t Critical one-tail	1.68709362	
P(T<=t) two-tail	0.765622198	
t Critical two-tail	2.026192463	

From above table, it was observed that P value =0.76 (Two Tail) is greater than 0.05. Hence, it is observed that there is no significant difference of opinion observed about marketing increases value of business by both Micro/Small and Medium scale business. Furthermore, t Stat= -0.30, it is observed that Micro/small scale are less agreed that marketing increases value of business compared to medium scale responders. Hence, it is concluded that Micro, small, and medium scale responders Strongly agree/agree that marketing helps improve optimization and increases value of the company.

Table 15. t-Test Analysis on Service Activity

t-Test: Two-Sample Assuming Unequal Variances		
	Micro or Small	*Medium*
Mean	3.807692308	4.176470588
Variance	1.361538462	1.404411765
Observations	26	17
Hypothesized Mean Difference	0	
Df	34	
t Stat	-1.003764232	
P(T<=t) one-tail	0.161291442	
t Critical one-tail	1.690924255	
P(T<=t) two-tail	0.322582885	
t Critical two-tail	2.032244509	

From above table, it was observed that P value= 0.3 (Two Tail) is greater than 0.05. Hence, it is observed that there is no significant difference of opinion observed about services increase value of business by both Micro/Small and Medium scale business. Furthermore, t Stat= -1.003, it is observed that Micro/small scale are less agreed that marketing increases value of business compared to medium scale responders. Hence it is concluded that both Micro, small, and medium scale responders “Strongly agree/agree” that services help improve optimization and increases value of the company.

The above result from analysis suggests that no difference in opinion of SMEs that marketing and services increase value of business and help improve optimization. The findings from Al-Bulushi and Bagum (2017) suggests that marketing and services are challenges face by SME and has the potential to create value for SME if they are executed with efficiently.

4.1 Presentation and Analysis of Interview findings

The researcher conducted interviews with four executive level professionals working in the cargo and logistics sector in Muscat. The aim of the interviews was to gather information related to research objectives. The interviewees were from the executive level and are identified in the following as I1, I2, I3, and I4 due to confidentiality of the interview. Furthermore, I1 and I2 represent interviewees from small-scale companies with 13- and 14-years’ experience respectively whereas I3 and I4 are from medium scale companies 23- and 35-years’ experience respectively.

Research question 1: this was regarding current practices in optimization of SCL where all the interviewees agreed that optimization levels could be improved in many levels. According to I1 and I2, most of the small-scale companies do not utilize technologies and tools such as warehouse management tools or network planning tools. Furthermore, utilization of such tools was not feasible for them as cost for implementation and utilization of such tools demands additional HR and financial backing. Additionally, these tools come with abundance of features, most of them are not useful for them. The small-scale companies collaborate with other medium scale companies in process of shipment consolidation which helps them optimize activities to some extent. In case of medium scale companies, I3 and I4 stated utilization of such tools are more feasible and can utilize such tools to full extend.

Research question 2: this was regarding challenges in primary activities and sub-activities. In the case of small-scale companies, both I1 and I2 states that lack of resources (financial and acquisition of experienced human resource) and technology are the main challenges faced. In frequent instances they faced delays in acquiring customs clearance from airports and ports which causes delays in their operations. Furthermore, obtaining loans from banks is a lengthy and difficult process. In case of medium-scale companies, I3 and I4 stated that lack of knowledge and experienced professionals in SCL with respect to the GCC market are the main challenges faced. Finding experienced professionals who are willing to work long hours is often a challenge. Furthermore, I4 emphasized that the technology and tools used are mostly old and stand alone. Thus, integration of all the processes within SCL through such tools will improve efficiency and reduce overall cost. Also, will provide competitive advantage.

Research question 3: this was regarding major activities which add value in SME optimization. All the respondents stated that inbound logistics, operations, and outbound logistics are the main three activities they focus on. However, I1 and I2 stated material handling and warehousing are the main inbound sub-activities, packaging and shipment consolidation are the main operation sub-activities, and material handling and delivery are the main outbound sub-activities. This was similar to responses from I3 and I4, however they also focus on sub activities such as order processing and vehicle scheduling. Furthermore, I4 emphasized these sub-activities help in increasing operational efficiency and improve customer relations.

Research question 4: this was regarding various opportunities for SME cargo companies. Interviewees I1 and I2 stated that small-scale companies should focus more on creative ways to market their service portfolios; and they should improve technology and tools used for SCL optimization. They should explore various custom tools and software available that are less expensive and provide training to employees. Furthermore, providing services such as follow-up, compensation for damages while transportation, insurance options, increased warehousing capacity are all the areas small-scale companies should focus on to improve optimization and overall efficiency. Meanwhile, in the case of medium-scale companies, I3 and I4 stated that more focus should be given in implementation of order management, document control, performance management, network planning, service-level optimization, and safety-first culture.

