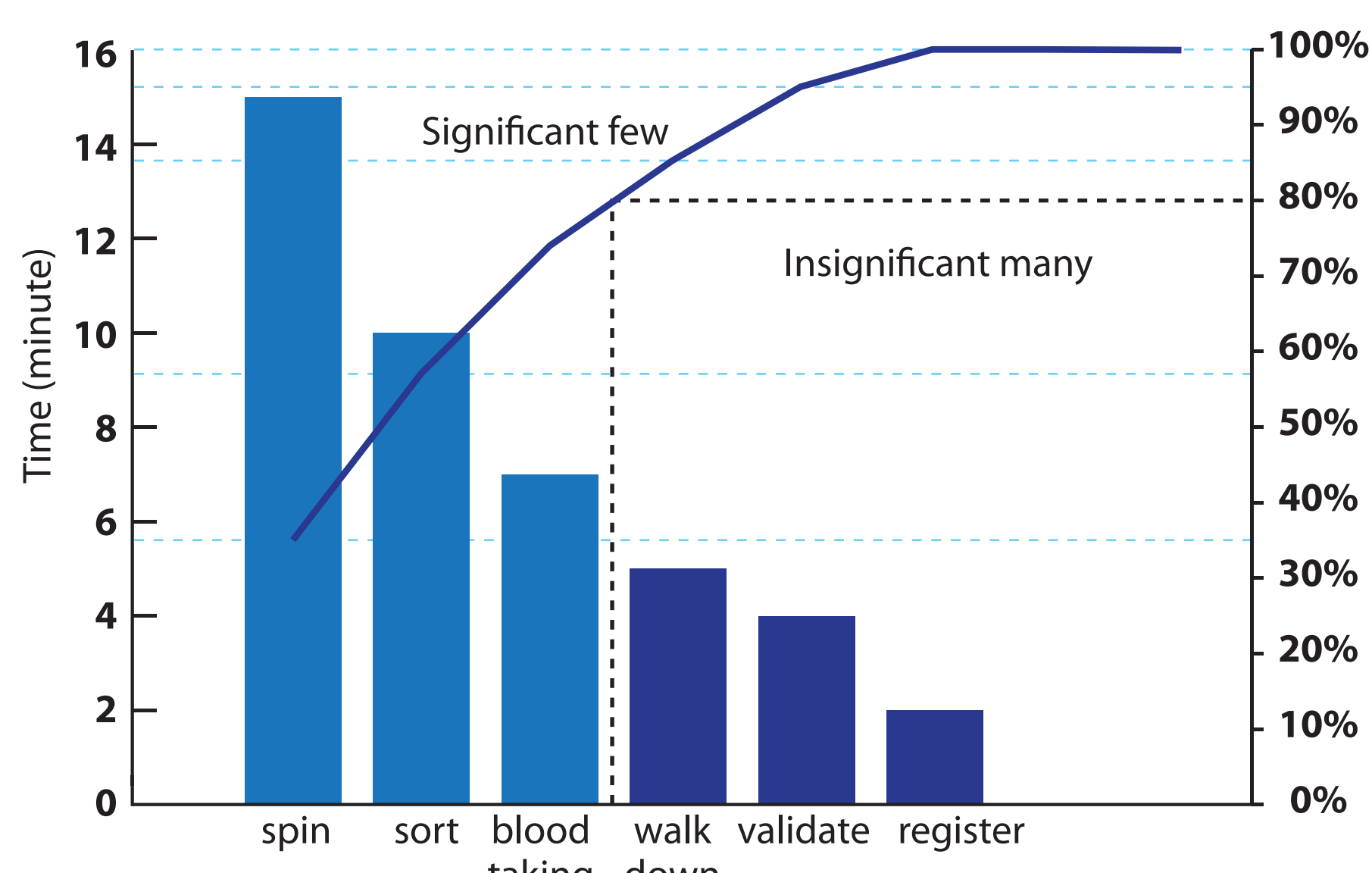


Figure 2 : Pareto chart for Laboratory workflow from Wellness Centre


	Before workflow study	After workflow study
Spinning	1 big centrifuge 	Avoid batching by having 2 small centrifuges instead of only 1 big centrifuge
Sorting	<ul style="list-style-type: none">• 1 headcount• Arrange sample on normal rack• Disorganized sorting and clerical area	<ul style="list-style-type: none">• Segregation of in-patient and outpatient samples to facilitate speedy arrangement of samples at the sorting area• Deploying headcount from one to two in the sorting area.• Arranging samples by instrument sample rack and immediately load into specific instrument• Re-organized - 5S
Blood Taking	Accumulate the sample	Frequent sample transport to the laboratory

