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Original Article

Modernizing Procurement by Adopting E-Procurement in RMG Industry: A Case Study

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Abstract - *This study focuses on how the procurement process for the Ready-Made Garment (RMG) sector changed from a traditional paper-based strategy to a centralized, digital e-procurement framework. This research draws attention to the shortcomings of conventional procurement techniques, such as long approval procedures, a lack of transparency, and risk of data loss. The company significantly boosted efficiency in workflow, decreased paperwork, and improved cost management by adopting an e-procurement system. Among the key features of the system that enable simple communication and informed decision-making are automated purchase orders, tracking of requisitions, and comparative pricing assessments. The results highlight how e-procurement can improve operations, increase transparency, and encourage sustainability across business supply chains. The recommendations concentrate on improving responsiveness through the integration of wireless approval systems and automated alerts. This case study is a practical, useful resource for industries seeking to implement sustainable business practices and digitize procurement procedures.*

Keywords *- E-Procurement, Purchase Order, Comparative Price Statement, Requisition.*

1. Introduction

The Ready-Made Garment (RMG) sector is essential for creating jobs, promoting economic growth and global trade, especially in emerging developing nations like Bangladesh. Operational effectiveness is becoming a crucial factor in determining sustainability and profitability as the sector grows and global competition increases. Procurement is a crucial area that directly affects production schedules, pricing structures, and supplier relationships among the many RMG supply chain responsibilities. Procurement begins with the demand for goods, followed by the purchase of expected goods by sourcing cost-effective, high-quality goods from suppliers and utilizing effective negotiation skills. Additionally, in-house goods are stocked at the store for further processing, and stock reports are maintained to monitor demand when it rises again.

Traditionally, procurement processes in the RMG sector have relied heavily on manual systems involving paperwork, phone calls, and email communications. A group of companies used conventional procurement processes but faced difficulties tracking their procurement progress because obtaining management approval was time-consuming. Additionally, they lost important documents and wasted paper. Following that, the company believes that a centralized procurement system would solve unnecessary problems and save cost as well as time. These conventional methods are often time-consuming, error-prone, and lack the transparency and real-time data required for informed decision-making. Industries in the RMG sector are shifting to online digital options to optimize their procurement procedures in response to the increased requirement for agility, compliance, and cost optimization. So, a centralized system is necessary to facilitate the procurement of goods for the procurement team, which can be built with the help of digitization. The world is now more interconnected as information technology advances. Users can connect because of its capacity to reach every area of the globe connected by an online network (Sitompul, 2022).

Conventional procurement can be managed by using e-procurement nowadays. E-procurement, defined as the use of internet-based technology to carry out procurement tasks, including sourcing, purchasing, and supplier management, has become a strategic tool. By automating procurement workflows and enabling data-driven insights, e-procurement systems offer significant advantages, including reduced cycle times, improved accuracy, enhanced visibility, and stronger supplier collaboration. This offers a centralized system where relevant concerns can easily track their procurement progress, cost of goods, price quotation, which provider will provide goods, and many other useful features. Competitive institutions are carrying out business-to-business e-procurement with an emphasis on cost reduction; in certain

nations, procurement transactions are estimated to represent 10% to 30% of the GDP of the respective nation (Afolabi et al., 2022).

This research explores the modernization of procurement in the RMG industry through the adoption of e-procurement-based solutions. Using a case study approach, it examines how one group of RMG companies transitioned from conventional, paper-based procurement methods to a digital e-procurement system. The objectives of this research are to ensure paperless work, to save paper use and costs, monitor working progress, and also to make the procurement process clear to the management. The objectives of this research are to identify the factors that prompted this change, examine any difficulties that arose during implementation, and assess the overall impact on procurement performance and effectiveness of the organization. Considering all, this study will make the purchase process relatively simple, easy, controllable, and manageable for a particular industry.

2. Related Research Work

Several studies analyzed the procurement process with an emphasis on workplace transparency, effectiveness, and efficiency in public expenditure. A prospective study assessed the transition from conventional procurement methods to e-procurement in governmental systems. The e-procurement method can minimize direct interactions between different stakeholders and reduce corruption. The authors also highlighted the potential benefits of e-procurement methods, mentioning several issues (Afolabi et al., 2022). However, several challenges, such as a lack of sufficient ICT support and infrastructure, high cost of implementation, and legal obstacles, hinder widespread adoption. Moreover, many companies are trying to boost their overall work efficiency nowadays.

Similar research proposed a particular framework that suggests employing several e-procurement tools across all the phases of a procurement process, which starts from the planning stage and extends to the auditing stage, to enhance accountability to management (Chen et al., 2022; Afolabi et al., 2022). E-procurement has not only the unique potential to improve financial management by facilitating open bidding but also to increase accountability by incorporating the principles of good governance (Sitompul, 2022).

In another study in Indonesia, e-procurement implementation was investigated at the Presidential Regulations. This particular regulation outlined three core stages, aiming to increase transparency among all the stakeholders, increase efficiency, transparency to management, and fairness in the procurement process of government (Kusumadewi et al., 2024). Electronic Procurement (EP) technology was used to modify the existing procurement processes, which was the main focus of another potential research. It examined the whole implementation process, several adoption strategies, and barriers during implementation, particularly in the construction industry. This study also emphasized advancements like Electronic Data Interchange (EDI) and Enterprise Resource Planning (ERP) for the quick change (Chan & Owusu, 2022). Another article analyzed the adoption process of e-procurement systems in local governments, providing an impactful foundation for further research into the technology adoption of the public sector and its organizational design (Chen et al., 2022).

Another research work aimed to find the related mechanisms that support the digital transformation of the procurement process in the energy sector. Polish energy company procurement executives were interviewed, which was a part of the qualitative inquiry technique (Kulikowska, 2025). Another similar study used a framework, the Technology Acceptance Model (TAM).

This model was used to evaluate the major factors that affect employees' acceptance of the e-procurement process (Kamran et al., 2024). Similar relevant work in Tanzania explored the impact of important technological factors on the vendors' involvement in the Public Electronic Procurement System (PEPS). The main findings were the implementation of technological factors, data quality and management, system integration, theoretical framework, TAM, and Resource-Based View (RBV) (Meshack, 2021).

In Ethiopia's textile and leather industries, another research presented the design and development of a tailored e-procurement website. Initially, both Java and PHP scripts were utilized to develop comparatively dynamic web content for client-side and server-side functionalities. The successful deployment of the website on the web server marked the appropriate completion of this process (Singh & Yadav, 2025).

Moreover, significant research in Bangladesh proposed that a strategic method, ERP adoption, can evaluate ongoing systems and also train employees, which may promote sustainable growth and competitiveness globally in the RMG sector (Das et al., 2025). Another investigation used the Perceived E-Readiness Model (PERM) to explore the influential factors in the adoption of B2B e-commerce in the RMG sector of Bangladesh. Data from more than 250 RMG companies were gathered using a questionnaire survey.

The Partial Least Squares (PLS) approach, a statistical analysis method, was used to analyze the data (Hoque & Boateng, 2017). Moreover, different research analyzed the creation of a conceptual framework and the design of an e-procurement assessment model in a particular industry in Bangladesh. The Statistical Package for Social Science (SPSS) program was applied for regression analysis and hypothesis testing to develop the e-Procurement assessment

model, following data gathered using mixed methods, Key Informant Interview (KII), and survey questionnaires (Rashid & Uddin, 2021). Lastly, the authors of another study aimed to inspect the challenges and prospects of Small and Medium-sized Enterprises (SMEs) with digital procurement in Bangladesh. The authors presented a research model of digital transformation, which identifies key variables (Bhuiyan & Bhowmik, 2024).

