



Faculty of Engineering

Department of Textile Engineering

**Impacts of Non-Compliance in Sample  
Submission:  
A Case Study in The Third-Party Testing  
Laboratories in Bangladesh**

Course code: TH-519 Course title: Project (M. Engg.)

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**A Thesis Submitted in Partial Fulfillment of The  
Requirements For The Degree Of Masters Of Science In  
Textile Engineering**

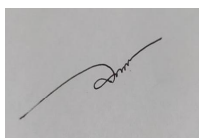
August, 2023

# Declaration

I hereby declare that this thesis represents my own work which has been done after registration for the degree of MSc at Daffodils International University, and has not been previously included in a thesis or dissertation submitted to this or any other institution for a degree, diploma or other qualifications.

I have read the University's current research ethics guidelines, and accept responsibility for the conduct of the procedures in accordance with the University's Committee on the Research. I have attempted to identify all the risks related to this research that may arise in conducting this research, obtained the relevant ethical and/or safety approval (where applicable), and acknowledged my obligations and the rights of the participants.

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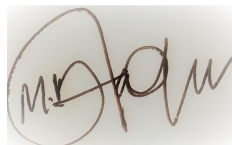


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## **Abstract**

The work reported in this thesis is about delays in test results in third-party testing laboratories in Bangladesh. For this study, I have collected three thousand data points randomly from a span of six months submissions for lab tests. The results show that, on average, 7% of test results are delayed for various reasons. Attempts have been made to find the reasons for the delay. It was observed that the main reasons for delayed test results were (i) insufficient test samples or specimens; (ii) insufficient documentation; (iii) missing account or finance-related documents; (iv) incomplete test request information; (v) technical problems; (vi) sample identification problems; (vii) submission of the wrong sample; and (viii) e-mail to E-Mail Confirmation. Among the above reasons, it was found that over half of the reports were being delayed because of insufficient test samples and documentation provided by the supplier or customer.

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# 1.0 Introduction

A testing lab is a facility where materials and products can be tested for quality assurance. There are many different types of testing labs, including chemistry testing labs, material testing labs, and quality testing labs. Third-party testing labs are particularly important, as they can provide an objective perspective on the quality of a product or material. In this blog post, American Testing Lab, providers of the top-rated analytical testing services, will discuss the importance of third-party testing labs and what they can offer your business. [1]

Third-party testing labs play an important role in quality control. By testing products and materials, businesses can ensure that they meet the highest standards of quality. This is especially important for businesses that produce consumer goods, as customers expect a certain level of quality when they purchase a product. Third-party testing labs can provide an objective perspective on the quality of a product, which can be helpful for businesses to make improvements. When you need professional quality control testing for your company, a third-party testing lab is your best choice. [1]

Not only do testing labs help to ensure the quality of products, but they also help to ensure their safety. Materials and products that are not up to standard can pose a serious risk to consumers. By testing products before they are sold, businesses can avoid any potential liability issues that could arise from selling a defective product. If you want to make sure your products are safe for your customers, make sure you partner with a quality testing lab like American Testing Lab. [1]

Finally, testing labs offer unbiased information about products. This is important because it allows businesses to make informed decisions about their products. When you partner with a testing lab, you can be sure that you are getting accurate and up-to-date information about your product. This helps you make the best decisions for your business and ensures that you are providing the highest quality products for your customers. If you want unbiased information about your products that is sure to help your company become even better, then you'll want to get third-party testing services. [1]

In order to be tested by a laboratory, specimens must meet the required collection and handling criteria. Some of the most common reasons for specimen rejection are:

- The specimen submission form is not included with the specimen.
- No specimen is included with the specimen submission form.
- Demographic information is missing or incorrect on the specimen submission form TRF (Test request Form)
- Specimen identifications are missing or incorrect.
- The specimen is not labeled with identifiers that match the identifiers on the submission form.
- Specimen volume/quality is insufficient or excessive.
- A specimen is damaged or not applicable for testing.
- Specimens are not mailed or shipped in a timely and proper manner.
- The payer source is not completed on the specimen submission form for

In some instances, specimens may meet testing criteria but have inaccurate results because of improper collection techniques.

In this study, we will analyze the problems in a pie chart and address each problem with details to find out their reasons and a one-in-all solution for this challenge.

This study will investigate the following research questions:

1. To find out the main reasons for sample rejections in testing laboratories
2. What factors play a part in the sample rejection process?
3. How it's decided to reject a sample with analysis
4. What are the challenges to overcome sample rejections for expediting test initiation?

Finding methods and ways to prevent sample rejection is the goal of this study. A case-by-case analysis of a survey regarding the causes of sample rejection is used. Charts are used to analyze data in order to determine the main causes of sample rejection and the steps that can be taken to eliminate or prevent sample rejection or hold.

Textile testing is extremely important as it ensures quality and can eliminate any problems before manufacturing. By testing textiles, we can easily detect the faults of machinery and materials. Following are the common benefits of textile testing:

- I. To ensure the product quality
- II. To check the quality and suitability of textile raw material
- III. To control the manufacturing process
- IV. To investigate the faulty materials
- V. For customer satisfaction and retention
- VI. Good reputation (brand image) among consumers
- VII. For research and development
- VIII. For product failure analysis
- IX. For process development
- X. For new product development
- XI. For product testing

- XII. For conformity with government regulations and specifications
- XIII. To assess the quality of final product

If at any stage the sample is delayed for testing, the final shipment will be delayed, as nowadays buyers are considering the quality of products over anything else, and some buyers will bear the testing expense themselves instead of the suppliers. Therefore, it is vital to ensure smooth testing in and out for an accurate and reliable report.

## 2.0 Literature Review

Third-party lab testing is a quality control phase of manufacturing. It involves an independent organization's review of the manufacturing process and end results of a manufactured good. The purpose of this testing is to ensure that the final product complies with specific safety and quality standards. Most manufacturers will also perform their own quality testing in-house. But outsourcing the final quality tests to a third-party lab ensures that the results are free from bias, accurate, and reliable enough for consumers to make an educated decision.

Simply put, third-party lab testing is when a private laboratory not associated with a manufacturer or distributor performs scientific tests to analyze a product.

The independent, or third-party, part of the equation is essential to defining third-party testing. If a manufacturer or distributor were to perform similar tests in-house, they might be tempted to alter or misrepresent the results, making their products seem safer or more appealing. Independent third-party testing makes that sort of dishonesty impossible.

