

The influence of horizontal integration strategy on the operational performance of a South African port

Author: Sipiwo Gladman Fumbeza (sfumbeza@gmail.com)

Supervisor: Dr Seugnet Bronkhorst (sbronkhorst@uj.ac.za)

Co Supervisor: Dr Alfred Masakale (amasakale@uj.ac.za)

Abstract

This study examines how horizontal integration strategies affect the operational efficiency of the Port of East London, which serves as South Africa's only river port and a vital center for automotive exports. Horizontal integration involves coordinating and consolidating operations among departments functioning at similar levels within the value chain. This strategy has been recognized as an effective means to mitigate inefficiencies typically associated with isolated management practices in port operations. Drawing on concepts from the Resource-Based View, Stakeholder Theory, and Coordination Theory, this research analyzes the impact of such integration on three critical performance indicators: ship turnaround time, berth throughput, and equipment reliability. The methodology employed is a qualitative case study based on an interpretivist approach. The researchers conducted purposive sampling involving fourteen officials and managers across various port divisions, including operations, logistics, maintenance, customs, and planning. Data was collected through semi-structured interviews complemented by document analysis, followed by thematic analysis using Braun and Clarke's six-step framework.

The results reveal that horizontal integration led to significant improvements in ship turnaround times due to enhanced scheduling, communication, and coordination; it resulted in a moderate increase in berth throughput despite limitations in existing infrastructure; and it improved equipment availability through collaborative maintenance planning. The findings highlight that successful integration extends beyond technical coordination to include essential elements such as trust-building, leadership engagement, stakeholder involvement, and informal communication pathways that promote organizational learning and adaptability. Horizontal integration can boost port efficiency when aligned with digitalization initiatives, cross-functional collaboration, and inclusive governance practices. Nonetheless, sustaining high performance requires continued investments in infrastructure development, capacity building, and alignment with national policies. This paper offers both theoretical insights and practical implications by proposing a three-dimensional framework for integration, technological, institutional, and relational, that captures the socio-organizational dynamics found in ports within developing countries.

Keywords: horizontal integration; operational efficiency; port management; ship turnaround time; berth throughput; equipment reliability; Port of East London; South Africa

1. Introduction

Port effectiveness is a key driver for international trade competitiveness and is a crucial factor in emerging markets where infrastructural and institutional constraints have traditionally affected operational performance (Naidoo and Reddy, 2023:52). South African ports have been condemned for inefficiency due to silo-oriented performance, aging port facilities, and lack of inter-agency coordination (Mhlongo and Dlamini, 2023:103). Horizontal integration offers a strategic approach to consolidating operational functions in ports, thereby alleviating fragmentation, increasing throughput, and enhancing customer service.

This article explores horizontal integration and its effects on the Port of East London. The research focuses on three major research questions: influence of horizontal integration strategy on ship turnaround time; influence of horizontal integration strategy on berth throughput, and the influence of horizontal integration strategy on marine equipment reliability and availability. The research adds to theoretical discussions on port governance and provides illustrations of logistics reform policy to the Southern African region.

2. Literature Review

2.1 Conceptualising Horizontal Integration in the Division of Terminal Management

The horizontal integration involves coordination and concentration of activities, processes, and decision-making at the same level of the value chain (Rodrigues et al., 2021:77). In port management, it covers coordination among operations, logistics, maintenance, and customs to remove internal silos and improve operational uniformity. In contrast to vertical integration, focused on upstream and downstream congruence or fitness, horizontal integration aims at lateral cooperation for better flow, responsiveness, and continuity of service (Chen and Hu, 2023:175).

2.2 Performance Metrics in Port Systems

In the seaport operation, performance measure is usually measured with such indicators as ship turnaround time, berth throughput, and equipment availability (Song and Lee, 2023:312). These factors are important, as they have significant impacts on the quality of a port's service, competitiveness, and customer satisfaction. Integration approaches have increasingly become associated with enhancing performance in these areas by harmonizing scheduling, sharing of resources and conflict resolution (Molefe & Tshabalala 2023:97).

2.3.1 Advantages and Drawbacks of Horizontal Integration

Scholarly conversation shows that drawing on these various sources will result in several advantages such as reduced delays, efficient use of resources, and better intra-department communication (Bichou and Hall, 2021:91). Furthermore, research by Tavakkol et al. (2022:104) highlight that integration allows initiative-taking

decision making by virtue of the shared view of activities. However, issues such as resistance to change, technological silo, and lack of leadership buy-in are typical barriers to achievement (Mhlongo and Dlamini, 2023:106). Without policy coherence and digital readiness, integration may generate only modest or short-lived dividends.

