# Analysis of the potential contribution of value-adding services to the competitive logistics strategy of ports

**Chukwuneke Okorie [a], Nicoleta Tipi [b] and Nick Hubbard[b]**

[a]International Shipping and Logistics Group, Plymouth Graduate School of Management, Sutton Harbour, Plymouth University, PL4 8AA, Plymouth, UK.
E-mail: Chukwuneke.okorie@plymouth.ac.uk

[b]Logistics and Transport Research Group, University of Huddersfield Business School, HD1 3DH, Huddersfield, UK.
E-mails: N.Tipi@hud.ac.uk ; N.J.Hubbard@hud.ac.uk

**Abstract**

This paper examines the potential contribution of value-adding services (VAS) to port logistics strategy development in order to enhance competitiveness in the face of increasing competition between ports. Based on an empirical study taking the critical-realist approach of mixed methods' research and using data from multiple case-study ports in both developed and developing countries, the relevance and deployment of value-adding services are assessed with a view to facilitating port strategy decisions. This study addresses the paucity of VAS investigations in the maritime logistics literature and examines the potential contribution of VAS to port competitiveness from the perspective of port users. Results demonstrate that the most readily available and accessible value-adding services are transport services, followed by warehousing and water supplies. The paper concludes that value-adding services have the potential to both attract port users and retain them.

**Key words:** value-adding services, logistics, ports, competition and strategy

 1479-2931 *Maritime Economics & Logistics 1–16*
DOI:10.1057/mel.2014.39 www.palgrave-journals.com/mel/

## Introduction

Many contemporary ports are becoming increasingly complex, forming what can be described as the most important nodes in global cargo transport and supply chain networks. For example, European ports alone handled approximately 3.6 billion tonnes of cargo in 2010, an increase of 5.7% compared to 2009 (European Commission, 2012) and ports have been recognised as major nodes in the production-distribution-chain, through facilitation of an integrated and seamless transport system (Haralambides, 2012; Haralambides, 1997). A large proportion of goods imported or exported must have transited through a seaport, a trend that has waxed stronger since the advent of globalisation. As the significance of ports increases, fierce competition between ports also intensifies as a result of the tussle for cargoes of the global economic boom (Haralambides et al., 1997; Lobo and Jain, 2002). This competitive scenario has encouraged dynamism in port business environments with a consequent need for continual strategy development.

Ports generally do not have immunity against competition, like most other businesses, they seek to attract and retain more customers (i.e. port users). Competitiveness has been extensively researched (Ma, 2004; Johnson et al., 2005) and is associated with the strength a firm builds for the purpose of gaining a stronger position in its industry. The 21st century has witnessed competition even among firms in industries where rivalry was hitherto regarded to be very low. This has stimulated the need for thorough assessment and reassessment of strategies geared towards creating or regenerating competitiveness (Powell, 2001), through understanding the business environment and then building suitable strategy (Chan et al., 2000). Consequently, acquisition of knowledge of the changing demands of port-users' businesses would enable

appropriate port logistics strategies to be developed to strengthen a port's position within a competitive market.

## Literature review

As competition increases among and between ports, stakeholders in the port industry seek innovative service offerings, beyond the traditional core services performed by ports, to enhance the competitiveness of ports. The offering of value-adding services (VAS) is perceived to attract port users to a port. The deployment of value-adding services has been acknowledged by Bowersox and Closs (1996) and Christopher (2005) as a significant strategy for gaining competitive advantage. UNESCAP (2003) and Pettit and Beresford (2009) in examining generations of ports have highlighted the on-going availability of VAS, while Bichou and Gray (2004) and Ugboma et al. (2004) have, to varying degrees, recognised the importance of VAS in ports. Despite this recognition, there is a dearth of studies that have given attention to evaluating the competitive potential of VAS in ports. Most studies in this field have been undertaken in relation to other features, such as cargo handling equipment, turnaround time, ship sailing frequency and port efficiency, which tend to overshadow VAS. This paper enables a fuller understanding of the potential contribution of VAS in developing port competitive strategy through an evaluation of the views of established port users and port management.