With independent third-party testing, the results are the results. It gives customers honest, detailed information on the products they buy, free of any interference from those motivated by profit. [2]

Below showing a Generalized format of a Test Request Form- TRF (Test request Form)

Quality Assurance Formats, Registers and Records		Format number : LABDOC / 5 (8) Issue no : 01 Revision : 00 Effective date: 20 March 2020 Page 1 of 1																																																												
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<b>End use:</b> _____ <b>Fibre content:</b> _____																																																														
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<b>Manufacturer:</b> _____ <b>Order No.:</b> _____																																																														
<b>Buying House:</b> _____ <b>Style No.:</b> _____																																																														
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<b>End buyer/Customer:</b> _____ <b>Ref. No.:</b> _____																																																														
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<b>Service Required -</b> <input type="checkbox"/> Regular (7.5 working days except Nickel Release) <input type="checkbox"/> Regular (10-12 working days for Overseas Tests) <input type="checkbox"/> Express (7.5 working days - for certain test at a surcharge of 40%) <input type="checkbox"/> Emergency (2 working days - for certain test at a surcharge of 100%) <input type="checkbox"/> Shuttle (1 working day - for certain test at a surcharge of 150%) <small>*If positive result found additional 2 working days may require.  Note: Samples received after 1:00 pm will be considered as submission of the next working day.</small>																																																														
<b>Report Delivery -</b> <input type="checkbox"/> Self-receipt <input type="checkbox"/> Courier																																																														



Textile testing is an expensive business. Because testing needs to be carried out in a well-organized manner since test results are used for evaluating product or fabric quality, A laboratory has to be set up and furnished with a range of test equipment. Properly trained operators have to be employed. Moreover, all these costs are nonproductive and therefore add to the final cost of the product. Therefore, it is important that testing not be undertaken without adding some benefit to the final product. There are a number of points in the production cycle where testing may be carried out to improve the product or to prevent substandard merchandise from progressing further in the cycle. [5]

When it comes to your health and wellness, it pays to be informed. Knowledge is power, as they say, and third-party testing allows you to be more knowledgeable about your purchases, your health, and your body's needs. [2]

The testing of textile products aids those involved in the running of the production line. During testing, the discrepancy of the product, for example, its strength, maturity, waste percentage (for fibers), aerial density, and weave design (for fabrics), is properly measured. Thus, the selection of the proper raw material is an important factor. Standards of control should be maintained to reduce waste, minimize prices, and so on. Faulty machine parts or improper maintenance of the machines can be easily detected with the help of textile testing. Improved, less costly, and faster protocols can be developed by researchers with the aid of testing. The efficiency and quality of the product can also be enhanced with the help of regular and periodic testing. Customer satisfaction and loyalty can also be won by producing according to customer specifications in good time. In insufficient, testing is an essential part of the whole textile product supply chain. [5]

Third-party product testing is a quality control (QC) process that allows an independent company (a third party) to test for some or all product quality and safety issues that may pose a risk of harm to the public. Regulatory agencies can be certain that the results are independent and, hence, unbiased. Utilizing a third-party lab enables companies to focus on core initiatives and empowers quality managers to devote their energy to products and customer service rather than managing a full-scale analytical lab. [3]

### **Advantages**

1. No commercial bias is present leading to the test reports having more credibility.
2. The turnaround time is generally insufficient as the third-party laboratory specializes in testing
3. Manufacturing company personnel focus on core research, innovation and manufacturing
4. Third party Labs almost always have specialized facilities with up-to date calibrations
5. Labs Personnel have excellent experience, credentials, certifications, and accreditation.

## **Disadvantages**

1. Cost of Third-party testing
2. Third Party testing labs do not know always the product, service, or customer as well as the manufacturer. Hence sometimes close coordination is needed.

Even if a company performs internal quality control on its products and is fairly confident in its safety, skipping third party testing can be incredibly dangerous.

Third party analysis is not always possible, however it is always recommended to undertake, whenever applicable. [3]

## 2.1 Textile Testing Process in A Third-Party Lab

Textile Testing is an Important Part for a Textile Company as they need a quality certificate to export their Textile or Garment Products. It's a Buyer requirement that the products they buy from different Garment Companies should meet their product criteria and quality. So here the question arises, where and how the products should be tested. Is it in the In-house lab of Manufacturing Company or in a Third party lab.[4]



Tests can be done in the In-house lab of a Manufacturing Company or in a buyer approved Textile Testing Company. In the development stage, most of the tests are done in the in-house labs to develop the products quality. But it is necessary to send the products to a Third-Party lab for testing to get the products testing certificate. The tests can be done in the Development stage or in the Production stage or in the both stages according to the Buyers requirement.[4]

Some In-house labs and Tests are accredited by some Buyers. So, the accredited tests are no longer need to be tested in the Third-Party Testing Labs. After verifying, some European Buyers give accreditation to the in-house labs of the Manufacturing Companies and a very few Manufacturing Companies get accreditation from American Buyers.[4]

There is so far difference between an In-house lab and a Third-party lab. In a Third-party lab, there are many departments. The departments are as follows [4]

- i. Customer Service
- ii. Login
- iii. Test Assign
- iv. Big Cut and Break Down
- v. Soft lines
- vi. Analytical or RSL
- vii. Reporting

## **2.2 Different Departments of Operation inside Third-Party Laboratory:**

### **Customer Service**

It is the very first department where the Testing samples are received for testing. The Merchandisers contact with the customer service to give their products with a Test Request form for testing. Then the customer service passes the products with Test Request Form to the Login department.[4]

### **Login**

In the login department, the samples are sorted according to the Test Request Form, Sample Category and services like Regular, Express, Emergency, Shuttle and logged in. They give a login number in the Test Request Form by mentioning service. Generally, the regular service is given by 5 days, Express by 3 days, Emergency by 2 days and Shuttle by 24 hrs. Data Entry service is also given by the Login Department. Then the samples are passed to the Test Assignment department.[4]

### **Test Assign**

Test Assignment is the most important department where the tests are assigned for a product. The tests are assigned according to the product category and Buyers Program manual or Protocols. Not a single extra test should be assigned or not a single test should be missed. The test Assignment is also done by department wise like Physical, Chemical, Colorfastness, Fiber etc. Washing instructions, testing methods etc. are also defined by this department. Then the samples are passed to the Big cut and Breakdown Department.[4]

### **Big Cut and Breakdown**

According to the Test Assignment, Big Cut prepare the samples for different technical departments like physical, Dimension, Fiber, Colorfastness, and Breakdown etc. and the samples are passed to the technical departments and also to Breakdown. The Breakdown department prepares the samples for Analytical or RSL tests and Also for pH and Formaldehyde tests.

