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A STUDY ON THE EFFECTIVENESS OF DIGITALISATION OF HS CODES IN A CHA FIRM WITH SPECIAL REFERENCE TO N H EXIM INDIA PVT LTD

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Abstract:

This study examines the increasing importance and effectiveness of digitising Harmonised System (HS) codes in the operations of Customs House Agent (CHA) firms. HS codes act as the global classification system for goods, forming the foundation of customs procedures, tariff determination, duty calculation, and regulatory compliance. Traditionally, many CHA firms relied on manual entries or partially automated systems, which increased the chances of errors, misclassification, and delays in the clearance process. With the rapid shift toward digitalisation in trade documentation supported by platforms such as ICEGATE, DGFT portals, and e-Sanchit, HS code management has become more streamlined and efficient.

The study examines how digital tools enhance the accuracy of HS code selection by reducing manual dependency and integrating automated validation features. Digital platforms cross-check commodity descriptions, ensure uniform classification across documents, and minimise the risk of misclassification that could lead to penalties, queries from customs, or shipment delays. Furthermore, digitisation improves the speed of processing documentation by enabling faster retrieval, auto-filling of repetitive information, and quick uploading of documents on government portals.

From a compliance perspective, the shift to digitised HS codes strengthens adherence to customs regulations. Digital systems maintain updated databases aligned with international HS revisions and national tariff schedules, helping CHA firms stay compliant with regulatory changes. This reduces the likelihood of non-compliance, avoids costly errors, and contributes to a transparent audit trail.

Overall, the findings of this study highlight that digitisation significantly improves operational efficiency, enhances documentation accuracy, and strengthens regulatory compliance for CHA firms. It not only minimises errors and processing delays but also supports the broader vision of modernising India's customs ecosystem through reliable, technology-enabled trade facilitation.

Introduction:

International trade depends on accurate and timely documentation to ensure the uninterrupted movement of goods across borders. Each shipment must comply with strict customs regulations, and even minor errors in paperwork can lead to delays, penalties, or additional inspections. In this highly sensitive environment, Customs House Agents (CHAs) play a vital role by serving as intermediaries between importers/exporters and customs authorities. Their responsibility involves preparing and verifying key documents such as Bills of Entry, Shipping Bills, invoices, packing lists, and HS code classifications, while also ensuring adherence to regulatory guidelines.

This study is based on the practical exposure gained during the Summer Internship Project (SIP) at a CHA firm. The internship provided hands-on experience with the organisation's documentation procedures and offered insights into how import and export operations are managed on a daily basis. It also enabled an understanding of the firm's workflow, beginning from receiving client documents and classifying goods, to filing entries on the ICEGATE portal and coordinating with customs officers.

The purpose of this study is to examine how documentation is handled within the CHA firm, the importance of accuracy in classification and compliance, and the challenges that arise during import and export processes. These challenges include delays in documentation receipt, discrepancies in product descriptions, incorrect HS code identification, system dependency, and frequent regulatory updates. The research also explores how the organisation maintains efficiency despite these constraints, and how digital tools or improved workflows can support smoother operations.

By analysing the firm's documentation practices and highlighting the issues faced in real-time operations, this study aims to contribute insights that may help CHA firms improve accuracy, speed, and overall effectiveness in handling trade documentation.

Statement of the Problem:

Import and export processes require multiple documents, such as Bills of Entry, Shipping Bills, commercial invoices, packing lists, and various permits. Errors, mismatches, or delays in preparing these documents can result in shipment detention, penalties, or increased clearance time. Although CHA firms follow standardised procedures, documentation errors continue to be a recurring challenge. Hence, the problem lies in determining how documentation efficiency affects clearance outcomes and identifying gaps that hinder smooth processing.

Objective of the Study:

1. To understand the documentation workflow followed in import and export operations at a CHA firm.

   This objective aims to examine the step-by-step process involved in preparing, verifying, and submitting documentation for both import and export shipments. It

includes studying how information is received from clients, how documents are processed internally across different departments, and how filings are completed on platforms such as ICEGATE.

