

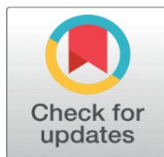
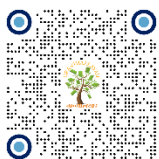
# RUNNING LOGISTICS CARGO CENTRES IN THE OMAN AND ZIMBABWE: THE KEY PERFORMANCE INDICATORS AND FAULT LINES. P05: RECENT ADVANCES OF CIRCULAR ECONOMY AND SUSTAINABLE DEVELOPMENT IN SUPPLY CHAIN MANAGEMENT

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## ABSTRACT

This research is about, "Running logistics cargo centres in the Oman and Zimbabwe: the key performance indicators and fault lines." This research was aimed at uncovering brief history and best practices in logistics cargo centres with the aim of contributing to this critical debate in many countries where little research had been done in Oman and Zimbabwe. These industries employed thousands of employees in each country and had a major impact on the national economies of countries as they linked the countries with the rest of the world in trade. It was no secret that logistics cargo centres faced many challenges as they operated. Researchers used the survey questionnaire method as well as face to face interviews, expert panel interviews at universities and literature review in this research. Findings reveal that logistics cargo centres like container terminals, warehouses, bonded warehouses, dry ports, airports, roads and a modern Customs and Excise Department, which fully embraces e-government and is strategically linked to all importers and exporters as well as critical trade and related government departments have improved a lot, but still needed further improvement in Oman, Zimbabwe to march regional and global competitors for these countries. It was found that critical skills, ports, Customs, and investment infrastructure in developing countries needed to be improved as well as processing and turnaround time to match best practices in the regions and globally. One Stop Shop for investment was operational in Oman but was still in its infancy in Zimbabwe. Delayed deliveries and wrong documentation were experienced sometimes due to port and Customs delays or transport and loading delays in all two countries. Oman and Zimbabwe had improved a lot and Zimbabwe had some technical delays at its logistics cargo centres and ports of entry and exit as semi-manual systems were used, is not a complete smart system used with no papers at all as expected. A lot of work in progress is there to catch up with the rest of the world. At the time of the conference our work may still be work in progress and we will share part of the findings, the field research done in Oman which is complete. Zimbabwe field research was still ongoing as the researchers there wanted maximum outreach.

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## 1. INTRODUCTION

Logistics and supply chains are increasingly gaining greater importance as they play a vital role in the overall cost of the products. Moreover, countries have learned that developing the infrastructure for logistics services is crucial for economic growth. Cargo logistics centers play a vital role in the country's competitive advantages. A critical resource that needs to be developed is human capital and talents development [Viotor \(2007\)](#). Governments also need to know the deep strategies, structures, and policies that help make the country a more competitive, growth-oriented economy [Gattorna \(2010\)](#). The cargo logistics centres can be crucial contributors to the success and prosperity of nations. They need to have good economic environments that propel economic growth [Porter \(1998\)](#). [Jain et al. \(2007\)](#) state that most CRM failures are attributed to poor design, planning and measurement of CRM projects and that capturing the wrong customer information, unclear goals, inappropriate selection and use of technology, inability to integrate people and processes and use of misleading metrics or improper measurement approaches are the major barriers in implementing and managing CRM projects. A study by [Mellat-Parast \(2013\)](#), suggested that quality management facilitated cooperative learning and improved inter-organizational learning processes. It said at the supply chain level, it enhanced supply chain satisfaction and supply chain performance. Therefore, TQM was central to SCM and distribution excellence. It was no secret that logistics cargo centres faced many challenges as they operated. China has universities of supply chain focusing on servicing and growing this huge sector. There are many big, advanced countries which have adopted the same strategy.

Oman started very early to develop the logistics sector and make it a vital factor in economic growth. Hence, the Oman Logistics Strategy 2040 was developed in 2014 [SOLS2040 \(2015\)](#). The strategy aims at developing Oman as a major logistics hub in the region. The government aims to make the logistics sector one of the major non-oil sectors that would contribute to the GDP and create jobs for the Omanis, jumping from 80,000 in 2020 to 300,000 in 2040 [SOLS2040 \(2015\)](#). Logistics sector contribution to GDP was R.O. 1.5 billion, and very ambitious targets were set to be achieved: R.O. 3 billion, R.O. 8 billion, and R.O. 14 billion in 2020, 2030, and 2040 respectively. For the Logistics Performance Index, the target ranks are top 30, top 20, and top 10 in 2020, 2030, and 2040 respectively. The Logistics Performance Index measures logistics efficiency in the following areas: Customs Performance, International Shipments, Tracking and Tracing, Infrastructure, Logistics Quality and Competence, and Timeliness. Performance metrics measurement was central to good supply chain management, and these were: control (which allows managers to evaluate and control the performance of resources they manage, communication (to communicate performance to internal and external stakeholders) and finally improvement (which shined a light on actual versus expected performance in order to take corrective action where need be, [Mckeller \(2014\)](#)).