5.0 Discussion

In the following, the researcher aims to summarize research findings from analysis per objectives to come up with conclusions and recommendations.

As per objective 1, the SCL optimization across SME cargo and logistics companies were found to be limited. From the review of literature challenges such as lack of resources and technology

seem to be among the main challenges (Mubarak & Mondal, 2019). In the objective 1, the researcher tried to understand the level of optimization across cargo and logistics SMEs. Through the questionnaire survey SMEs were asked if they utilize tools such as warehouse management or network planning tools. The descriptive statistical analysis results of survey data emphasized SME cargo and logistics companies do not use tools like network planning or warehouse management tools. However, in-depth interview indicated that challenge in cost of implementation could be tackled through customization of tools based on the features required and company size. Furthermore, small-scale companies' practices shipment consolidation with other small- and medium-scale companies to ensure optimization of SCL.

As for objective 2, through the survey questionnaire the three main challenges faced by SME cargo and logistics companies in optimization was lack of resources, technology, and knowledge. Furthermore, lack of experienced professionals to deploy and execute strategies and lack of prior data on SCL optimization were also some of the challenges identified by respondents of questionnaire. This was in agreement with the findings from interview as interviewees I1 and I2 from small-scale companies identified lack of resources (financial and human resource) and technology whereas, interviewees I3 and I4 identified lack of knowledge and experienced professionals to deploy and successfully execute SCL optimization as main challenges. These results are also in agreements with prior studies by Ramachandran and Al-Yahmadi (2019) where the researcher emphasized on lack of market information and knowledge, adequate finance, and delay in securing a bank loan. Furthermore, in the study across 250 SMEs conducted by Mubarak and Mondal (2019) observed that SMEs find it difficult to acquire or retain qualified personnel due to lack of resources and face challenges like lack of skill and administrative knowledge, technology, access to finance, and administrative challenges. The study also observed that SMEs have been deploying strategies based on operational procedure rather than strategic plans through trial and error due to lack of prior data.

Furthermore**, objective 3** focuses on the major activities that contribute value to optimization of supply chain and logistics. According to Porter's Value Chain, the activities were divided into primary and secondary activities. This research focuses on the main primary activity and sub-activity of Porter's Value Chain in SME cargo and logistics companies in Muscat. The primary activities include Inbound and outbound logistics, operations, marketing, and services (Sutarmin & Jatmiko, 2016). Through histogram analysis of questionnaire survey data, Inbound and outbound logistics were the most frequent responses. Furthermore, cumulative percentage of inbound logistics, outbound logistics and operations constitute to "86.06%". Hence, the researcher carried out further analysis of these three main primary activities. In inbound logistics, the main sub-activities material handling and warehousing cumulated to "69.77%" of the total responses. In operation, the main sub-activities packaging, and shipment consolidation cumulated to "83.72%" of the total responses. Finally, in outbound logistics, cumulative of "72.09%" identified delivery and material handling. Findings from the questionnaire are in-line with the interview conducted however interviewees I3 and I4 from medium scale companies emphasized they also focus on sub-activities such as order processing and vehicle scheduling.

As per objective 4, it focused on opportunities for SME cargo and logistics companies in optimization of SCL. The results from questionnaire analysis indicated that there is no significant difference between Micro, Small and Medium companies on agreeing optimization of SCL activities will help improve overall efficiency and reduce cost. Similarly, the t-Test analysis indicated that SMEs agree marketing and services helps in optimization and increases value of company. However, it is also observed that SMEs mainly focus on outbound, operations and inbound logistics. Therefore, the researcher emphasizes SMEs should focus more on opportunities in marketing and services. Furthermore, the findings from the interviews are in-line

with these findings as interviewees I1 and I2 states small-scale companies should focus more on creative ways to market products and services, improve technology by using tools like warehouse management tools and customized network planning tools. Also, interviewees I1 and I2 emphasized the need to expand the services provided such as real-time tracking, follow-up, increased warehousing capacity, compensation for damages while transportation, and insurance options. Meanwhile, interviewees I3 and I4 stated that medium scale companies need to focus on performance management, order management, network planning, document control, service-level optimization, and safety-first culture. Further, opportunities in the SCL sector were identified through literature review such as economic opportunities and diversification (Al-Ghassani et al., 2018), location (Taderera et al., 2018), and infrastructure (Al-Ghassani et al., 2018).

5.3 Conclusion

In conclusion, the findings of this descriptive-exploratory research can be utilized for enrichment of future research in this field of study. The interpretation of the questions has successfully addressed the challenges and opportunities along with the main activities and sub-activities of SME cargo and logistics companies in Muscat.

5.2 Suggestions

The following suggestions are drawn by the researcher based on quantitative and qualitative analysis findings on ways to optimize SCL in SME cargo and logistics companies. Effective and successful implementation of initiatives to outsource business activities, use centralized management software, consolidation of inbound freight deliveries, track-and-trace of goods and, regularly optimize supply chain can help SMEs improve optimization across their SCL activities.

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