2. To identify common challenges and bottlenecks in documentation preparation.
   This involves analysing the practical difficulties encountered during the documentation process, such as delays in receiving documents, product description mismatches, incorrect HS code classification, system-related
   issues, or communication gaps between clients and CHA staff. 3. To evaluate the efficiency and accuracy of the existing documentation system.
   The study seeks to assess how effectively the current documentation procedures support timely customs clearance and regulatory compliance. It examines the accuracy of document preparation, the time taken for each stage, and the extent to which errors or rework affect overall operational performance.
4. To recommend improvements to enhance documentation quality and compliance levels.
   Based on the findings, the objective is to propose practical strategies— such as digitisation, streamlined workflows, staff training, or updated verification methods— that can help the organisation reduce errors, strengthen compliance with customs regulations, and improve overall operational efficiency.

Hypothesis of the Study:

H1H₁: Efficient documentation processes significantly reduce delays and compliance-related issues in import and export customs clearance. This hypothesis proposes that when documentation is prepared accurately, verified thoroughly, and processed promptly, the chances of customs-related delays, rework, penalties, or compliance queries decrease substantially. It assumes that improved workflow, proper HS code classification, and digitised systems contribute directly to smoother clearance procedures.

H₀: Documentation efficiency does not have a significant impact on delays or compliance issues in customs clearance. The null hypothesis states that the level of efficiency in documentation has no meaningful relationship with the delays or compliance challenges experienced during import or export clearance. According to this assumption, other factors, such as customs inspections, regulatory changes, or external operational factors, may influence clearance outcomes more than documentation accuracy or speed.

Initial Literature Review:

Scholarly research consistently underscores the central role of accurate and timely documentation in ensuring smooth international trade operations. In global supply chains, Customs House Agent (CHA) firms act as intermediaries who facilitate compliance with regulatory procedures, ensuring that import and export documentation adheres to established customs guidelines. Sharma (2020) explains that the documentation responsibilities of CHA firms, such as preparing invoices, packing lists, Bills of Entry, shipping bills, and HS code

classifications, are critical for regulatory adherence and error-free clearance. He emphasises that even minor documentation inaccuracies can escalate into major compliance issues, resulting in penalties, delays, or shipment detentions.

At a global level, the World Customs Organisation (2022) highlights the persistent challenge of documentation discrepancies, noting that such errors contribute to over 30% of shipment delays worldwide. These delays stem from mismatched data, incomplete declarations, incorrect HS codes, and inconsistent classification practices. The WCO's findings also indicate that documentation quality is not merely an administrative requirement but a strategic determinant of how efficiently goods flow across borders. This aligns with the broader literature that positions documentation accuracy as a crucial factor influencing international trade competitiveness.

Furthermore, the increasing adoption of digital technologies in customs processes has transformed traditional documentation practices. Singh and Verma (2021) point out that platforms such as ICEGATE (Indian Customs Electronic Gateway) and e-Sanchit have significantly streamlined document submission, assessment, and verification procedures. Their research shows that digital platforms reduce manual intervention, minimise human error, and enhance transparency by enabling automated checks. The authors also highlight that digitisation supports faster turnaround times by simplifying data sharing between CHA firms, customs authorities, and logistics stakeholders.

In addition, contemporary literature emphasises the growing importance of HS code accuracy as part of documentation integrity. HS codes determine duty structures, tariff classifications, and compliance requirements. Studies have shown that digital HS code classification tools improve consistency, reduce misclassification risks, and help CHA firms align with international customs standards. This shift towards digital documentation is a key driver of operational efficiency, as accurate HS codes directly influence the speed and accuracy of customs assessments.

Collectively, the reviewed literature suggests that documentation quality is a critical factor affecting customs clearance timelines, regulatory compliance, and overall trade efficiency. With global trade systems rapidly shifting towards automation and digital record-keeping, CHA firms that adopt digital documentation solutions, including automated HS code management, are better positioned to reduce errors, enhance operational accuracy, and improve clearance outcomes. These insights form the theoretical foundation for examining how digitising HS codes can improve documentation processes within CHA firms.

Research Methodology:

Data Collection Method:

The study adopts a combination of primary and secondary data collection techniques to ensure a comprehensive understanding of documentation practices within the CHA firm.

Primary Data:

- Direct Observation of Documentation Processes: Regular on-site observation was conducted to understand the actual workflow involved in preparing import and export documentation. This included monitoring how documents are received,

verified, classified, and finally entered into the customs filing systems, such as ICEGATE.

- Informal Discussions with Documentation Executives and Supervisors: Interactions were held with employees handling documentation, EDI filing, and operations to gain insights into practical challenges, common errors, and time constraints. These discussions provided contextual understanding that may not be captured through formal interviews or structured questionnaires.