### **Soft lines**

There are many departments relate to Soft-line. The departments are Physical, Wet and Dimension Lab, Colorfastness Lab, Flammability Lab, Fiber Lab. [4]

### **Physical Lab**

In the physical lab most of the Physical tests are done. Tensile and Tear strength of fabrics, Oprability of zipper, strength and torque test for zipper, Pocket reinforcement, seam strength, attachment strength of garments etc. are done in the physical lab.[4]

### **Flammability Lab**

In Flammability lab Flammability of clothing textile, Children Sleepwear flammabilityetc. tests are done.[4]

**Colorfastness Lab**

In colorfastness lab, Colorfastness to Light, Water, Sea water, Pool water, Chlorine Bleach, Dry Clean, Non-Chlorine Bleach, Perspiration, Saliva, Phenolic Yellowing, Dye transfer, Rubbing/Crocking etc. tests are done.[4]

**Fiber Lab**

In fiber Lab, Fiber analysis, Exclusive of Decoration, Labeling review of fibre etc. tests are done.[4]

**Wet and Dimension Lab**

In wet and Dimension Lab, Dimensional Changes, Appearance, Actual Laundering, Colorfastness to Commercial Dry Cleaning, Side seam Twisting, Durability after repeated Home Laundering, Iron Ability etc. are done in the Wet and Dimension lab.[4]

**Analytical or RSL (Restricted Substrates List)**

In the RSL department, many tests like, Ph, Formaldehyde, Azo Dye Determination, Phthalates, California Proposition 65, CPSIA and Total Lead in Surface Coating and Substrates, Cadmium Content, Nickel Spot and Nickel Release test, Chromium 6, Soluble Heavy Metals Content etc. tests are done.[4]

**Reporting**

Reporting is the last and most important department in a 3<sup>rd</sup> party Textile Testing lab. There is a due date for every Test Request form and on that due date all the data for a specific Test Request Form come to the reporting department. The reporters work Buyer wise. They analyze the data and give Pass and Fail according to the Buyer requirements. They make the Report against a TRF(Test request Form) release the report.[4]

### 3.0 Methodology:

This study implemented data on sample rejection over a span of six months. The data has been refined and analyzed to identify the major reasons for sample rejection and hold

1. Data were sourced from reputed third-party testing laboratories.
2. Total data for the time frame is included within a time frame of six months. January 2023 to June 2023
3. The top reasons for the sample rejection in chronological order
4. Discover common and innovative ways to overcome the challenges.
5. Data were refined, analyzed through charts, and elaborated through explanation.
6. Real-time solutions are introduced as well as solutions in development.

A total of 3103 cases were studied in this study. Collected from a pool of 44000 submissions. So, the average rate of hold is 7 sample out of every 100 samples are being hold. At random 300 cases were selected and analyzed. 300 Data were picked at random and analyzed for the most occurring cases using Random sampling method. Each of the problems identified are discussed.

After a request is hold it undergoes re-processing and re-checking and then sent to for testing, the duration may vary depending on various factor.

We can see how many days it took for lab to resolve an incident. This is to show that lab was unable to provide report for the time it took to resolve the incidents.

Both providers and laboratories benefit when recommended procedures for specimen collection and handling are followed.

Benefits to the provider include:

1. Earlier intervention may improve outcomes.
2. Maintenance of the provider's quality of care.
3. Higher confidence in staff performance.
4. Savings in time and money from more efficient and productive office operations
5. Trust and willingness to follow future recommendations.

Benefits to the laboratory include:

1. More timely and accurate diagnosis and action plan, which may improve outcomes.
2. Avoidance of emotional stress and discomfort from unnecessary testing
3. Less time away from original work.
4. Continued trust in the provider and a more positive attitude toward future interactions [7]

Some of the most prominent reasons for sample result delays are briefed below-

**Table 1.0 Delay in Test Result Due to Insufficient Sample**

<b>Buyer Name</b>	<b>Client Name</b>	<b>Reason for Delay</b>
PVH CORP	METRO KNITTING AND DYEING MILLS LTD.	Sample was insufficient for testing. Needed additional 01 pieces draw-cord
C&A	TASNIAH FABRICS LTD	Sample Insufficient- Needed additional 1 piece Garment for testing.
C&A	TASNIAH FABRICS LTD	Sample Insufficient- Needed additional 1 piece Garment for testing.
GROUPE BEAUMANOIR	COAST TO COAST (PVT.) LTD	1. As it was retest sample, Lab only found appearance test mention in TRF(Test request Form) But in previous report, tearing strength test was also fail, so confirm tearing strength test is needed or not. So Needed 1 meter body fabric and lining fabric.
C&A	ISLAM GARMENTS LTD. (UNIT-2)	1. Did Not Confirm Metal Drawstrings Tipping Nominated From Buyer Or Not so Needed Additional Tipping for Testing
DECATHLON S.E.	HKD OUTDOOR INNOVATIONS LTD	01. Needed 0.5 Meter non coated Taffeta Lining to perform DS150 and DS031 testing
DECATHLON S.E.	HKD OUTDOOR INNOVATIONS LTD	Lab needed 04 pieces A4 size printed swatch per print type to perform print durability test and DS031 test.
SELF REFERENCE	PADDOCKS JEANS LTD.	01. Lab needed 02 pieces more Complete Garments or 01 meter fabric for physical test due to provided sample is cutting garments and also sample size was insufficient.
SELF REFERENCE	PADDOCKS JEANS LTD.	01. Insufficient sample lab needed 2 pieces more Complete Garments or 1 meter fabric for physical test due to provided sample was cutting garments
MYER	RENAISSANCE APPARELS LTD.	01. Provided care code GM110, states Dry cleaning is applicable, thus additional 1 piece garment was required
PVH CORP	METRO KNITTING AND DYEING MILLS LTD.	Insufficient sample- needed 2 gm per type of label, embroidery thread
PVH CORP	METRO KNITTING AND DYEING MILLS LTD.	Insufficient sample- needed 2 gm per type of label, embroidery thread
PVH CORP	METRO KNITTING AND DYEING MILLS LTD.	01. Needed additional 2 gm all type of label to proceed test.
PVH CORP	METRO KNITTING AND DYEING MILLS LTD.	01. Needed additional 2 gm all type of label & 2 pieces printed swatch to proceed test.
PVH CORP	METRO KNITTING AND DYEING MILLS LTD.	01. Needed additional 2 gm all type of label & 2 pieces printed swatch to proceed test.
PVH CORP	METRO KNITTING AND DYEING MILLS LTD.	01. Needed additional 02gm all type of label & 02 gm mobilon tape to proceed test.