2.4 Integration as a Social-Organisational Process

Recent studies suggest that integration is not just a technical implementation, but as a socio-organisational change. According to Gumbi and Petersen (2024:101), integration implies the alignment of informal communication networks, shared norms, and trust across departments. Theorisations such as those provided by stakeholder theory or coordination theory offer a powerful way to understand relational infrastructure as supporting integration (Freeman et al., 2022:486; Van de Ven, 2021:254).

3. Research Methodology

3.1 Research Design and Approach

This research utilised a qualitative case study design, which facilitates a detailed analysis of the horizontal integration approach at the Port of East London. We have selected the interpretivist (or interpretive) paradigm as it is useful to investigate how the actors in the port perceive and experience integration taking place in a real-life context. This method is in line with Ritchie et al. (2023:112), they maintain that case studies are well-positioned for making sense of organizational change in complex systems.

3.2 Data Collection

Purposive sampling of fourteen respondents who were interviewed using a semi-structured interview guide was adopted. Participants comprised managers and supervisors of port operations, logistics, maintenance, customs, and strategic planning. It enabled the access of varied perspectives but relevant to the impact of horizontal integration on daily operations (Maxwell, 2022:97).

Data credibility was enhanced through triangulating using secondary document review, such as internal memos, reports on port performance, and strategic integration plans. Check: Selected participants were used to confirm findings.

3.3 Data Analysis

Data were analysed according to Braun and Clarke's (2006) six-step model, with themes emerging inductively and being mapped to the research questions. Themes were coded as (1) Strategic Perspectives & Implementation of Horizontal Integration, (2) Collaboration, Coordination & Team Dynamics, (3) Asset Management & Resource Reliability, and (4) Operational Capacity, Performance & Service Delivery.

3.4 Limitations

The focus on a single site clearly limits the external validity, and time constraints limit the inclusion of a wider range of stakeholders including private shipping firms. These limitations are typical for qualitative logistics research (Mugwedi and Sibeko, 2021:113) and are also recognised by the authors.

4. Findings

4.1 Ship Turnaround Time

The integration concept resulted in increased vessel service speeds by joint scheduling, central planning, and use of communication in real time. The lower level of departmental silos enabled participants to inevitably address the conflict in initiative-taking manner and to coordinate in resource allocation. This discovery corroborates Chirwa and Maluleke's (2022:84) argument that horizontal integration enhances port efficiency by simplifying processes.

4.2 Berth Throughput

Berth productivity also benefited slightly from improved queue management and digital tracking measures. But lack of berth space and old infrastructure kept advantages in check. As Zuma and Lekganyane (2023:76) contend, integration needs to be combined with capital investment to alleviate physical bottlenecks.

4.3 Equipment Availability and Reliability

Consolidation enabled more efficient maintenance scheduling as well as cross-kitchen equipment sharing. However, there were still difficulties because of the old equipment and funding restraints. Ndlovu and Mpofo (2021:88) stress that integration cannot make up for structural deficiencies without along asset renewal programmes.

5. Discussion

The results of this research demonstrate that 'horizontal' integration could be an enabler of such reformation and productivity improvement for ports especially in developing countries context such as South Africa. The empirical evidence from the Port of East London indicates that overall strategic alignment between functional departments that include terminals, logistics, maintenance, and customs can result in tangible performance improvements such as reductions in ship turnaround time, increases in berth throughput, and improvements in equipment reliability. But these results do not just come from technical solutions; they are extremely linked to social-organizational factors, leader involvement, and alignment of stakeholders.

The results reiterate the value of the Resource-Based View (RBV) theory as a base theory for understanding performance differences in organisation (Barney, 1991). With this view, internal resources, namely the talent of the employees, the connectedness of the ICT (Information & Communication Technologies) and flexible

processes are necessary to create competitive advantages. In this research, the intra-port resources (digital platforms and cross-functional teams) were better utilised under horizontal integration such that better equipment and labour productivity indices were achieved. Nevertheless, based on this research we also have highlighted that RBV alone is inadequate to model the complexity of integration dynamics in public port systems.

These scholars seek to address some of the above limitations by drawing more broadly on Stakeholder Theory (Freeman et al., 2022:486) and Coordination Theory (Van de Ven, 2021:254) which provide broader lenses to understand how the actors are connected and how integration processes occur in a relational context. Stakeholder theory advocates that the interests of both internal and external parties, from port authorities to shipping companies, should be brought together for co-planning and policy consistency. Coordination theory, in addition, explains why synchronization between interdependent tasks reduces friction, eliminates redundancy, and improves process efficiency.