Figure 3 : Prioritizing the significant problems

Results

- We compared the TAT data and obtained 13% improvement in median turnaround time in 2012 versus 2011 (Figure 4) despite of increasing of total volume. (Figure 5).
- The customer satisfaction survey resulted in over 90% of customers are satisfied in all the three categories as shown in Figure 6.
- Autoverification was found to have substantial savings of RM17,002 by reducing the headcount for manual validation at the validation section. (Figure 7 & 8).

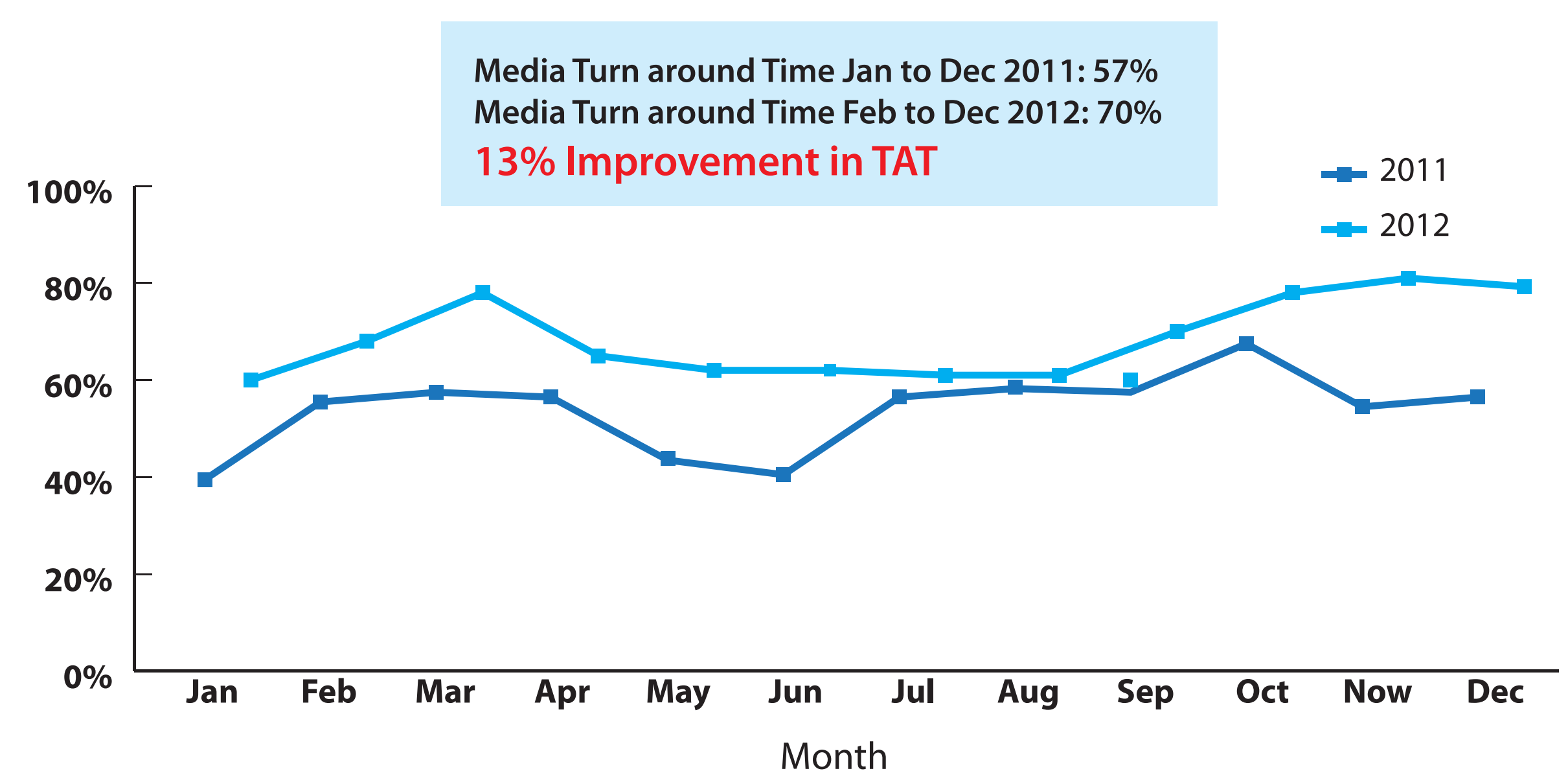


Figure 4: Median turnaround time Executive Screening Profile from 2011 to 2012

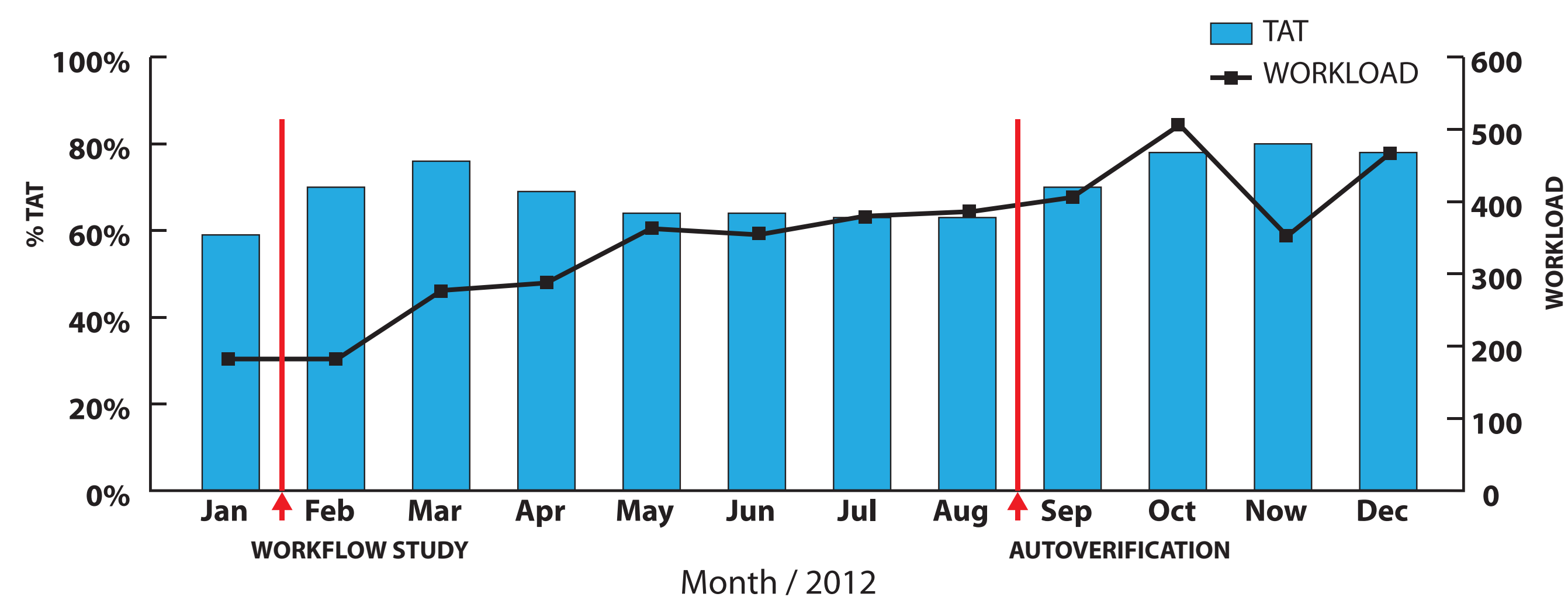


Figure 5 : Summary Executive Screening Profile 1 Turn around time versus workload