This study presents a real-world, practical, novel case of shifting and digitizing the procurement process within the RMG industry, a sector that was traditionally dependent on manual, paper-based processes. Previous researches primarily focus on theoretical frameworks or large-scale implementations in technology-based industries, whereas this particular study provides a practical demonstration of how a mid-scale RMG enterprise successfully transitioned to a centralized e-procurement platform from conventional processes.

The research uniquely highlights the integration of several features, such as automated requisition tracking, comparative price analysis among all the alternatives, and digital approval workflows in a resource-constrained, labor-intensive industry context. Additionally, the study contributes to the unique and novel sustainability discourse by analyzing how digital procurement can reduce the use of paper, enhance transparency, and also support greener supply chain practices.

3. Materials and Methods

This research used both primary and secondary data to accomplish its goal. The main ways to acquire data are interviews, information gathering, and personal observation. The methodology includes various key steps, such as understanding the procurement and procedures, the traditional procurement process, and the electronic procurement process, both in-person meetings and phone call interviews with authorities, as part of the gathering of primary information. The research methodology shown in Figure 1 is as follows:

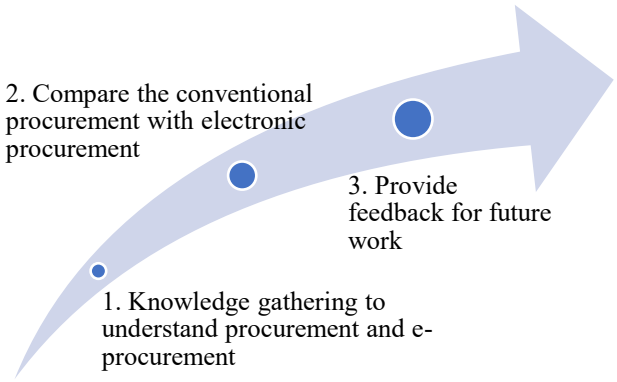


Fig. 1 Procedure of Research Methodology

4. Results and Discussions

The authors describe the whole procurement process of automatic systems in this section, alongside traditional procurement methods. The total system dashboard is displayed in Figure 2. This dashboard displays many types of requisitions, including the total number of personnel, the total number of requisitions, the authorized CS number, and the total number of products. Moreover, it also includes settings, the user login/logout icon and button, and all other modules. The system's modules are depicted by the green line in Figure 3, which include, company name, departments of the companies, service place, terms and conditions, all pending requisitions of the factory, the master setup includes category, unit of item, number of items, Purchase Order (PO) module, Delivery Order (DO), Gate Pass, Requisition or Purchase Requirement (PR), Other Documents, Comparison Sheet (CS), and Procurement. Moreover, in every module, there is the same sub-module, which has: Pending List, Modify List, Approved List, Cancel List, highlighted by a blue border, except for all RQ pending, master setup, and procurement.

When an individual creates a PO/DO/Gate Pass/PR/Other Documents and CS, the system stores these in the pending list. Then, when the reporting manager approves, that creation goes to the Head of the Department (HOD). After the approval of HOD, the creation finally goes for the approval of top management. If anyone thinks that the creation needs to be modified or changed, they can give a modification, and the creation is then stored in the modified list. If all approval concerns approve the creation, then it goes to the approved list. Finally, if a concerned person thinks that the creation is invalid or unnecessary, they can cancel it by providing a valid explanation, and the system will record the creation in the cancellation list.

The RQ Pending module displays the unapproved requisitions from factories due to different issues. The modified system covers the entire procurement process through several integrated sub-modules. The Master Setup module stores essential information such as item categories, units, companies, departments, and terms. The PO module generates supplier orders by automatically loading approved requisition items and prices, the DO module records transfers of goods between factories, while the Gate Pass module is used for goods delivered from the Head Office. The Other Documents module handles approvals for Pro-Forma Invoices, HR, audit, and compliance documents. Moreover, in the Procurement Module, the team compares prices from two or three suppliers to select the most cost-effective and quality option. It also includes several sub-modules for suppliers, quotations, and invoices. After the approval of management, purchase orders are issued, and all related sub-modules function together for efficient control of requisitions, procurement, and delivery operations.