*Maritime Ports' logistics trends*

Maritime ports have undoubtedly been at the centre of the advent of modern logistics and its ever increasing areas of application. As a result, there is an evolution of trends that have continued to set dynamic resonance in the traditional port system. With this in mind, it is worth recalling that according to the 'Port Working Group of the Commission of European Communities' (ESPO, n.d), the seaport can be defined as an area of land and water made up of improvement works and equipment that principally permit the reception of ships, loading and unloading of vessels, storage and transfer of goods to inland transport, while being able to include the activities of businesses linked to sea transport (UNCTAD, 1993). While these principal functions of the port remain, it is pertinent to observe that there has been changing demands on services offered by ports. These demand changes do not only emanate from within the port system, but are largely consequent upon external influences from business stakeholders using the transport network and supply chain.

Integrated port logistics and a supply chain orientation are gaining substantial ground. In relation to port logistics, the major concepts concerned with integration of supply chains are inter-modality and the organisational aspects of integration (Bichou and Gray, 2004). Modern ports have generally experienced rapid developments in becoming inter-linking points for different modes of transport; hence accelerators of inter-modal transport integration. Mangan et al. (2008) joined others such as Pando et al. (2005) and Beresford et al. (2004) in supporting the view that in addition to the traditional role of freight transhipment, there are various adaptable roles ports can play within the supply chain in a bid to reach and satisfy the ever-dynamic expectations and

demands of port users. Given the position of ports in the distribution of materials and products, they have consequently become nodes for the integration of various global supply chains. An example of a port that has a developed and integrated logistics system is the port of Singapore, which is one of the world's top hub ports for the consolidation of goods and products (MPA, n.d.).

The emergence of the containerisation of cargo, an innovation by Malcom McLean in 1956 (Cudahy, 2006), has enormously contributed to modern ports' economic importance, complexities and roles as major integration nodes for transportation networks. This has boosted the evolving notion of 'port-centric logistics', which advocates the potential of ports to be centres for the provision of distribution and other supporting activities (Mangan et al., 2008; Analytiqa, 2007; Wall, 2007). In other words, these ports that have further developed distributive and logistics functions are also referred to as hub ports (UNCTAD, 1992; Anderson et al., 2008). This depicts the advancement of ports from the coordination of internal activities to being further involved in integrating logistics activities beyond port boundaries and into the networks of supply chains. For example, in anticipation and response to international trade and logistics developments, the Port of Rotterdam began developing 'Distripacks' areas in the 1980s to provide space for product processing, warehousing, distribution and other logistical activities, mainly for companies in need of an European hub (Pettit and Beresford, 2009).

*Value Added Concept and Value Adding Services*

The first perspective of the 'value added' concept is that of an incremental process, implying that a sequence of progressive activities carried out to satisfy customers is viewed as value added (Christopher et al., 2002; Porter, 1986). As an element (material or function) of demand advances along the stages and progresses to satisfy customers, it acquires value (Okorie and Tipi, 2008). In relation to maritime transport, Stopford (2009) portrayed 'value added' as a modern economic jargon that can be used to convey the meaning that the lives of recipients of goods and those who benefit from global trade are made better.

The second aspect is the focus of 'value added' as being concerned with the input and output of a particular business in relation to the cost, revenue or benefits as perceived by the customers (Wilson, 1979; Walter et al., 2002; Edvardsson and Olsson, 1996). Value added is seen as a measure of output divided by manpower and capital inputs to express performance per head (Wood, 1978), hence a profit on sales or return on capital/investment orientation. In this way, value added is perceived as based on efficiency and effectiveness of resource utilisation.

The third point is a view of 'value added' as concerned with enhanced strategies, management styles, technologies, special projects or operations (Chernatony and Harris, 2000; Fletcher and Hardill, 1995). An activity or new innovation that makes an organisation thrive becomes value added to the business. Technology-based facilitation of a supply chain is considered value added (Au and Ho, 2002), and a measure of the contribution of ports' cargo-traffic to a nation's Gross Domestic Product (Haezendonck et al. 2000)

An integral aspect of Value-Adding Services (VAS) is about doing things or offering some kind of activities to customers rather than the total creation of tangible products. They are additional services to complement other major services (Okorie and Tipi, 2008). Typically VAS connote customised and extra special services beyond the basics (Bowersox et al., 2007; Galetzka et al. 2006). Supply chains are increasingly customer-driven (Ainsworth, 1992), and rendering tailored services offer opportunities for a competitive differentiation strategy (Christopher, 2005). When VAS are carefully developed, the intrinsic worth of their customised nature can be elicited.