To achieve those objectives, the cargo logistics centers and hubs need to be developed and incentivized. Reduced supply chain vulnerability to risks arose through horizontal collaboration amongst producers, and vertical collaboration with the processor and retailers, [Leat and Revoredo-Giha \(2013\)](#). Oman has developed a number of world-class deep-sea ports and modern international airports. The main seaports include Sohar Port, Salalah Port, and Duqm Port. All these ports have major free zones and economic zones in the hinterland to develop cargo and logistics facilities that create captive volumes. The airports include

Muscat International Airport, Salalah Airport, Sohar Airport, and Duqm Airport. All these airports have big cargo facilities except Sohar Airport. These cargo facilities are key drivers to enhance logistics cargo growth.

The cargo logistics centers provide services for all international freight and shipping needs. The services include customs clearance, storage, and transportation.

The cargo logistics facilities and services depend on the types of cargo and customers' requirements. There are containerized cargo, general cargo, and perishable cargo. Each one of these types requires different special handling services. Oman is well located for regional and international supply chain routes. Oman has excellent land connections with GCC countries. Oman is also well connected by the air and sea.

The main logistics hubs in Oman include the Sohar Free Zone, Salalah Free Zone, Khazaen Economic City, Duqm Economic Zone, and Mazunah Fee Zone. All these cargo centers are well connected by land, sea, and air. These options for logistics help increase the competitiveness of the export and re-export trade.

Oman has been improving in terms of logistics performance. The World Bank's Logistics Performance Index shows that Oman's rank has jumped from 59 in 2014 to 43 in 2018 (LPI, World Bank). The LPI evaluates a number of attributes, mainly the Customs, Timing, Cost, Infrastructure, etc.

To set Oman as a major logistics hub, Oman has become a member of the IRU (Asyad). This membership helps to export smoothly to the final destination without any hurdles while crossing various borders and customs points. It also helps reduce the cost and time of shipments across countries to final destinations.

## **2. OMAN LOGISTICS STRATEGY 2040**

For Oman to be one of the key logistics hubs in the region, it has developed a clear national strategy toward 2040; Sultanate of Oman Logistics Strategy 2040 (SOLS2040). The overall picture is that Oman is heading in the right direction in developing Oman as one of the major regional logistics hubs. The strategy focuses on four areas that will enable Oman to be among the top ten logistics hubs in the region. They are:

- Market development for import, export, and re-export.
- Ease of doing business and smooth logistics operations.
- Development of the Omani workforce skills and expertise.
- Use of latest technologies as key enabler for competitive logistics services.

## **3. OMAN ECONOMY**

Oman is heavily dependent on oil and gas in the fiscal revenue and as a percentage of the total GDP. Despite the relentless efforts to diversify the economy away from oil and gas, the country is still heavily dependent on these commodities. Oil and gas revenue account for 52% of total revenue, and 70% of government revenue in 2020 (NCSI).

## **4. LOGISTICS MAJOR HUBS**

Many logistics clusters have educational institutions specifically created to meet the needs and schedules of logistics operations, including deep integration of education with cluster operations. In addition, some cluster operations have

invested in specialized university facilities to support their logistics mission and upgrade their capabilities through partnerships with international centres of excellence Sheffi (2014).

Developing Oman as a major logistics hub in the region, Oman has developed a number of free economic zones (where tax exemption and non-unionization of labour were the main attraction).

**Table 1**

Table 1 OMAN FDI, GDP, IMPORTS, EXPORTS And 2020 US\$ Billions				
FDI	GDP	IMPORTS	EXPORTS	GLOBAL LOGISTICS INDEX
22.2	72.06	20.96	\$30.6	43 (2018)

In 2020 Oman was the number 70 economy in the world in terms of GDP (current US\$), the number 62 in total exports, the number 67 in total imports, the number 57 economy in terms of GDP per capita (current US\$) and the number 73 most complex economy according to the Economic Complexity Index (ECI)

Source:  
<https://oec.world/en/profile/country/omn#:~:text=In%202020%2C%20Oman%20exported%20a,to%20%2430.6B%20in%202020>.

## 5. STATEMENT OF THE RESEARCH PROBLEM

Two theories guide this research, and these are the theory of market orientation and the accelerator theory of investment as they apply to logistics cargo centres. Market orientation is a company philosophy focused on discovering and meeting the needs and desires of a company’s customers through its products mix, and in this instance cargo logistics centre businesses will be expected to meet foremost the needs of their diverse portfolio of customers directly, then the needs of society, the dictates of corporate social responsibility and sustainable business. In an international survey of 1,337 companies who have implemented CRM systems to support their sales force, CSO Insights has estimated that only 25 per cent reported significant improvements in performance, Pettey (2008). They said it was management commitment, implementation, and resourcing that normally affected CRM success or failure. This applied to LCC as well.

