

IMPLEMENTING EFFICIENT CUSTOMS CLEARANCE PROCESS IN LOGISTICS

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ABSTRACT:

Customs clearance is a vital part of global trade and logistics, seeking solutions for the persistent issues affecting cross-border trade (like delays, documentation issues, poor infrastructure) and so on. This study responds to these challenges specifically by analysing how well the customs clearing process within logistics works. This research assesses how digitalisation, CHA competence, compliance with regulations, level of port infrastructure, level of stakeholder coordination, AI/automation, level of transparency, risk management, and simplification of processes affect successful outcomes for customs clearing. The primary data were collected through a structured Likert scale survey that was given to 54 individuals (Customs Brokers, Logistics Managers, Freight Forwarders, and trainees). Data was analysed using percentage analysis, one-way ANOVA and Chi-Square tests. The Chi-Square test showed that there was a significant correlation ($p = 0.015$) between Professional Designation and the way respondents viewed the effectiveness of using digital documentation, ICEGATE, AI, and experienced CHA professionals on the effectiveness of clearing in general. The ANOVA indicated that there were no significant differences between the three groups based on experience ($p > 0.05$), indicating a near complete consensus regarding the importance of modernising the customs clearing processes. This study indicates that creating a more efficient way to clear customs will require a combined framework utilising experienced business individuals.

Keywords: Customs Clearance, Custom House Agent (CHA), ICEGATE, Logistics Efficiency, Digital Documentation, Trade Facilitation

INTRODUCTION

Customs clearance is an essential component of worldwide commerce. Each time something crosses international borders, it must undergo numerous compliance processes - including providing various types of documentation, determining the duty rates that apply, being inspected by government authorities, and complying with different regulatory requirements - before it can enter (or leave) a given country. The timely completion of these processes establishes not only the movement of cargo but also the competitiveness of commercial enterprises, the dependability of supply chains, and the vitality of trade hubs.

In India, this responsibility primarily rests with Custom House Agents (CHAs) accredited by CBEC, a wing of the CBIC within the Ministry of Finance. CHAs act as intermediaries between local importers or exporters, shipping lines, and government authorities such as CBEC. To facilitate the movement of goods across borders, CHAs prepare and file all necessary documents (e.g., Bill of Entry and Shipping Bill), assemble and provide the required duty payments, coordinate logistics functions at ports, and make certain that all requirements have been met and that the applicable laws and regulations have been followed. If a CHA is not used, businesses may incur additional costs (e.g., incurred due to delays in shipment), face financial penalties, and experience disruptions throughout their entire supply chain. As such, the method and manner in which Customs Clearance takes place is changing rapidly. This evolution is not only protecting commercial enterprises from the negative consequences associated with lack of compliance, but also enhancing the performance and future capabilities of a country's economy.

REVIEW OF LITERATURE

The next section synthesizes past and recent scholarly research on efficiency of customs clearance procedures and the role of intermediaries in the logistics process; technology (digital transformation); and the performance of logistics as a result of the aforementioned.

Customs procedures and Firms Performance

In her study on challenges in customs procedures and their effects on business performance in clearing and forwarding, Ngari (2018) identified inefficient customs procedures such as manual processes, non-standardisation, and system downtimes as having a considerable impact on operational performance. The study also highlighted the effects of downtimes to the SIMBA system, which was determined to have a considerable disruptive effect on the declaration process of clearing and forwarding firms. Additionally, descriptive survey design and regression analysis were applied for the purposes of establishing that customs verification and release had a large positive effect on business performance while declaration stage had much less of an overall effect on business performance. As part of the conclusion of the study, recommendations were provided for the adoption of pre-lodgement systems, utilisation of improved technology, and improved training of staff in order to facilitate streamlined customs processing.

In 2020, Kipkoech examined the influence that customs-clearance processes had on the success of all agencies involved in customs processing in Kenya. Their research drew on the concepts of Resource-Based theory, Queuing theory, and Technology Acceptance theory and utilized data collected from 105 clearing & forwarding businesses located in Nairobi. The findings of this study indicated that clearance-procedure processes would have a large effect on the overall success of all stakeholders involved in customs clearance, and that verification & release processes would have a much greater impact on performance than declaration processes. The study also identified several barriers that limit stakeholder performance including lack of adequate scanners, insufficient employee capacity, and downtime of systems. The report recommend the implementation of smart-gate technology and improved electronic systems as a method of increasing efficiency in logistics operations.