*Value-adding Services in Port Logistics*

The widening problems of port logistics have propelled port authorities and other port-interest bodies into off-dock non-traditional activities (Heaver, 2006). The port is an integral component of the global supply chain where customisation has increasingly gained momentum. This reflects the widely acknowledged trend for port logistics VAS (Wall, 2007; Mangan, et. al.; 2008; UNESCAP, 2003; Beresford et al. 2004). In this context therefore, port management need to understand the peculiar business needs of their customers and exploit the same to the port's advantage in offering VAS. However, a study by Ugboma et al. (2004) suggested that VAS ranked low in the perception and expectation of services by customers (port users) of different Nigerian ports. Bichou and Gray (2004) indicated that the direction of a port toward a strategy of value-adding logistics activities could be a beneficial approach to the port's business. Additionally, the responsibility of ports surpasses just being the traditional water/land interface

for ships and cargo services to include value-adding logistics. Over and above traditional services, Pettit and Beresford (2009) supported the idea that the provision of tailor-made services within a port has become fundamental to the overall effectiveness of the port within the supply chain.

These are all pointers to a view that VAS are activities to be taken seriously in the port business. Haezendonck and Notteboom (2002) advocated that in the 21st century's customer-led business arena, seaports with a sound understanding of customers' needs are most likely to succeed. In the same vein, Goss (1990) stated that rather than ports' marketing departments concentrating merely on the selling of services, they could also be useful channels through which the views of shippers and consignees can be communicated to the port management. Song and Lee (2009) reiterated that the increasingly evolving demands of end users of maritime transport is one of the reasons that has led to the growth of maritime logistics, raising issues that require further elaboration and debate. Undoubtedly, efforts towards understanding customers' needs and becoming more end-user/customer-oriented would promote service customisations, which are in turn considered as VAS.

## Study Methodology

*The Hypotheses*

Two hypotheses were postulated in this study to examine the impacts of VAS on port-users' usage of ports.

**H1: ''the patronage level to a port by port-users is associated with the value-adding services obtainable from that port''.**

**H2: ''the capacity of a port to retain port-users is associated with the value-adding services obtainable from that port''.**

The study was based on a critical realist approach to understanding reality, founded on an objective platform, while also incorporating principles of subjectivism by drawing on expert experience. This type of mixed methods design, as opined by Harwell (2011), is typically traced to the multi-trait, multi-method approach of Campbell and Fiske (1959, cited in Teddlie and Tashakkori, 2009, p. 31), and is considered to be a relatively new methodology whose key philosophical foundations and practice standards have evolved since the early 1990s (Tashakkori, 2009). This further translated to the integration of both quantitative and qualitative approaches in the study, enabling the employment of deductive and inductive contributions respectively. The survey comprised a sample of established port-user companies from Rotterdam port, PD port, Apapa port and Damietta port. For in-depth examination and representativeness, the case study research approach has proven to be useful (Malhotra, 2010; Cousin, 2005), which may take single or multiple forms, including qualitative and quantitative ones (Bruns 1989; Yin,

2009). Multiple case study ports were used in order to broaden the understanding of VAS and produce robust evaluations of the subjects examined. Based on findings from the literature, interviews were carried out with senior port management personnel to understand their views on some key VAS issues and provide a complementary edge to the analysis of data gathered via questionnaire survey. A semi-structured questionnaire was developed, expert-validated, pilot-tested and used to gather data on port users' perceptions of the potential of VAS. Subsequently, the data gathered were used to test the hypotheses on the attraction and retention capacity of VAS in order to support informed strategy decisions in ports. A total of 18 questions were included in the questionnaire, designed in a manner void of pushing 'forced answers' on respondents. Thus questions included dichotomous, multiple-choice and open-ended questions, providing opportunities for respondents to include relevant information and explanations which would assist further understanding of the views on the subjects. Lists of accredited port users as published in the brochures and other databases of the four case study ports were obtained and used for the survey. As a result, the sample constituted a total of two hundred and forty (240) port-user companies from the four case study ports. To facilitate data collection from different geographical areas, questionnaires were administered both electronically (by e-mail) and through the use of field surveyors.