The accelerator theory of investment, in its simplest form, is based upon the notion that a particular amount of capital stock is necessary to produce a given output. By definition, net investment equals gross investment minus capital consumption allowances or depreciation. Investment must be maximized for better productivity and profit maximization. Do Oman and Zimbabwe have environments where this is possible? Researchers must put themselves in the day in the life of an investor, a business person, business customer and government officer and politician (the political class) – what do they want and expect? Only then can incisive analysis be done. This research would question and critique the levels of efficiency, costs, and investment in the logistics cargo centres sector and why they are what they are, and what could be done to maximize performance, investment, and business in the sector. The purpose of this research was to contribute to the success of logistics cargo centres and diversification into logistics with focus on logistics cargo centres, and advance critical ideas to drive this plan forward. The conceptual framework is that fully integrated cargo logistics centres which embraced latest IT

systems delivered good service to customers and society. The dynamics of theoretical perspectives and field research would rip this theory apart and educate the academic world on what was practical and the full spectrum of interest groups, institutions, and lobbyists. The two countries were running solid logistics cargo centres and a knowledge society partly insulated from reliance on agriculture and primary products income. [Crow and Dabars \(2015\)](#) quoting James Duderstadt said that the world was entering a new age, an age of knowledge, in which the key strategic resource necessary for prosperity has become knowledge itself – that is educated people and their ideas, but that universities, who produced those highly skilled people, were besieged by factors like public policies, reductions in public investments and market forces which could make universities fall by the wayside.

The countries have achieved phenomenal and admirable progress in logistics cargo centres but more still needed to be done. All of them faced some operational problems which have to be solved for smooth operations. Some of the challenges were customs delays, driver shortages vagaries of weather and changing customs tariffs. Logistics was one of the most difficult industries on earth linking firms, government, society, and nations in a delicate matrix of trade, politics and economics. Moreover, all two countries will be competing for investment, markets, and talent with regional competitors like South Africa, Botswana, Namibia and Zambia (for Zimbabwe) the six GCC countries in the case of Oman as well as facing global competition. Research is required to inform government, industry and society about correct policies, alternatives, opportunities, risks, and pitfalls for logistics cargo centre excellence.

[Shah \(2015\)](#), warned procurement practitioners and industrialists saying the ten major challenges future leaders in procurement would face were:- Focus on strategic relationships, continuously looking for new markets, global supply chain risk, exchange rate volatility, political instability, integrating risk management in sourcing, using free trade agreements and tax havens, using of big data and analytics, technological innovation and finally having the right skills and influencing skills which means working collaboratively with other experts in and outside your organization. How prepared were logistics cargo centres in these aspects? This research makes the crucial contribution to theory building by shedding light on key operational and national policy imperatives which have not been in the public domain in Oman and Zimbabwe, and for those already known, to highlight their effectiveness and shortfalls, causes and remedial measures based on world best practices, current findings, and literature realities. Good well-functioning logistics cargo centres created millions of jobs worldwide, have good admirable conditions of service, contributed to the fiscus through taxes by profitable companies, provided a critical service required by the economy, build confidence in the economy, attracted much needed investment, lowered costs of operation substantially, improved competitiveness, introduced advanced technologies to a country, improved overall industrial and national efficiency, helped in import substitution, connected the country to the world and attracted tourists to marvel at economic wonders there and were a source of national pride. Poor service by any country and company reflected lack of respect for contracts and other countries, dishonest and a complete lack of ethics. It also destroyed trust, repeat business, loyalty, profitability, goodwill, reputation, confidence, competitiveness and good long-term relations amongst the vending community and their clients, the very foundation and anchor of any successful business (refer to [Appendix 1](#) and [Appendix 2](#) and findings in this research). For these reasons this research was long overdue, necessary, and transformative. It had to be done and was urgently required in both countries.



## 6. OBJECTIVES AND RESEARCH QUESTIONS

The objectives of this research are to:

- 1) Establish status of logistics cargo centre businesses and issue affecting them and their customers in Oman and Zimbabwe.
- 2) Establish and evaluate KPIs in logistics cargo centre management.
- 3) Establish global best practices in logistics cargo centres.
- 4) Identify IT infrastructure and human capital required for good performance.
- 5) Establish the challenges faced by logistics cargo centres in the countries and best way forward.

## 7. RESEARCH QUESTIONS

The research questions to be answered by this research were: -

- 1) What is the status of logistics cargo centre businesses and issues affecting them and their customers in Oman and Zimbabwe?
- 2) What are the KPIs in logistics cargo centre management?
- 3) What are the global best practices in logistics cargo centres.
- 4) Identify IT infrastructure and human capital required for good performance.
- 5) Establish the challenges faced by logistics cargo centres in the countries and best way forward.

## 8. LITERATURE REVIEW

Hong Kong, Guangzhou, and Shenzhen have played critical roles in regional growth in Asia but faced many challenges such as port handling capacity, environmental problems, and the expansion of the complex transportation system owing to large volume of goods. Authors said port and terminal development and efficiency deserved more attention and can guide in future port investment and regional development, [Liu et al. \(2022\)](#), (99-106). This was a message to Oman LCCs and Oman Government, loud and clear. Networks with densely interconnected first tier suppliers promoted network neutrality and complexity. [Gruchmann \(2022\)](#), (170-192). These findings allow more comprehensive theoretical grounding for mapping governance approaches in a network-sensitive context like the LCCs under discussion. Logistics clusters depended on supportive government in terms of public infrastructure, paying for and maintaining and regulating the use of key infrastructure assets such as roads, railways, canals, ports and airports and user-friendly regulations on land use, infrastructure use, conveyance operations and trade to promote logistics clusters. The Singapore government was renowned for both high efficiency and low corruption, an ill affecting many governments in the world, [Sheffi \(2014\)](#). There were lessons for all two countries here as they work towards establishment, maintenance and growing world class logistics cargo centres as engines to drive the economy and as diversification measures. Any infrastructure, regulatory or tariff shortfalls were clear fault lines not good for logistics cargo centre development. Making the right decisions by companies and governments produced good results which gave the feel-good factor that we are contributing to our own country and the world in a positive way.