Documentation and Delay in Clearance

Ndambuki & Mincu (2018) studied the reasons for delays in clearing imported goods at the Port of Mombasa through the lens of the Single Window System Theory, Stakeholder Theory, and Transaction Cost Theory. They did this by surveying 177 clearing firms. The authors found that three major contributors to delays in clearing imported goods were inefficient documentation, insufficient staff, and poor connectivity via information and communication technology. Additionally, the authors noted that without skilled personnel, the operational effectiveness of clearing firms is compromised, and made recommendations for improving documentation methods, improving staff competencies, and creating dependable ICT infrastructure to speed up cargo clearance.

Digital Transformation and Technology in Customs Operations

Radio Frequency Identification (RFID) technologies were used by Hsu, Shih, and Wang (2009) to increase efficiency in customs clearing at international air cargo facilities. The researchers created a model of how cargo is processed through an air cargo terminal located in Taiwan to demonstrate how the use of RFID technologies can dramatically reduce wait times; reduce inventory costs; and reduce staff costs to meet the needs and expectations of those who are shipping or receiving goods. The researchers also consistently demonstrated that cargo arriving before the close of the processing day has a much shorter wait time to be cleared from customs than cargo arriving at the close of that processing day. When combined with

improvements to the dispatch process, RFID technologies created the largest operational efficiencies in the customs clearance process, demonstrating how implementing new technologies, like RFID, can greatly assist and improve customs clearance.

Customs Brokerage and Trade Facilitation

The research conducted by Sitisara, Rattanawong, and Vongmanee (2023) focused on customs brokers' changing roles in Thailand due to the increasing logistics and trade integration in the country. The research showed that while there may be several major challenges that customs brokers face due to the complex processes and ever-increasing documentation requirements, the increased implementation of digital technologies and advanced declaration tools have greatly improved both the speed and accuracy of customs clearance. An example of a tool that will revolutionise the customs brokerage industry is Easy Paste, which provides a way for customs brokers to quickly and accurately calculate the applicable duty rates, ultimately improving their operational efficiencies and enhancing the customer experience. Furthermore, when customs brokers continue to innovate, this directly contributes to stimulating global trade, thereby helping to support international trade and ultimately reinforcing long-term economic growth.

RESEARCH GAPS:

The current literature on customs clearance efficiency highlights several important limitations. First, while most research studies consider various aspects of customs clearance efficiency – including digitalization, infrastructure, staff competence, etc. – only a limited number offer an integrated framework linking operational, technological, and regulatory dimensions of customs clearance efficiency. Secondly, the literature provides limited insight into process mediation factors, such as transparency, error reduction, and speed of information flow that serve as intermediary mechanisms between input and output of customs clearance efficiency. In addition, there are few quantitative studies that examine external moderating variables (such as cargo type, volume of trade, etc.) and their effect on customs clearance efficiency; this limits the generalizability of research findings regarding customs clearance efficiency. The lack of theoretical clarity in the area of customs clearance efficiency is evidenced by the vast majority of studies reporting inconsistent results as to how customs procedures affect clearance times. Finally, the vast majority of studies on customs clearance efficiency have used samples from Africa, Europe, and Southeast Asia, leaving limited empirical evidence pertaining to the Indian logistics industry, especially with respect to major port cities (e.g., Chennai). In addition, customer satisfaction and supply chain performance are under-researched downstream outcomes of the efficiency of customs clearance processes. The present research will fill all the identified gaps by developing and validating an integrated model.

RESEARCH QUESTIONS

1. How are logistics experts in Chennai aware of and implementing digital documentation and e-customs platforms like ICEGATE?
2. How do cases of Custom House Agents' skills and expertise affect documentation accuracy and timescale for customs clearance?
3. How do regulations and their often-changing nature affect the pace of customs clearance?
4. How do port infrastructure and IT systems impact how fast or reliably a cargo gets cleared?
5. How do stakeholder collaboration and instantly available information impact customs clearance speed and supply chain effectiveness?