## Discussion of results and findings

*Evaluation of the availability of key value-adding services*

The availability or non-availability of VAS in a particular port is considered a reflection of the importance attached to such services in a port's competitive strategies. The availability of identified key port VAS is hereby evaluated based principally on data from port users. Reflection on the availability and accessibility levels of services to users reinforces that these parameters are of importance to customers' patronage and the continuity of any firm. Providing products and services in a responsive manner to end-users is a very important key performance indicator (KPI) for a competitive logistical edge in business (Fernie and Sparks, 2004). In other words, a strategy of ensuring that products and services are readily available in the market strengthens the prospects of a firm (Jeannet and Hennessey, 1998).

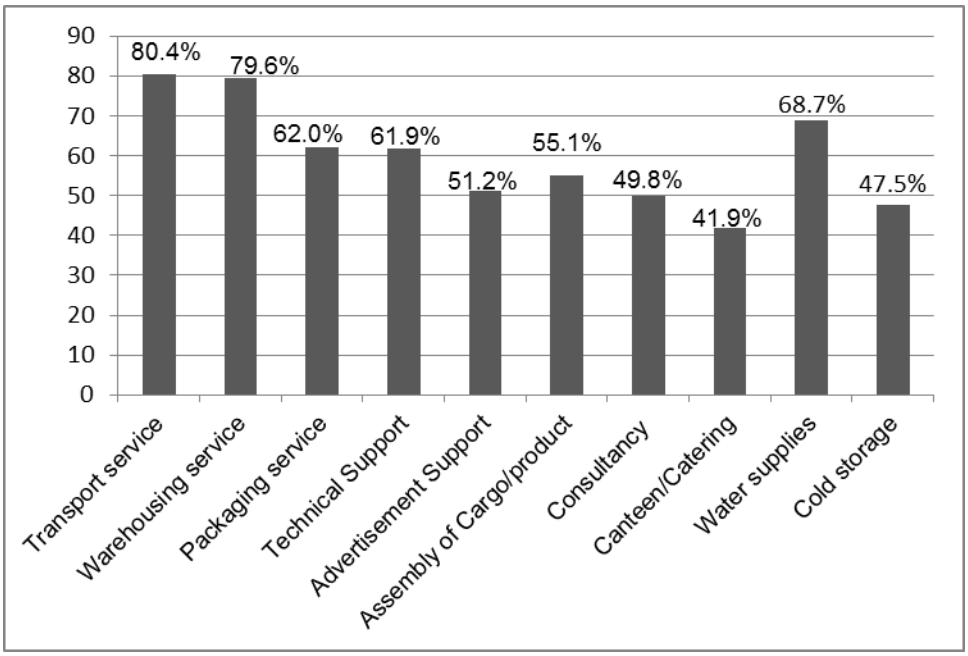


Figure 2 - Port users' indication of VAS availability

Figure 2 presents, for each of the key VAS examined, the percentage of all the port users surveyed who indicated the availability of each service. It is pertinent to observe that different models of ports can decide to offer VAS alongside traditional services. There is also the option of VAS availability by ports facilitating private firms' offer of VAS within the port vicinity, for example by using 3PLs.

- *Transport, warehousing and water provision services*

Transport is the most commonly available VAS in the ports surveyed (80.4%). Transport service, as discussed herein, is essentially concerned with the movement of export/import goods to and from the ports by direct port service provision or made possible through the services of third

party logistics providers. Warehousing (79.6%) is another commonly available VAS. The provision of fresh water for the use of ships, crew and other port users was noted as being available by 68.7% of respondents.