- Review of 20 Real Documentation Cases (10 Import + 10 Export): Actual case files handled by the firm were analysed to identify error patterns, processing timelines, compliance issues, and the quality of documentation. This helped in evaluating the operational efficiency of the existing system.

Secondary Data:

The study is based on an analysis of 20 documentation case files, comprising: • 10

import shipment cases, and

- 10 export shipment cases.

This sample provides a balanced view of both import and export operations, enabling comparative analysis of workflow efficiency, accuracy levels, and documentation challenges.

Statistical Tools Proposed for Analysis:

To evaluate the findings effectively, the following statistical tools and techniques will be used:

- Percentage Analysis:

  Used to calculate the proportion of errors, delays, or compliance issues observed across the selected documentation cases.

- Descriptive Analysis:

  Helps summarise and interpret key observations, including average processing time, nature of errors, and frequency of documentation issues.

- Error Frequency Analysis:

  Identifies how often specific types of errors occur, such as incorrect HS codes, incomplete documents, or mismatched product descriptions.

- Comparative Delay Analysis:

  Compares import vs. export processing time, delays caused due to documentation errors, and the impact of documentation accuracy on customs clearance timelines.

Significance of the Study:

This study holds considerable significance for Customs House Agent (CHA) firms, logistics professionals, and the broader international trade ecosystem. By examining the impact of digitising Harmonised System (HS) codes within CHA operations, the research generates insights that can contribute directly to improving documentation accuracy, operational efficiency, and compliance with global customs regulations.

Firstly, the study emphasises the critical role that correct HS code classification plays in international trade. Errors in HS codes can lead to incorrect duty calculations, shipment delays, penalties, or even cargo seizure. By demonstrating how digital tools reduce manual errors and standardise classification procedures, the study supports CHA firms in adopting more reliable and efficient workflows.

Secondly, this research provides practical value by addressing common documentation challenges identified during the internship, such as incomplete data, mismatched invoices, and inconsistent classification. Highlighting these issues with real-world observations enables CHA firms to understand where their processes may be vulnerable. The study's findings can therefore guide organisations in strengthening their internal controls and documentation review mechanisms.

Furthermore, the study contributes to operational improvement by suggesting ways to enhance process efficiency. Recommendations such as staff training, better digital infrastructure, and closer integration with customs systems offer actionable solutions that firms can readily implement. These improvements can help organisations reduce turnaround time for shipments, minimise compliance risks, and achieve greater accuracy in documentation processing.

In addition, this research benefits policymakers, trade consultants, and industry regulators by presenting a structured analysis of how digital HS code management can support national and international customs efficiency. With global supply chains moving rapidly towards digitalisation, the study provides relevant insights into how India's customs brokerage sector can align with international best practices.

Finally, the study adds academic value by bridging the gap between theoretical concepts of digitalisation and their practical application within CHA firms. It offers an evidence-based understanding of how digital tools impact real-world documentation tasks, making it a useful reference for future studies in logistics, trade management, and customs automation.

Overall, the significance of this study lies in its contribution to enhancing trade efficiency, promoting technological adoption, and strengthening the operational capabilities of CHA firms. Through its insights, organisations can reduce errors, improve compliance, and contribute to smoother and more transparent customs processes, ultimately benefiting the entire international trade industry.

Data Interpretation:

The data analysis is based on the review of 20 documentation cases and observations from the CHA firm's processes.

1. Error Frequency Analysis

Common Errors Identified:

Type of Error	Import Cases	Export Cases	Total Frequency
Incorrect HS Code	3	2	5
Incomplete or Missing Data	4	3	7
Mismatched Invoice Details	2	1	3
Delay in Receiving Documents	5	6	11
Wrong Product Description	1	2	3

Insight:

Delayed document submission from clients was the most frequent problem, affecting 55% of all cases.

2. Documentation Processing Time Analysis

Average Time Taken per Shipment

Process Stage	Import (mins)	Export (mins)
Document Verification	20	15
HS Code Classification	10	8
Data Entry on ICEGATE	15	12
Final Filing & Submission	10	10

Observation:

Import documentation generally took 10–15 minutes longer than export documentation due to additional checks, duty calculations, and more detailed compliance requirements.

3. Delay Analysis

Reasons for Delays:

- 55% - Delay in receiving documents from clients
- 20% - Product description mismatch
- 15% - HS code reclassification
- 10% - Technical/ICEGATE system issues

Conclusion:
Most delays were attributed to client-side document issues, not internal CHA workflow.