6. Are there different perceptions of how Digitalization plays a role in customs clearance due to the professional titles location based logistics practitioners hold?

7. Do logistics and customs experience provide enlightenment on how the benefits of efficient customs systems work

OBJECTIVES OF THE STUDY

Primary Objectives:

- To analyze the existing customs clearance procedures in logistics and identify areas for improvement.
- To evaluate the efficiency of customs clearance operations in facilitating smooth import and export activities.
- To examine the role of Custom House Agents in ensuring timely and accurate customs clearance under the regulations of the Central Board of Indirect Taxes and Customs.
- To study the impact of technology and digital systems such as ICEGATE in improving customs clearance efficiency.
- To develop recommendations for implementing a more efficient and effective customs clearance process in logistics.

SECONDARY OBJECTIVES:

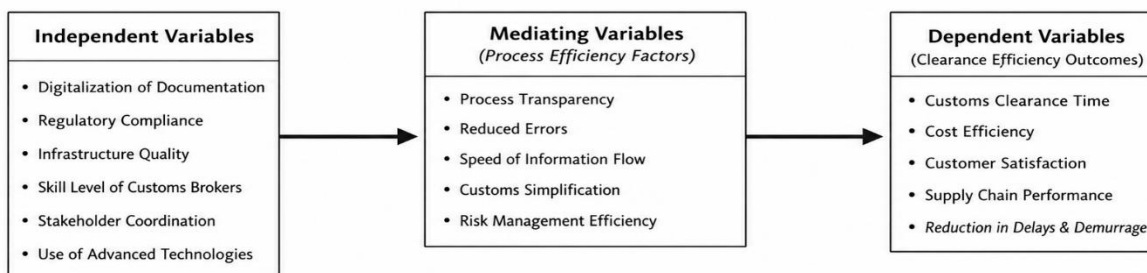
- To understand the overall customs clearance procedures involved in international logistics.
- To study the role and responsibilities of Custom House Agents (CHAs) in facilitating customs clearance.
- To identify the common challenges and delays faced during the customs clearance process.
- To analyze the documentation and regulatory requirements involved in import and export clearance.
- To evaluate the effectiveness of digital customs platforms such as ICEGATE in improving the efficiency of customs operations.

HYPOTHESIS OF THE STUDY

Hypotheses are stated as null (H_0) and alternative (H_1) forms to facilitate objective statistical testing across five key constructs.

S.No.	Variable	H ₀ (Null Hypothesis)	H ₁ (Alternative Hypothesis)
1	Digitalization & Clearance Efficiency	Digitalization does not significantly affect customs clearance efficiency.	Digitalization significantly improves customs clearance efficiency.
2	Regulatory Compliance & Error Reduction	Regulatory compliance does not significantly reduce errors.	Regulatory compliance significantly reduces documentation and procedural errors.
3	Infrastructure Quality & Process Efficiency	Infrastructure quality has no significant impact on process efficiency.	Infrastructure quality significantly improves process efficiency.
4	Skill Level & Clearance Performance	Skill level of CHAs does not significantly influence clearance performance.	Skill level of CHAs significantly improves clearance performance.
5	Process Efficiency & Clearance Outcomes	Process efficiency does not significantly affect clearance time, cost, and customer satisfaction.	Process efficiency significantly improves clearance time, cost efficiency, and customer satisfaction.

CONCEPTUAL FRAMEWORK



Source: Conceptual framework developed by the researcher based on literature review and previous studies related to customs clearance efficiency, digital documentation, regulatory compliance, and supply chain performance.

RESEARCH METHODOLOGY

Research Design

The research design used in this study will be descriptive in nature because it allows the researcher to examine and describe current operations/customs clearance operations in a major logistics company and to identify relationships between variables without manipulating the variables. This study will describe how customs clearance is currently occurring; to assess respondents' perceived differences in the multiple constructs associated with customs clearance operations; and to find patterns of operation that can explain differences in customs clearance efficiency. Qualitative data (from the secondary research/literature review) and quantitative (from a structured Likert-scale questionnaire) will both be used to ensure a thorough and triangulated study.