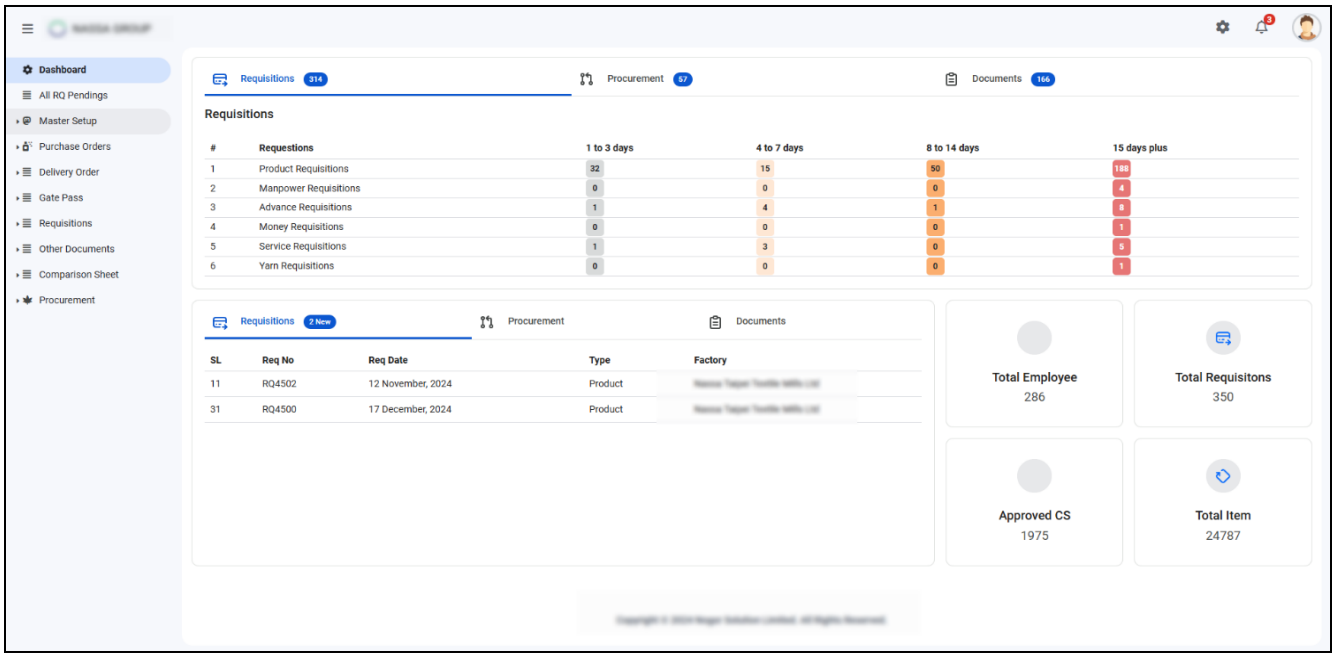


Fig. 2 System Dashboard

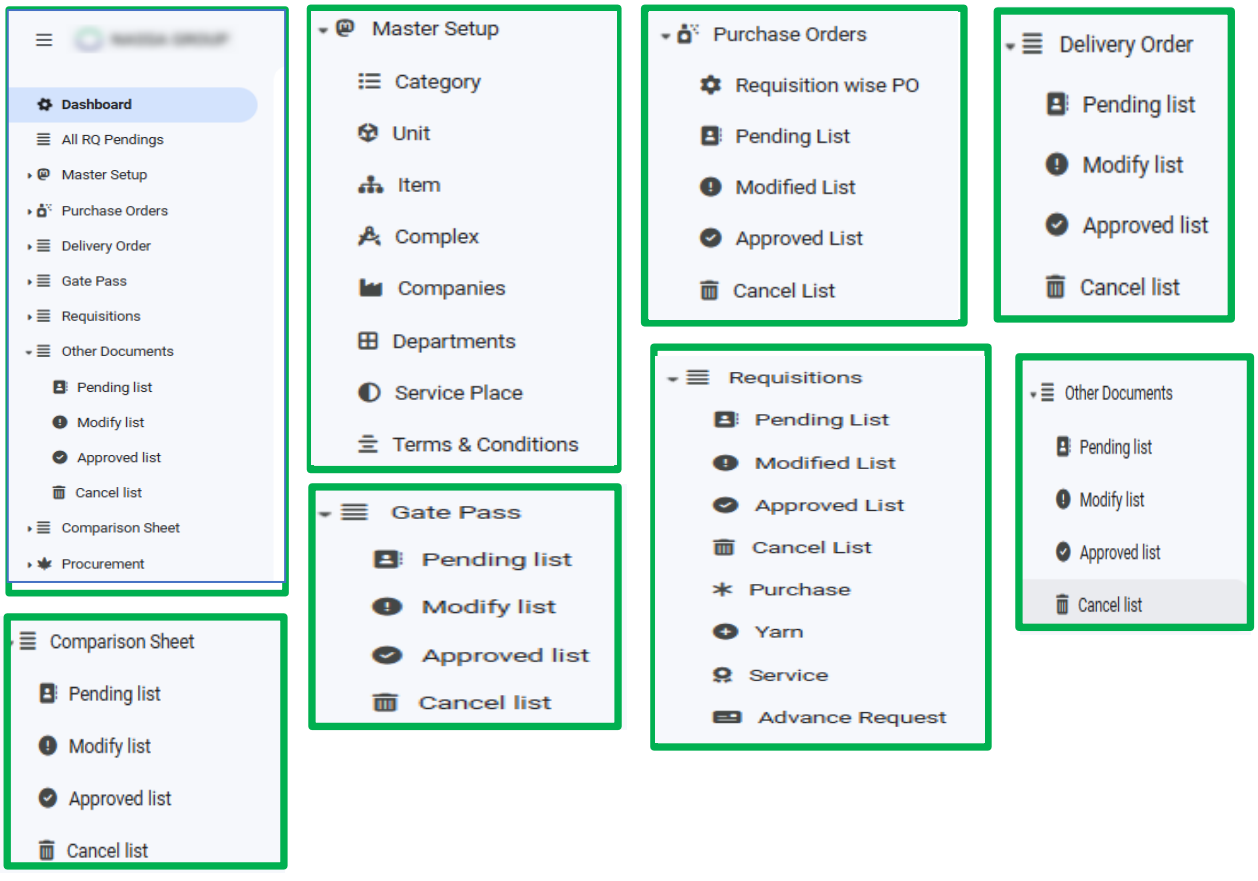


Fig. 3 Module and Submodules of Master Setup, Delivery Order, Purchase Order, Gate Pass, Requisitions, Other Documents, Comparison Sheet, and Procurement

4.1. Previous Handmade Requisition Format and New System-Generated Format

The present manual format and the e-procurement system format will be compared here. Previously, manual PR was created in an Excel sheet, which was totally back-dated and time-consuming.

Firstly, Figure 4 illustrates the manual PR format. On the other hand, the system requisition creation interface is shown in Figure 5.

4.1.1. Outcome of this Segment

The outcome after completing the required functions, system-generated PR is shown in Figure 6.

4.2. Previous Comparison Sheet and New System-Generated Format

When the updated system was not established, Excel sheets were used to make a CS, which was also time-consuming for both processing and management approval, and the possibility of making mistakes was too high. Figure 7 illustrates the previous manual CS format.

For making a CS, it is necessary to add the price quotations of suppliers, using the quotation module. Procurement team members use this module to add suppliers' quotations. Quotation addition process is illustrated in Figures 8 and 9 accordingly. Star (*) marks indicate required fields during every document's creation.

4.2.1. Outcome of this Segment

The system-generated comparison sheet is shown as an outcome in Figure 10. After completion, the approval Trail is shown in Figure 11.

4.3. Previous Manual Purchase Order and New System-Generated Format

The existing format illustrates the manual purchase order, generally made in an Excel sheet. It creates hassle and consumes the valuable time of the procurement team. Addressing this issue, ABC Company has implemented a system to automatically create purchase orders to avoid unnecessary hassles.

Every requisition generates a unique number for every factory; moreover, every requisition item needs price approval from the top management. Once the price is approved for a specific item of the requisition, it can be added to the PO automatically.

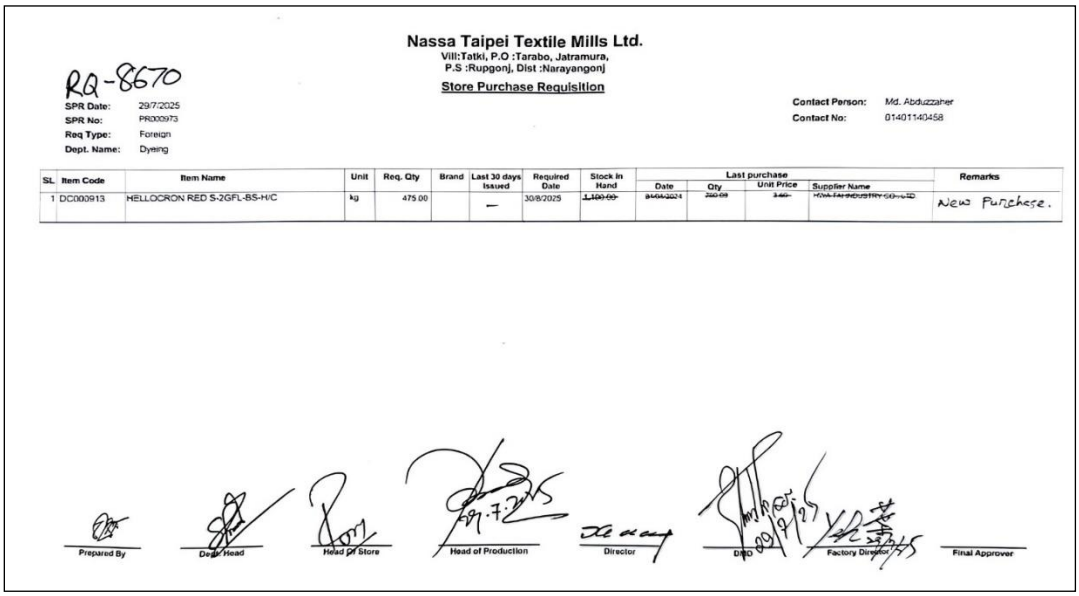
Other necessary things like suppliers' details, terms and conditions, factory and billing details could also be inserted into the system PO. The existing Purchase Order format, generally managed by Excel, is shown in Figure 12. Now, to create an auto-generated system PO, the following things must be completed.

4.3.1. Outcome of this Segment

The outcome after creating the PO creation interface and placing the order is shown in Figure 13.

4.4. New System-Generated Format Delivery Order Format

The system-generated DO Creation Interface and system-generated DO are shown in Figures 14 and 15, respectively. The important parts of the system are mentioned in green color, which are necessary to complete. After all the processing, a system-generated DO model is shown in Figure 16, previously mentioned.



Nassa Taipei Textile Mills Ltd.
Vill:Tatki, P.O :Tarabo, Jatramura,
P.S :Rupgonj, Dist :Narayangonj
Store Purchase Requisition

RQ-8670

SPR Date: 29/7/2025
SPR No: PR000973
Req Type: Foreign
Dept. Name: Dyeing

Contact Person: Md. Abduzzaher
Contact No: 01401140458

SL	Item Code	Item Name	Unit	Req. Qty	Brand	Last 30 days Issued	Required Date	Stock In Hand	Last purchase				Remarks
									Date	Qty	Unit Price	Supplier Name	
1	DC000913	HELLOCRON RED S-2GFL-BS-H/C	kg	475.00		—	30/8/2025	~~1,100.00~~	~~8/04/2024~~	~~250.00~~	~~340~~	~~KHA TAI INDUSTRY CO., LTD~~	New Purchase.