PVH CORP	METRO KNITTING AND DYEING MILLS LTD.	01. Needed additional 2 gm all type of label & 2 pieces Printed swatch to proceed test.
PVH CORP	METRO KNITTING AND DYEING MILLS LTD.	Insufficient sample- needed 2 gm per type of label, embroidery thread
C&A	FLAMINGO FASHIONS LTD	Needed 02 meter Full width fabric per color for Flammability test
DECATHLON S.E.	TARASIMA APPARELS LTD.	Needed 02 pieces printed swatch same as garment for DS0096 and DS0130 test.
DECATHLON S.E.	TARASIMA APPARELS LTD.	Needed 02 pieces A4 size printed swatch per print for DS0096 and DS0130 test.
DECATHLON S.E.	HKD OUTDOOR INNOVATIONS LTD	01. Insufficient sample needed- 0.5 meter shell fabric for DS150 and DS031 test
PVH CORP	METRO KNITTING AND DYEING MILLS LTD.	01. Needed additional 02gm all type of label
PVH CORP	METRO KNITTING AND DYEING MILLS LTD.	01. Needed additional 2 gm all type of label to proceed test.
PVH CORP	METRO KNITTING AND DYEING MILLS LTD.	01. Needed additional 2 gm all type of label to proceed test.
PVH CORP	METRO KNITTING AND DYEING MILLS LTD.	01. Needed additional 2 gm all type of label & embroidery thread to proceed test.
VERTBAUDET SAS	ALIB COMPOSITE LIMITED	01. Needed 10 Pieces Yarn dyed cord at pocket zipper for azo test.
INTERSPORT	INTIMATE ATTIRE LIMITED	Needed three pieces additional garment to perform requested tests because received only fabric.
KARIBAN	AMEX KNITTING & DYEING INDUSTRIES LTD	01. Insufficient Sample- Needed additional 06 Pieces loose Button and 05 Pieces cuff Rib
OKAIDI	OKAIDI	Insufficient sample needed 01 meter fabric to proceed all test.
OTTO INTERNATIONAL GMBH	KNIT PLUS LIMITED	insufficient sample - needed 0.5 meter fabric more to proceed all test.
GALERIA KARSTADT KAUFHOF GMBH	F012001 SGS INSTITUT FRESENIUS GMBH	Insufficient sample needed additional 02 pieces garment.
HANES BRANDS INC	HANESBRANDS ROH ASIA LTD.	Insufficient sample Needed Additional 1.5 Meter Fabric For flammability test
NORMA	NATUBINI GMBH	01. Insufficient sample needed additional 0.5 METER contrast fabric per color for fabric weight test.
NORMA	NATUBINI GMBH	01. Insufficient sample Needed 0.5 METER contrast fabric per color.
NORMA	TOP GRADE INTERNATIONAL ENTERPRISE LIMITED	1. Insufficient sample lab needed one meter shell fabric per color and also need one meter padding fabric per color.



COTTON ON GROUP	JERICO IMEX LTD.	Insufficient sample needed additional 01 Piece Garment and 0.5 Meter Fabric to proceed Full test.
DELTA GALIL USA	F419601 SGS NORTH AMERICA INC. (CTS)	Insufficient sample - needed additional 01 piece garment per color
C&A	FLAMINGO FASHIONS LTD	Insufficient sample needed 01 piece garment & 04 pieces printed swatch
DECATHLON S.E.	SNOWTEX OUTERWEAR LTD.	Insufficient sample - Needed 0.5 meter fabric all color for DS0031 & DS0150 test.
KARIBAN	NORTHERN CORPORATION LTD.	1.Lab need o.5 Meter Rib Fabric per color for determination elasticity test.

**Table 2.0 Delay in Test Result Due to Insufficient Documentation**

<b>Buyer Name</b>	<b>Client Name</b>	<b>Reason for Delay</b>
COTTON ON GROUP	JERICO IMEX LTD.	01. Care label composition did not match with Oeko-Tex declared composition. Which will be followed? 02. Did not provide Pocketing fabric composition for exempt test by Oeko-Tex.
DECATHLON S.E.	DESIPRO PTE LTD	1. Supplier did not provide MTSR(Minimum Technical Specification Required) sheet. 2. DS0025 test was not applicable on received sample
PVH CORP	METRO KNITTING AND DYEING MILLS LTD.	01. Needed additional 2 gm all type of label to proceed test. 02. Needed Oeko-Tex certificate for Body fabric, Contrast fabric, Prin, Rib & Mobilon tape
TENDAM	NEWAGE APPARELS LTD.	Missing chemical Oeko-Tex certificate for Flock Print, Neck Tape and Drawcord  Confirmation about Composition of Neck Tape and Drawcord Part.
COTTON ON GROUP	BIG BOSS CORPORATION LTD.	received sample in old test request form (TRF), as per new manual needed updated test request form (TRF) and tests.
INA INTERNATIONAL LTD	LYRIC INDUSTRIES (PVT) LTD.	01. Supplier did not provide OEKO-TEX for drawcord, metal tipping, embroidery thread, eyelet
COTTON ON GROUP	JERICO IMEX LTD.	(1) Supplier not follow updated TEST REQUEST FORM (TRF) and Test as Per Updated Buyer Manual

		(2) Did not Provide valid OEKO-TEX for metal hook & eye button for exemption of test (3) 04
TENDAM	RUPASHI KNIT WEARS LTD.	Supplier did not provide oekotex certificate, oeko tex validity date has been expired.

