ISSN No: 2582-4236

SKIPS

SCHOOL OF BUSINESS

SKIPS Anveshan

(A Journal of Management Studies)

Volume 5 | Issue 2 | December 2024

ISSN No: 2582-4236

SCHOOL OF BUSINESS

SKIPS Anveshan

(A Journal of Management Studies)

INDEX

A Study on the impact of Social Networking Sites on purchasing personal care products in Ahmadabad, Gujarat

Dr. Kamal K. Agal
Associate Professor
[Ph.D., M.Com-HRM, M.Com-Tax Planning & Management, LLB-LLM, MPA,PGDHRE,Dip-Yog]
School of Commerce & Management
Dr Babasaheb Ambedkar Open University, Ahmedabad

Abstract

Nowadays Social network sites are massively used by the majority of the big companies to promote their products and encourage customers to purchase through social network sites, even in the last two decades, the Indian personal care products industry has observed fast growth through social network sites. It is the best channel for advertising in a short time& highly reachable to all the people that somehow connected with the internet. The study aims to identify the factors affecting the customers' purchase decisions……. in city of Ahmedabad. For this study, exploratory research designs were used. Snowball and convenience sampling methods were used to collect the data. 310 questionnaires were distributed among people of Ahmedabad during the period of January 2024 and just 306 collected respondents were analyzed

Keywords: *Social Networking Sites, Purchase decision, personal care products.*

1. Introduction

The internet is considered the sole backbone of E-marketing and has contributed to overcoming the limitation of the geographical presence of any business organization without incurring the enormous costs of having a global company. The internet gave those possibilities virtually 24/7days only to improve communication technology anywhere .But, with considerably and rapidly growing online activities, many companies have speedily adopted the internet to connect their marketing communication functional efficiently and economically.The majority of the companies that provide FMCG personal care products to the consumer market have financed the creation of company websites to introduce better and raise awareness of the product worldwide Online marketing or e-marketing refers to marketing using various channels on the internet. This includes search engine optimization, pay-per-click, social media marketing, e-mail marketing, web banners, digital online advertising, online marketing platform, mobile marketing (apps), content marketing, etc.

2. Literature Review

The researchers explored that web-shopping adoption decisions and web-search behavior are directly influenced by web-shopping intentions and are indirectly affected by past web-shopping experiences, web-shopping attitudes, and experience with the websites. And this study also discovered that the most substantial factor was web-search behavior than adoption decision in terms of affecting web-shopping intentions.(W.C, Danny Wong, & Domenic, 2005). One of the studies discussed four tools: E-marketing, web-marketing, mobile marketing, and E-mail marketing through SNS, and found that marketing can be done with all those tools(Dehkordi, et al., 2012).Some factors like social, emotional, psychological, and privacy factors affect the consumer attitude toward doing online shopping. The study found that security and privacy are two significant difficulties affecting consumers' online purchases. Trust, price, convenience, and recommendation have been identified as the key factors and the most critical factor that affect the majority of consumers and other people doing online shopping, there are some students and consumers that hesitate not to do online shopping, and it was forthe insecurity of payment and online transaction payment system. (Arsalan, Aziz, Sajjad, Haroon, & Javed, 2012).A study found that marketers faced different challenges in the digital era. Almost nowadays, even small businesses use social networking sites for advertising their products. Most companies have their social links, like Facebook, Instagram, Twitter pages, and other SNS, to mark and target the audience anywhere, as digital marketing doesn't have boundaries. And the most crucial social networking channels that marketers can use to advertise their products are Facebook, e-mail, Instagram, WhatsApp, and many more. And receive online information from their consumers' feedback, like comments, reviews, and like the pages and their products on social media.(Afrina, Kaniz, & Sadia, 2015).The researcher discovered many sources of E-word of mouth: retailer's websites, message boards, consumer reviews, Social Networking Sites, personal blogs, and brand websites. The researcher discussed two sources in the study: SNS and Customer review websites. The finding shows that when the reviews are positive, the consumer is willing to recommend the products to friends, and the study also discovered when the judgment of the products isharmful. It affects the willingness of the consumers to recommend the products on social networks sites platform (Lee & Seounmi, 2015).(Ted, James, Elizabeth, & Amy, 2007) theynoticed that the review of peers influences the perception of consumers. They have stronglyagreedthat the positiveevaluation of consumers affects new consumers visiting the social network sites.

3. Research Methodology

310 questionnaires were distributed, and just 306 collected respondents were analyzed, and the other four replies had to miss some parts. The questionnaires were structured into three sections,A: Demographic profile,B: internet shopping experience, and C: Social Networking siteson Purchase Decision Construct. This question was framed based on the 5-point Likert scale. All the questions were preparedin the google form and hard copy.

4. Research Gap

As Number of studies done so far on the impact of Social Networking Sites on purchasing decision of customers but very few studies have been undertaken as personal care products and Ahmedabad city is concerned

5. Objective

1. To find out factors affecting the purchase decision of a customer.
2. To know the impact of Social Networking Sites on the purchase decision of customers in Ahmedabad.

6. Hypothesis

H1: Advertisement through social media positively impacts the purchase decision of the customers.
H2: Contents in social media platforms positively impact the purchase decision of the customers.
H3: Celebrity posts through social media positively impact the purchase decisions of the customers.
H4: Word-of-Mouth in social media positively impacts the purchase decisionof the customers.

7. Sampling Design

Non-Probability snowball and convenience sampling methods were used for this study.

8. Research Methods

Quantitative and Descriptive research designs were used for this study.

9. Data collection source

1. **Primary data:** the researcher collected 306 respondents both in hard copy as well google form.
2. **Secondary data:** Through many secondary sources like Books, Articles, Websites, and Published papers in journals.

10. Data Analysis & interpretation

Table 1 Represents the frequency and percentage of demographic variables of this study. In this study, 173 (56.5%) respondents were males, and 133 (43.5%) respondents were females. On the other hand, in the age category, the results revealed the majority of the respondents were between the age group of 25-34 years old, 164 (53.60%) respondents, and the minority of the respondents were above 45+ years.

Table 1

DEMOGRAPHIC PROFILE OF RESPONDENTS			
	CATEGORY	**FREQUENCY**	**PERCENTAGE**
gender	Male	173	56.50
	Female	133	43.50
	Total	**306**	**100%**
Age	18-24 years	92	30.10
	25-34 years	164	53.60
	35-44 years	41	13.40
	45+ years	9	2.90
	Total	**306**	**100%**
Level of Education	Under Graduation	152	49.7
	Post-Graduation	148	48.40
	Basic School Education	2	0.7
	Other specify	4	1.30
	Total	**306**	**100%**
Annual income level	Less than 100,000₹	118	38.6
	100,001₹ to 300,000₹	122	39.9
	300,001 to 600,000₹	50	16.3
	600,001+ ₹	16	5.20%
	Total	**306**	**100%**

Table 2

RELIABILITY ANALYSIS		
Variables	**No of items**	**Cronbach's Alpha**
Advertainment through Social Media (AoSM)	6	0.952
Contents on Social Media (CSM)	6	0.951
Celebrity through Social Media (CSM)	9	0.959
Word-of-Mouth in Social Media (WOMSM)	10	0.96
Purchase Decision (PD)	4	0.926

Table 2 represents Cronbach's Alpha values of four variables that all are greater than 0.7. the Cronbach's alpha value of the advertisementis 0.971, which is greater than .70, Cronbach's alpha value of content is 0.94, Cronbach's alpha value of Celebrities is 0.925, and finally, the Cronbach's alpha value of word-of-Mouth is 0.959.hence,itindicates that all the variables have very high internal consistency. They are reliable,as the reliability of the variables is all greater than 0.70 Cronbach's alpha; thus, no deletion of variables wasperformed.

Exploratory Factor Analysis

Table 3

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.967
Bartlett's Test of Sphericity	Approx. Chi-Square	12052.028
	df	496
	Sig.	.000

For factor analysis, the researcher used KMO and Bartlett's Test for Bartlett's Test of Sphericity, and Varimax was applied for data rotation. The researcher performed factor analysis to recognize which factor has the most impact on the purchase decision of personal care products. The results are presented above in Table 3.

The value of KMO and Bartlett's Test is .096, which is greater then .05 thus factor nalysis isused for further anlaysis, It covers the development of the sphere-city and sample adequacy of the sample. In that table,Sampling suitability is 0.969 in KMO and indicates that the example is relevant.

And the Chi-Square value is (12052.028), indicating that the sample conforms to the Normality. In this research, 32 factors were selected to identify which factors affect customers' purchase decisions. The result of the study in table 4 revealed first four components alone explain 72.882% of the variance. These four components consist of factors that impact the customers' purchase decisions. Varimax rotated component matrices were used for this purpose.

Table 4

Total Variance Explained									
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	24.621	63.131	63.131	24.621	63.131	63.131	9.872	25.314	25.314
2	1.509	3.869	67.000	1.509	3.869	67.000	7.133	18.290	43.603
3	1.276	3.272	70.273	1.276	3.272	70.273	6.422	16.468	60.071
4	1.118	2.609	72.882	1.018	2.609	72.882	3.795	9.731	69.801
5	1.082	2.366	75.249	0.923	2.366	75.249	2.124	5.447	75.249
Extraction Method: Principal Component Analysis.									

Table 5

Rotated Component Matrix[a]					
	Component				
	1	2	3	4	5
Advertisement through social media made me like the brands more.		0.639			
I think advertisement is important when I purchase a personal care product.		0.746			
My decision to purchase personal care products is influenced by advertisements.		0.729			
The message in the advertisement attempts to persuade me to buy personal care products.		0.731			
I trust the messages given by the advertisement.		0.675			
Clicked ads.		0.571			
Consumers sharing content with others.			0.589		
Consumers react to contents.			0.612		
Consumers comments on contents.			0.724		
Consumer reviews on contents.			0.736		
Brand reacts to Consumer contents.			0.708		
Brand responds to Consumer contents.			0.661		
I will make a decision to make a purchase based on a recommendation I received from the celebbrities.			0.527	0.563	
Celebrity posts.				0.635	
Celebrities convey the messages in short words.				0.618	
Celebrities influencers.				0.579	
Sharing text messages in groups.	0.526			0.536	
Sharing Images in groups.				0.556	
Likes on the products.				0.560	
The attitude of influencers that I admire.				0.528	
Celebrities have the power to influence my purchase decision.				0.546	
Recommendations regarding personal care products are useful to me.	0.662				
Recommendations regarding personal care products influence my choice when I am performing online shopping.	0.730				

Recommendations regarding personal care product purchasing would increase my interest in finding out more.	0.734				
I will make a decision to make a purchase based on a recommendation I received.	0.719				
I always read the reviews given by consumers before buying.	0.687				
Consumer reviews are important for me to make a purchase decision.	0.634				
I warn friends and family members about choosing the wrong product.	0.594				
I often buy specialty personal care products referred by networking sites.	0.580				
I take information from previous consumers rather than going for online reviews.	0.507				0.491
A positive review of a product will enhance my chances to purchase personal care products.	0.604				0.416
I feel good about my decision to purchase personal care products online.					0.624
I positively recommend purchasing personal care products online to other people					0.648
I intend to purchase personal care products online again in the future.					0.664
Overall, I am satisfied with purchasing online,					0.613
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. a. Rotation converged in 9 iterations.					

a. Rotation converged in 11 iterations.

As we can see in the above table 5, it's clear that the first component has 14 factors that are heavily loaded on social networking sites;we can find the factors in table 5 on the 1st component. The main aim of social network sites is to build a strong relationships between customers through social networking platforms. The result shows that social network sites excellently attracted and engaged customers with personal care products. The advertisement of personal care products always impacts customers at any stage of the purchase decision journey.The 2nd component has fiveheavily loaded factors, and we can find the factors in table 5 on the 2nd component. The customers are purchasing personal care products based on the Customer's positive reviews, comments, ratings, and information from the group's friends and family.The 3rd component has fourheavily loaded factors: high-quality images of the products, Celebrity influencers, Official brand accounts *, and Sponsored ads by brands. The 4th component has nineheavily loaded factors, and we can find those factors in table 5 in 4th component.

To know the impact of Social Networking Sites on the purchase decision of customers in Ahmedabad.

Table 6

Usage of Social Network sitesamong the users					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Facebook	106	34.6	34.6	34.6
	WhatsApp	17	5.6	5.6	40.2
	Instagram	164	53.6	53.6	93.8
	Twitter	9	2.9	2.9	96.7
	Others	10	3.3	3.3	100.0
	Total	306	100.0	100.0	

Table 6 represents social networks' usage and their influence on social media users. The study revealed that Instagram got the highest percentage in terms of usage among the respondents, which means most respondents are using Instagram. It affectscustomers' purchase decisions; the rate of Instagram users is 53.6% (164 respondents). Then Facebook got 34.6% (106 respondents), WhatsApp 5.6% (17 respondents), Twitter 2.9% (9 respondents), and finally got that just 3.3% (10 respondents) out of 100% of other social networks influence the Customer's decision.

Table 7

Items purchased on social media

What kind of personal care products did you purchase online?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Skincare	80	26.1	26.1	26.1
	Hair care	59	19.3	19.3	45.4
	Makeup	70	22.9	22.9	68.3
	Fragrances	39	12.7	12.7	81
	Personal hygiene	58	19	19	100
	Total	306	100	100	

As we can see in the above table, most respondentsprefer to purchase skincare products through social media.

Table 8

Descriptive Statistics			
	N	Mean	Std. Deviation
The search of information due to a friend's recommendation	306	3.79	1.226
The search for information due to a stranger's recommendation	306	3.77	1.233
Seeking information due to a social media friend's recommendation.	306	3.89	1.163
Taking family's suggestion regarding products.	306	3.90	1.169
Valid N (listwise)	306		

As we can see in the above table, the mean of the family's and friend's suggestions is almost the same higher than it shows that most of the respondents listen to their family and friends'recommendations.