Prepared By | Dept. Head | Head of Store | Head of Production | Director | DMD | Factory Director | Final Approver

Fig. 4 Manual Purchase Requisition (PR)

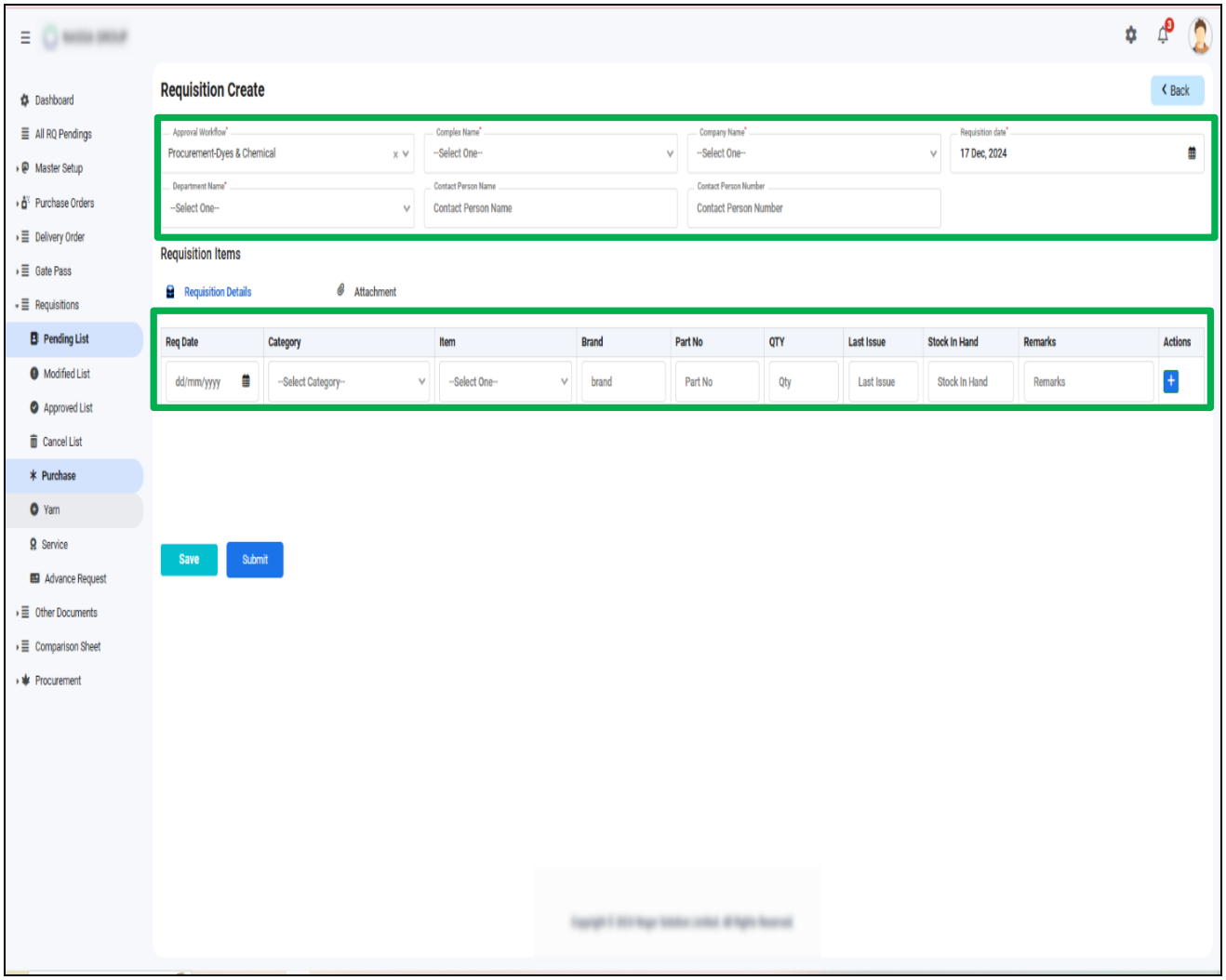


Fig. 5 System Requisition Creation Interface

Nassa Taipei Textile Mills Ltd

Tatki, Tarabo, Jatramura, Rupgonj, Narayangonj.

Store Purchase Requisition

SPR Date: 29 July, 2025
SPR No: RQ8670
Dept. Name: Dyeing

Contact Person: Md. Abduzzaher
Contact No: 01401140458

SL	Item Code	Item Name	Unit	Req. Qty	Brand	Part No	Last 30 days issued	Required Date	Stock In Hand	Last purchase				Remarks
										Date	Qty	Unit Price	Supplier Name	
1	DC000567	Hellocron Red S-2GFL-BS-H/C	kg	475.0000			0	30 Aug, 2025	0					Required for dyeing section.1st time purchase.

Created by
Md. Raqibul Islam
Executive

Approved by
Kamrul Islam
Manager

Approved by
Major A K M Bazlur Rashid (Retd.)
Deputy Managing Director

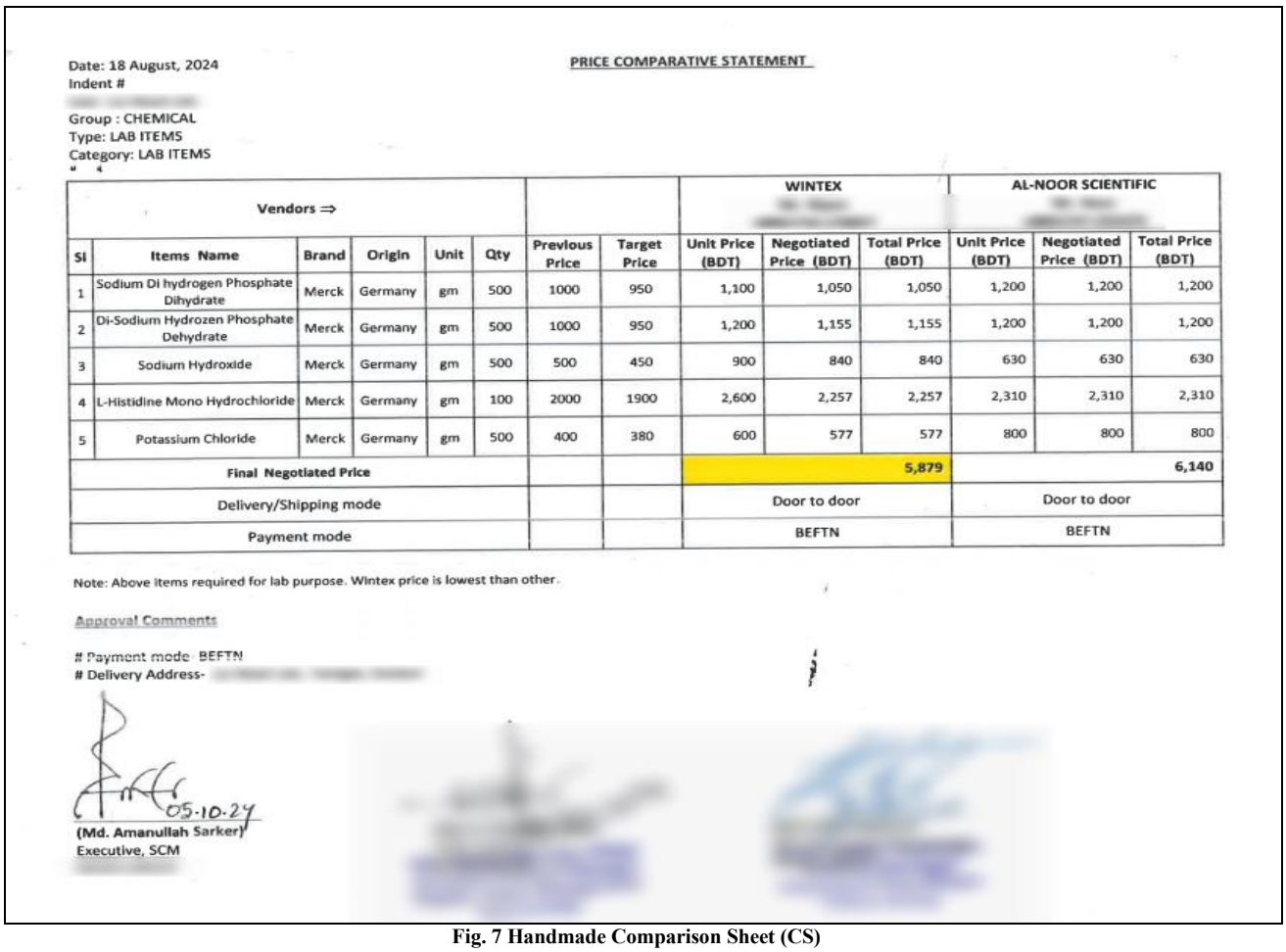
Approved by
Md. Amanullah Sarker
Executive