Sampling and Data Collection

Fifty-four respondents were selected from various logistics and customs-related organizations in Chennai using the convenience sampling method. The sample is made up of four categories of professionals: Customs Brokers (28), Logistics Managers (9), Freight Forwarders (11), and Trainees/Others (6). The data obtained through the structured questionnaire was primary data.

DATA ANALYSIS

Percentage Analysis: Digital Documentation

the aggregated percentage distribution of responses across three items measuring Digital Documentation (Items 4.1, 4.2, 4.3 from the questionnaire).

Hypothesis

H₀ (Null Hypothesis): There is no significant positive perception among employees regarding the study variable (e.g., employee engagement / job satisfaction / leadership effectiveness).

H₁ (Alternate Hypothesis): There is a significant positive perception among employees regarding the study variable.

Scale	No. of Respondents	Percentage (%)
Strongly Disagree	14	8.6%
Disagree	14	8.6%
Neutral	44	27.2%
Agree	55	34.0%
Strongly Agree	35	21.6%
Total	162	100%

Table 1.1

INTERPRETATION:

The data reveal that 55.6% of respondents agreed or strongly agreed that digital documentation reduces paperwork and electronic filing improves the speed of customs procedures. This majority positive perception underscores the readiness of the logistics community to embrace digital transformation.

The mean response is likely to fall in the "Agree" range, and the skew toward the positive end of the scale supports the acceptance of the alternate hypothesis (H_1). This implies that employees generally hold a positive perception regarding the variable under study.

Percentage Analysis: CHA Expertise

The following table summarizes responses to items measuring the perceived impact of CHA expertise (Items 4.9 and 4.10).

Hypothesis

H_0 (Null Hypothesis): There is no significant positive perception among employees regarding the impact of CHA (Custom House Agent) expertise on operational effectiveness.

H_1 (Alternate Hypothesis): There is a significant positive perception among employees regarding the impact of CHA expertise on operational effectiveness.

Scale	No. of Respondents	Percentage (%)
Strongly Disagree	18	11.1%
Disagree	14	8.6%
Neutral	24	14.8%
Agree	76	46.9%
Strongly Agree	30	18.5%
Total	162	100%

Table 1.2

INTERPRETATION:

Over 65% of respondents agreed or strongly agreed that expertise of CHAs improves documentation accuracy and that experienced CHAs help reduce clearance delays. This validates the central importance of skilled customs professionals even within a digitalized environment.

The concentration of responses at the positive end of the scale, particularly the high "Agree" frequency of 46.9%, strongly indicates that CHA expertise is widely recognized and valued among the respondents. This supports the **acceptance of the alternate hypothesis (H_1)**, confirming that there is a statistically meaningful positive perception regarding the impact of CHA expertise.

One-Way ANOVA: Digital Documentation vs. Years of Experience

The ANOVA test examined whether perceptions of Digital Documentation differed significantly across four experience groups.

Hypothesis

H₀ (Null Hypothesis): There is no significant difference in the perception of Digital Documentation among employees across different experience groups.

H₁ (Alternate Hypothesis): There is a significant difference in the perception of Digital Documentation among employees across different experience groups.

Experience Group	N	Mean Score	Std. Deviation
Below 1 year	28	3.560	0.82
2–5 years	9	3.444	0.74
5–10 years	6	3.778	0.68
Above 10 years	11	3.303	0.79

Source	df	F-value	Sig. (p-value)
Between Groups	3	0.348	0.791
Within Groups	50	—	—
Total	53	—	Not Significant

Table 1.3

INTERPRETATION:

The ANOVA result ($F = 0.348$, $p = 0.791$) indicates that there is no statistically significant difference in perceptions of digital documentation across experience groups. This finding is practically significant: it demonstrates that recognition of the value of digital systems in customs clearance is uniformly distributed across the workforce, length of service. The hypothesis is rejected.

Since the p-value ($0.791 > 0.05$), the null hypothesis (H_0) is accepted and the alternate hypothesis (H_1) is rejected. This confirms that years of experience does not significantly influence employees' perception of digital documentation.

Chi-Square Test: Designation vs. Digital Documentation

Hypothesis

H₀ (Null Hypothesis): There is no significant association between employee designation and their perception of Digital Documentation.