Table 9

Which one of the social networking sites influences you to purchase personal care products more?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Facebook	106	34.6	34.6	34.6
	WhatsApp	17	5.6	5.6	40.2
	Instagram	164	53.6	53.6	93.8
	Pinterest	9	2.9	2.9	96.7
	Others	10	3.3	3.3	100
	Total	306	100	100	
N	Valid	306			
	Missing	0			
Mean		2.35			
Median		3			
Std. Deviation		1.085			
Minimum		1			
Maximum		5			

Table 9 clearly shows that Instagram is mostly used among the social media platforms of the respondents while looking for product information through social media.

11. Hypothesis

H1: There is a significant relationship between theadvertisement through social media andits impact on the purchasedecisionsof the customers.

Table 10

One-Way ANOVA					
Advertisement through social media					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	93.713	4	23.428	19.177	.000
Within Groups	367.725	301	1.222		
Total	461.438	305			

H2: There is a significant relationship between the Contents on the social media platform and its impact on the purchase decisionof the customers.

Table 11

One-Way ANOVA					
Brand post content					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	81.367	4	20.342	17.984	.000
Within Groups	340.453	301	1.131		
Total	421.820	305			

H3: There is a significant relationship between celebrity posts through social media and their impact on the purchase decisionsof the customers.

Table 12

One-Way ANOVA					
Celebrity's posts					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	68.464	4	17.116	14.286	.000
Within Groups	360.621	301	1.198		
Total	429.085	305			

H4: There is a significant relationship betweene-Word-of-Mouth in social media and its impact on the purchase decisionof the customers.

Table 13

I believe that WOM impacts the purchase decision of the customers at their work.					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	55.329	4	13.832	11.098	.000
Within Groups	375.142	301	1.246		
Total	430.471	305			

The hypothesis test revealed a significant relationship between advertisement, content, celebrity posts, and e-WOM on the purchase decision of the customers.

Hence, we reject all four Null Hypotheses of the study as $p < .001$ and accept all four Alternative hypotheses. Here we can say there is a positive relationship between the advertisement, content, celebrity posts, and e-WOM on the purchase decision of the customers while they are in social media.

12. Discussions

This study is very much related to the survey done by(De Vries & Leeflang, 2012); he stated that most companies and factories investin social media,which could motivate the customers who purchase personal care products through social media. Most of the respondents of this study revealed the quality of the products, Reviews, comments, ratings of the products, and recommendations of personal care products made through social networking sites affect customer purchase decisions. And the above statement is related to the study done by (Cheong & Morrison, 2008); nowadays, companies are using social network sites to encourage customers and promote products to buy and reduce the price of personal care products through social media.

13. Conclusion

We can conclude that the study reveals some other factors influencing the Customer's decision; it shows that the celebrities' messages, comments, and suggestions influence customers' decisions. SNS employs recommendation systems to providehealth information and user experiences to virtual groups that lead to confident purchase decisions of products. A recommendation of any personal care products by celebrities proved to be an effective wayof buying the product through social networks and influencing the Customer's decision. Social networking sites utilize suggestion frameworks to givevirtual networks better information and customer experiences that allow customers to purchase personal care products. A suggestion of personal care products by a family member, friends, and others proved to be a positive way of affecting customers to purchase the products through social networking sites.

Limitations and further scope:

- The Study is Conducted to ahmedbabd city only
- As respondants are lesser in comparision of population of ahmedbad City
- Variation of time period of the study may vary
- More number of people may be added as respondant fo the future study
- Number of other statistical techniques may be used for analsyis purpose of the study

References

Amin B.Z. (2013). *The impact of E-Marketing on Buying Behaviour* (1, Ed.) Ahmedabad, Gujarat, India: Biztantra Idea for tomorrow.

Afrina , Y., Kaniz , F., & Sadia, T. (2015, Apri). Effectiveness of Digital Marketing in the Challenging Age: An Empirical Study. *International Journal of Management Science and Business Administration, 1*(5), 12.

Arsalan, T., Aziz, S., Sajjad, N., Haroon, u. R., & Javed, I. (2012, May). How Online Shopping Is Affecting Consumers Buying Behaviour in Pakistan? *International Journal of Computer Science Issues, 09*(3), 11.

Atshaya, S., & Rungta, S. (2016). Digital Marketing Vs Internet Marketing: A Detailed Study. *International Journal of Novel Research in Marketing Management and Economics, 3*, 30.

Cheong, H. J., & Morrison, M. A. (2008). Consumers' reliance on product information and recommendations found in UGC. *Journal of Interactive Advertising*, 8(2), 38-49.

De Vries, L. G., & Leeflang, P. S. (2012). The popularity of brand posts on brand fan pages: an investigation of the effects of social media marketing. *Journal of Interactive Marketing*, 26(2), 83-91.

Goodarz, J. D., Samin, R., Muhammad, S. R., Firoozeh, F., Neda, N., & Samaneh, F. J. (2012, 05 22). A Conceptual Study on E-marketing and Its Operation on Firm's Promotion and Understanding Customer's Response. *International Journal of Business and Management, 7*, 124.

Krishnan, G. A., Koshy, L., & Mathew, J. (2013). Factors affecting the purchasing behaviour of customers towards male grooming products. *ZENITH International Journal of Multidisciplinary Research*, 3(7), 48-60.

Lee, M., & Seounmi, Y. (2015, Jan 07). Electronic word of mouth (eWOM) How eWOM platform influences consumer product judgment. *International Journal of Advertising*, 473-499. doi:10.2501/S0265048709200709

Nabard. (2020). Effects and Mechanisms of Tea Regulating Blood Pressure: Evidence and Promises.

Ted, S., James, R. C., Elizabeth, L., & Amy, S. (2007, Dec 1). Reconsidering Models of Influence: The Relationship between Consumer Social Networks and Word-of-Mouth Effectiveness. *Journal of Advertising Research, 47*, 387-397. doi:10.2501/S0021849907070407

W.C, M. S., Danny Wong, T. N., & Domenic, S. (2005). Factors affecting intentions to Purchase via the internet. *Emeraldinsight, 105*(9), 1225-1244.

E-customer's Perspectives towards Green Finance Initiatives in Gujarat State

Dr Rajesh P Ganatra
Assistant Professor and HOD. (Accountancy/Commerce)
Sabarmati Arts and Commerce College, Ahmedabad
Email id – drrajesh.lvu@gmail.com

Abstract

"Sustainable development is a fundamental break that's going to reshuffle the entire deck. There are companies today that are going to dominate in the future simply because they understand that" - *Francois-Henri Pinault*

Green Finance is an effective tool through which balance between the economy and the environment can be achieved. Sustainable Development means achieving harmony between the development and environmental aspects. Green Financing helps in protecting the natural resources, encourages using of renewable energy resources, and thus attempts to reduce the exploitation of the environment by the human beings. It works as an effective tool to attain sustainable development goals with the help of various initiatives such as Electronic Banking, Green Mortgage, Green Home Equity Loan, Home Office Conversion Loans, Green Car Loan, Green Credit Cards, Energy Efficient Loans, Alternative Fuel Vehicle & Fuelling Infrastructure Loans, Green Car Insurance, Green Business Insurance, Eco – Friendly Home Insurance, Green Travel Insurance, Green Life Insurance, Green Project Bonds and Green Securitized Bonds. The researcher in this research paper assesses the awareness level of the e-customers with respect to green finance initiatives and also examines the perceptions of the e- customers with respect to various aspects of green finance relative to their demographic characteristics.

Keywords – *Demographics, Green Finance, Perspectives, Sustainable Development.*

1. Introduction

Protecting Environment – Now a day's is the buzz word. Ensure that our environment is clean and green. This thought process is emphasised by all the banks, be it a private sector bank or a public sector bank or cooperative bank or foreign banks. By embracing the Go Green Initiative the banks are not only contributing towards their goal of corporate social responsibility but also passing the message of protecting the environment to their customers. The e customers are now educated more so by the banks to use the green finance products for purchase of their house, cars, office as well as for creating infrastructure. However in the current scenario the go green concept has spread its wings in the insurance segments also. The banks focus on selling the Green Car Insurance, Green Business Insurance, Eco – Friendly Home Insurance, Green Travel Insurance, and Green Life Insurance to the customers. Not only that, banks as a very socially responsible corporate citizen also insists that the investment products such as Green Project Bonds and Green Securitized Bonds forms the part of their portfolio.

2. Literature Review

S Gopal (2015) in the paper titled ***Indian Banking Sector towards a Sustainable Growth: A Paradigm Shift*** explains the importance of green banking in India and states that the e- customers must use more and more green finance products as well as make the habit embrace the green finance initiatives undertaken by their banks.

Jaggi (2016) in the paper titled ***Green Banking Initiatives by SBI and ICICI*** explains how the green finance products are responsible for increasing the revenue. He also signified that with more awareness being created among the e customers about green banking products, green insurance products and green finance products, the businesses will progress manifold.

S Chinnadorai (2017) in the paper titled ***Green Banking Practices in Indian Banks*** asserts that now a days for any country green finance initiatives have become very important. Indian Banks are required to promote the green finance products to the e-customers extensively.

Bhome (2018) in the paper titled ***A study of green banking trends in India*** opined that for achieving the goal of sustainability it is critical that the banks must take the lead and start spreading the awareness among their customers about various green banking products. Not only that but the different type of the green products must be sold very frequently to the e-customers.

K Rajgor (2019) in the paper ***A study on e-customer's awareness on Green Banking initiatives in selected public and private sector banks with special reference to Mumbai*** explained about the various aspects of the carbon disclosure projects. The perceptions of the bankers with respect to carbon disclosure projects were examined.

Pathak (2020) in the paper ***titled Environmental Sustainability through Green Banking*** stated how the proactiveness of private sector banks are responsible for spreading awareness about the green finance products among their e-customers. This scenario is now also witnessed in the public sector banks and in all the banking sector has taken the responsiblity of protecting the environment and do well for the society.

Bahl (2021) in the paper titled ***the role of green banking in sustainable growth*** states how the awareness can be spread about green banking and green finance. He uses Garrettt's ranking technique to map the perspectives of e-customers which creates awareness about green finance products relative to their demographics.

Sahoo (2022) in the paper titled ***Green Banking in India*** explored various initiatives to spread green banking in India. It was advocated that the go green concept must be adhered by Indian banks. Indian banks should use environmental criteria for funding projects.

3. Research Gap

The perceptions regarding the various initiatives such as Electronic Banking, Green Mortgage, Green Home Equity Loan, Home Office Conversion Loans, Green Car Loan, Green Credit Cards, Energy Efficient Loans, Alternative Fuel Vehicle & Fuelling Infrastructure Loans, Green Car Insurance, Green Business Insurance, Eco – Friendly Home Insurance, Green Travel Insurance, Green Life Insurance, Green Project Bonds and Green Securitized Bonds were left to be examined in case of the e-customers of the Gujarat State. Hence the effort was to address this gap by conducting the research study.

4. Research Objective

The study is conducted to know whether the perceptions of the e-customers with respect to green finance initiative awareness level as well as green finance initiative differ with their demographic characteristics or not.

5. Research Hypothesis

H1: There is significant difference in perception of e customers relating to Green Finance Initiative among people belonging to different age group / education / income / occupation

H0: There is significant difference in perception of e customers relating to Green Finance Initiative among people belonging to different age group / education / income / occupation

6. Research Methodology

Research Methodology describes the steps how the research was carried out.

1. Firstly Top 4 Banks among NSE 50 (S& P CNX Nifty) companies which have average market capitalization of 5 billion rupees or more during last six months. These banks are State Bank of India, Axis Bank, ICICI Bank Ltd. and HDFC Bank Ltd and the respondents are the e-customers.
2. Secondly the Sample Size and Sampling Method was decided. The survey of 400 e-customers was carried out by the researcher on the basis of convenience sampling method.
3. Thirdly the research tool in form of A self-administered questionnaire was devised whereby the questionnaire was sub divided into two categories'. The target questions focus on the independent variables such as perceptions of the e-customers and dependent variables such as age, education, income, and occupation of the e-customers. The scaling used in this research is the 5-point Likert scale of 1-stronglydisagree, 2-disagree, 3-slightlydisagree, 4-agree, 5-stronglyagree. The questions contained in the questionnaire were close ended questions.
4. Fourth, with respect to the time frame of the research work The study was carried out during the financial year 2023-2024.
5. With respect to the limitations of the study, the study was limited to 400 e-customers as well as NSE 50 banks.

Results

The results describe the analysis of e-customer's gender, age group, education, income and occupation details as well as green finance initiatives by NSE 50 banks in Gujarat State & its awareness among their e-customers. The hypothesis testing with respect to perceptions of e-customers and their demographic aspects is carried out with the help of one way annova analysis.