Approved by
Abdullah Al Mahfuz
Manager

Approved by
S M Latifur Rahman
General Manager

Approved by
Walid Islam
Managing Director

Fig. 6 Outcome of System-generated Purchase Requisition Format



Date: 18 August, 2024
Indent #
Group : CHEMICAL
Type: LAB ITEMS
Category: LAB ITEMS

PRICE COMPARATIVE STATEMENT

Vendors ⇒								WINTEX			AL-NOOR SCIENTIFIC		
Sl	Items Name	Brand	Origin	Unit	Qty	Previous Price	Target Price	Unit Price (BDT)	Negotiated Price (BDT)	Total Price (BDT)	Unit Price (BDT)	Negotiated Price (BDT)	Total Price (BDT)
1	Sodium Di hydrogen Phosphate Dihydrate	Merck	Germany	gm	500	1000	950	1,100	1,050	1,050	1,200	1,200	1,200
2	Di-Sodium Hydrozen Phosphate Dehydrate	Merck	Germany	gm	500	1000	950	1,200	1,155	1,155	1,200	1,200	1,200
3	Sodium Hydroxide	Merck	Germany	gm	500	500	450	900	840	840	630	630	630
4	L-Histidine Mono Hydrochloride	Merck	Germany	gm	100	2000	1900	2,600	2,257	2,257	2,310	2,310	2,310
5	Potassium Chloride	Merck	Germany	gm	500	400	380	600	577	577	800	800	800
Final Negotiated Price										5,879			6,140
Delivery/Shipping mode								Door to door			Door to door		
Payment mode								BEFTN			BEFTN		

Note: Above items required for lab purpose. Wintex price is lowest than other.

Approval Comments

Payment mode: BEFTN
Delivery Address-

05.10.24
(Md. Amanullah Sarker)
Executive, SCM

Fig. 7 Handmade Comparison Sheet (CS)