Figure 6: Customer Satisfaction feedback survey

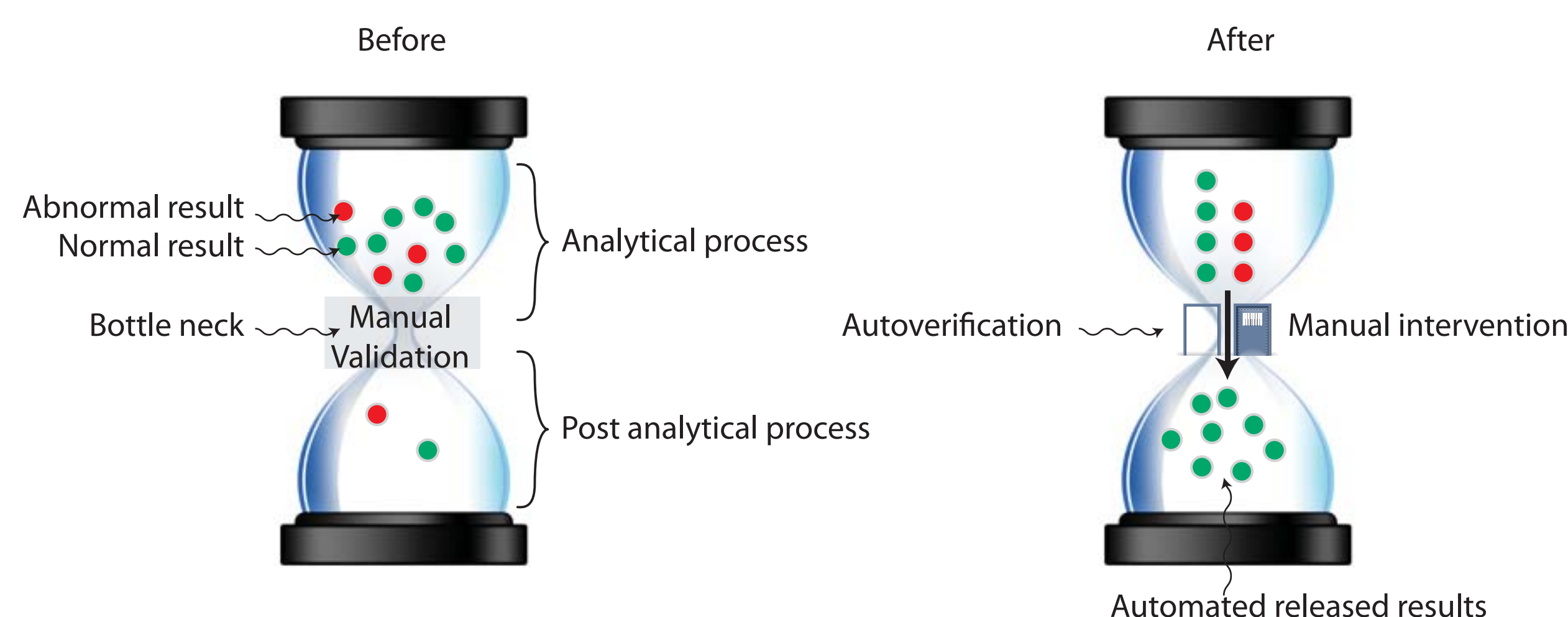


Figure 7 : Bottlenecks of completed results before and after autoverification.

	Manual validation	Auto validation	Saving
FTE (Full-time equivalent)	1.27	0.30	0.90
Cost	RM22,371	RM5,369	RM17,002
Time Spend	7.26 hour	1.74 hour	5.52 hour

Figure 8 : Autoverification savings



Discussion and Conclusion:

Our results show that designing smart laboratory workflow could actually improve Wellness screening turnaround time by 13%, resulting in over 90% satisfied customers and headcount of RM17,002. The effective re-engineered workflow and Laboratory Information System automation or auto verification frees up our staff to concentrate more on abnormal results and other quality improvement projects besides improving the Wellness screening TAT.