Logistics scholars, as well as strategic management scholars, have in recent years shown that capabilities in logistics and supply chain management may be the foundation for a company's sustainable competitive advantage, [Sandberg \(2013\)](#), (176-188). He said it could be argued that beside product-, production-, or market-oriented companies, there were also flow-oriented companies, in which the business models are based on superior logistics performance.

The importance of adopting an internal market orientation (IMO) for new service development performance is illustrated by [Boukis \(2013\)](#). The role of intra-team contingencies, such as trust, relationship conflict and political activity and some contextual antecedents, such as resource allocation effectiveness and efficiency and cross-functional integration were assessed

The findings of explorative case studies suggest the implementation of various strategic SCM strategies in order to fit the requirements of the market (e.g. protect critical resources, implement a customized agile production strategy and enhance SC flexibility), [Ponticelli et al. \(2013\)](#). In this direction, specific SCM practices are already adopted by investigated firms. Identified techniques and tools aimed to achieve high customisation while reducing changes in specification. The issues here are security, strategic fit, speed to the market and flexibility.

Taking a supply chain perspective, logistics performance refers to cost, time, and complexity in accomplishing import and export activities, [Hausman et al. \(2013\)](#). The paper studied the impact of logistics performance on global bilateral trade. Their research calibrated the impact of specific improvements in logistics performance (time, cost, and reliability) on increased trade. Their findings could spur public and private agencies that have direct or indirect influence over logistics performance to focus attention on altering the most relevant aspects of logistics performance to improve their country's ability to compete in today's global economy. Moreover, as their logistics metrics are directly related to operational performance, countries could use these metrics to target actions to improve logistics and monitor their progress. This is where governments are expected to facilitate logistics through infrastructure, SCM education and research institutions and having effective lobby and advocacy groups or industry associations to support firm level distribution and SCM. It is a shared partnership. There is a supply chain association in Oman but marketing professional body seems not there as yet. This is unfinished business in Oman.

In contemporary business environments, the ability to manage operational knowledge is an important predictor of organizational competitiveness, [Setia and Patel \(2012\)](#). Organizations invest large sums in various types of information technologies (ITs) to manage operational knowledge. Because of their superior storage, processing and communication capabilities, ITs offer technical platforms to build knowledge management (KM) capabilities. A critique would say there were budgetary limitations and austerity after Covid-19 disruptions and slowdown of business. Where would adequate funding come from when austerity was still in place? A lot is being done but obviously not at optimum in terms of infrastructure development the world over. Currently the world is between a hard rock and a hard surface.

## 9. RESEARCH METHODOLOGY

This study used a pragmatism research philosophy. The pragmatism research philosophy is described in [Burke Johnson and Onwuegbuzie \(2012\)](#), [Göktürk \(n.d.\)](#) as the third force research philosophy. In [Burke Johnson and Onwuegbuzie \(2012\)](#)

citing [Cresswell \(2009\)](#) pragmatism originally derived from a Greek work “pragma” which means action. For [Saunders et al. \(2012\)](#) pragmatism calls for plurality in creation of knowledge and human actions cannot be separated from reality, experience, and beliefs. Given this scenario or philosophical underpinning researchers and scholars in logistics and supply chain have drawn the epistemology of pragmatism to understand logistics aspects in areas such as logistics cargo centres. Given the nature of the logistics industry in Zimbabwe and Oman it is crystal clear that no single philosophy can unpack the understanding of the contemporary problems. The research philosophy of a study is usually determined by the nature of the research objectives [Kaushik and Walsh \(2019\)](#), [Saunders et al. \(2012\)](#). Taking an eagle’s view of the study and the plurality of the logistics industry in Zimbabwe and Oman and the composition of the research team this study adopted questionnaire method as well as face to face interviews, expert panel interviews at Universities and Industry. This is consistent with the pragmatism research philosophy and mixed research approach [Creswell \(2011\)](#), [Göktürk \(n.d.\)](#). Researchers used the survey questionnaire method as well as face to face interviews, expert panel interviews at universities and literature review in this research. Consent was obtained for both interviews and survey. Validity and reliability issues were addressed full as were field research protocols. Researchers explained the purpose of the research and freewill for participation.

## **10. FINDINGS IN OMAN FIELD RESEARCH AND DISCUSSIONS**

So far these were the findings in Oman where field research had been completed.