- *Packaging, technical support and assembly of cargo*

Packaging services (62.0%), technical support (61.9%) and assembly of cargo (55.1%) were considered as being commonly available in the ports. Technical support can be associated with professional assistance in any aspect of port business. A good example of a port that has further developed its technical support to a dedicated division of international consultancy is Amsterdam port (APC, 2001). Although packaging service companies have been described as having less significance in supply chain partnerships (Gattorna, 2003), many contemporary logistical operations cannot be carried out effectively if standardised packaging is not available. The port system, given its supply chain position in the downstream and upstream connectivity role, presents an arena that can be considered as increasingly suitable for packaging services.

- *Cold storage, canteen and consultancy*

Cold storage was determined to be available by 47.5 % of the surveyed port users, whereas consultancy and canteen/catering were affirmed as being available to port users by 49.8% and 41.9% of respondents respectively. Closer observation of the trends in figure 2 shows canteen/catering services to be the least readily available VAS service to port users.

- *Advertisement Support*

Advertisement support is considered to be available by 51.2% of the port-users. This can be evidenced by ports' involvement in publicising port users' services in brochures and publications (ABP, 2007; PD Teesport and Hartlepool, 2008).

*The Extent of offering value-adding services in ports*

In this section, the extent to which VAS are deployed in the case study ports is discussed.

Table 1. Extent of offering Value-Adding Services in the Ports

| Extent of offering Value-Adding Services in the Ports | Total % of port users' opinion |
|---|---|
| *Value-Adding Services are not in Existence* | *2.7%* |
| *Value-Adding Services are Scarcely Offered* | *15.3%* |
| *Value-Adding Services are Moderately Offered* | ***36.9%*** |
| *Value-Adding Services are Offered Considerably* | ***31.5%*** |
| *Offering of Value-Adding Services is Very High* | *13.5%* |
| Total | 100.0% |

The results in Table 1 show that the extent of offering VAS in ports falls between "*value-adding services are moderately offered" and "value-adding services are offered considerably"*. The view of 31.5% of respondents could serve as an indicator that in some ports, value-adding services are indeed offered at a considerable level. However, the fact that a greater percentage of port-users, 36.9%, were of the opinion that value-adding services are moderately offered goes to

reiterate that although increasingly on the rise, the trend of port-centric logistics which encourages ports' VAS is not yet widely the case in many ports. Areas of logistical deficiency could possibly be hidden opportunities waiting to be harnessed. To buttress a similar view, the Economist (2009) stressed the importance of learning from companies that have effectively harnessed business opportunities created by the difficulties of economic recessions and scarcities. Consequently, the general moderate levels of offering VAS in many ports point to the existence of opportunities worthy of further exploration in the port industry.

*Hypotheses tests results and implications*

Hypotheses were tested by using chi-square analysis using data from all port-user respondents. According to Proctor (2005) a simple inspection of the data upon which chi-square tests are to be performed may suggest association between the variables in question. However, the reason for carrying out the chi-square test in this study was to verify whether observable associative relationships between variables were statistically significant and not occurring by chance. In addition, in order to ensure consistency and accuracy, the Fisher's exact test was also carried out, which gave compelling confirmation of the chi-square's outcomes.

- *Hypothesis 1: VAS association with the attraction (patronage)of port users to a port*

The first hypothesis was on the possibility of an associative-relationship between the offering of value-adding services and attraction of port users to a port. This is based on port users' opinions on being attracted to a port because of VAS availability. A chi-square test carried out by cross-

tabulation of data to examine the attraction effect of value-adding services, resulted in a Pearson chi-square statistic value of 47.979.

Table 2 Chi-Square Tests (VAS' port-users attraction potentials)

| | Value | Df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| **Pearson Chi-Square** | **47.979[a]** | **4** | **.000** |
| Likelihood Ratio | 44.597 | 4 | .000 |
| Linear-by-Linear Association | 40.240 | 1 | .000 |
| N of Valid Cases | 100 | | |

a. 4 cells (40.0%) have expected count less than 5. The minimum expected count is .51.