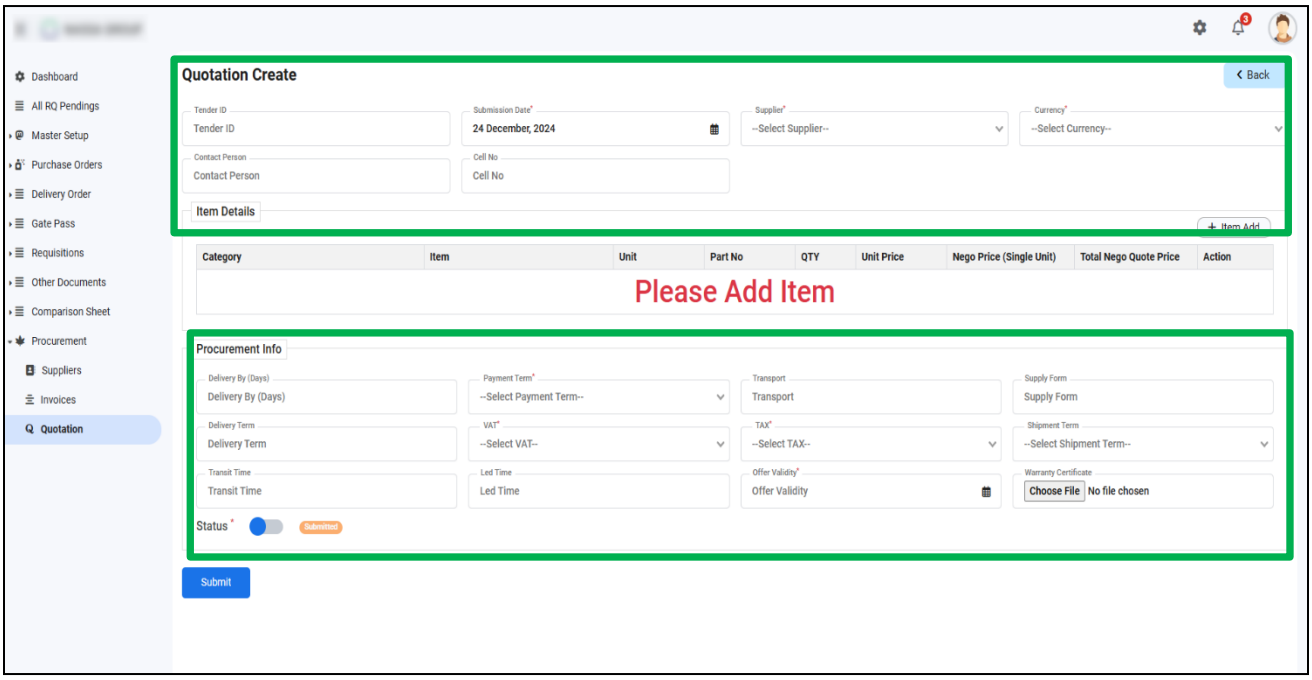


Fig. 8 Supplier Information and Procurement Information Interface

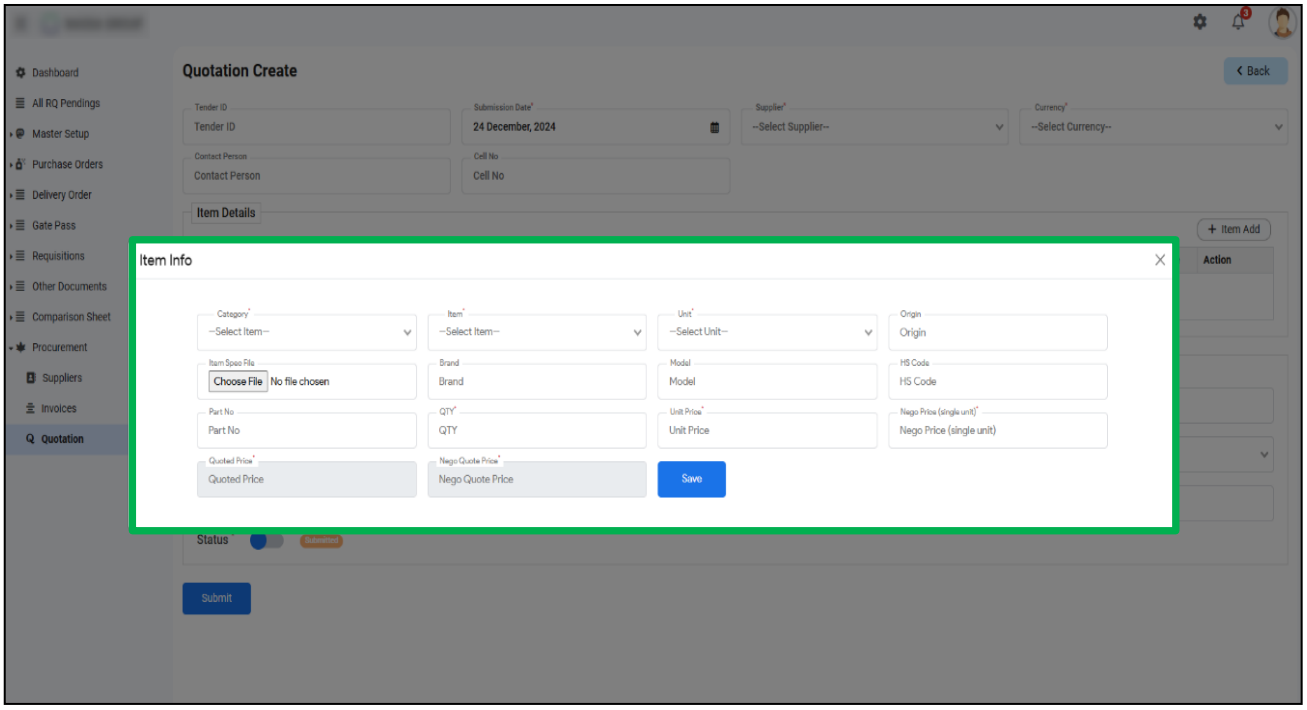
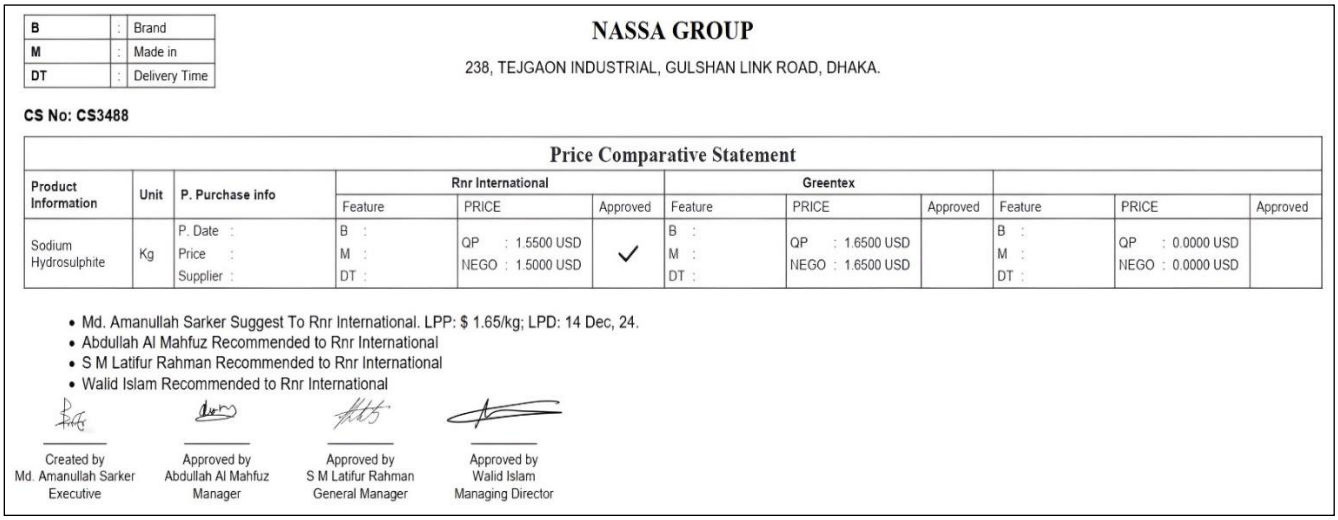


Fig. 9 Supplier's Price Quotation Adding Process



B	:	Brand
M	:	Made in
DT	:	Delivery Time

NASSA GROUP

238, TEJGAON INDUSTRIAL, GULSHAN LINK ROAD, DHAKA.

CS No: CS3488

Price Comparative Statement

Product Information	Unit	P. Purchase info	Rnr International			Greentex					
			Feature	PRICE	Approved	Feature	PRICE	Approved	Feature	PRICE	Approved
Sodium Hydrosulphite	Kg	P. Date : Price : Supplier :	B : M : DT :	QP : 1.5500 USD NEGO : 1.5000 USD	✓	B : M : DT :	QP : 1.6500 USD NEGO : 1.6500 USD		B : M : DT :	QP : 0.0000 USD NEGO : 0.0000 USD	

- Md. Amanullah Sarker Suggest To Rnr International. LPP: $ 1.65/kg; LPD: 14 Dec, 24.
- Abdullah Al Mahfuz Recommended to Rnr International
- S M Latifur Rahman Recommended to Rnr International
- Walid Islam Recommended to Rnr International

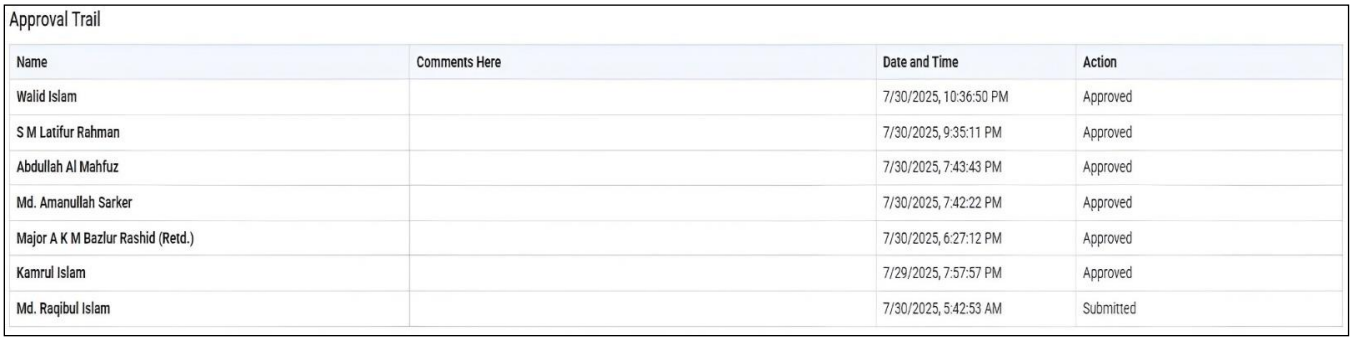
Created by
Md. Amanullah Sarker
Executive