**Table 2.1 Delay in Test Result Due to Missing Account or Finance  
Related Document or Information**

<b>Buyer Name</b>	<b>Client Name</b>	<b>Reason for Delay</b>
COUNTRY ROAD	HA-MEEM TEXTILES LTD	Supplier account was not created. SGS needed supplier BIN, TIN certificate to create account
STREET LEGAL CLOTHING	PASSION SOURCING LTD.	Supplier account was not created. SGS needed supplier BIN, TIN certificate to create account
DECATHLON S.E.	OFMA CAMP LIMITED	Supplier did not mention Billing party name
SELF REFERENCE	ALIBABA COMPOSITE TEXTILE MILLS LTD	Needed Client BIN, TIN Certificate to create account. Supplier did not confirm country of destination
SUZUKI CO. LTD.	ABC FOOTWEAR INDUSTRIES LTD	Needed Client BIN, TIN Certificate to create account.
NORMA	F012001 SGS INSTITUT FRESENIUS GMBH	1. Supplier did not confirm billing party
HOLLAND HOUSE FASHION B.V.	FAKIR KNITWEARS LTD.	Needed Client BIN, TIN Certificate to create account.
CAPRICORN	GUANGZHOU HONGTEXTILE (BD)	Needed Client BIN, TIN Certificate to create account.
SELF REFERENCE	M/S SHAN TRADING CORPORATION	1. Supplier did not mention any email address in the TRF (Test Request Form) 2. Needed Client BIN, TIN Certificate to create account.
K. LIMITED	FEDERAL INSPECTION SERVICES LTD	Needed Client BIN, TIN Certificate to create account.
GLOBUS	TANZILA TEXTILE LTD	Needed Client BIN, TIN Certificate to create account. Supplier did not provide care label for wash related tests

**Table 2.2 Delay in Test Result Due to Incomplete Test Request Information**

<b>Buyer Name</b>	<b>Client Name</b>	<b>Reason for Delay</b>
J.D. WILLIAMS & CO LTD	V-KNITWEAR AND COMPOSITE LTD.	Supplier did not provide sample style No.
GROUPE BEAUMANOIR	PIONEER KNITWEAR ( BD ) LTD.	Supplier did not provide care label for washing tests
SELF REFERENCE	HAMID EXPORTS INTERNATIONAL	Supplier did not mark tests which is required in TRF(Test request Form)
OTTO INTERNATIONAL GMBH	KNIT PLUS LIMITED	Supplier did not provide season for the sample in TRF(Test request Form)
COMARK (RICKI'S)	THAT'S IT KNIT LTD.	Supplier did not provide care label for washing tests  Supplier did not mark tests which is required in TRF(Test request Form)
C&A	FAKIR APPARELS LTD	Supplier did not provide care label for washing tests
2XU PTY LTD	F520101 SGS HONG KONG LTD	1. Supplier did not mark tests which is required in TRF(Test request Form)  2. Supplier did not provide care label for washing tests
OTTO INTERNATIONAL GMBH	COTTON CLUB (BD) LTD.	Supplier did not confirm color name in TRF(Test request Form)
VERTBAUDET SAS	AMAN KNITTINGS LTD	01. Supplier did not mark tests which is required in TRF(Test request Form)  02. Supplier did not provide care label for washing tests
VENUS FASHION, INC.	AZIM & SONS PVT LTD	01. Lab needed to confirm any mechanical finish as like peach was applied on the sample or not  02. Supplier did not mention fabric weight
HOLLAND HOUSE FASHION B.V.	HOLLAND HOUSE FASHION B.V.	(a) Confirmation on Which Part to conduct testing for azo & Formaldehyde test, Example: Shell or Yarn Dyed Drawcord  (b) Needed to know the Composition of Drawcord Part

		(c) Lab needed to know if Flame retardant was applied or not
LANDMARK GROUP	IRIS FABRICS LTD.	Supplier did not provide care label to perform wash related tests
VERTBAUDET SAS	GRAMTECH KNIT DYEING FINISHING & GARMENTS INDUSTRIES LTD.	Supplier did not provide previous report number because in Test Request Form (TRF) mentioned its re-test.
WE EUROPE B.V	ZAATEX LTD.	Supplier did not provide care label to perform wash related tests
TENDAM	STYLECRAFT LTD.	Supplier did not provide care label to perform wash related tests  Needed to confirm if product used garment dye or indigo dye.  Required okeo-tex certificate if any.
DECATHLON S.E.	TOSRIFA INDUSTRIES LTD.	1. confirmation for wash cycle for DS0034
COMARK (CLEO)	T-DESIGN SWEATERS LTD.	Supplier did not mark which tests to conduct in TRF (Test Request Form)
J.D. WILLIAMS & CO LTD	ENTRUST FASHION LTD	Supplier did not confirm country of destination
TAPE A L'OEIL	JSL STITCHES LTD	Supplier did not provide care label for wash related tests
SELF REFERENCE	KNIT ASIA LIMITED (UNIT-2)	Supplier did not mark which tests to conduct in TRF (Test Request Form)
UNIQLO CO., LTD.	BRANDIX APPAREL BANGLADESH LTD	1. Supplier did not provide care label for wash related tests
DESIGNWORKS INTERNATIONAL PTY LTD	M.M KNITWEAR LTD.	Supplier did not provide care label for wash related tests
MARKET-FIT DHAKA	POLE STAR FASHION DESIGN LTD	01. Supplier did not provide care label for wash related tests
GIII APPAREL GROUP LTD.	BEQ KNIT LTD	Supplier did not provide care label for wash related tests
SELF REFERENCE	MONTRIMS LTD	Supplier did not confirm Test Method.
DECATHLON S.E.	MNC APPARELS LTD.	Supplier did not confirm drying Procedure for washing tests
C&A	SHANTEX PVT. LTD.	Supplier did not provide care label for wash related tests
BERNE APPAREL	F419601 SGS NORTH AMERICA INC. (CTS)	01. Supplier did not provide care label for wash related tests  02. Confirmation on DWR(Durable water repellent) Finish or Not.