Table 1: DEMOGRAPHIC DETAILS

Sr. No.	Particulars	Details	E Customers
1	**Gender**	Male	226
		Female	174
Total			**400**
2	**Age Group**	Less than 20	43
		21-30 years	90
		31-40 years	138
		41- 50 years	96
		Above 50 years	33
Total			**400**
3	**Education**	Graduate	128
		Post Graduate	192
		Others	80
Total			**400**

4	**Annual Income**	Below Rs. 1,00,000	77
		Rs. 1,00,000 -3,00,000	111
		Rs. 3,00,001 -5,00,000	138
		More than Rs. 5,00,000	74
Total			**400**
5	**Occupation**	Govt Employees	55
		Self Employed	150
		Retired Personnel	128
		Private Employees	39
		Students	28
Total			**400**

Source - Survey

Table 2: Green Finance Initiatives by NSE 50 Banks & Its Awareness among Their E-Customers (In Percentage)

Sr. No.	Areas of Green Finance	Aware	Not Aware
1	Electronic Banking	88%	12%
2	Green Mortgage	62%	38%
3	Green Home Equity Loan	40%	60%
4	Home Office Conversion Loans	35%	65%
5	Green Car Loan	72%	28%
6	Green Credit Cards	71%	29%
7	Energy Efficient Loans	81%	19%
8	Alternative Fuel Vehicle & Fuelling Infrastructure Loans	50%	50%
9	Green Car Insurance	69%	31%
10	Green Business Insurance	70%	30%
11	Eco – Friendly Home Insurance	60%	40%
12	Green Travel Insurance	64%	36%
13	Green Life Insurance	65%	35%
14	Carbon Insurance	82%	18%
15	Green Project Bonds	58%	42%
16	Green Securitized Bonds	50%	50%

Table 3: Hypothesis Testing (One Way Anova Analysis)

No	Dependent Variable	Independent Variable	Groups	Sum of Squares	D.F.	Mean Square	F-test Statistic	Sig Value	Result
1	Green Finance Initiatives	Age Group	Between Groups	7.577	4	1.894	15.083	0.000	0.000 < 0.05, (Accept H1)
			Within Groups	49.608	395	0.126			
			Total	57.185	399				
2	Green Finance Initiatives	Education	Between Groups	2.344	3	0.781	5.643	0.001	0.001< 0.05, (Accept H1)
			Within Groups	54.841	396	0.138			
			Total	57.185	399				
3	Green Finance Initiatives	Income	Between Groups	2.257	3	0.752	5.423	0.001	0.001< 0.05, (Accept H1)
			Within Groups	54.928	396	0.139			
			Total	57.185	399				
4	Green Finance Initiatives	Occupation	Between Groups	2.137	3	0.712	4.463	0.003	0.003< 0.05, (Accept H1)
			Within Groups	55.048	396	0.121			
			Total	57.185	399				

Source – SPSS Output

8. Discussion

1. From the survey undertaken, it was inferred that male respondents form major part of the survey.. The most of the ecustomer's belong to age group of 31-40 years. The high portion of the ecustomer's are post graduates. The e-customers mainly annual income of Rs. 3-5 lakhs and the majority of ecustomer's surveyed are self-employed.
2. The respondents covered under the study exhibited high awareness level with respect to under mentioned green finance initiatives.
    i. Electronic banking
    ii. Carbon Insurance

iii. Energy efficient loans
iv. Green Credit Cards
v. Green Car Loans
vi. Green Business Insurance

3. There is significant difference in perception of e- customers relating to Green Finance Initiative among people belonging to different age group / education / income / occupation

9. Recommendations / Policy Implications

Based on the survey results it can be recommended through the study that it is the need of hour that banks must inculcate the mantra of green products in the mind of their ecustomer's. The banks can mitigate this problem by conducting more workshops and seminars for green finance initiatives. Further banks should design strong strategies to promote these green finance initiatives for the good of the society and thereby contributing to the sustainable development.

10 Conclusion

In nutshell it can be said that all the banks have one common motive. "CONTIBUTE TOWARDS THE GREENER GOOD" in the larger interest of the society. This study focuses on the perception and acceptability of Green Finance Initiatives such as Office Conversion Loans, Green Car Loan, Green Credit Cards, Energy Efficient Loans, Alternative Fuel Vehicle & Fuelling Infrastructure Loans, Green Car Insurance, Green Business Insurance, Eco – Friendly Home Insurance, Green Travel Insurance, Green Life Insurance, Green Project Bonds and Green Securitized Bonds by e- stakeholders and aims to gain a deeper understanding of the demographic factors influencing the initiatives of Green finance particularly in Gujarat State. The demographic factors such as education, income and occupation must be taken into consideration by any banker while selling the products to the e-stake holders as a part of Green Finance Initiative.

References

1. S Gopal (2015), Indian Banking Sector towards a Sustainable Growth: A Paradigm Shift. *International Journal of Academic Research in Business and Social Science.* Vol 3(1), 55–71
2. Jaggi, (2016) Green Banking: Initiatives by SBI and ICICI, *Paripex-Indian Journal of Research*, Vol. 1, No.1, pg. no. 45-51.
3. S Chinnadorai (2017). Green Banking Practices in Indian Banks, *International Journal of Management and Commerce Innovations.* Vol 2 (1), pg. no. 232-235.
4. Bhome (2018) A study of green banking trends in India, *Abhinav International Monthly Refereed Journal of Research in Management & Technology*, Vol. 1, pg. no. 111-25.
5. Rajgor (2019) A study on customer's awareness on Green Banking initiatives in selected public and private sector banks with special reference to Mumbai, Journal of Economics and Finance, 42-49.

6. Pathak (2020) Environmental Sustainability through Green Banking: A Study on Private and Public Sector Bank in India. *OIDA International Journal of Sustainable Development*, Vol 6(08), 37-48.
7. Bahl (2021) The role of green banking in sustainable growth. International Journal of Marketing, Financial Service & Management Research, 1(2).
8. Sahoo (2022) Green Banking in India, *IOSR Journal of Economics and Finance*, Volume 1, Pg.no. 28-35

A Study on Green Banking in India With Reference to Selected Banks

Dr. Divyarajsinh M. Zala
Assistant Professor
Department of Commerce
Shree G.K. & C.K. Bosamia Arts & Commerce College-Jetpur

Abstract

In the age of globalization, environmental sustainability has become a pressing issue, with the rapid loss of greenery being a key challenge. In response, businesses, including banks, are increasingly adopting eco-friendly practices to reduce their environmental impact. Green banking involves incorporating sustainable methods into banking operations through technological innovations and shifts in consumer behavior. It encourages paperless transactions, favors online banking over traditional branch banking, and supports environmentally conscious initiatives with financial backing.

This study aims to assess the development of green banking strategies by Indian banks and identify the challenges they face in their implementation. The research relies on secondary data analysis, examining recent trends in the Indian banking sector related to sustainable development. The findings emphasize the critical need to raise awareness, enforce effective green banking policies, and address adoption barriers. Enhancing green banking practices can play a vital role in both environmental protection and financial sustainability.

Keywords: *Environmental Sustainability, Financial Sustainability, Green Finance*

1. Introduction

Green Banking is an emerging concept in the financial world, where banks, as key agents of financial and developmental activities, play a vital role in promoting sustainable development. The term "green banking" refers to making banks more accountable for their environmental impact. It involves developing inclusive banking strategies to ensure sustainable economic growth while promoting environmentally responsible investments. Green banking encourages banks to prioritize lending to industries that have adopted or are transitioning to environmentally friendly practices, thus contributing to the restoration of natural ecosystems.

Green banking encompasses operational improvements, technology adoption, and changes in consumer behavior within the banking industry. It promotes eco-friendly practices in various forms, such as using online banking instead of traditional branch banking, paying bills online rather than mailing them, opening certificates of deposit (CDs) or money market accounts with online banks instead of large multi-branch banks, or supporting local banks involved in significant green initiatives.

Foreign banks have been adopting green banking practices on a large scale, while Indian banks are still in the early stages of this approach. However, many are eager to pursue it actively. A challenge faced in

green banking is how to evaluate investments that benefit the environment. For instance, investing in a factory that heavily pollutes may offer a higher financial return in the short term compared to one that invests in expensive pollution-control technologies, which would show a lower return. The dilemma banks face is determining which investment to prioritize for lending, even though it is widely understood that the environmentally sustainable option will provide better long-term benefits for both the environment and society.

Green Banking

Green Banking, essentially an ethical form of banking, integrates social and environmental considerations into its operations. Unlike traditional banks, which primarily focus on financial growth, green banks are committed to environmental protection and sustainable development. While they are managed by the same authorities as regular banks, they give more emphasis to environmental and social responsibility. Green banks ensure that all lending and investment decisions consider the ecological impact of the projects or enterprises involved. A loan will only be granted when the project adheres to environmental protection standards, aiming to promote sustainable business practices.

The concept of green banking is relatively simple: it promotes environmentally friendly practices and reduces the carbon footprint associated with banking activities. This can take many forms, such as:

1. Using online banking instead of visiting branches.
2. Paying bills online rather than mailing paper checks.
3. Opening accounts with online banks rather than large multi-branch institutions.
4. Supporting local banks that prioritize green initiatives.

Green Banking Products

- Green Loans: These are loans provided to projects or businesses that are deemed environmentally sustainable. The goal is to support initiatives that contribute positively to the environment.
- Green Mortgages: These loans offer incentives, such as lower interest rates or larger amounts, for purchasing homes that meet energy-efficiency standards or for making energy-saving upgrades to a home.
- Green Credit Cards: These cards focus on eco-friendly rewards, using biodegradable materials, or promoting paperless banking. They contribute to environmental sustainability through responsible consumption.
- Green Savings Accounts: In this type of account, banks make donations based on the customer's savings, supporting environmental causes. The more customers save, the greater the environmental contribution made by the bank.
- Mobile and Online Banking: These modern banking methods reduce paperwork, mail, and travel to physical bank branches, all of which have a positive environmental impact by minimizing resource use and carbon emissions.

By adopting these practices, green banking helps reduce environmental harm while encouraging consumers and businesses to adopt sustainable habits.

2. Review of literature

Concept and Evolution of Green Banking

Green Banking refers to the integration of environmentally sustainable practices into banking operations, such as minimizing the ecological impact of internal processes, physical infrastructure, and IT systems. The Reserve Bank of India (RBI) defines green banking as a method that focuses on reducing the environmental footprint of banking institutions. In an effort to promote sustainability, the RBI introduced the 'Green Coin Ratings,' which evaluate banks based on their carbon emissions, material recycling, and financial support for green initiatives.

Jeucken (2001) categorized sustainable banking into four stages: defensive, preventive, offensive, and sustainable banking, highlighting the regional and institutional differences in the adoption of these practices. Chowdari Prasad (2002) discussed the impact of economic reforms on Indian banking and provided strategies to address the emerging challenges, while Hopwood (2005) emphasized the need to transform banking models for achieving sustainable development.

Green Banking and Profitability

A study by McKinsey & Co. (2007) found that sustainability aligns with profitability, noting that green banking strategies enhance both financial and environmental outcomes. Douglas (2008) observed several key trends:

1. Increased discussion of climate-related business opportunities in annual reports by banks.
2. Many banks disclose their greenhouse gas emissions, showing their commitment to transparency.
3. Demand for climate-friendly financial products is pushing banks into new markets.
4. Investment banks play a significant role in emissions trading and risk management, supporting the transition to sustainable practices.

Green Banking and Customer Satisfaction

Sudip Kar Purkayastha (2010) highlighted that green banking improves customer satisfaction, particularly in a competitive environment where differentiation is key. Mohmed Aminul Islam (2010) noted that the digitalization of the banking industry, along with the rise of networking and online banking, plays a crucial role in supporting green banking initiatives. Ela Sen (2010) pointed out the advantages of paperless banking, which contribute to waste reduction and pollution control.

Technology and Consumer Behavior

Goyal & Joshi (2011) argued that technological advancements allow banks to serve customers remotely, thus reducing the need for branch visits and improving operational efficiency. Nigamanda Biwas (2011) viewed green banking as the intersection of operational improvements, technological innovations, and shifts in consumer behavior. These changes benefit not only the banks but also industries and the economy by enhancing operational efficiency, reducing fraud, and cutting costs.

Policy and Regulatory Aspect

Alice Mani (2011) emphasized the social responsibility of banks in reducing carbon emissions, suggesting that Indian banks should actively implement green lending practices to support environmental sustainability. T. Rajesh & A.S. Dileep (2014) described green banking as an umbrella term that

encompasses sustainable banking practices across economic, environmental, and social dimensions. They stressed the importance of environmental risk assessments in project financing, recommended incentives for responsible banking practices, and suggested penalties for polluting activities.
Overall, the development of green banking shows how financial institutions can contribute to environmental protection and social responsibility while also enhancing their profitability and customer satisfaction. As the sector evolves, regulatory frameworks and technological innovations will continue to shape the future of green banking.

3. Objectives of the study

The primary objectives of this study are:

a) To understand how the green banking strategies are developed by Indian banks.
b) To identify the challenges in the implementation of green banking in India.

4. Research methodology

This study is **exploratory in nature**, relying primarily on **literature review** and **secondary data**. The research proceeded in two phases:

1. **Phase 1: Literature Review**
   An updated literature review was conducted on **Green Banking** and **sustainable development** within the banking sector. This phase focused on identifying outcomes and recommending future directions for green banking practices.
2. **Phase 2: Secondary Data Collection**
   The second phase involved the collection of data regarding Indian banks, gathered from secondary published sources. These sources include reports on green banking and other relevant information published by the banks, government agencies, and available on official websites.

5. Geographical Coverage and Duration of the Study

The study specifically focuses on **Indian banks**, examining both **public and private sector banks** that have implemented green banking initiatives. The research was conducted during the **2020-2021** period.

Selection of Banks for the Study

The study evaluates the green banking practices of six major Indian banks, selected based on their **market share**, **digital adoption**, and **commitment to sustainability**. These banks are:

- **State Bank of India (SBI):** India's largest public sector bank with extensive green banking initiatives.

- **Punjab National Bank (PNB):** A prominent public sector bank known for its emphasis on sustainability in banking operations.
- **Bank of Baroda (BOB):** Recognized for incorporating environmental and social factors into its financing decisions.
- **ICICI Bank:** A major private sector bank with a strong focus on digital and paperless banking.
- **HDFC Bank:** Leading in green banking efforts, including significant investments in renewable energy projects.
- **Axis Bank:** Focuses on financing green projects and promoting paperless transactions.

These banks were chosen for their active involvement in green banking practices and their ability to influence the broader banking sector in India.