Approved by
Abdullah Al Mahfuz
Manager

Approved by
S M Latifur Rahman
General Manager

Approved by
Walid Islam
Managing Director

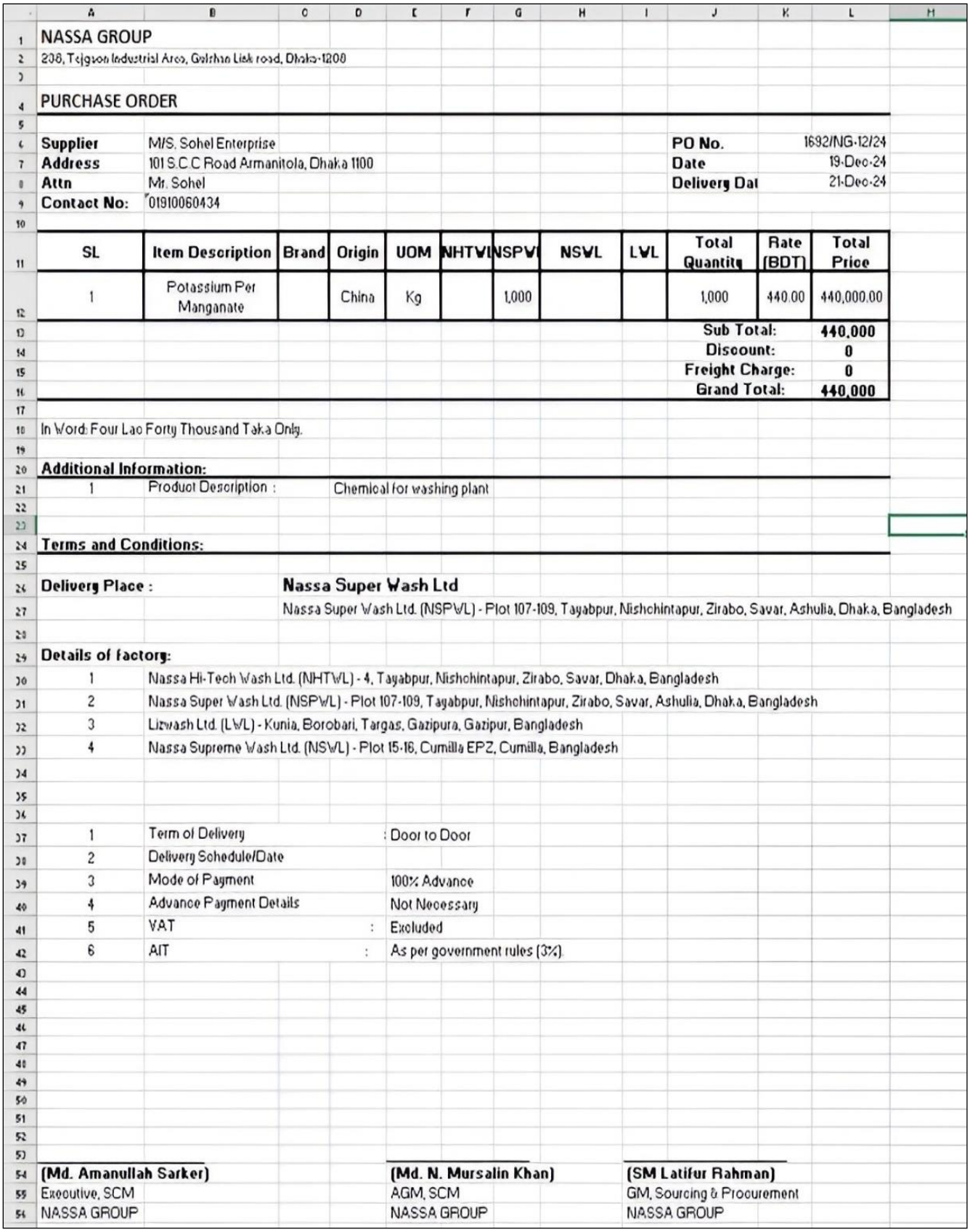
Fig. 10 System-generated Comparison Sheet (CS)



Approval Trail

Name	Comments Here	Date and Time	Action
Walid Islam		7/30/2025, 10:36:50 PM	Approved
S M Latifur Rahman		7/30/2025, 9:35:11 PM	Approved
Abdullah Al Mahfuz		7/30/2025, 7:43:43 PM	Approved
Md. Amanullah Sarker		7/30/2025, 7:42:22 PM	Approved
Major A K M Bazlur Rashid (Retd.)		7/30/2025, 6:27:12 PM	Approved
Kamrul Islam		7/29/2025, 7:57:57 PM	Approved
Md. Raqibul Islam		7/30/2025, 5:42:53 AM	Submitted

Fig. 11 Final Approval Trial



NASSA GROUP
238, Tejgaon Industrial Area, Gulshan Link road, Dhaka-1208

PURCHASE ORDER

Supplier	M/S. Sohel Enterprise	**PO No.**	1692/NG-12/24
Address	101 S.C.C Road Armanitola, Dhaka 1100	**Date**	19-Dec-24
Attn	Mr. Sohel	**Delivery Dat**	21-Dec-24
Contact No:	01910060434		

SL	Item Description	Brand	Origin	UOM	NHTWL	NSPWL	NSWL	LWL	Total Quantity	Rate (BDT)	Total Price
1	Potassium Per Manganate		China	Kg		1,000			1,000	440.00	440,000.00
									Sub Total:		**440,000**
									Discount:		**0**
									Freight Charge:		**0**
									Grand Total:		**440,000**

In Word: Four Lac Forty Thousand Taka Only.

Additional Information:

1 Product Description : Chemical for washing plant

Terms and Conditions:

Delivery Place : **Nassa Super Wash Ltd**
Nassa Super Wash Ltd. (NSPWL) - Plot 107-109, Tayabpur, Nishchintapur, Zirabo, Savar, Ashulia, Dhaka, Bangladesh

Details of factory:

1 Nassa Hi-Tech Wash Ltd. (NHTWL) - 4, Tayabpur, Nishchintapur, Zirabo, Savar, Dhaka, Bangladesh
2 Nassa Super Wash Ltd. (NSPWL) - Plot 107-109, Tayabpur, Nishchintapur, Zirabo, Savar, Ashulia, Dhaka, Bangladesh
3 Lizwash Ltd. (LWL) - Kunia, Borobari, Targas, Gazipura, Gazipur, Bangladesh
4 Nassa Supreme Wash Ltd. (NSWL) - Plot 15-16, Cumilla EPZ, Cumilla, Bangladesh

1	Term of Delivery	:	Door to Door
2	Delivery Schedule/Date		
3	Mode of Payment		100% Advance
4	Advance Payment Details		Not Necessary
5	VAT	:	Excluded
6	AIT	:	As per government rules (3%)

(Md. Amanullah Sarker)	**(Md. N. Mursalin Khan)**	**(SM Latifur Rahman)**
Executive, SCM	AGM, SCM	GM, Sourcing & Procurement
NASSA GROUP	NASSA GROUP	NASSA GROUP

Fig. 12 Existing Excel-based PO Format

[redacted]

PURCHASE ORDER

Supplier Name	:	[redacted] Dhaka	**PO**	:	PO310
			PO Date	:	17 December, 2024
			Delivery Date	:	17 December, 2024
Attention To	:	**Mr. Rasel**	**Indent No**	:	RQ3253
			Ref	:	QN1917
Cell Number	:	[redacted]	**Currency**	:	BDT
Delivery Place	:	[redacted]			
Billing Address	:	[redacted]			

SL	Item Description	Origin	UoM	Qty	Unit Price	Total Price
1	Wash Tawal		pcs	10,000.00	6.50	65,000.00
					Subtotal	**65,000.00**
					Discount	**0.00**
					VAT	**0.00**
					Freight Charge	**0.00**
In Words:	**Sixty Five Thousand Only**				**Grand Total**	**65,000.00**

Terms & Condition

01. Return Policy: If raise any quality issue, supplier will be liable & replace the goods.
02. Delivery Term: Door to Door.
03. Quality as standard.
04. Warranty/Guarantee: Ensure about quality.
05. Payment Term: BEFTN after 60 days.
06. AIT Included as per government rules (3%).