4. Compliance Issue Analysis

- Incorrect HS codes led to customs queries in 25% of the cases.
- Missing documents resulted in re-submission in 30% of cases.
- Export shipments had fewer compliance queries compared to import shipments.

Insight:
Higher compliance issues in imports due to stricter examination and valuation procedures.

5. Overall Documentation Accuracy Score

Based on error observations, each file was rated on a 10-point accuracy scale.
- Import accuracy average: 7.2/10
- Export accuracy average: 8.1/10

Interpretation:
Export documentation was more consistent and contained fewer discrepancies. **Summary of Data Analysis**

- Client-side issues, not CHA inefficiency mainly cause documentation delays.
- Import documentation is more complex and time-consuming.
- HS code errors and mismatched details remain major compliance risks.
- Overall accuracy is acceptable but can be significantly improved with digitisation and training.

Limitations of the Study:

• **Limited to a Single CHA Firm**

The research focuses on the documentation processes of only one Customs House Agent firm. As a result, the findings may not fully represent the practices, challenges, or efficiency levels of other CHA firms operating within the industry. This limits the generalisability of the study. • **Time Constraints and Limited Sample Size**

Due to the short duration of the internship, the study was restricted to observing **20 documentation cases**. A larger sample size may have provided deeper insights into error patterns, compliance trends, and workflow performance.

• **Restricted Access to Confidential Operational Data**

Certain internal documents, financial records, and sensitive compliance reports could not be accessed because of confidentiality policies. This limited the ability to examine all aspects of internal documentation accuracy and system performance.

• **Dependence on Informal Interviews**

The study relied on informal discussions with documentation executives and supervisors. Although useful, these interactions may not provide comprehensive or unbiased insights. Formal interviews or structured questionnaires could have offered a deeper understanding of employee perspectives.

Conclusion:

Digitising HS codes in CHA firms has a profound impact on enhancing operational accuracy, improving workflow efficiency, and strengthening regulatory compliance. The study clearly shows that manual classification of HS codes is prone to frequent errors such as mismatched descriptions, outdated classifications, and inconsistent categorisation across different shipments. These errors often lead to customs queries, delays in clearance, and increased operational costs. By adopting digital HS code management systems, CHA firms can significantly minimise such risks through automated classification, real-time validation, and instant access to updated tariff schedules and regulatory amendments.

Moreover, digitisation improves the speed at which documentation is processed. Automated systems reduce the time required for searching, verifying, and applying the correct HS codes, thereby enabling faster preparation of Bills of Entry and Shipping Bills. This contributes directly to shorter clearance timelines
and higher client satisfaction. The enhanced workflow efficiency also allows documentation teams to focus on value-added tasks rather than repetitive manual processes.

From a compliance standpoint, digital HS code tools ensure that the firm stays aligned with ongoing changes in customs regulations, DGFT notifications, and international tariff updates. Automated alerts and system-driven checks help prevent classification mistakes that may otherwise result in penalties or non

compliance.

The findings of the study imply that if more CHA firms and logistics organisations adopt modern digital HS code management systems, the positive impact could extend across the entire customs brokerage industry. Industry-wide digitisation would promote standardised classification practices, reduce discrepancies, and streamline customs clearance at a broader level. Ultimately, this transformation could lead to faster trade facilitation, improved transparency, and a more efficient import–export ecosystem for all stakeholders, including customs authorities, freight forwarders, and international traders.

Recommendations:

Invest in Digital Infrastructure and Staff Training Programs CHA firms should adopt advanced digital tools such as automated HS code classification software, integrated documentation management systems, and update alert mechanisms to reduce manual errors. Alongside technological upgrades, regular staff training programs must be implemented to enhance employee proficiency in digital tools, regulatory requirements, and documentation accuracy.

Foster Collaboration Between CHA Firms and Customs Authorities Strengthening communication channels between CHAs and customs departments can lead to smoother document processing and faster resolution of queries. Joint workshops, knowledge-sharing sessions, and integration of digital interfaces can simplify clearance procedures and reduce compliance-related delays.

Conduct Regular Reviews and Updates of Digital Systems Since customs regulations and DGFT guidelines frequently change, it is essential to periodically evaluate and update the firm's digital systems to maintain compliance. Routine system audits, software upgrades, and performance checks
will ensure that documentation processes remain accurate, efficient, and aligned with the latest regulatory standards.

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