Findings revealed that logistics cargo centres like container terminals, warehouses, bonded warehouses, dry ports, airports, roads and a modern Customs and Excise Department, which fully embraces e-government and is strategically linked to all importers and exporters as well as critical trade and related government departments have improved a lot, but still needed further improvement in Oman to march regional and global competitors (Zimbabwe field research is still work in progress). In a study to investigate success and failures of Customer Relationship Management (CRM) systems and implementation [Foss et al. \(2008\)](#). found that the scope, size, complexity, and duration of the CRM projects seem to vary quite significantly across firms and that poor planning, lack of clear objectives and not recognising the need for business change were the key reasons for CRM failures. The question that must be answered is, ‘What systems, technology, culture and practices should be put in place for CRM to be successful and do LCC firms in Oman have them?’ It was found that critical skills, ports, Customs, and investment infrastructure in Oman needed to be improved as well as processing and turnaround time to match best practices in the region and globally. One Stop Shop for investment was operational in Oman. Delayed deliveries and wrong documentation were experienced sometimes due to port and Customs delays or transport and loading delays. Oman had improved a lot. A number of external and internal factors influenced the evolution of a university like – meeting the needs of industry, an expanding USA population, internal migration and immigration, the needs of war and how USA responded to it, the pressures for educational attainment and mobility, the growing role of science in society, the growing importance of the professions and professors and various pressures from government, and no single person or persons controlled its destiny, but the result was the greatest system of knowledge production and higher education, [Cole \(2009\)](#). A lot of work in progress is there to



catch up with the rest of the world. At the time of this submission our work was still work in progress and we shared part of the findings only done in Oman excluding Zimbabwe field research which would be in another paper. The research team for the Zimbabwe field research may be adjusted as well for maximum outreach.

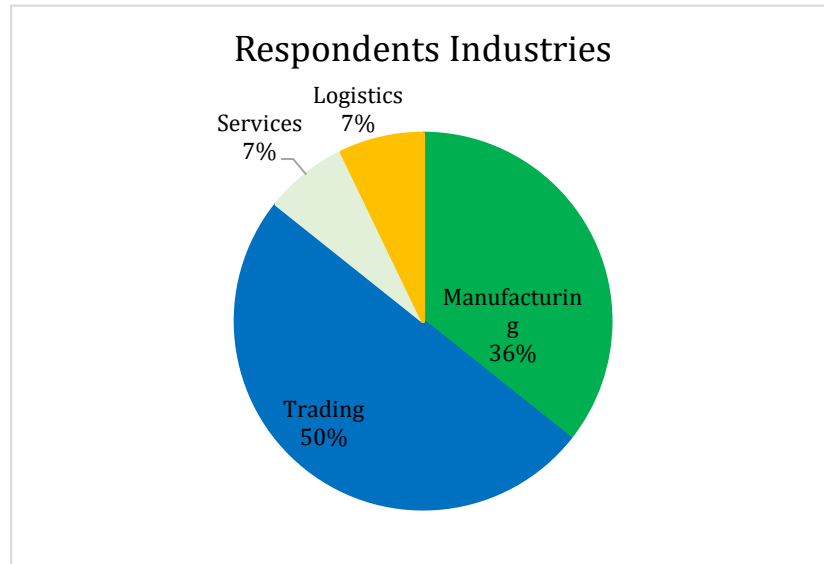
So far these were the findings in Oman where field research had been completed.

## 11. OMAN CARGO LOGISTICS

### 11.1. SURVEY AND INTERVIEW: RESULTS ANALYSIS 2022

The survey and interviews conducted to get primary data for this research from various companies and industries that are closely connected with logistics services providers and logistics centers. The survey and interviews received from 14 companies (14 respondents answered the survey, one from each company). Researchers would have wanted more respondents but unfortunately there seems to be some reluctance to answer survey to a certain extend. The same applies to interviews. Respondents were mainly based in Muscat and Sohar governorates. Though the number is low, but the firms are considered the major manufacturers and traders. Their valuable opinions were shared that help answer questions related to this paper purpose and give a fair understanding of the cargo market in Oman. Interviews were done with three people only (top executives in their organisations), as some declined to do the interviews for many reasons. [Figure 1](#)

**Figure 1**



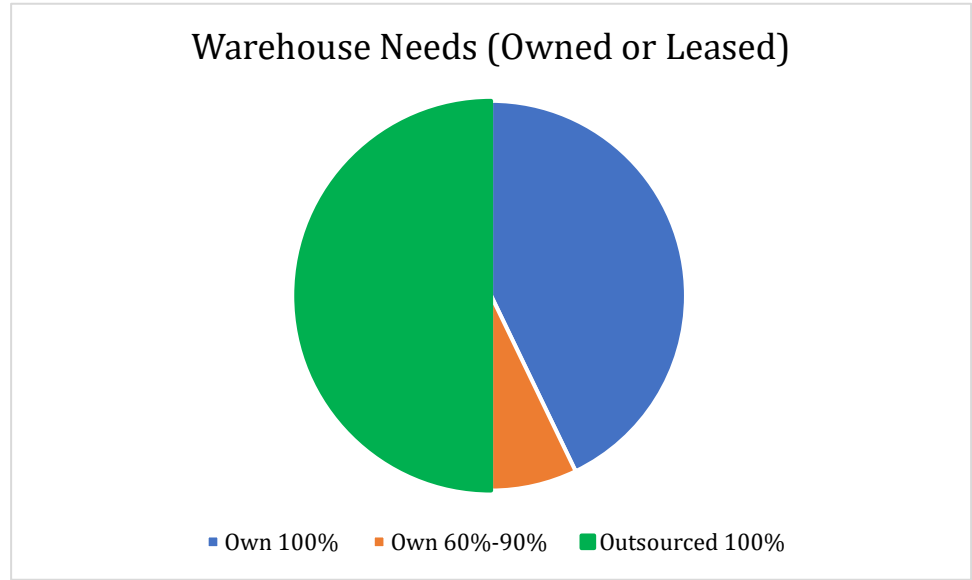
**Figure 1**

The majority respondents, about 50%, were trading firms, followed by manufacturing 36%. The respondents from Service and Logistics were about 7% each.