Green Banking Initiatives by Various Indian Banks

1. State Bank of India (SBI):

SBI has taken significant steps to promote green banking, becoming the first bank in India to venture into the generation of green power by installing windmills for captive use. Additionally, as part of its green initiative, SBI issues its annual report in electronic form to shareholders who have provided their email addresses. The bank encourages shareholders to participate in its green initiative by opting for electronic communication, thus reducing paper usage.

2. Punjab National Bank (PNB):

PNB has implemented several measures to reduce emissions and energy consumption. The bank has established **12 Farmers Training Centres (FTC)**, where they provide free training on agriculture, allied activities, and skills like computers, tailoring, and entrepreneurship. Since the inception of these centres, over **16.2 million** individuals have been trained. Additionally, FTCs are equipped with mobile vans that offer soil testing services and LED displays for showing informative videos to farmers, thereby contributing to sustainable agricultural practices.

3. Bank of Baroda (BOB):

Bank of Baroda promotes green banking by prioritizing **environmentally friendly projects**, such as windmills, biomass, and solar power ventures that help generate carbon credits. The bank has also made significant operational improvements, including **desktop virtualization, backup consolidation**, and **server virtualization**, which enhance the efficiency of data centers. Furthermore, BOB supports pollution control and environmental conservation measures as part of its broader green initiative.

4. ICICI Bank Ltd:

ICICI Bank has adopted the **'Go Green' initiative**, which includes offering green products and services. The bank integrates **environmental and social risk assessments** into its credit appraisal

process through its **Social and Environmental Management Framework**. This involves evaluating the environmental impact of proposed projects and ensuring they meet national environmental guidelines. Additionally, large projects undergo due diligence by an independent engineer, ensuring compliance with sustainability standards.

5. HDFC Bank Ltd:

HDFC Bank promotes environmental responsibility by encouraging its employees to minimize wasteful use of natural resources and reduce greenhouse gas emissions. The bank also provides its shareholders with the option to download **annual financial statements** from the bank's website, thereby minimizing paper usage. HDFC Bank's efforts align with its commitment to environmental sustainability through reducing operational waste and promoting green practices internally.

6. Axis Bank Ltd:

Axis Bank's **Corporate Social Responsibility (CSR)** strategy focuses on meaningful and measurable contributions to the welfare of disadvantaged and excluded communities. Their initiatives promote **environmental sustainability** and **financial inclusion**. The bank works on creating opportunities for improving livelihoods, quality education, skills development, financial literacy, and health and hygiene awareness. Axis Bank also supports health, sanitation, and environmental sustainability initiatives through direct implementation or partnerships with organizations like the **Axis Bank Foundation (ABF)**.

6. Challenges Faced by Banks in Implementing Green Banking Strategies

1. **Confronting Challenges to Going Green:**

   Green banks often face more obstacles than traditional for-profit banks. While they support environmental causes, they are expected to navigate additional challenges, such as overcoming higher operational costs and market limitations due to their specialized nature.

2. **Diversification Matters:**

   Green banks limit their client pool by focusing on businesses that meet environmental sustainability criteria. This narrower focus can lead to a smaller customer base and reduced revenue. Moreover, by concentrating on specific industries, these banks may become vulnerable to shifts in the economic landscape that affect those industries.

3. **Banks Are Startups:**

   Many green banks are relatively new and still in their startup phase. Typically, it takes 3 to 4 years for a standard bank to start turning a profit. The challenge for new green banks is that they are

trying to establish themselves during difficult times, such as economic recessions, which complicates their ability to grow financially.

4. **Specialized Nature of Green Banks:**

While green banks focus on supporting environmentally conscious businesses, the profitability of such industries is often uncertain. Saving the environment does not always equate to making a profit. Therefore, green banks must strike a balance between environmental goals and financial sustainability.

5. **Higher Operating Costs and Fees:**

Green banks often require specialized knowledge and expertise to handle their specific clientele, which drives up operating costs. Employees, especially loan officers, need training in managing green projects and clients. Additionally, offering lower interest rates or discounts to encourage green practices could further impact profit margins.

6. **Reputation Risk:**

With growing awareness about environmental issues, banks face increased risk to their reputations if involved in projects that harm the environment. There are few instances where implementing environmental management systems has led to cost savings or improved the value of bonds, making it harder for banks to justify green initiatives from a financial perspective.

7. **Lack of Proper Regulations:**

In India, environmental regulations for green banking are not yet fully framed or enforced. This lack of regulatory clarity leads to compliance risks for banks involved in green projects. Sudden changes in policies can expose banks to legal risks and further complicate the process of green banking.

8. **Lack of Environmental Audits:**

Banks may not conduct environmental audits to assess the sustainability of their projects. Environmental audits are necessary to determine the environmental impact, compliance with regulations, and potential risks. Without these audits, banks may face challenges in identifying and mitigating environmental risks.

9. **Less Focus on Environmental Risk Management Post-Transaction:**

After loans are granted, green banks may neglect ongoing management of environmental risks. This lack of focus can lead to missed opportunities for continued sustainability efforts or addressing issues in the projects they’ve financed.

10. **Non-Automation of Business Processes:**

    Many banks have yet to fully automate their processes. Automation could help reduce the environmental impact by minimizing paperwork and improving operational efficiency. Adopting automation in energy management systems, such as using energy-efficient lighting and monitoring energy use, could significantly reduce energy consumption.

11. **Lack of Clear Regulations:**

    Clear and structured regulations are necessary to help banks integrate sustainability into their existing management systems. Without clear guidelines, banks may face challenges in modifying their operations to account for sustainability factors.

7. Limitations, Policy Implications, and Future Scope of the Study

- **Limitations:**

  The study primarily relies on secondary data and focuses on a select group of Indian banks, which may not fully represent the entire banking sector in India. The absence of primary data limits the study's ability to delve deeper into real-time implementation challenges. Additionally, the evolving regulatory landscape may affect the findings and insights presented in the study.

- **Policy Implications:**

  Policymakers must strengthen regulatory frameworks to support green banking, offer incentives to encourage banks to adopt sustainable practices, and ensure environmental risk assessments are integrated into lending policies. Clearer regulations and enforcement mechanisms would assist in addressing the challenges faced by banks in implementing green banking initiatives.

- **Future Scope:**

  Future research could benefit from primary data collection to provide more detailed insights into the real-time challenges and success stories of green banking initiatives in India. Comparative studies with global banking practices would offer valuable insights, as would examining the role of **fintech** in sustainable banking. Additionally, further research on the long-term impact of green banking on financial performance and environmental sustainability will contribute to enhancing its adoption.

8. Suggestions for Effective Implementation of Green Banking in India

1. **Increase Awareness:**

   Banks should raise awareness about green banking by promoting it on their websites and social media platforms.

2. **Promote Digital Banking:**

   Encourage the adoption of digital banking services to reduce paper consumption and energy use.

3. **Use Media for Public Awareness:**

   Banks can use media campaigns to increase customer awareness about the importance of green banking and environmental sustainability.

4. **Reduce Carbon Footprint:**

   Banks should actively work on reducing their carbon footprint by saving energy, using paperless banking systems, and minimizing waste.

5. **Provide Environmental-Friendly Rewards:**

   Banks should offer incentives to customers who engage in environmentally-friendly practices, such as using digital services instead of paper-based ones.

6. **Finance Environmentally-Friendly Projects:**

   Encourage financing of green projects, including renewable energy initiatives, sustainable infrastructure, and eco-friendly technologies.

7. **Corporate Social Responsibility (CSR) Initiatives:**

   Banks should engage in CSR activities that support environmental sustainability, financial literacy, and community development.

8. **Establish Clear Guidelines:**

   Clear guidelines should be established to help banks incorporate sustainability into their management structures and operational procedures.

9. Conclusion

Green banking has the potential to significantly enhance environmental protection while promoting economic growth. While Indian banks have made progress, they still lag behind their counterparts in developed nations in terms of adopting green banking practices. For Indian banks to remain competitive in the global market, they must recognize their environmental and social responsibilities. Green banking presents both opportunities and challenges for Indian banks, but with the right strategies, it can be a sustainable business model that benefits both the environment and the economy. Indian banks must adopt green banking practices without delay to align themselves with global sustainability goals.

References

- Axis Bank. (2021). Annual report 2020-21.
- Bank of Baroda. (2021). Annual report 2020-21.
- Bihari, S. C. (2011). Green banking—Towards socially responsible banking in India. International Journal of Business Insights & Transformation (IJBIT), 4(1), 82-87.
- Biswas, N. (2011). Sustainable green banking approach: The need of the hour. Business Spectrum, 1(1), 32-38.
- Centre for Environment Education. (2014). Green banking initiatives in India. [Publisher Unknown].
- Cordeiro, J. J., & Sarkis, J. (1997). Environmental proactivism and firm performance: Evidence from security analyst earnings forecasts. Business Strategy and the Environment, 6(2), 104–114.
- Dash, R. N. (2008). Sustainable 'green' banking: The story of Triodos Bank. CAB Calling, 32(1), 26-29.
- Dharwal, M., & Agarwal, A. (2013). Green banking: An innovative initiative for sustainable development. International Journal of Research in Commerce & Management, 4(6), 45-52.
- HDFC Bank. (2021). Annual report 2020-21.
- ICICI Bank. (2021). Annual report 2020-21.
- Mani, A. (2011). Green banking through green lending. Journal of Finance & Banking Studies, 3(2), 112-118.
- Nath, V., Nayak, N., & Goel, A. (2014). Green banking practices: A review. International Journal of Research in Business Management (IMPACT: IJRBM), 2(3), 45-52.
- Punjab National Bank. (2021). Annual report 2020-21.
- Pravakar, S., & Nayak, B. (2008). Green banking in India (Discussion Paper No. 125). Institute of Economic Growth, University of Delhi.
- Shah, A. (2010). Indian banking 2020 – Making the decade's promise come true. Report of BCG, FICCI, and Indian Banks' Association.
- State Bank of India. (2021). Annual report 2020-21.

Export Quality Standards Compliance of Small-Scale Farmers – The Case of MAC Exports Company

W.A.D.W Fonseka
Graduate,
Department of International Business, Faculty of Management and Finance, University of Colombo, Sri Lanka (Author)

A.J. Hewage
Graduate,
Department of International Business, Faculty of Management and Finance, University of Colombo, Sri Lanka (Author)

Y.G.I.H. Wijekoon
Graduate,
Department of International Business, Faculty of Management and Finance, University of Colombo, Sri Lanka (Author)

Sandun Weerasekera
Senior Lecturer,
Department of International Business, Faculty of Management and Finance, University of Colombo, Sri Lanka (Author and corresponding author)

Abstract

The current study aims to identify the challenges faced by small-scale farmers of MAC exports in meeting export quality standards set by international markets and provide recommendations to solve the current challenges faced by MAC exports.

Through a comprehensive analysis of data collected from small-scale farmers, field officers and Managers of Mac exports, the research uncovers key findings related to the compliance levels, barriers, and strategies employed by farmers to adhere to quality standards. The study also highlights the role of MAC Exports Company in supporting farmers in meeting these standards and explores the impact of compliance on market access and profitability.

The current research study uses qualitative interviews and thematic analysis to gain a detailed understanding of the challenges involved in meeting export quality standards. The findings of this

research underscore the importance of strengthening supplier relationships, providing detailed guidelines, conducting regular audits, and enhancing market competitiveness to ensure consistent quality and meet export standards.

The findings of this research contribute valuable insights to MAC exports, small scale farmers, academic community, policymakers, and industry practitioners seeking to enhance the competitiveness of small-scale farmers in global markets.

Keywords: *Small-scale farmers, Quality, Export standards compliance*

1. Introduction

Supply chain is an emerging concept since the 1980's (Tien et al., 2019), as a process that coordinates all of the parties who are directly or indirectly involved to fulfill a customer order (Chopra & Meindl, 2016). All parties in a supply chain - raw material suppliers, manufacturers, wholesalers and retailers make a significant contribution to provide a company's offerings in a way that maximizes the satisfaction of customers (Uluskan et al., 2016). Even though the contributions of all parties are essential, raw material suppliers are the ones who laid the foundation for the entire process (Wilhelm et al., 2015). Raw materials make a considerable impact on the quality level of the final product. Therefore, it is necessary for the company to actively seek out suppliers who are deeply committed to the quality of their raw materials (Foerstl et al., 2014).

Agricultural exports from developing countries to developed countries have shown significant growth during the past few years (Lambert et al., 2020). Even though there is an increment in demand it is quite challenging to increase the supply to counterbalance demand and supply. There are many reasons behind this issue such as seasonality of fresh supplies, lack of reliable and affordable suppliers, technological obsolescence, and issues related to inbound and outbound logistics are some of them (Jain & Benyoucef, 2008). Scholars have argued that quality standards act as an indirect trade barrier (Maertens & Swinnen, 2006), imposed by developed countries to restrict imports and to protect infant industries (Jongwanich, 2009).

Quality standards - GLOBALGAP, Hazard Analysis Critical Control Point, United States Department of Agriculture Organic Standards, ISO 14001, ISO 22000, Brand Reputation through Compliance Global Standard, European Union Organic Certification, Food safety system certification scheme 22000, Good Management Practices, Social Accountability 8000, and Occupational Health and Safety Assessment Series 18001 makes exporters to rethink about the quality of their products to compete and ensure survival in foreign markets (Awaysheh & Klassen, 2010).

MAC, a subsidiary of the DA conglomerate, is a Sri Lankan company registered under Sri Lankan Export Development Board as an exporter of processed fruits, vegetables, and spices to the Australian market since 2022. The company has gained a significant popularity among Australian customers since its

inception due to the fact that the products are coming under the brand name of a well-established and reputed multinational located in Sri Lanka.