		03. Confirmation on sample face & back side
DECATHLON S.E.	TARASIMA APPARELS LTD.	Supplier did not confirm country of destination
C&A	FLAMINGO FASHIONS LTD	Needed fitting type of garment for load of stretch & recovery test
COSTCO WHOLESALE CORPORATION	ELITE GARMENTS IND. LTD.	Supplier did not provide care label for wash related tests
TENDAM	MONDOL FABRICS LTD.	Needed Composition of applique Part
SUSSAN CORPORATION PTY LTD.	INTERSTOFF APPARELS LTD.	Supplier did not provide care label for wash related tests
GIORGIO ARMANI (GAO)	F520101 SGS HONG KONG LTD	Needed Composition of applique Part

**Table 3.0 Delay in Test Result Due to Technical Problems**

<b>Buyer Name</b>	<b>Client Name</b>	<b>Reason for Delay</b>
BERNE APPAREL	F419601 SGS NORTH AMERICA INC. (CTS)	1. Supplier did not provide correct TRF(Test request Form) 3. Did not clarify if needed Appearance test along with dimensional stability test
OTTO INTERNATIONAL GMBH	COTTON CLUB (BD) LTD.	A separate sample was submitted with “only for GSM test” tag along with other sample for other tests. Which is a violation of the code of conduct.
PUMA SE	FAKHRUDDIN TEXTILE MILLS LTD.	1. Needed to confirm Finish type of sample for flammability testing 2. Needed to confirm end use Either Daywear or Sleepwear for test package selection -If sleepwear then also confirm fitting type loose fitting or tight fitting -Heat press test not capable in BD lab, will we send Overseas? -Needed recycle polyester certificate. (15 sample)
GROUPE BEAUMANOIR	APS APPARELS LTD.	1. Supplier did not provide correct TRF(Test request Form) 3. Did not clarify if needed Appearance test along with dimensional stability test
DECATHLON S.E.	SNOWTEX OUTERWEAR LTD.	1. Confirmation about drying frequency and drying type, TRF(Test request Form)(Test request Form) mentioned "After the last washing = At the end of all washings" and "Line Dry" but in PVC sheet mention "After every washing" and "Tumble Dry". So needed confirmation which one to follow. 2. TRF(Test request Form) mentioned CC no. did not match with garment's attached care label CC no.A separate sample was submitted with “only for GSM test” tag along with other sample for other tests. Which is a violation of the code of conduct.

GROUPE BEAUMANOIR	CROSSLINE SAS	<p>1. Needed to confirm Finish type of sample for flammability testing</p> <p>2. Needed to confirm end use Either Daywear or Sleepwear for test package selection</p> <p>-If sleepwear then also confirm fitting type loose fitting or tight fitting</p> <p>-Heat press test not capable in BD lab, will we send Overseas?</p> <p>-Needed recycle polyester certificate.</p> <p>(15 sample)</p>
OTTO INTERNATIONAL GMBH	GRAPHICS TEXTILES LTD.	TRF(Test request Form) mentioned print type is pigment, but Lab received 02 pieces sample without any print
GROUPE BEAUMANOIR	CROSSLINE SAS	Lab received T-Shirt but TRF(Test request Form) mentioned Pant.
SELF REFERENCE	ABLOOM DESIGN LTD.	<p>i. Supplier did not confirm Buyer properly Self Reference Or AUCHAN, If AUCHAN then PO sheet with all information like Ref, Season was missing</p> <p>ii. Test confirmation if only Cadmium &amp; PHTHALATES, also confirm on which part test needed to proceed? If on inner neck print then needed 10 pieces printed swatch to proceed Cadmium &amp; PHTHALATES testing</p>
DECATHLON S.E.	TARASIMA APPARELS LTD.	<p>1. Did not confirm DS0270 test- As received or After wash condition</p> <p>2. Also did not confirm, will lab consider TRF(Test request Form) mentioned color migration point for DS0150 test or not.</p>
C&A	SHANTEX PVT. LTD.	Needed To Confirm Weave Type of Fabric For Wash Test Temperature.
VENUS FASHION, INC.	AZIM & SONS PVT LTD	<p>01. confirmation for sample peach finish or not</p> <p>02. confirmation for fabric weight for flammability applicability of the sample</p>
FAR EAST (CRT)	MOONLIGHT WASHING & DYEING UNIT-2	<p>1. Needed to confirm buyer brand- Far East (GUY) or Far East (CRT)</p> <p>2. If brand name- Far-East(CRT) need to provide BIN, TIN to create new account as per procedure.</p>
HOLLAND HOUSE FASHION B.V.	HOLLAND HOUSE FASHION B.V.	Needed to confirm if Flame retardant finish was done or oil-repellent finish for PFCs test.
TEXEM	ORIENT FASHION LTD.	<p>1. Lab needed to confirm buyer name because supplier provided STOKOMANI Test Request Form (TRF) but buyer name mentioned TEXEM.</p> <p>2. If self-reference then Lab needed self- reference Test Request Form (TRF)</p> <p>3.if buyer name TEXEM then lab needed test methods to conduct</p>
DECATHLON S.E.	NICE FABRIC PROCESSING LTD.	Confirmation of Drying Procedure Either Tumble Dry or Line Dry. (note- TEST REQUEST FORM (TRF) mentioned Tumble Dry but MTSR mentioned Line dry )

**Table 4.0 Delay in Test Result Due to Sample Identification Problems**

<b>Buyer Name</b>	<b>Client Name</b>	<b>Reason for Delay</b>
NORMA	F012001 SGS INSTITUT FRESENIUS GMBH	Sample colors could not be identified as they were not marked with stickers
SELF REFERENCE	KNIT ASIA LIMITED (UNIT-2)	1. Did not identify body fabric for DS0025 test. Lab found three type of body fabric
SELF REFERENCE	WINREX BANGLADESH LTD.	Supplier Did Not Identify Sample Color
NORMA	F012001 SGS INSTITUT FRESENIUS GMBH	Supplier Did Not Identify Sample Color
TRENT LIMITED	F535001 SGS LANKA (PRIVATE) LTD.	Supplier Provided 9 color Garments but In TEST REQUEST FORM (TRF) mentioned 03 color names  Also needed Identify Garments color
DECATHLON S.E.	NICE FABRIC PROCESSING LTD.	1. Confirmation to identify sample face side.
NORMA	LISA TEX HANDELS GMBH & CO. KG	Supplier did not tag color name on sample

**Table 4.1 Delay in Test Result Due to Identification Problem Due to Wrong Sample Submission**

<b>Buyer Name</b>	<b>Client Name</b>	<b>Reason for Delay</b>
LANDMARK GROUP	SINHA KNIT AND DENIM LTD.	shade variation in submitted sample was found
LANDMARK GROUP	SINHA KNIT AND DENIM LTD.	shade variation in submitted sample was found
PVH CORP	EPYLLION STYLE LTD.	Sample Mismatch - Test Request Form (TRF) Mentioned Terry Fabric But Received Rib Fabric