Most of these companies own trucks and use owned warehouses. The warehouse sizes ranged from 800 sqm to 20,000 sqm. In terms of ownership compared to leased, about 43% own their warehouses and 7% own about 60% to

90% of their needs and outsource the balance. On the other hand, about 50% lease their warehousing needs. [Figure 2](#)

**Figure 2**



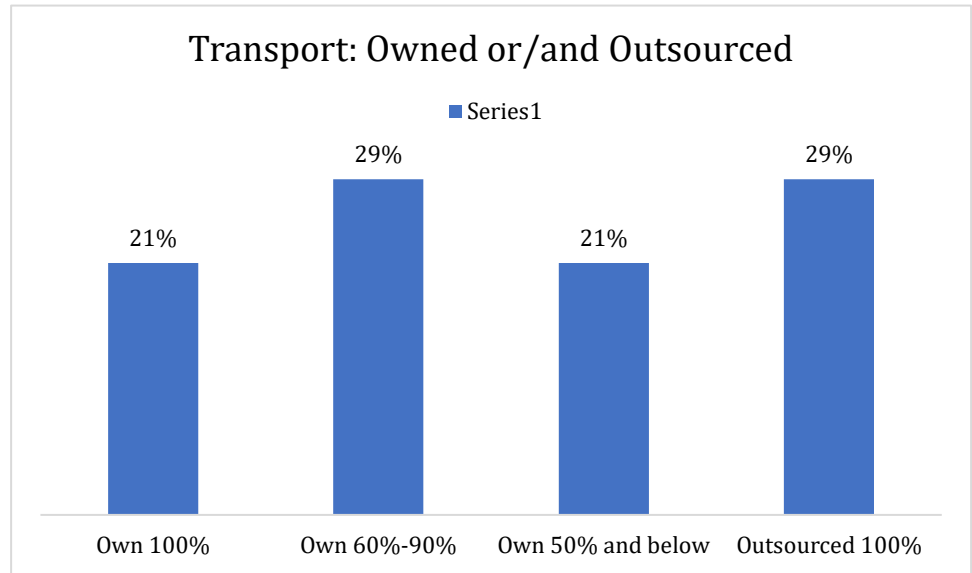
**Figure 2**

The warehouse types usually include dry warehouse, AC warehouses, chilled warehouses, and freezers. About 50% only have dry warehouses. The dry and AC/chilled warehouse are utilized by 21%, while the balance.

For the outsourcing of the logistics services, a question on 3<sup>rd</sup> party logistics services provider was included. The question was to know how many use 3<sup>rd</sup> party logistics services. The results showed that about 64% use 3<sup>rd</sup> party logistics service provider for their logistics and supply chain needs. This is good indication that the logistics market is developing and more and more businesses starting to outsource logistics services. This definitely help encourage more investments in logistics centers and operations. It is an indication that business started to focus more on their core business and outsource the logistics services to professional firms for better control of cost and improve efficiency of supply chain.

Regarding the truck fleet ownership, the companies are increasingly starting to use outsource trucks for trips. This usually help in maximizing the efficiency of trips costs by enhancing the truck capacity and route utilization. The survey shows that about 79% use outsource trucks, while about 29% depend 100% on the outsourced trucks. [Figure 3](#)

**Figure 3**



**Figure 3**

The average monthly trips is 397 trips. About 50% of these trips are done by owned trucks and 50% by the outsourced trucks. This shows that companies are trying to reduce the fixed cost and benefiting from outsourced trucks as the need and requirement may change based on the supply and demand.

The ports are key element in the trade and business operations. Oman has world-class-deep-sea ports. The major ones are Salalah Port and Sohar Port. Muscat International Airport along Salalah Airport are some of the modern airports in the region with new cargo building facilities. The quality of service at these seaports and airports varies. Based on the survey, over 70% consider the quality of services at Sohar and Salalah Ports are good while 29% and below consider them as average. The quality of services at Muscat International Airport is considered good by 75% while Salalah Airport received only 17%. This shows that Salalah Airport needs to work on improving the quality of cargo services.

**Table 2**

Table 2 Quality of Cargo Services at Ports		
Quality of Cargo Services at	Good	Average
Sohar Port	71%	29%
Salalah Port	86%	14%
Suwaiq Port	17%	83%
Muscat Int'l Airport	75%	25%
Salalah Airport	17%	83%

The manufacturers and traders source their products from various local and global sources. Over 36% of the firms imports 100% of their materials from global suppliers. The imports mainly come from the following countries: UAE, Saudi, India, USA, China, and Brazil.

While for the exports, over 50% of manufacturers and traders have some of their products exported. Over 50% of the firms export about 29% of their products. The exports market includes the following: UAE, Saudi, India, and Yemen.