Supply chain process of the MAC subsidiary of DA conglomerate is multi-tiered (Mena et al., 2013), where it can divide the parties involved in this process to different tiers as raw material suppliers, manufacturers, exporting companies, shipping companies and distributors (Dong et al., 2005; Wilhelm et al., 2016) First tier customers are agents and distributors in Australia who deliver the final product to customers. Second tier customers are the individuals who purchase the products. Processing company - MAC subsidiary engaged in the process of converting low value inputs to high value outputs through value addition and handover it to DA conglomerate for distribution (Gong et al., 2021; Taylor, 2006) First tier suppliers are the field officers who inspect the quality of raw fruits and vegetables and forward it to manufacturing plants after sorting out poor quality and high-quality materials (Olhager & Selldin, 2004) Second tier suppliers consist of the small holder farmers - raw material suppliers who act as the main driving force of the supply chain who provides resources for processing (Kusi-Sarpong et al., 2023; Wisner & Tan, 2000). In our study we mainly focused on the upstream supply chain - raw material suppliers to the processing companies. The processing company sources agricultural supplies from external smallholder farmers to enhance livelihoods of rural communities (Dias, 2021).

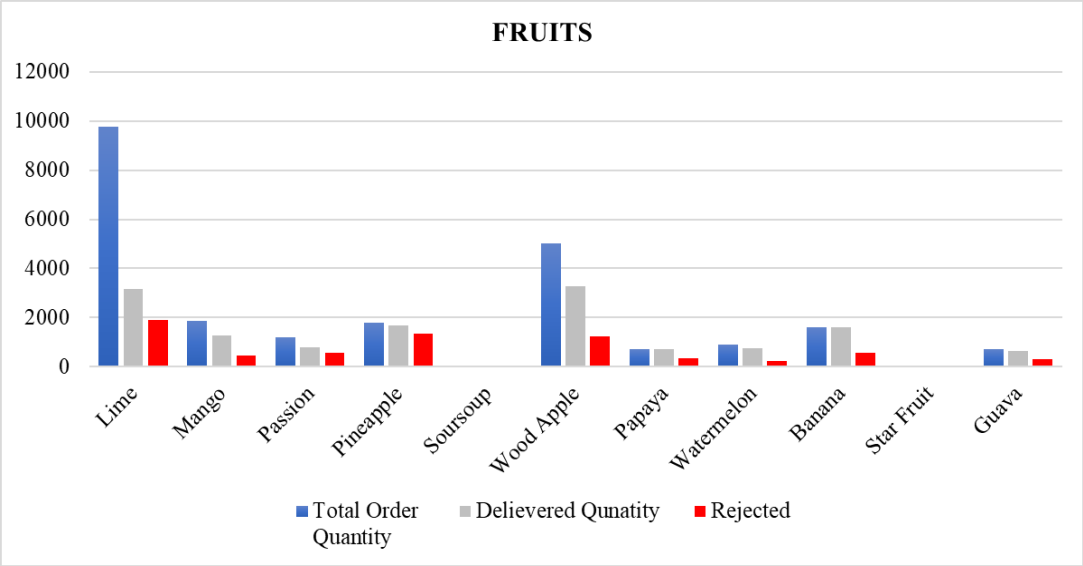
1.2 Problem Statement

Inability of Agri food small scale suppliers of MAC exporters to provide agricultural supplies that complies with the export quality standards which is the main reason for the supply demand imbalance of the company. Which strategies could be utilized by MAC exporters to increase the quality of their small-scale raw material suppliers?

The evidence given below shows that there is a significant quality issue in raw materials sourced by smallholder farmers when meeting export quality standards. Rejections as a percentage of delivered quantity is shown in the last column and the highlighted columns show the highest rejection percentages out of all fruits, vegetables and spices are shown in annexures. The detailed version for the reasons for rejections are also attached under annexures. The following bar charts graphically shows the number of raw materials ordered by the company, supplied by farmers and the amount rejected out of the quantity supplied of the recent order of the company while the graphical representations related to the 2022 March order are included under annexures.

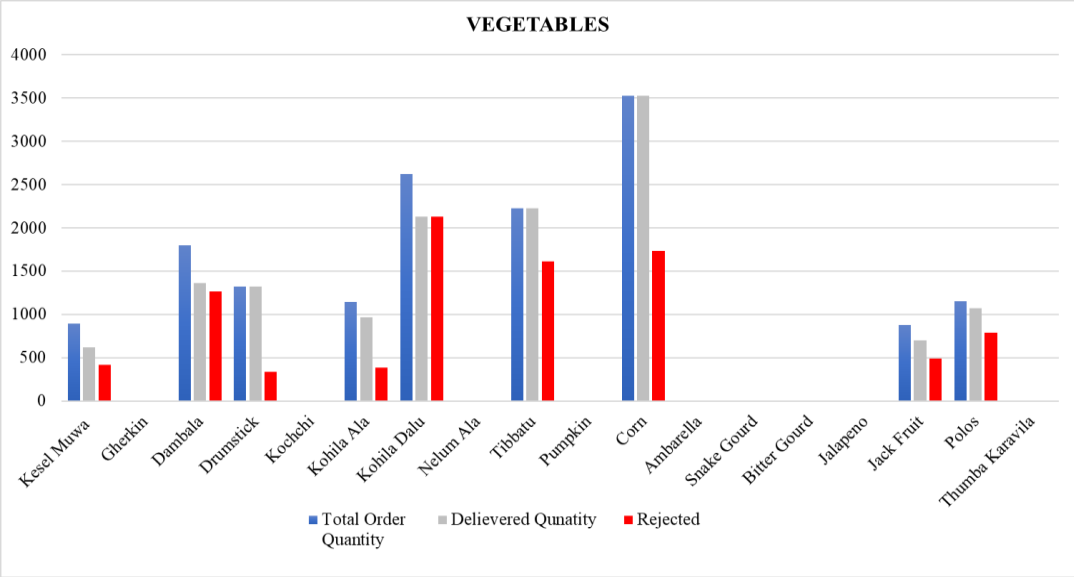
Evidence 01 - Fruits rejected in 2023, August due to quality issues

Figure 1: *Rejected Fruits (2023)*



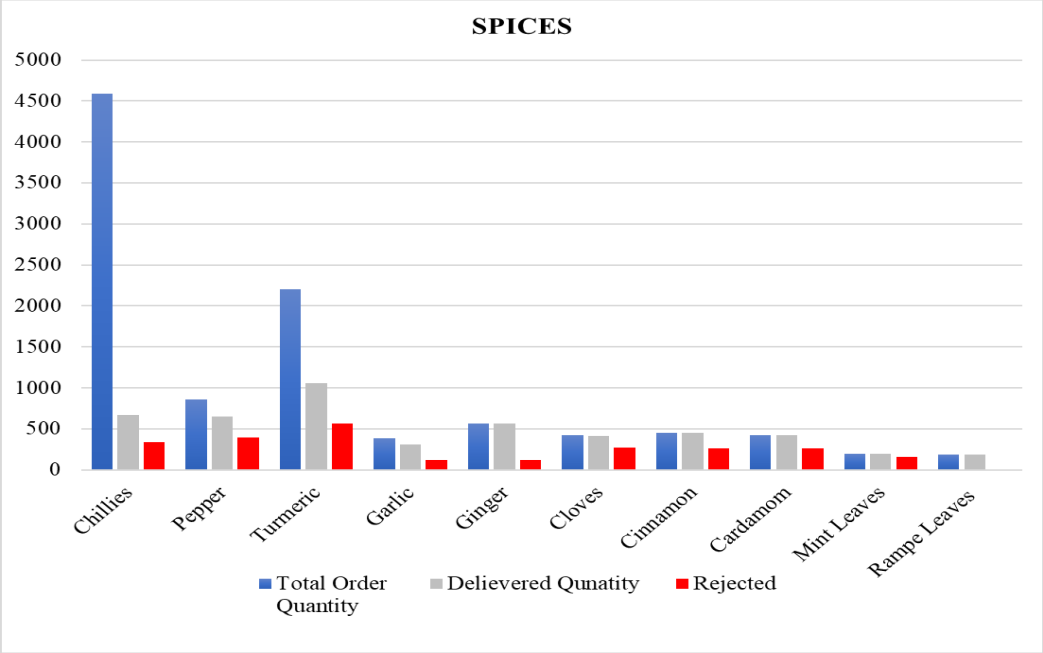
Evidence 02 - Vegetables rejected in 2023, August due to quality issues

Figure 2: *Rejected Vegetables (2023)*



Evidence 03 - Spices rejected in 2023, August due to quality issues

Figure 3: *Rejected Spices (2023)*



1.3 Research Questions

1. Why raw material suppliers of MAC exporters cannot meet the export quality standards?

2. What are the solutions that can be adopted by MAC exporters to improve the export quality standards of raw material suppliers?

1.4 Research Objectives

1. To identify the reasons for MAC exporter's raw material suppliers' inability to meet export quality standards.

2. To identify solutions that can be adopted by MAC exporters to improve the export quality standards of raw material suppliers.

2. Literature Review

2.1 Quality

A product that is free from deficiencies and that can satisfy the stated needs is defined as quality (Kuei & Madu, 2001). Intrinsic quality selection of agri food exporters enables them to compete successfully in existing markets while giving them the capacity to enter untapped markets to develop both

quantitative and qualitative aspects (Tian et al., 2016). Achieving quality performance is a collective effort, where all parties involved in the supply chain process are responsible for the overall quality performance of the supply chain.

2.2 Shared Information

According to Simatupang and Sridharan (2005), "Information sharing refers to the act of capturing and disseminating timely and relevant information for decision makers to plan and control supply chain operations" (p. 46). Effective information sharing enhances the performance of supply chains (Zhou & Benton, 2007). Quality of information has a very high impact on the quality of food (Dania et al., 2018).

2.3 Coordination

Coordination aligns the actions of two or more groups to achieve shared goals and objectives (Singh, 2011). Coordination between supply chain partners is achieved through shared information (Arshinder et al., 2008). Effective coordination enhances clear role allocations which minimizes conflicts and potential ambiguity (Dania et al., 2018). Coordination among supply chain partners is essential for improving performance and product quality, while a lack of coordination negatively impacts both (Arshinder et al., 2008; Costantino et al., 2014; Lehmann et al., 2012).

2.4 **Knowledge**

Knowledge is a combination of experiences, shared information and specialized and expert guidance that creates a framework for integration and evaluation of new experiences and information (Mohajan, 2016). Focusing on the Agri food industry, inefficiencies occur in supply chains leading to quality issues, increased waste, lower yields due to lack of knowledge of farmers. Small Agri food suppliers lack vital knowledge on utilizing the latest technologies, techniques and best practices on quality seed selection and postharvest management (Negi & Anand, 2015). Inadequate knowledge of small-scale farmers negatively impacts the quality standards compliance of MAC exports company, and it is the reason behind relevance of knowledge to our study.

2.5 Trust

Trust is a fundamental factor for improved supply chain performance (Capaldo & Giannoccaro, 2015; Salam, 2017). Trust between supply chain partners is important in the production of quality products. Trust in between business partners is important to ensure that they fulfill their commitments accordingly (Fischer, 2013). Trust is essential for stable supply chain relationships, while distrust undermines confidence and network stability (Yang et al., 2008). Trust between supply chain partners has a strong influence on sharing information (Klein & Rai, 2009; Wu et al., 2014), while according to Dania et al. (2018) and Fischer (2013), shared information leads to generation of trust. MAC exporters lack

trustworthy relationships among supply chain partners that can be utilized to achieve the required level of quality output to cater to international demand and trust plays an important role in our study.

2.6 Transparency

Transparency, defined as access to accurate and sufficient information, enhances product traceability, improves supply chain quality, and reduces potential risks (Wognum et al., 2011; Zelbst et al., 2019). Transparency is crucial for efficient supply chain management and positively impacts quality performance (Holcomb et al., 2011). Transparency is the lack of information asymmetries, which provides easy access to information by all supply chain partners of which shared information has a positive impact on supply chain transparency (Bastian & Zentes, 2013). Small holder farmers of MAC exports company have limitations on the accessibility to relevant and accurate information to boost their quality standards compliance. We are trying to embed the importance of transparency since it is relevant when solving the quality issue of MAC exporters.

2.7 Stability

Stable supply chain relationships, built on trust between partners, deliver long-term benefits, while a lack of trust undermines confidence, performance, and relationship stability. (Yang et al., 2008). The organizations improve their performance by increasing the supply chain stability while reducing uncertainties (Ip et al., 2011). Hence, there is a positive relationship between supply chain stability and performance. Relationship stability within supply chain partners motivates quality improvements. Contracts between supply chain partners reduce uncertainties, support quality improvement, and ensure stable terms for long-term relationships, enabling smooth and uninterrupted raw material supply (Mena et al., 2013; Zhou et al., 2008). Stability is a key factor which determines the success of long-term relationships and continuing efforts to ensure the quality standards compliance and it brings our attention to focus on stability in the case of MAC exporters.

2.8 Cost

Cost of Quality is a combination of quality conformance and quality non-conformance costs. Cost of quality conformance is the cost borne to reduce poor quality and cost of non-conformance of quality is the cost incurred due to poor quality of products and service failure (Schiffauerova & Thomson, 2006). Adhering to quality controlling techniques generates new costs required to make investments in modified or new equipment and acquisitions of new skills and other capabilities (Farina & Reardon, 2000). Adoption of new quality controlling mechanisms would be beneficial if the outcome of these mechanisms is greater than the costs incurred. It is evident that in certain studies poor small scale Agri food suppliers may have to deal with high costs of quality in terms of investment requirements and quality standards compliance where the costs exceed the benefits generated from the quality controlling mechanisms (Farina & Reardon, 2000; Maertens & Swinnen, 2006). One of the major bottlenecks that hinders the capacity of small-scale growers to achieve the required quality performance if cost of quality. Minimizing

the cost of quality is essential in our study since it involves small-scale farmers who do not have financial stability to a greater extent.