H₁ (Alternate Hypothesis): There is a significant association between employee designation and their perception of Digital Documentation.

Designation	Agree	Neutral	Disagree	Total
Customer Broker/CHA	7	16	5	28
Logistics Manager	4	1	4	9
Freight Forwarder	7	2	2	11
Trainee/Other	5	1	0	6
Total	23	20	11	54

Test	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	15.837	6	0.015
N of Valid Cases	54	—	—

Table 1.4

INTERPRETATION:

The Chi-Square test result ($\chi^2 = 15.837$, $df = 6$, $p = 0.015$) is statistically significant at the 5% level, indicating that professional designation significantly influences the perception of digital documentation. Freight Forwarders and Customer Brokers/CHAs display higher levels of agreement compared to Logistics Managers and Trainees, suggesting that professionals with direct operational exposure to customs clearance are more attuned to the benefits of digitalization. The hypothesis is accepted, indicating that professional designation has a significant influence on the perception of digital documentation.

Since the p-value ($0.015 < 0.05$), the null hypothesis (H_0) is rejected and the alternate hypothesis (H_1) is accepted. This confirms that there is a significant association between employee designation and their perception of Digital Documentation.

FINDINGS OF THE STUDY

A greater value has been placed on international trade and the use of electronic filing systems such as 'ICEGATE' that help eliminate paperwork, but also reduce time in processing.

The importance of human knowledge and expertise has not diminished. Customs brokers play an important role in ensuring the accuracy of information submitted to customs and reducing delays in the clearance of goods.

The compliance environment is both a help and a hinder due to frequent changes in regulations and procedures. Fifty percent (68%) of all delays can be attributed to frequent changes in laws, regulations and procedures.

Though over 63 percent of respondents support improving the information technology (IT) infrastructure within ports, only 52 percent of them have supported improvements in port infrastructure.

AI and automation were rated as the most important use of new technologies within the supply chain and received the highest level of enthusiasm (71.1%).

There is currently a systemic issue with poor coordination among customs, port authorities and logistics; 61 percent of the respondents indicated that weak collaboration among these three segments was a primary cause of the issues that they face.

PRACTICAL IMPLICATIONS

Logistics companies and CHA firms should engage in continuous digital upskilling of all employees instead of only senior levels. The ANOVA analysis suggests a common perception of uniformity across the different level of experience, which means a digital training initiative across the entire workforce has a high chance of being successful and beneficial. Additionally, companies should work to standardise document workflow processes and utilise integrated or digitalised platforms to remove friction between departments.

The study found that while ports have invested in IT solutions, the quality of those investments is often a source of frustration for many respondents. For the Chennai Port Authority and Kamarajar Port, investing in scanner enhancements, real-time cargo tracking dashboard solutions, and solid Electronic Data Interchange solutions are priorities. Furthermore, enhancing single-window clearance capabilities should also be a priority.

The finding that 68% of respondents believe that frequently changing regulations cause delays in customs responses suggests that there should be a more collaborative approach to amending policies, including providing reasonable lead time to the private sector. Moreover, enhanced document stability, clarity and communication would enhance compliance rates and better solve the speed of clearance issues.

CONCLUSION

This research aims to assess logistical customs clearance processes in India to determine what inefficiencies exist and how to identify evidence-based solutions. and it employs rigorous statistical analysis along with a comprehensive review of literature and survey results of 54 logistics professionals to reach conclusions that are both clear and actionable.

The results clearly show that the efficiency of customs clearance is a multi-dimensional phenomenon that cannot be attributed solely to one factor. Rather, it results from an integrated network of skilled human capital, state-of-the-art digital infrastructure, coherent regulatory frameworks, and inter-agency collaboration. Within this network, Custom House Agents (CHAs) are at a central point and their expertise in documentation, classification, computation of duties, and coordination with other stakeholders cannot be replaced even as automation expands within customs operations.

Moreover, the evidence shows that the logistics community in India is now preparing for the future through digitalization. Widespread positive reception to features such as electronic filing, ICEGATE, AI risk assessment, and real-time shipment tracking demonstrates that the logistics community is both ready and willing for digital transformation.

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