These imports and exports are traded through the land borders, seaports, and airports. About 14% of the firms use land borders as their main trading routes. The sea ports are used by 93% of the firms.

The feedback from the survey on how to improve the cargo handling and competitiveness of the Oman ports, airports and land borders highlighted the following points:

- Improve handling efficiency and speed.
- Be more competitive in terms of cost and charges.
- Improve the inspection bays and service quality.

On the question of the main challenges in managing the human resources in logistics services sector, the main point highlighted included the following:

- Lack of expertise and experience.
- Less capable of doing multiple tasks.
- Less interest on learning and developing.

To sum up the findings from survey and interviews it is quite clear Oman has done very well in cargo logistics centre management where it employed thousands of employees servicing the whole economy, was No. 4 in road infrastructure development in the world and had climbed up the global logistics index by many margins. Findings regarding successes recorded in Oman were mainly in good service at most ports in Oman and the airports where satisfaction was quite high (average 70%), except Salalah Port where the rate of dissatisfaction with service was quite high above 80%; manpower development was rated as good, infrastructure as good, customs as good as well and other government services.

Regarding the challenges faced key findings by respondents revealed that there was a need to improve efficiency, speed of service, lower fees charged and charges, Oman partly lacked local skilled and experienced logistics personnel, multi-skilled local talent was in short supply, some employees especially fresh graduates were not interested in training and learning and did not have a sense of responsibility and company stewardship, marketing talent was in short supply locally, punctuality was also an issue for some employees. Sheffi argued that the major challenges facing supply chain operations were too much product complexity, too much slow-moving and obsolete inventory, supply chain considerations not part of the product design process, no supply chain strategy, ineffective matching of supply with demand, physical network problems, global issues, outsourcing problems, customer preferences, market growth, terrorism, and global warming, [Sheffi \(2001\)](#). Higher education was humanity's primary enabler, its principal path on curing diseases [Antony et al. \(2017\)](#), advancing technology, enhancing communication, creating decent communities, making transportation safer, and even predicting the weather, appreciating beauty, inspired by creativity, understand our past, discern the consequences of our politics, comprehend, respect, and transcend differences, made sense of our emotions, and assess our values.

Dealing with these depends on the country's stage of economic development and policy framework. It was mostly easier for well-resourced developing countries to address most of these issues while 3<sup>rd</sup> world and developing countries had resource constraints, less sophistication and less systems integration.

Respondents emphasized the need for universities to have highly experienced lecturers with industrial experience teaching in universities alongside pure academics so that students have a rich experience which connects them with industrial realities. On this part they said that guest lectures and workshops by industrialists could help universities educate a solid future workforce with an industrial culture. Suggestions were raised that more internships were required in tertiary institutions as well as establishment of more supply chain training institutions. What does theory say about these findings? Customers were at the heart of the LCC and the needs of industrial and post-industrial societies and the emphasis on customer satisfaction, innovation and competitiveness were central for LCC success. Oman was racing to do head on competition with its GCC partners just as it cooperates with them in win-win situation. Other academic commentators had said the marketplace was a battleground where only the fittest survived and prospered. Maxwell (2007) was frank and warned leaders that leaders could not afford just to think outside the box, they needed to reinvent the box or to blow it up, and that the first responsibility of a leader was to define and address reality. That is what Oman must now do as a matter of addressing the current and future economy. Others would argue that politicians and national leaders were not company managers and had too many and complex societal issues to deal with which required long term consultations and consensus, and sometimes consensus was not the best technical decision.

It was argued that, "The primacy of human capital is leading to a global war for talented people in much the same way that nations once fought over land because it was considered a productive asset," The Emirates Center for Strategic Studies and Research (2003:4). This was the reality in the GCC and elsewhere where companies and governments had to offer best benefit packages for strategic employee retention. In the GCC countries with higher oil reserves tended to give better conditions of service and could pamper strategic employees with heaven on earth packages. LCCs were part the national economy and had to fight competition for talent and investment and win. Despite continuous training programmes LCCs were acting as training grounds and were losing employees to oil companies and the government sector for reasons of better salaries and condition of service as well as job security. Government was considered less pressurized and conducive (refer to Appendix 1 and Appendix 2).

Historically Oman has always been a nation of global traders and masters of the sea and global trade. It is a giant slowly taking its rightful place amongst the global trading community starting in the GCC where it claws quite substantial trade and investment (Table 1 is instructive regarding this). The culture of logistics management and refinement has always been with Oman throughout the ages. The titanic moves steadily in maneuvering the highly competitive supply chain LCC business as it diversifies its economy away from reliance on oil to a knowledge and service economy (Appendix 1 & Appendix 2 refer). Speeding up establishment of majestic academic cities run by local and international universities (like UAE) could accelerate this process supporting this direction with top grade research, innovation, industrialisation, and production of world class strategic human resources required by the LCCs, support industries and government.

## 12. LIMITATIONS IN THIS RESEARCH

This research faced a number of limitations. One of those limitations was the refusal to answer certain questions considered too sensitive in this highly



conservative community or refusal to participate in the research altogether, especially in interviews. Some survey questionnaires were not answered and was of great concern to the researchers. The sample size became quite small due to these refusals in both survey and interviews. Researchers struggled to get willing respondents. However, researchers compensated most of those shortfalls through triangulation of respondents by involving respondents from different companies.