**Table 5.0 Delay in Test Result Due to E-Mail Confirmation**

<b>Buyer Name</b>	<b>Client Name</b>	<b>Reason for Delay</b>
JOHN LEWIS	COAST TO COAST (PVT.) LTD	Lab Needed supplier's consent to conduct some tests overseas.
AS COLOUR LTD	APPARELS VILLAGE LTD	Need test re-confirm Color fastness to hot pressing and phenolic yellowing testing due to its not applicable on given sample,  Also confirmation if Fabric weight test was needed or Not.
VERTBAUDET SAS	AMAN KNITTINGS LTD	01. Needed Management Permission of Aman Knitting's to Issue Any Shittle Service As Per Attached Mail
AUKO - TEX LTD.	AUKO - TEX LTD.	Needed test and method confirmation.
MARK'S WORK WEARHOUSE	MODEXTIL INC. - CANADA	As per main report Stretch & Recovery, pH test was also failed but not requested in TEST REQUEST FORM (TRF).  So required buyer's acceptance mail or to proceed
G.U. CO.,LTD.	MAXCOM INTERNATIONAL (BD) LTD	01. As per G.U buyer protocol selective test is not applicable but test request form (TRF) mentioned selective test.
NORMA	OPTIMUM FASHIONS WEAR LTD.	1. Received 5 Garments only for GSM test so needed confirmation if any other test was required
DECATHLON S.E.	MNC APPARELS LTD.	Lab needed KIPS PVC (technical file) to perform test. After getting technical file then confirm sample is ok or not.
MARKS & SPENCER	KENPARK BANGLADESH APPAREL (PVT.) LTD. (K-2)	Lab is not capable for thermal resistance (P65) test, so needed to conduct at out overseas lab. Therefore, needed client confirmation by mail
G.U. CO.,LTD.	MAXCOM INTERNATIONAL (BD) LTD	01. As per G.U buyer protocol selective test is not applicable but test request form (TRF) mentioned selective test.
G.U. CO.,LTD.	MAXCOM INTERNATIONAL (BD) LTD	01. As per G.U buyer protocol selective test is not applicable but test request form (TRF) mentioned selective test.
G.U. CO.,LTD.	MAXCOM INTERNATIONAL (BD) LTD	01. As per G.U buyer protocol selective test is not applicable but test request form (TRF) mentioned selective test.



KMART AUSTRALIA LTD	RENAISSANCE APPARELS LTD.	01.needed clear or soft copy test request form (TRF) received test request form (TRF) is not clear.
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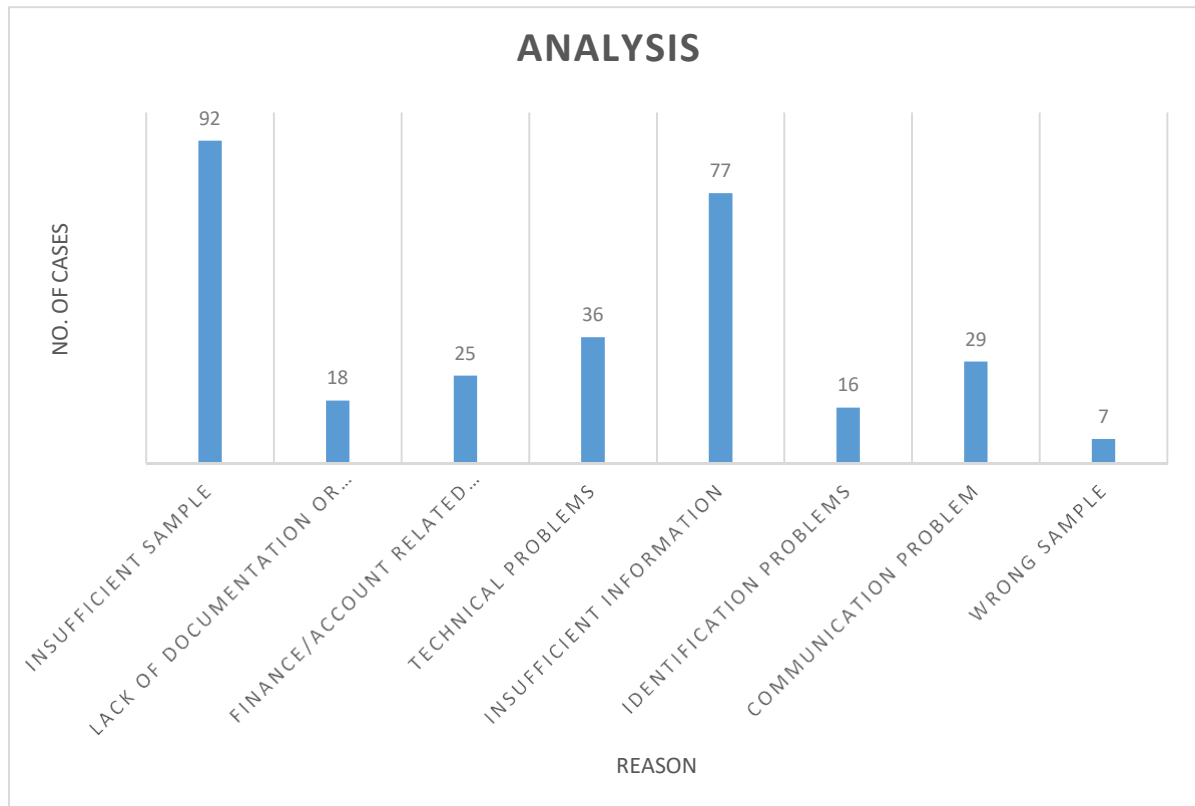
**Table 6.1 Breakdown of Reasons for Hold**

<b>Delay Reasons</b>	<b>Total Entries</b>
Delay in Test Result Due to Insufficient Sample	92
Delay in Test Result Due to Insufficient Documentation	18
Delay in Test Result Due to Missing Account or Finance Related Document or Information	25
Delay in Test Result Due to Incomplete Test Request Information	77
Delay in Test Result Due to Technical Problems	36
Delay in Test Result Due to Sample Identification Problems	16
Delay in Test Result Due to Identification Problem Due to Wrong Sample Submission	7
Delay in Test Result Due to E-Mail Confirmation	29

**Table 6.2 Breakdown of Duration for Hold**

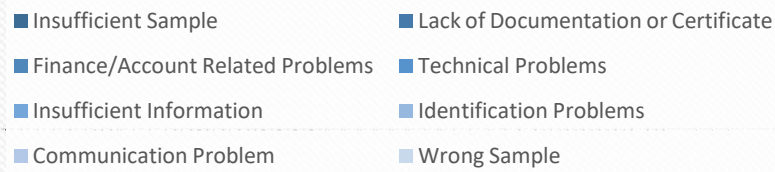
<b>Total Incident</b>	<b>3103</b>
Hold Duration <1 Day	1277
Hold Duration <2 Day	717
Hold Duration <3 Day	429
Hold Duration <4 Day	279
Hold Duration <5 Day	176
Hold Duration <6 Day	111
Hold Duration <7 Day	58
Hold Duration <8 Day	37
Hold Duration <9 Day	19

For the sake of review, a portion of the collected data is shown below; due to the sheer volume of the data (347 pages), not all could be presented herewith but only the highlighted ones as below.