2.9 Resource Dependency Theory

Resource Dependency Theory introduced by Pfeffer and Salancik is one of the most influential organizational theories. Resource Dependency Theory acknowledges the role of external forces influencing the actions and decisions of organizations (Hillman et al., 2009). Resource Dependency Theory is based on the understanding that organizations are interconnected which organizations depend on other organizations for crucial resources, creating a system of mutual dependence (Drees & Heugens, 2013). One of the major tenets of Resource Dependency Theory is scarcity of resources where companies have to seek external suppliers to fulfill resource requirements (Hessels & Terjesen, 2008). When dealing with external parties it is necessary to build trustworthy relationships due to the fact the company has to depend on external parties which increases the risk of vulnerabilities (Becerra et al., 2008). Thereby, Resource Dependency Theory is a framework that recognizes the interdependence of organizations and how this interdependence can be harnessed to build relationships based on trust and collaboration without causing fear or intimidation among the parties involved (Dania et al., 2018). Supply chain partners of MAC exports company are highly interdependent on resources – raw fruits and vegetables that are converted into processed food exports. Interdependency to source raw materials is a crucial aspect according to our study. Due to its relevance, we apply the Resource Dependency Theory in order to discover feasible solution for quality standards compliance issue of MAC exports company.

3. Research Methodology

This study follows a qualitative approach to identify the root causes for the incapability of small-scale farmers to provide Agri products that meet the export quality standards (Jaffee et al., 2011). Qualitative approach – case study provides valuable insights to our study which requires a deep knowledge about the case of MAC exports company where export quality standards act as a barrier to the quality performance of smallholder farmers (Maertens & Swinnen, 2006). Similar studies also identified that one of the indirect trade barriers imposed on developing countries by developed countries is the export quality standards (Handschuch et al., 2013; Ouma, 2010).

The sample population of this study consisted of three key respondent groups: small-scale farmers, field officers, and MAC Exporters. Convenience and purposive sampling methods were utilized. Convenience sampling was employed to collect data from small-scale farmers due to resource and time limitations, as they are dispersed across the country. Purposive sampling was used to collect data from field officers and export managers, as their knowledge of the problem was essential for answering the research questions. This study covered several geographical locations in the Western Province, including Colombo, Mathugama, Padukka, Horana, Aluthgama, and Meegoda.

4. Data Analysis and Findings

Through Semi-structured interviews, we navigated through the complexities of the MAC exports company, capturing information and challenges faced by stakeholders at various levels of the supply chain. The interviews were transcribed and analyzed to extract key themes and patterns that underpin the research objectives.

4.1 Profile of the Participants

Each interview lasted around 20 to 30 minutes, and most interviews were conducted in the Sinhala language. Below is a table showing the profiles of the participants, including additional details about their backgrounds and roles. Refer to Table 1 for more information.

Table 1

Profile of the Participants

Name	Designation	Code
Ravindra	Manager (MAC)	I1
Janaki	Assistant Manager (MAC)	I2
Jayantha	Field Officer	I3
Pushpa	Field Officer	I4
Chandini	Field Officer	I5
Nimal	Farmer	I6
Ranji	Farmer	I7
Priyangani	Farmer	I8
Anil	Farmer	I9
Sunil	Farmer	I10
Namal	Farmer	I11

4. Findings

4.1 Quality Management and Compliance

The main reason for the supply demand imbalance of MAC exporters arises due to the limited availability of quality inputs. A quality management system (QMS) refers to an extensive collection of business practices and protocols intended to fulfill customer needs and produce products focused on quality (Robinson & Malhotra, 2005). Hence it is important to supply a product free from deficiencies to the customers. Low quality products dissatisfy the consumers. In quality management quality standards and quality certifications plays a major role. Compliance with the export quality standards guarantees that the products meet the required quality level and are suitable for their intended use.

4.1.1 Quality Standardization

Standards are guidelines for categorization and measurement set through consistent use or regulation. These are parameters used to categorize similar products into groups and describe them using

terms that are commonly understood by everyone in the market (Giovannucci & Reardon, 2000). Certification is a procedure where the quality level of a product, which cannot be directly observed by the consumer, is communicated through a labeling system typically provided by a third-party organization that is independent (Auriol & Schilizzi, 2015). Based on all the interviews conducted it was found that having quality certifications and compliance with export standards are important when exporting the products to foreign markets due to the fact that it gives an assurance that the products are safe for consumption. But most of the farmers of MAC exports do not possess quality certificates and do not comply with export standards due to different reasons, which is a main barrier for the hindrance of the performance in the foreign market.

"As well we do not have quality certification for our products which is a main factor that is considered by the company when purchasing the harvest as it is a main requirement in exporting their products". (I7)

MAC exporters are more concerned about the quality of the products, which they mostly prefer in purchasing supplies from farmers that have quality certifications.

"We are planning to expand the number of farmers that we get raw materials from and move to farmers that have quality certifications as this issue mainly arises due to quality. So we are planning to search for more farmers who have quality certifications". (I2)

4.1.2 Quality Characteristics

The way food is produced, and the ingredients used greatly affect the overall quality and safety of the final product. There are certain unique characteristics to food production that require special attention to ensure customers get high-quality food (Ziggers & Trienekens, 1999). Quality of products have different dimensions and quality could be determined based on different aspects. Quality characteristics differ based on the product, market and user (Sebastianelli & Tamimi, 2002). When analyzing the quality requirements, the farmers of MAC exports need to comply with certain quality characteristics to ensure that their products are up to the export standards as quality characteristics plays an important role in determining the quality of the products. To ensure the quality compliance of the products the farmers need to adhere to the quality characteristics which are unique to the particular product.

"As an example for a certain cereal type, when supplying the harvest to the company there is a particular level of moisture that has to be included in the harvest". (I6)

In most of the interviews conducted it was depicted that the farmers do not have sufficient knowledge about the appropriate quality characteristics of the produce.

"It is very complex for us to understand as different fruits and vegetables require different quality measurements. As an example, the quality measurements of the tomatoes that are used for vegetable brines are different from the tomatoes used for salads". (I8)

4.2. Financial Issues

The suppliers of MAC exports are facing difficult or challenging financial situations as they come from poor family backgrounds and do not have the required financial capabilities to meet the expected quality requirements of the export markets.

4.2.1 Cost of Certification

Obtaining quality certifications is a high cost for the suppliers. In certain studies, it is said that the cost of non-compliance of quality is relatively higher than adherence (Ziggers & Trienekens, 1999). Yet farmers of MAC exports face difficulties and challenges due to the high costs of certification. Due to the difficulty in obtaining quality certifications they face difficulties in selling their products to the company.

"We do not have quality certification for our products which is a main factor that is considered by the company when purchasing the harvest as it is a main requirement in exporting their products. These certifications are high in cost and we cannot afford them". (I7)

"Costs related to obtaining quality standards certifications and costs related to purchasing of agricultural equipment, implementing of storing facilities and green houses, quality raw materials and technology upgrades is unbearable". (I9)

Companies even have to bear additional costs in maintaining the standards even after obtaining the standard certifications. The expenses associated with complying with regulations for each type of facility include training staff to establish and manage the systems, implementing standard sanitary operating procedures, and making any necessary process adjustments (Antle, 1999). Due to the high cost of the certification process only a few firms are capable of obtaining quality certifications. This poses a challenge for poorer countries, as they may be unable to afford the high costs associated with certification (Auriol & Schilizzi, 2015). Certification can be quite costly, and in certain situations, the expenses involved can be exceptionally high, creating barriers for businesses to achieve certification and maintain competitiveness in global markets.

As the suppliers of MAC exporters cannot obtain quality certificates the company plans to obtain quality certifications for the farmers who have financial constraints.

"We are trying to get quality certifications for the suppliers who have financial constraints". (I2)

4.2.2 Financial Constraints

Following quality control methods incurs additional expenses which require investing in updated or new equipment and acquiring new skills and capabilities (Farina & Reardon, 2000). In order to ensure the quality of the products companies and suppliers need to spend money on improving their processes and ensuring that their products meet the desired quality standards. Agri-food suppliers may face significant challenges due to the high costs associated with ensuring quality, including the need for investments in equipment and compliance with quality standards (Maertens & Swinnen, 2006; Reardon

et al., 2009). This can pose a problem especially when farmers lack the financial means to meet these expenses when achieving quality requirements of companies and the export market.

"To cultivate for large orders, we need large lands. For that we need good finances. And also, to get the required raw materials such as fertilizers and the required equipment we need a lot of money". (I8)

"Using proper packaging like high-quality baskets and other necessary equipment might come with significant expenses". (I7)

Farmers working with MAC Exports face financial challenges as they lack the necessary funds to buy essential equipment, fertilizers, and high-quality seeds. Coming from financially disadvantaged backgrounds, they struggle to afford the prerequisites for cultivation.

"To cultivate for large orders, we need large lands. For that we need good finances. And also, to get the required raw materials such as fertilizers and the required equipment we need a lot of money". (I8)

"Weedicides and pesticides would cause huge costs for the small-scale farmers". (I2)

The suppliers of MAC exports encounter significant financial challenges when it comes to acquiring quality raw materials, ingredients, and equipment necessary to uphold the quality of their harvest. As a result, they struggle to meet the stringent quality standards set by both the company and the export market, creating a significant issue in performing in foreign markets.

"Costs related to obtaining quality standards certifications and costs related to purchasing of agricultural equipment, implementing of storing facilities and green houses, quality raw materials and technology upgrades is unbearable. These high costs have reduced the ability of meeting the required quality standards of the company". (I10)

"To get a good price for the harvest the fruits and the vegetables have to be supplied without getting damaged and spoiled. To supply the products by following proper packaging such as high-quality baskets and the other required equipment we may have to bear a high cost. What we do as a practice is piling the harvest in sacks and sending it to the company. This spoils and destroys the harvest". (I6)

4.3. Supplier Relationship Management

Supplier relationship management is a process of partnering up with the suppliers with the aim of benefiting mutually. Since the issue faced by MAC exporters is mainly due to quality issues arising by its suppliers it is important to maintain good relationships with their suppliers.

4.3.1 Strengthening Supplier Relationships

Supply chain relationships prioritize establishing direct, long-term connections that foster mutual planning and collaborative problem-solving. Strengthening the relationship between buyers and suppliers can lead to improved performance across the entire supply chain (Bentona & Malonib, 2005). Improved supplier relationships help in building trust which in return improves the performance of supply chains (Nyaga et al., 2009). Hence, MAC Exports emphasizes the importance of fostering and strengthening positive relationships with its suppliers to enhance the performance of its supply chain.

"We have identified that it is important to strengthen the relationships with existing suppliers via communication and performance monitoring". (I2)

The stability of relationships among supply chain partners encourages enhancements in quality. Contracts established between them minimize uncertainties, enabling a focus on quality enhancement (Mena et al., 2013). Stable terms and conditions foster long-term partnerships, ensuring an uninterrupted and smooth supply of raw materials. To mitigate uncertainties, organizations enter into more tailored contracts (Zhou et al., 2008). Stability plays a crucial role in the success of ensuring long term relationships. This highlights the importance of prioritizing stability with the suppliers of MAC exporters.

"Currently the company is in the process of gaining experience and insights into export markets. It can be utilized in future to work towards building stronger relationships with small-scale farmers. Over time, establishing long-term contracts with farmers can become feasible as it enhances the trust and understanding of each other's requirements and expectations". (I3)

"Through agreements it can provide stability and assurance to farmers in cases of price fluctuations to protect them from facing price disadvantages. It can guarantee a fair price for their harvest, which acts as a motivating factor for them to invest in improving the quality of the harvest. Moreover, it provides a framework for cooperation, and capacity-building initiatives that is mutually beneficial for the involved parties". (I4)

4.3.2 Effective Communication

Effective Communication is important to maintain strong supplier relationships. Effective communication along with positive collaboration is important in building trust between supply chain partners (Morgan & Hunt, 1994; Fischer, 2013). It is evident that the level of effective communication between the suppliers and the MAC exports company is low, which has deteriorated the level of trust between them.

"We can give a good harvest only if the company conveys us about the required export standards". (I11)

"Farmers do not have a close relationship with the company. It is the situation right now where we will be using intermediaries like our field officers as a form of contact mechanism. In that way using

field officers we are hoping to get in touch with the farmers frequently where it could be used as a problem-solving mechanism as well". (I2)

"If the company communicates to us about the fixed prices that they are paying for us through proper written agreements we could trust the company about the continuation of the transactions". (I9)

Effective communication improves quality conformance in supply chains. Effective communication with suppliers is essential to align with the quality requirements which impact the end product positively. Continuous and clear communication across the entire food chain is vital for identifying and addressing all potential issues in each stage of the process (Panghal et al., 2018). Hence MAC exports could increase the quality of the produce by developing trust between supply chain partners through effective communication mechanisms.

"We do not have an idea about the foreign market as the field officers do not effectively communicate about the requirements of the foreign market. If we had clear information about that we could understand how to supply our harvest". (I6)

4.3.3 Building Trust

The process of willing to rely on another party is building trust. Trust plays a pivotal role in enhancing the performance of supply chains (Capaldo & Giannoccaro, 2015; Salam, 2017). Trust is crucial for making sure that products are of good quality and for ensuring that business deals are successful (Fischer, 2013). Based on the interviews conducted it is evident that the farmers do not rely on the company. This has become one of the reasons for the deterioration of the supply chain performance.