Table 2 presents the chi-square test results which yielded a highly significant p-value ($p < 0.001$), less than the set significance level of 0.05. Thus, there exists strong evidence of an associative relationship between offering value-adding services and the attraction of port users to ports. The note beneath Table 2 shows '*4 cells have expected count less than 5'*, however it's normally desired to have up to 5 counts (frequencies) in each cell. Although parametric tests are more robust, the chi-square test is one of the widely used nonparametric significance tests (Cooper and Schindler, 2006). Field (2009) encouraged the use of Fisher's invented test to further investigate the significance of chi-square test results in circumstances where the counts (frequencies) of the

cells are less than 5, as is the case in Table 2. To this extent, the Fisher's exact test was carried to assess the accuracy of the chi-square results.

Table 3 Attention- Fisher's Exact Test

| | Value | Df | Asymp. Sig. (2-sided) | Exact Sig. (2-sided) |
|---|---|---|---|---|
| Pearson Chi-Square | 47.979[a] | 4 | .000 | .000 |
| Likelihood Ratio | 44.597 | 4 | .000 | .000 |
| **Fisher's Exact Test** | **41.425** | | | **.000** |
| N of Valid Cases | 100 | | | |

In Table 3 attention is particularly drawn to Fisher's exact test result with a statistics value of 41.425, which yielded a very significant p-value of ($p<0.001$). The high significance of this result goes to further substantiate the chi-square's results as being reliable, supporting observation that the results were not products of chance but of statistical consistencies. Another source of confirmation of this inclination is that 6 out of the 8 port management senior personnel interviewed were of the opinion that the use of value-adding services is a strong means of competitive differentiation to attract port users. An excerpt from interview statements affirming VAS attraction potentials is:

*"there is a saying that 'services that prospered traded in cargo and physical items'. In the future, institutions/firms must be prepared to trade in ideas. 'Ideas rule the world- the same is true for the port sector" (Port Manager, NPA Port Harcourt).*

The need for ideas as communicated in this statement points to the inevitability of innovative developments, which are in line with the customisation core aspect of value-adding service concept. Just as the development of services should be followed stepwise (Edvardsson and Olsson, 1996), even so the generation of ideas and offering of customised value-adding services requires generating and implementing innovative ideas. Given these scrutinizing processes, the hypothesis 1 'the patronage level to a port by port-users is associated with the value-adding services obtainable from that port' was accepted.

- *Hypothesis 2 – VAS association with the retention of port users to a port*

The second hypothesis as postulated earlier, suggested an associative relationship between offering of value-adding services and retention of port users in a port. To test this assertion, a chi-square test carried out on data based on port users' opinions yielded a statistics value of 30.241, as shown in Table 4.

Table 4 Chi-Square Test Result (VAS' port-users retention potentials)

| | Value | Df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| **Pearson Chi-Square** | **30.241[a]** | **4** | **.000** |
| Likelihood Ratio | 30.291 | 4 | .000 |
| Linear-by-Linear Association | 29.072 | 1 | .000 |
| N of Valid Cases | 98 | | |

a. 5 cells (50.0%) have expected count less than 5. The minimum expected count is .43.

Closer observation of Table 4 shows that the resultant chi-square value has a p-value of ($p<0.001$), which at the set significance level of 0.05 represented a highly significant relationship between the variables under investigation. The connotation of this outcome is that there is evidence of a strong associative relationship between the offering of value-adding services and port users' retention in ports. For assurance and confidence in results, given that 5 cells have less than 5 counts (in Table 4), further tests and investigations were deemed necessary. Consequently, the Fisher's exact test (Table 5) was carried out in order to ascertain the degree of accuracy of the chi-square results.

Table 5 Attention- Fisher's Exact Test

| | Value | Df | Asymp. Sig. (2-sided) | Exact Sig. (2-sided) |
|---|---|---|---|---|
| Pearson Chi-Square | 30.241[a] | 4 | .000 | .000 |
| Likelihood Ratio | 30.291 | 4 | .000 | .000 |
| **Fisher's Exact Test** | **28.270** | | | **.000** |
| Linear-by-Linear Association | 29.072[b] | 1 | .000 | .000 |
| N of Valid Cases | 98 | | | |

Attention is particularly called to the result of the Fisher's exact test in Table 5 which yielded a statistic value of 28.270, having a p-value ($p<0.001$). This resulting p-value depicts a highly significant outcome, and thus validated the chi-square results for the tested hypothesis on evidence of retention of port users by value-adding services. As a result, we confirm that the outcome of the test was not an occurrence of chance, but based on consistent statistical trends in the examined data. By way of substantiation, it is also the case that 6 out of the 8 interviewed

port management personnel were of the opinion that value-adding services can strongly increase retention of port users in ports. In this regard, one of the experts commented:

*'If the port management decides that the VAS is important to retain certain cargo/trade flows, they can give incentives to start up VAS companies and they can take this into account for land lease strategy' (Advisor corporate Strategy, Port of Rotterdam).*

While other issues raised by this comment shall be subjected to further scrutiny, at the moment it suffices to acknowledge that it is one of the remarks put forward in favour of value-adding services' potential in the retention of port users. Having critically subjected 'hypothesis 2' to different levels of statistical analyses and examinations, we accept that 'the capacity of a port to retain port-users is associated with the value-adding services obtainable from that port'.

**Implications for 3PL within the port system**

Third party logistics (3PL) companies were found to be actively involved in the provision of port value-adding services. Findings showed that in some circumstances, ports offer the services directly, and in others, ports outsource or provide the necessary facilities for other companies to offer value-adding services. An excerpt from an interview with port management, held that:

"*We will get involved in cargo handling activities where it makes sense, but it is unlikely that ABP itself will get involved in the bolt-on activities, but we can make it possible by providing land for some other companies to do that on the port" (Business Development Manager, ABP, Port of Hull).*

Value-adding services, referred to in the statement as 'bolt-on activities', are much more likely to be offered by other companies within the port. This statement stands true for many ports proactively involved in making value-adding services available to port users through the use of third party logistics companies (3PL). As more and more ports take on the strategy path of

offering port value-adding services, the potential for direct and indirect business opportunities in connection with the port will continue to rise. Third party logistics companies' involvement in ports is therefore expected to continue increasing as a result.

**Port Strategy Implication**

Contrary to being a decisive objection, high inertia by ports management and port-user companies to respond to innovations, for example in relation to value-adding services, could be a result of their level of awareness. Continual research is hence important to support innovation to enhance port managements' strategy development. For instance, in reporting the herculean competitive tussle between Busan (Korea) and Shanghai (China) ports for cargoes originating from the northern part of China, one of the suggestions of Anderson et al. (2008) is that Busan's new strategic port (Yangshan) may concentrate on cargoes requiring value-adding services, given that the services can be more quickly provided in its hinterland park. It is therefore necessary to examine the characteristics of different cargoes in order to understand those that might require more value-adding services than others. Knowledge, awareness and innovation on value-adding services are indeed crucial for contribution to port competitive strategy. An input from port management that is worth recalling held that:

*''….life itself is competitive. VAS is offered for competitiveness, to do better than others, people tend to change to respond to different challenges'' (Assistant Chief Port Strategist, Apapa Port).*

This insight reinforces the need for port management and port users to be willing to make necessary changes, learn and embrace new trends that make profitable sense in the short and long run. Consequently, it is deemed important to raise the knowledge profile of port managers and

port users about value-adding services in port strategy. Again, there are also pointers to the need for good expanse of land and the development of certain facilities to facilitate the offering of value-adding services. The need for VAS for strategy differentiation is growing in potential, not only in the port industry, but also in the entire maritime sector. As the global alliances between shipping lines increase, individual ship operators will also continue to seek a means to differentiate their products from other lines, even from their alliance partners, by the offering of value-adding services (Martin and Thomas, 2001).

**Conclusion**

Service is the offer of an industrial sector that does things as opposed to the making of things. While the 'value-added' concept was found to have been used to represent varied inclinations such as incremental processes, cost to benefit outcomes and management styles, 'value-adding services' (VAS) as examined in this study were distinguished to represent supplementary or additional services which complement the core offers of a firm. Within the port-system, key value-adding services identified in this area are transport services, warehousing, packaging, consultancy, and advertisement support, assembly of cargo, canteen /catering, cold storage and water supplies. Overall, findings revealed that the most readily available and accessible value-adding services are transport service, followed by warehousing and water supplies. On the basis of analysis of port-users' opinions and hypotheses test results, we conclude that value-adding services have the potential to both attract port users and retain them.

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