[redacted]

Approved by
[redacted]
General Manager
17 Dec, 2024

Fig. 13 System-Generated PO after Approval

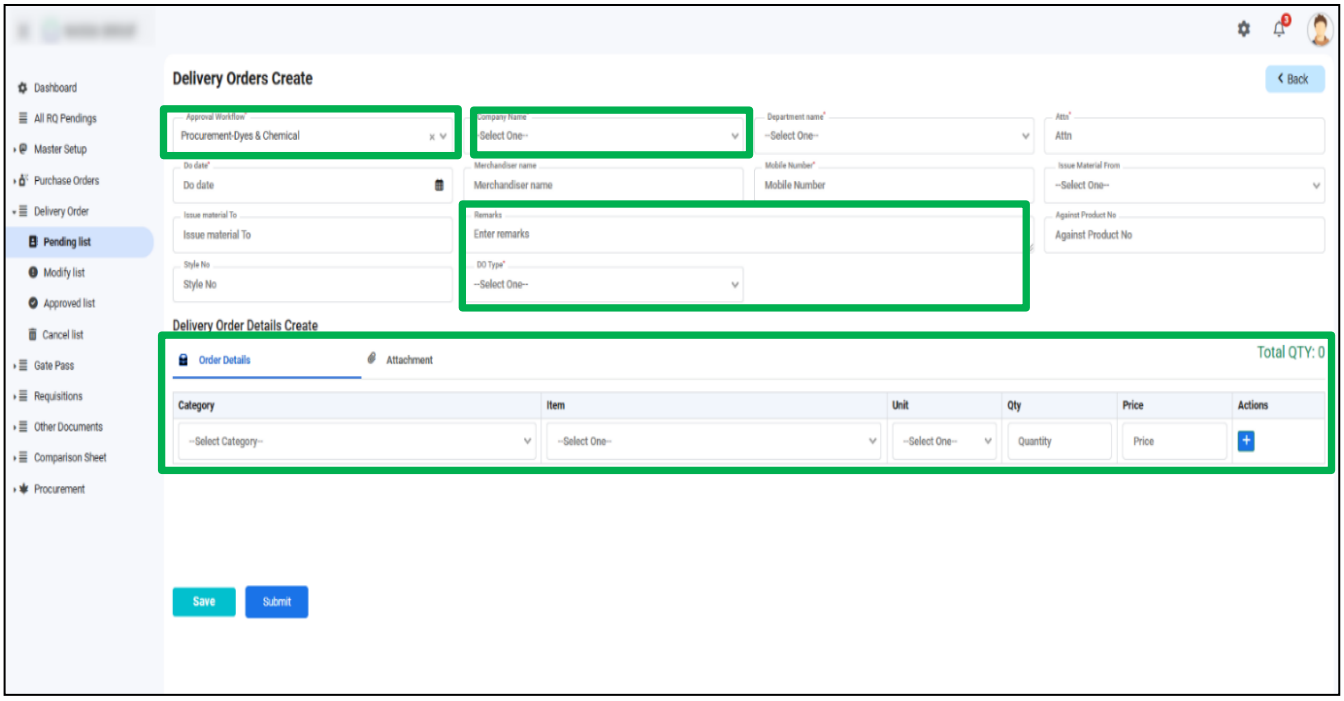
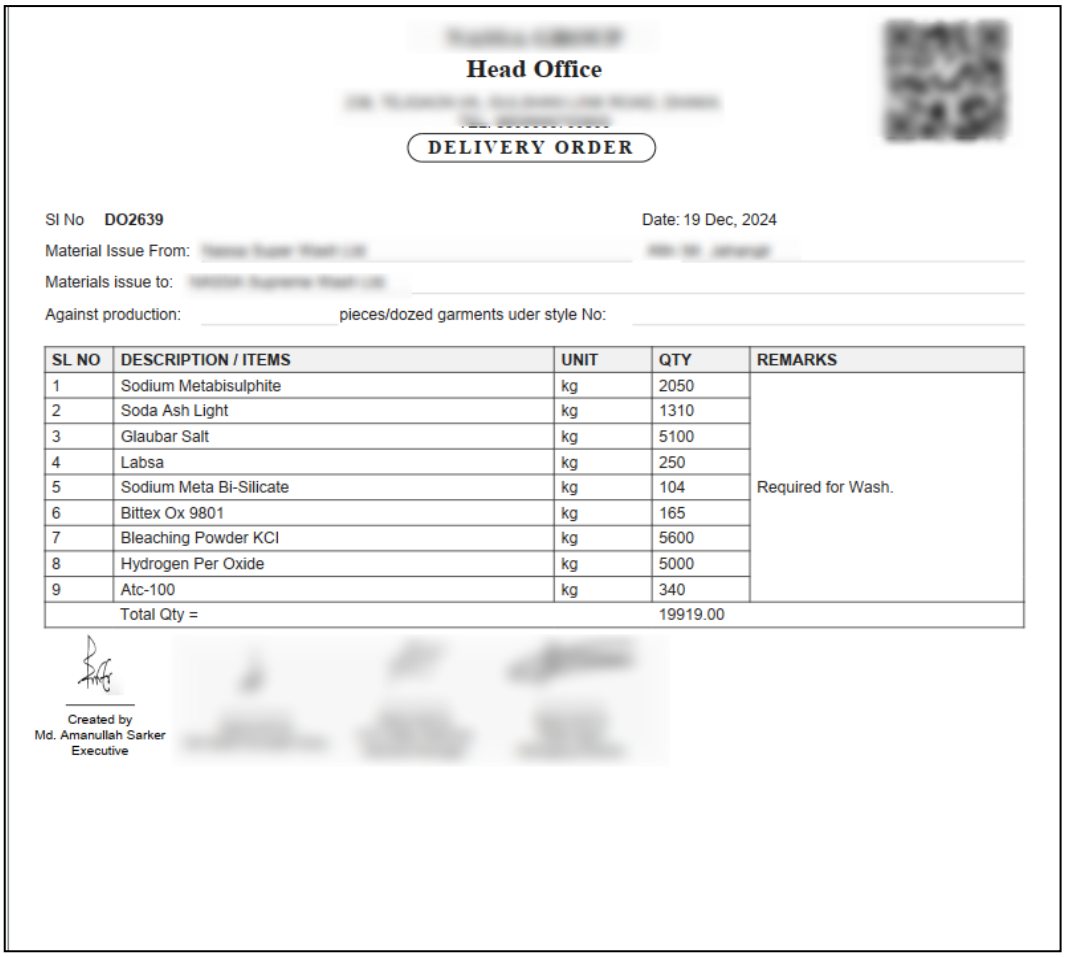


Fig. 14 System DO Creation Interface



Head Office

DELIVERY ORDER

Sl No **DO2639** Date: 19 Dec, 2024

Material Issue From:

Materials issue to:

Against production: pieces/dozed garments uder style No:

SL NO	DESCRIPTION / ITEMS	UNIT	QTY	REMARKS
1	Sodium Metabisulphite	kg	2050	
2	Soda Ash Light	kg	1310	
3	Glaubar Salt	kg	5100	
4	Labsa	kg	250	
5	Sodium Meta Bi-Silicate	kg	104	Required for Wash.
6	Bittex Ox 9801	kg	165	
7	Bleaching Powder KCl	kg	5600	
8	Hydrogen Per Oxide	kg	5000	
9	Atc-100	kg	340	
	Total Qty =		19919.00	

Created by
Md. Amanullah Sarker
Executive

Fig. 15 System-generated DO

5. Conclusion and Recommendations

Information Technology (IT) plays a significant role in connecting people and organizations across the world through digital innovation. IT makes quick solutions that streamline business operations, enhance productivity, and enable data-driven decision-making. With the rapid advancements in this sector, IT continues to shape industries like healthcare, education, RMG, and finance by providing innovative ideas, tools, and platforms. The current study gives a comprehensive scenario of the transition from manual procurement to e-procurement in a particular company. It streamlined the company's operations and functions, which are stored in a database, and also saved time. Moreover, it is feasible and easy to find and track the work progress and final status of the work. Using the updated e-procurement system, made a fully paperless work system compared to conventional procurement, saving more valuable time.

5.1. Future Recommendations

- Update the system in such a way that when a member creates a PO, this PO will automatically be sent to the nominated supplier's e-mail.
- Management can maintain a WhatsApp or any online group for approval issues to save more time. If anyone needs approval, they will simply text the number for approval. In this way, the company can save more valuable time.

Author Contributions

Md. Amanullah Sarker: Conceptualization, Methodology, Software, Data Curation, Writing and Original Draft Preparation, Visualization, Investigation.

Raihan Ahmed Joy: Writing Preparation, Writing, Reviewing, Validation, Reviewing, Editing, Supervision.

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