"We do not have contracts with the company. Hence, we do not get standard prices for our harvest. This affects our standard of living. This mainly affects our trustworthiness with the company". (I6)

Lack of trust among supply chain partners can lead to a breakdown in confidence between them, which can weaken the stability of their relationships (Yang et al., 2008). Trust is vital for sharing information effectively among supply chain partners (Klein & Rai, 2009; Wu et al., 2014). Since the suppliers of MAC exports do not rely on the company, they are reluctant to provide accurate information to the company. Therefore, it is hard for the company to gather accurate data about the cultivation process of the produce which might affect the quality of the harvest.

Q - *"So will you be able to provide accurate information to the field officers"?*

A - *We provide them information based on our day-to-day practice and as we do not have contracts with the company, we are not sure about the actions of the company. Hence, we are afraid that the company would purchase from other suppliers".* (I11)

4.3.4 Transparency

Access to accurate, timely information in sufficient amounts can be known as transparency. Efficient information sharing within supply chains increases transparency allowing easy access to all

supply chain partners on a timely basis. Thus, transparency helps in increasing supply chain performance (Bastian & Zentes, 2013). The transparency of the MAC exports supply chain is less since the amount of information transferred is not done on a timely basis.

"Currently the monitoring is done through field officers. But we do not have any real time monitoring systems like you mentioned". (I2)

Q - *"Do you have access to any technology driven real time access to reliable and accurate information that is useful to enhance transparency"*?

A - *"We lack the literacy required to utilize technology effectively, and our area lacks the necessary infrastructure, including signal and other essential facilities".* (I9)

Also, the farmers of the company are reluctant to share accurate information since they do not have stable relationships with the company.

Q - *"So will you be able to provide accurate information to the field officers"?*
A - *"We provide them information based on our day-to-day practice and as we do not have contracts with the company, we are not sure about the actions of the company. Hence, we are afraid that the company would purchase from other suppliers"*. (I11)

4.4 Knowledge and Information Generation

In the context of agricultural exports, knowledge is the creation, dissemination, and application of experiences and insights which are useful to increase the quality and competitiveness of agricultural products in the global market (Pietrzyck et al., 2021). Small-holder farmers often need support to adopt best practices in cultivation, harvesting, and post-harvest handling to protect the quality of the harvest. According to Simatupang and Sridharan (2005), information sharing refers to the act of capturing and disseminating timely and relevant information for decision makers to plan and control supply chain operations. Shared information is a crucial factor for the performance enhancement of supply chain, and it enables the coordination between supply chain partners which in turn is useful in building a competitive advantage by differentiating themselves out of international competitors who are serving the same target market.

4.4.1 Monitoring

The systematic and ongoing process of observing, assessing, and evaluating various aspects of agricultural activities is referred to as monitoring (Casley, 2010). It includes activities such as tracking the implementation of planned activities, resource utilization, and identifying bottlenecks. Crop monitoring and quality control are two key aspects that come under monitoring. Field officers regularly inspect the status of crops - health, growth, and issues to optimize farming practices to obtain a quality yield (Jagdish, 2021; Jagrarian, 2016). Effective monitoring allows farmers to accurately plan crops by predicting soil conditions and it ensures the on-time delivery of raw materials at the time of requisition by the processing company (Shalimov, 2023). Monitoring plays a vital role in enhancing resource

utilization, and product quality. MAC exporters frequently face demand supply imbalance due to problems associated with monitoring.

"And also, regular monitoring of the agricultural process followed by the farmers where we frequently keep in touch with them via our field officers". (I7)

"But we do not have any real time monitoring systems like you mentioned. It is due to the lack of communication technologies and lack of knowledge" (I1)

Even though the managers mentioned that they use contact mechanisms to frequently communicate with small scale farmers it is somewhat contradictory when it comes to the thoughts shared by farmers. It is evidence that the current monitoring mechanism is not functioning as expected by the company.

"In that way using field officers we are hoping to get in touch with the farmers frequently where it could be used as a problem-solving mechanism as well". (I1)

"We do not have an idea about the foreign market as the field officers do not effectively communicate about the requirements of the foreign market". (I6)

Processing company strictly monitor the conditions of raw fruits and vegetables before purchasing it from these farmers. Field officers highlighted that they share instructions from point of cultivation to point of harvesting to preserve the quality. But still, they are struggling to source the required number of raw materials on time indicates that there are issues in monitoring.

"Farmers are frequently instructed about the permitted dosage of pesticides that plays a critical role in determining the freshness of the harvest". (I4)

"As an example for a certain cereal type, when supplying the harvest to the company there is a particular level of moisture that has to be included in the harvest. The company is always concerned about these factors when buying the harvest". (I11)

4.4.2 Technical Assistance

Technical assistance is the support and guidance required by farmers to utilize modern technologies to enhance their capabilities in different phases of agricultural production starting from cultivation to post harvest handling (Kumar & Kalita, 2017). Raw material suppliers lack vital knowledge on utilizing the latest technologies, techniques and best practices on quality seed selection and post-harvest management (Negi & Anand, 2015). The objective of technical assistance is to improve skills related to crop cultivation, soil management, pest control, irrigation, and post-harvest handling. Small scale farmers often lack formal procedures to maintain records on the quantity demanded and quantity

supplied and sourcing from small scale farmers is an indirect procedure which cannot be standardized and strictly implemented (Dong, 2022). This aims to provide guidance on record-keeping by encouraging them to keep up to date records about the status of the supplied quantity that is useful in making informed decisions in future. Quality standards make exporters rethink the quality of their products to compete and ensure survival in foreign markets (Awaysheh & Klassen, 2010). Technical assistance helps export-oriented farmers to understand market requirements, comply with regulations, and produce high-quality raw materials.

"They face challenges in accessing market information, technical guidance, and updates on export requirements. Moreover, farmers are not updated on market trends – price changes hinder the supply chain efficiency" (I5)

In the case of MAC exports company managers mentioned that the problems arise due to the lack of support or guidance given to small-scale farmers that is mainly associated with the loopholes in technical assistance.

"Okay… so providing technical assistance to farmers through field officers which provide information on how to produce quality fruits and vegetables, and also at the same time provision of knowledge on the usage of fertilizers. If we don't guide them, they will overuse fertilizers and pesticides also and weedicides. So, we continuously let them know the usage of the dosage to which extent they can use fertilizers". (I2)

There are significant issues that act as hindrances for the efficient delivery of technical assistance due to lack of telecommunication facilities and knowledge on the usage of technical devices.

"Lack of communication technologies in the sense that they do not have appropriate levels of signal, do not know how to use smartphones properly and do not have the required knowledge to use apps. Therefore, we couldn't implement a real time tracking system so far" (I1)

4.4.3 Knowledge

Knowledge is a combination of experiences, shared information and specialized and expert guidance that creates a framework for integration and evaluation of new experiences and information (Mohajan, 2016). Improved knowledge through extensive information sharing within supply chains is an important factor in enhancing quality of the production processes (Danskin et al., 2005). Lack of knowledge creates significant drawbacks such as quality issues, increased waste, and lower yields (Saghaian et al., 2022; Farsani et al., 2024). The creation of agricultural information and utilization of that knowledge in agriculture are crucial for improving the quality of exports, and enhancing the competitiveness of agricultural products in the global market (Ramzan & Li, 2023; Xiao & Abula, 2023). In the case of MAC Exports company, it is the sound understanding that small-holder farmers have about

the required quality standards to meet the export quality requirements and awareness about management of post-harvest produce, quality of seeds, use of latest technologies, techniques etc.

"We will be able to supply the harvest for the required quality and on time if we have the required knowledge". (I7)

Small-holder farmers do not have excellent education backgrounds to understand complex best agricultural practices. It is a serious issue behind the inability of MAC exporters to source quality raw materials required for the production from these farmers.

"And also, the farmers do not have a clear idea about the export standards. They are not coming from an educated background". (I8)

"Small holder farmers are not that much educated to understand complex information". (I5)

Lack of knowledge on export quality standards is another crucial factor behind quality failures experienced by the MAC exporters. These farmers require continuous guidance on practices that should be followed in order to comply with export quality standards.

"As well we do not have the required knowledge to maintain the export quality of the harvest." (I9)

If we don't guide them, they will overuse fertilizers and pesticides also and weedicides". (12)

4.4 Information

Information sharing means distributing useful information for systems, people or organizational units (Lotfi et al., 2013). Shared information improves the effective coordination between supply chain partners which can be utilized to gain a competitive advantage (Subramani, 2004; Tan et al., 2010). It can foster the relationship network through enhanced coordination to maintain long-term relationships over time (Kembro et al., 2014). Shared information often creates new knowledge, and it can lead to the formation of trustworthy relationships between supply chain partners (Mohajan, 2016; Dania et al., 2018). Effective and efficient flow of information increases the transparency in the cultivation, harvesting, and post-harvest handling process (Zhou & Benton, 2007). Disseminating relevant, accurate and complete information among small scale farmers in a timely manner is important to overcome the issue faced by MAC exporters.

"We can provide the harvest for the required quality only if the company provides us the required information on the required quality and the foreign and the local demand". (I9)

Farmers share their thoughts and experience on the shared information between the company and themselves. They highlighted that there are significant loopholes in the process of information sharing where they do not receive required information on time.

"But still there is a gap in the information provided for us. Due to the gap in the knowledge and financial difficulties it affects the quality of the harvest". (I10)

"What I think is that the information shared between us is low". (I11)

Field officers are aware that if it lacks the information sharing by solving issues these small-holder farmers face difficulties in adhering to the export quality requirements. Therefore, it is important to share real time information with farmers to minimize the non-compliances.

"Without proper guidance and support, they may struggle to produce crops that meet the expectations of international buyers". (I3)

4.5. Brand Enhancement and Market Competitiveness

Brand enhancement refers to the strategies and actions taken by a company to improve its brand reputation to differentiate the brand from competitors which can lead to enhance the brand equity (Liu et al., 2022). Market competitiveness is the ability of a company to gain a large market share and growth while earning profits and it can be influenced by product quality and brand reputation. Compliance to the export quality standards is an added advantage to enhance the customer loyalty and brand reputation which in turn enable them to capture a significant market share (Henson & Jaffee, 2007; Jámbor & Babu, 2016).

4.5.1 Export Competitiveness

Export competitiveness is the ability to compete with international players while offering quality products at competitive prices by adhering to export quality standards (Wang et al., 2022; Suroso et al., 2023). Successability of agricultural exporters in international markets depends on factors such as production costs, product quality, technological innovation, market access, and trade policies (Jha & Roe, 2021; Long, 2021). Agricultural exports from developing countries to developed countries have shown significant growth during the past few years and it made a significant impact on export competitiveness (Lambert et al., 2020). During the interview with export development managers, it was revealed that their market competitiveness is negatively affected by the unavailability of quality products to export within the given period of time.

"There are plenty of competitors in the processed food industry who export to different countries. Out of that to achieve a competitive advantage definitely we have to differentiate ourselves from those competitors". (I1)

Cost of quality plays a major role in attaining competitive advantage and in the current setting high cost of quality hinders international competitiveness.

"High costs associated with quality compliance, that is when we are going to adhere to quality standards such as investment in new equipment are required and also infrastructure facilities, other costs such as cost of standardization, cost for high quality fertilizers hinders the competitive advantage.". (I2)

In one instance they lost the order due to unavailability of quality raw materials to utilize in the process of production, which negatively affects their competitiveness in the international market while creating a huge loss for the company.

Q - "*What are the challenges encountered during the export process due to lack of quality products?"*

A - *"On the other hand in one of the instances a shipment was delayed due to non-availability of quality harvest which is utilized to produce the processed food…. that is export of vegetable and dried fruits. So, this shipment was late and the customer canceled the shipment which created a significant loss for the company".* (I1)

4.5.2 Brand Loyalty

Degree of preference and commitment of consumers towards a particular brand of agricultural exported products that resulted in repeated purchases and trust is referred to as brand loyalty (Shyu et al., 2023; Feeney et al., 2022). Brand loyalty is influenced by factors like product quality, consistency, pricing, and the brand's reputation and it can be used as a driving force to increase the market share and as a buffer against competition (Hui et al., 2023). According to Shyu et al. (2023), loyalty toward a particular agricultural product brand can be particularly significant due to the direct impact that the quality and safety of food products have on consumers' health and well-being. Brand loyalty is a consumer's consistent preference for one brand over all others, due to satisfaction with the product and comfort with the brand image.

"Having the required quality standards would increase the brand reputation of the company and with that customer loyalty also increase in the foreign market. Due to this we will be able to attract more buyers and also by expanding our customer base we can increase the revenue of the company which increases the competitive advantage in the foreign market". (I2)

One of the recent events that happened due to unavailability of quality products to cater to the international market is the discontinuation of one the major clients that negatively impacts the brand loyalty and reputation towards the band.

"So, it is the inability to maintain the quality standards resulted in discontinuing transactions by one of the major buyers of the company. It was a significant loss that impacted the immediate revenue of the company and also caused damages to the brand reputation as well". (I1)

Managers share their experience about the brand and one of the main reasons behind the customer attractiveness is the mother country of this brand which is Sri Lanka. Due to the prevailing issues their brand reputation and customer loyalty is declining which requires immediate solutions to solve the issue.

"Since this is a Sri Lankan brand foreign consumers prefer us more than other brands and also the basic requirement to cater to the export market is also the adherence to their export quality standards. So non-adherence to the quality standards negatively affects the brand reputation. If this problem is solved for sure we can increase our brand reputation". (I2)

6. Timely Order Fulfillment

Delivering products to the right customer at the right time is simply known as timely order fulfillment. It is the process of delivering processed agricultural exports to foreign buyers within the lead time (Fiankor et al., 2020). In a sector like agricultural exports, timely order fulfillment is necessary due to the nature of the product. To preserve the freshness and usability of the products, minimum shelf time is also important due to its perishable nature (Saghaian et al., 2022). Efficiency in logistics plays a crucial role in this process because orders can be delayed during the shipping process. Due to the incapability of MAC exporters to fulfil orders on time they face significant challenges and they lose major clients as well.