**Figure 1.0: Depiction in Bar Chart of Total Entries Against Delay Reasons**

## Percentage of Reasons For Delay in Test Result



**Figure 2.0: Depiction in Pie Chart (%) of Total Entries Against Delay Reasons**

From the pie chart we can depict that the top reason for delay in test result is Insufficient sample 30%. Next, we have insufficient or incomplete Test Request Information and account related information which cover up another 26% on the spectrum. These two combined contribute for more than half of the sample being delayed for testing.

All of the research data can be found in the line below-

<https://docs.google.com/spreadsheets/d/12bI4oGH838VSjQyB0owcvvo5Wn56LQpZ/edit#gid=1520645490>



## **4.0 Results Discussion:**

In this study some key reason for delay in report were identified in regards to myriad of different difficulties. They are discussed below.

### **4.1 Delay in Test Result Due to Insufficient Sample**

The Data provided in [Table 1.0](#) shows the reasons for delay in test reports due to insufficient sample. This is the most major reason that was found which lead to the delay in report release and it contributes to 30% of the total cases of delays.

The required test specimens are not sufficient to conduct all the tests. May need additional garments, fabrics, accessories, trims etc. to proceed tests and deliver reports.

It may be due to unawareness of the personnel handling the sample. In most cases we found that, the person liable for handling of these test sample are not technicaly sound or trained.

On ther cases it was found that the total order quantity of the product was very small and related test or sample costs goes above the budget. In which case, some tests were omitted or results were provided with a remark of “Insufficient sample. Results may be inaccurate”

Lack of a sufficient sample will lead to inaccurate test results an wrong reports. Which in turn jeopardize the trust and final product quality and will ultimately come around as customer complaints and legal cases against the party in question.

### **4.2 Delay in Test Result Due to Insufficient Documentation**

The data provided in [Table 2.0](#) shows the reasons for delay in test reports due to Insufficient Documentations. This is the second most occurring reason why sample results are delayed. It can be heavily reduced by introducing online platforms.

Relevant information is not mentioned in a TRF (Test Request Form), which may include fiber content, sample color, client name, payer name, and contact information. This information’s sometimes missed by the client or overlooked.

### **4.3 Delay in Test Result Due to Missing Account or Finance Related Document or Information**

The data provided in [Table 2.1](#) shows the reasons for delay in test reports due to Missing Account or Finance Related Document or Information

Payer account not registered in system and bank LC. In which case the client must submit BIN, TIN, etc. documents for proceedings in order to obtain payment clearance.

If payments are long overdue, the lab has the authority to hold the report release until payments or other agreements are formed.

#### **4.4 Delay in Test Result Due to Incomplete Test Request Information**

The data provided in [Table 2.2](#) shows the reasons for delay in test reports due to Incomplete Test request information.

Tests are not identified in the TRF (Test Request Form), which results in a sample hold and a delay for testing. The request will also be held if the requested test item does not comply with the regulation or the sample. These information are missed by the client or overlooked

#### **4.5 Delay in Test Result Due to Technical Problems**

The data provided in [Table 3.0](#) shows the reasons for delay in test reports due to technical problems.

A buyer-approved TRF (Test Request Form) format must be provided for a report to be accepted and tested. Most of the buyers have their own unique TRF (test request form) format and distribution channels.

In the case of wash-related tests, a care label is a must, unless it's an item for care label recommendation. If it's not found in the sample, the client must include it in the TRF (Test Request Form). Sometimes they do not match and sometimes the tests requested are not applicable due to size or category but risky to avoid. Which requires buyer advice and technical input from experts.

#### **4.6 Delay in Test Result Due to Sample Identification Problems**

The data provided in [Table 4.0](#) shows the reasons for delay in test reports due to sample identification.

Sample colors are not identified, in which case the client must provide artwork and an order sheet. Individual test items for a specific specimen are not allowed without mail consensus, in which case samples are halt until solve.

#### **4.7 Delay in Test Result Due to Identification Problem Due to Wrong Sample**

##### **Submission**

The data provided in [Table 4.1](#) shows the reasons for delay in test reports due to wrong sample submission.

The submitted sample has defects, e.g., cutting sample, panel missing, trim missing, shade variation, initial dimensional deformity, or crease. The sample color does not

match the submitted TRF (test request form). In some retest cases, the submitted sample has been washed and the color is lighter than the original sample, in which case the sample is also rejected.

#### **4.8 Delay in Test Result Due to E-Mail Confirmation**

The data provided in [Table 5.0](#) shows the reasons for delay in test reports due to confirmation via E-Mail.

This refers to the incidents where there is a mail inquiry involve with the clients or directly with the main buyer. Its regarding sample credibility or any suspicious aspect of the request. For example- client requested tests are outside the manual.



## 5.0 Conclusion

This study is based on a real-world scenario that occurred inside a testing laboratory and aims to identify the most frequently occurring causes of sample rejection through surveys and data, as well as solutions to these problems.

The most common causes of test results being delayed were found to be (i) insufficient test samples or specimens; (ii) insufficient documentation; (iii) missing account or finance-related documents; (iv) incomplete test request information; (v) technical issues; (vi) sample identification issues; (vii) submission of the incorrect sample; and (viii) e-mail to E-Mail Confirmation.

Over 50% of the reports were found to be delayed for the aforementioned and other reasons because the supplier or customer did not submit enough test samples or supporting documentation.

We studied each reason in details and concluded that, over half the reports are being delayed because of insufficient sample and documentation provided by the supplier or customer, and given practical solution to the to the most problems.

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- 8) Alan-Boey - How Digitization Is Shaping the Future of Analytical Laboratories – Link- [How Digitization Is Shaping the Future of Analytical Laboratories \(dksh.com\)](#)
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