This could have resulted in other issues being kept under the surface. The compensating factor was the triangulation of findings by having interviewees/respondents from a diversity of people. That helped to bring many issues to the fore. Statistical tests too were not done as the sample was too small. A bigger sample would have enabled researchers to do justice on this parameter. This virgin field research had quite some teething problems for researchers.

The research was quite objective. Time would always be an issue for working academics and industrialists. Having more time on the ground could have possibly led to the unearthing of other issues. However, the researchers used comprehensive questionnaires covering all issues that normally affected LCC in any country as reflected by answers received and analysed in this research. There was no doubt that coverage was comprehensive. The last limitation was that this field research was done during the summer holidays here where many people are on annual vacation, therefore some respondents may have been missed as a result of that rather than refusal.

### **13. CONTRIBUTION OF THIS RESEARCH TO THE STOCK OF NEW KNOWLEDGE**

This research has made many meanings sterling and breakthrough new insights which were not known before in Oman LCCs, and about Oman LCC dynamics and society. There were discoveries that there was a need to improve efficiency, speed of service, lower fees charged and charges, Oman partly lacked local skilled and experienced logistics personnel, multi-skilled local talent was in short supply, some employees especially fresh graduates were not interested in training and learning and did not have a sense of responsibility and company stewardship, marketing talent was in short supply locally and what was affecting LCCs which was previously unknown. This was our contribution to the stock of knowledge about LCC and filling the gap in knowledge. This is one of the most strategic and critical sections of the economy and contributing to ongoing public discourse about LCC development does matter a lot in Oman and beyond. Society was watching every development and wanted to see LCC succeed, prosper, and grow.

### **14. RECOMMENDATIONS AND FUTURE RESEARCH**

Findings from this research clearly indicated that major successes had been achieved in LCC operations in Oman, but that more needed to be done to catch up with the group of NICs and advanced economies like China, Germany, USA, UAE, Saudi Arabia, Taiwan, and Singapore. There were some supply chain pain points identified which needed to be addressed naturally. Considering all the foregoing the researchers would summarise shortfalls in performance as: the need to improve efficiency, speed of service, lower fees charged and charges, Oman partly lacked local skilled and experienced logistics personnel, multi-skilled local talent was in short supply, some employees, especially fresh graduates, were not interested in training and learning and did not have a sense of responsibility and company

stewardship, marketing talent was in short supply locally, and lastly punctuality was also an issue for some employees.

We make recommendations for a resurgent Oman in LCC operations as follows:

- 1) The Oman Government must make it compulsory to employ supply chain graduate trainees in any supply chain office/operations as a way to localize skills quickly and long term. One of the reasons why many local supply chain graduates were not employed was that they did not have the required experience. But experience was not bought from supermarket shelves but was given by the very companies asking for it and requiring it, yet denying these young people a chance to get and gain that very experience. It looks quite contradictory. Many companies were already doing this and making a great contribution to developing the sector and national economy, but many others were not doing so.
- 2) A regular multi-sectoral consultative process for industrial associations, colleges/universities and government in crafting policies and processes for LCC development targeted at cost reduction, efficiency, and excellence in LCC operations.
- 3) Deliberate policy interventions and industrial investments were required to fully integrate LCC, and the rest of the economy as was the case at ports like Rotterdam in Netherlands, Shanghai in China and Jebel Ali Port in UAE. An IT big data driven model has proven to be a panacea where this has been applied. A lot has been done in Oman but more needed to be done.
- 4) Comprehensive internships that address industry supply chain operations must be done by all students and period of internship could be bolstered to six months for students to get maximum industrial exposure. Other countries do eight months. That way graduating students were fully immersed in industrial supply chain operations and were productive from day one of employment.
- 5) Oman HEIs must employ a combination of highly experienced industrial managers with supply chain backgrounds as lecturers (even on a part time basis), and other career academics so that there is a balance between theory and industrial realities. Universities in Europe are known to do this with good results, e.g., Breda University of Applied Sciences in Netherlands which has some senior managers and CEOs as supply chain lecturers on a part time basis. This brings industry to the classroom and students benefit from practicalities rather than just theories.

It was very clear from literature review and field research that outdated policies and slow change management by LCCs were the major causes of challenges facing LCCs in Oman and some of these were in the government domain where individual LCCs could do very little or none. These are areas other researchers can look into maybe using longitudinal studies for a deeper understanding and dealing with cross-cutting issues. Such research is necessary to understand why known challenges persisted and what could be possible solutions based on experiences elsewhere in the leading world.

This research had sought to answer all research questions, which were clearly answered conclusively in this research as per above findings and analysis.

## **CONFLICT OF INTERESTS**

None.

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## **APPENDICES**

### **Appendix 1**

Ullah, A., Eidin M.S., Ahmed, H.O.N. (2022). Logistics clusters development in Oman (2022)  
<https://ijecm.co.uk/wp-content/uploads/2022/05/10518.pdf>

### **Appendix 2**

ASYAD (2018). Oman proves that logistics integration is key to growth. Available at: <https://www.iru.org/news-resources/newsroom/oman-proves-logistics-integration-key-growth>