The research demonstrates that horizontal integration resides not in a technical-centered activity but in a social-organisational process. Trust, leadership commitment, and informal communication networks were identified as key enablers. A number of respondents mentioned that peer-to-peer trust facilitated more honest discussions as well as expedited decision-making processes, notably in challenging situations. These findings corroborate those made by Mbatha and Nkomo (2021:67) who contend that digital technologies and integration tools work best when they are incorporated in, and become as it were part of, a collaborative and a learning, adaptive organisational culture.

The integration approach was determined to work best in the business-as-usual operating environment with crises such as strikes or equipment failure often testing the advantages. In some instances, departments also fell back on siloed behaviour, suggesting the requirement for crisis-specific coordination mechanisms. This chimes with what Naidoo and Reddy (2023:108) described, that resilience in integrated systems should comprise of pre-defined roles, contingency plans and devolved leadership that work under pressure.

Informal networks and non-hierarchical cooperation were also an emergent aspect that this study identified as contributing to integration. CNNs also talked about informal problem solving, for example “coffee room conversations,” as a key factor in addressing challenges with schedules and equipment. This is consistent with recent research by Zuma and Lekganyane (2023:75) that claims that informal relational infrastructure is frequently used to fix failures of bureaucratic port governance.

A second important observation is related to the role of technology. Port Community Systems (PCS) and predictive maintenance tools were identified as beneficial for coordination and downtime reduction, although their effectiveness was strongly influenced by levels of user training, digital literacy, and management support. This supports the point made by Ndlovu and Mpofo (2021:88) that technical systems need to have behaviour change and capacity building interventions in place for sustained performance results.

The research has revealed that external alignment – not only with national policy schools and regulatory bodies is uneven. While coordination within the port has improved, several participants pointed to mismatches with national logistics rules and investment priorities as obstacles to deeper integration. This finding supports the findings of Tshabalala and Nkuna (2023:89) in that the outcome of local-level integration policies is linked to broader policy support and inter-agency coordination.

This research opens several paths for future research. First, we recommend the use of comparative case studies between diverse South African and international port systems to consider variations between different contexts in horizontal integration (Govender & Maistry, 2022:91). Second, researchers could have used mixed-methods approach bringing together qualitative observations and quantitative performance data (e.g., berth occupancy, equipment uptime), which would have increased depth of analysis and generalisability (Tshabalala & Nkuna, 2023:89).

Subsequent research could investigate the relative effectiveness of integration mechanisms during periods of crises (e.g., labour strikes, operational disruptions) to assess their resilience (Naidoo & Reddy, 2023:108). Research into digital readiness, and barriers to the use of technology, such as the implementation of AI enabled tools and PCS platforms is also necessary (Phiri and Khosa, 2022:142).

Finally, there is the opportunity to gain experience in our understanding of the impact that organisational culture and stakeholder engagement models have on the success of integration. Through examining the impact of values, trust and participatory governance on implementation, knowledge of what are more inclusive and sustainable integration strategies could be identified (Maponya & Daniels, 2022:59; Radebe & Sibanda, 2024:122).

Conclusion

The objective of the research was to assess the influence of horizontal integration on port operational performance with the Port of East London as a proxy of South Africa's public logistic system. Adopting a resource-based view, stakeholder and coordination theory-based perspective, our evidence suggested that integration enhances ship turnaround time, berth throughput, and equipment reliability, especially when buttressed by cross-functional coordination, IT tools, and trust-oriented organisational cultures.

Apart from mere technical alignment, the results highlight that horizontal integration is a socio-organisational process that entails leadership engagement, stakeholder cooperation, and behavioural change. Informal structures of communication and inclusivity in decision-making were identified as key facilitating factors for successful integration, particularly in low-resource settings.

While the gains from connectedness were evident, the study also found that barriers, like infrastructure constraints, digital maturity disparities, and coordination challenges in times of crisis, continued to persist. All of

which go to show that assimilation is not in and of itself a panacea and must be coupled with continued investment in infrastructure, education, and inclusive government.

This article makes a theoretical and practical contribution by proposing a three-dimensional port integration framework that combines technological, institutional, and relational dimensions. With many in Global South ports facing increasing trade volumes and competitive challenges, the insights from this case point to a strategic direction for improved operations in the form of more digitalized, collaborative and human-centred views of integration.

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