4.6.1 Supply Chain Inefficiency

Disruptions, delays or wastage that happened in between the process of sourcing raw materials to delivering the end product to the customers is supply chain inefficiency (Katsaliaki et al., 2021). Supply chain inefficiencies can lead to increments in costs, substandard products or reduced quality, and delays in delivery (Dohse et al., 2023). Disruptions to supply chains can be triggered due to factors such as poor logistics management, inadequate information flow, lack of coordination among supply chain partners, or external factors like crop diseases (Skalkos, 2023). In the case of the MAC exports company, farmers are frequently getting immediate orders from the processing company that are unable to supply within a very short period of time since it takes a considerable amount of time to get yield from the crops. Lack of coordination between field officers and small-scale farmers resulted in inadequate flow of information that failed farmers to fulfill the orders on time. It generates a huge wastage of harvest due to insufficient logistics and infrastructure facilities which in turn hinders the on-time delivery of the quality end product.

"We do not have the required transportation facilities to supply our harvest to the company.' (I7)

Lack of information sharing by field officers regarding optimal allocation of resources such as market trends, usage of fertilizers, and irrigation affects the disruptions to the overall supply chain.

"But we cannot say the guidance given by them is sufficient. What I think is that the information shared between us is low". (I6)

Supply chain disruptions and wastages can also stem from spread of pests and diseases that resulted in crop failures and shortages in the supply chain. This is an external factor behind the supply chain efficiency where supply chain partners have very little control on it.

"Another problem is the spread of different diseases during different periods of the year. This reduces the quality of the harvest". (I9)

4.6.2 Demand Supply Imbalance

Mismatch between the quantity demanded by the importing country and quantity supplied by the exporting country can be simply referred to as demand supply imbalance. Factors that affect the demand supply imbalance are production constraints - immediate orders, coordination issues, trade policies, and infrastructure and logistics. Exporting or processing companies usually source their fresh requirements from these small-scale farmers immediately without engaging in time consuming formal order placement and replenishment (Katsaliaki et al., 2021). Sourcing from small scale farmers is an indirect procedure which cannot be standardized and strictly implemented (Dong, 2022). MAC exporters are currently facing challenges in effectively supplying and meeting the increasing demand in Australia, leading to a substantial imbalance between the demand and the supply due to their incapability to estimate the demand.

"When the company gets immediate orders from the foreign buyers they send us immediate orders. But it is hard for us to send the order on the required quality during the required time period within a very short time". (I10)

Lack of coordination between the supply chain partners hinders the timely order fulfillment by creating a demand supply imbalance. In the case of MAC Exports, company field officers share their thoughts about coordination issues between supply chain partners.

"Coordination between these farmers and them is very important if the company wants to continuously supply foreign demand. But currently there are no agreements, so coordination is at a very low level". (I4)

Delays that happen in shipments and inability to accurately predict the demand also affect the on-time order fulfillment in a negative way by failing the company to cater to the import demand with the required amount of export supply.

"So, this shipment was late and the customer canceled the shipment which created a significant loss for the company". (I2)

4.7. Infrastructure and Logistics

Infrastructure and logistics refer to the physical and organizational structures, facilities, and services needed to efficiently produce, process, and transport agricultural products from producers to consumers while preserving the freshness of the product (Munim & Schramm, 2018; Diaz, 2021). Transportation networks that enable the movement of goods, warehouses to store the processed or work-

in-progress inventory, and packaging centers that are required to pack the products in a way to protect its quality to increase shelf time are the main components that are included under infrastructure and logistics.

4.7.1 Insufficient Infrastructure

Inadequate facilities that are required for efficient production, processing, and distribution of agricultural exports by complying with international quality standards is known as insufficient infrastructure (Fiankor et al., 2020). Insufficient infrastructure facilities can vary from poor road conditions, inadequate port facilities, lack of storage facilities like cold chains, and inappropriate packaging (Singh et al., 2023). Lack of facilities can lead to delays and damage, spoilage, rejection by importers which hinders the export competitiveness and customer loyalty (Rehman et al., 2020). It can lead to increased costs, and potential loss of market access due to non-compliance with international quality standards. Small scale farmers of MAC export company face a lot of difficulties in transporting their fresh harvest to the processing company while maintaining the required quality level becomes impossible for them due to insufficient infrastructure.

"To supply the products by following proper packaging such as high-quality baskets and the other required equipment we may have to bear a high cost. What we do as a practice is piling the harvest in sacks and sending it to the company. This spoils and destroys the harvest". (I6)

Small scale farmers do not have access to modern equipment due to financial constraints since they are not operating at large scale. They could not bear the costs of these facilities and managers mentioned that they are trying to provide these facilities as much as they can to obtain a quality harvest.

"Infrastructure facilities in the sense they are the new equipment to reap the harvest by preserving its quality. What they are currently doing is just plucking fruits and vegetables by their hands. So it actually damages the harvest actually". (I1)

4.7.2 Transportation Facility Shortages

Transportation facility shortages in agricultural exports refer to the lack of support services related to transportation that are necessary to deliver agricultural products from the point of production to the point of consumption (Sardar & Rehman, 2022). Lack of transportation facilities required for the movement of goods make a considerable negative influence on maintaining the quality of the harvest which is mandatory to export for the international markets. Some of them are delays, increased transit times, and inadequate handling during transit (Zhou et al., 2021; Hammond et al., 2015) Shortages in transportation facilities in turn increase the transit times, which is a crucial aspect for perishable goods like agricultural exports that require timely delivery to maintain freshness and quality. Agricultural products may not be handled in an appropriate manner if it lacks proper handling facilities that leads to damage and spoilage, which can result in wastage and non-compliance with quality standards. It can often lead to higher transportation costs, which negatively affect the global competitiveness of the product and limit access to markets, due to the incapability of transporting goods on time to the import country.

"We do not have the required transportation facilities to supply our harvest to the company". (I9)

Lack of vehicles to transport the harvest by preserving its quality is also a burning issue since these small-scale farmers do not have well maintained vehicles with sophisticated storage facilities to preserve the freshness until the point of production.

"They do not have vehicles as well to properly store and transport the harvest". (I1)

Small scale farmers are residing in areas far away from Colombo and it also makes a significant cost and requires a sufficient amount of transportation facilities for them to transport it to the processing company even though they lack those facilities in the current context.

"These farmers are living in rural areas like Anuradhapura, Polonnaruwa where they do not have proper roads. Proper roads mean broken roads which are not much renovated. So, this damages the harvest when transporting". (I2)

4.7.3 Packaging Issues

Packaging issues in agricultural exports refer to the problems associated with the packaging process that can affect the quality, safety, and marketability of agricultural products (Saghaian et al., 2022; Pietrzyck et al., 2021). Packaging is one of the most important processes in agricultural exports since it has a direct impact on the product quality. Utilization of substandard or low-quality packaging materials and techniques do not provide adequate protection against physical damage, contamination, or spoilage. It can lead to inefficiencies in handling, storage, and transportation if the packaging is poorly designed without adhering to the guidelines in preserving the freshness of the harvest. Financial constraints motivate the small-scale farmers to compromise on the quality of packaging, which in turn affects the condition of the raw materials upon arrival to the processing company.

"To supply the products by following proper packaging such as high-quality baskets and the other required equipment we may have to bear a high cost". (I11)

5. Recommendations and implications

5.1 Recommendations

5.1.1 Contractual Farming

Based on the interviews conducted it was concluded that the farmers have financial constraints in investing in new agricultural equipment, buying fertilizers, and high-quality seeds. Also, the company does not have any written agreements or contracts with the farmers which erodes their mutual trust.

5.1.2 Creating Farmers' Associations

MAC Exports could establish farmer associations by gathering all farmers who supply their harvests to the company within specific geographical areas. This initiative could be facilitated with the assistance of local authorities to ensure effective organization and support throughout the process. Since

the farmers of MAC exports face different financial difficulties with related to purchasing of modern agricultural equipment, obtaining necessary infrastructure facilities to store the harvest, and the necessary transportation facilities, the company could provide these facilities collectively such as implementing appropriate storage centers with proper temperature controls and collectively transport the harvest to the company by using appropriate quality controlling mechanisms by implementing farmers' associations (Bingen et al., 2003).

5.1.3 Providing education and knowledge to farmers about quality controlling mechanisms.

The farmers of MAC exports are not coming from educated backgrounds. They don't have a clear idea about the export standards and the ability of these farmers to identify the export quality requirements by themselves is hard. It is important to provide proper guidance and education to these farmers in order to improve their understanding regarding the essential quality requirements to be met when exporting the products of MAC exports. Farmer education is an important factor in improving the quality of the produce (Strauss et al., 1991).

5.1.4 Improving information sharing mechanisms.

The level of accurate information shared in the supply chain of MAC export company is not reliable, causing trust issues between supply chain partners. Hence the company could introduce traceability and tracking systems such as Quick Response and barcode systems. These traceability systems help in improving the transparency, shareability and the reliability of the information transmitted (Wang et al., 2021). MAC export company could assign field officers to input data into the Quick Response systems after carefully monitoring and observing the agricultural practices and inputs used by the farmers since the technological knowledge of the farmers is not sufficient to handle these systems by themselves. Quick Response code systems provide information about the entire history of the product which helps in enhancing the traceability and to obtain clear and accurate information about the ingredients used in producing the product (Hasan et al., 2023). The cultivation, production, and processing of transparent produce enhance trust between the farmers, MAC Exports, and the company's Australian buyers (Wang et al., 2021). This reduces the number of order rejections and improves brand loyalty among consumers due to the higher quality of the products and the increased trust. Implementation of traceability systems would make the company bear high costs, yet MAC exports could generate higher revenues through well designed pricing strategies since these systems improve the performance of the supply chains (Morkunas et al., 2019; Saurabh & Dey, 2021).

5.1.5 Implementing Private Standards

Private standards are code practices introduced by individual companies to ensure food safety and the quality of the produce (Jaffee & Masakure, 2005). Private standards ensure compliance with regulatory requirements and maintain brand reputation by meeting consumer demands for food safety and quality, while differentiating the product from the competitors highlighting unique characteristics that are not covered by public standards. Private standards also play an important role in specifying how outcomes should be achieved, unlike public standards which focus more on what outcomes should be achieved (Henson & Humphrey, 2010).

5.1.6 Conducting Regular Audits

MAC exports can arrange for third-party audits to be conducted by independent industry experts. Third party audits are carried out by independent auditors who are not employed by the company being audited, and often result in improved quality and certifications. Through these audits it ensures that the produce of the suppliers is meeting the requirements of the standards that have been assessed. Third party audits check the condition of facilities and products, ensure legal compliance, and find ways to improve food safety and quality. These audits increase consumer trust and help in meeting regulatory requirements.

5.2 Limitations

The findings and the recommendation of the current study focuses on the agri food supply chains. The problem of the inability of the suppliers to provide quality raw materials that meet the export quality is specific to MAC exports company. The research questions, data collection, and analysis are tailored to this specific context. The challenges of MAC Exports supply chain practices, quality control mechanisms, and supplier relationships were closely observed, in deriving recommendations to the research problem. Hence, the findings and the recommendations may not be generalizable to other settings. Therefore, the findings of this research may not be applicable to other industries, regions, populations or company settings.

5.3 Conclusion

This study presents the findings and the recommendations to solve the problem of the inability of the suppliers of MAC exports to supply raw materials that comply with the export quality standards, based on data collected from 11 participants, including small-scale farmers, field officers, and company managers. Thematic analysis was employed to interpret the data, revealing seven core themes supported by various sub-themes that provide a comprehensive understanding of the issues faced by MAC Exports.

6. References

Aghazadeh, H., Abadi, E. B. J., & Zandi, F. (2022). Branding advantage of agri-food companies in competitive export markets: a resource-based theory. *British Food Journal*, *124*(7), 2039–2060. https://doi.org/10.1108/bfj-08-2021-0952

Akanmu, A. O., Akol, A. M., Ndolo, D. O., Kutu, F. R., & Babalola, O. O. (2023). Agroecological techniques: adoption of safe and sustainable agricultural practices among the smallholder farmers in Africa. Frontiers in Sustainable Food Systems, 7. https://doi.org/10.3389/fsufs.2023.1143061

Arshinder, Kanda, A., & Deshmukh, S. (2008). Supply chain coordination: Perspectives, empirical studies and research directions. *International Journal of Production Economics*, *115(2),* 316–335. https://doi.org/10.1016/j.ijpe.2008.05.011

Augier, P., Gasiorek, M., & Tong, C. L. (2005). The impact of rules of origin on trade flows. *Economic Policy, 20(43)*, 568–624. https://doi.org/10.1111/j.1468-0327.2005.00146.x

Auriol, E., & Schilizzi, S. G. M. (2015). Quality signaling through certification in developing countries. Journal of Development Economics, 116, 105–121. https://doi.org/10.1016/j.jdeveco.2015.03.007

Awaysheh, A., & Klassen, R. D. (2010). The impact of supply chain structure on the use of supplier socially responsible practices. *International Journal of Operations & Production Management, 30(12)*, 1246–1268. https://doi.org/10.1108/01443571011094253

Bastian, J., & Zentes, J. (2013). Supply chain transparency as a key prerequisite for sustainable agri-food supply chain management. *The International Review of Retail, Distribution and Consumer Research, 23(5)*, 553–570. https://doi.org/10.1080/09593969.2013.834836

Becerra, M., Lunnan, R., & Huemer, L. (2008). Trustworthiness, risk, and the transfer of tacit and explicit knowledge between alliance partners. *Journal of Management Studies, 45(4)*, 691–713. https://doi.org/10.1111/j.1467-6486.2008.00766.x

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3(2)*, 77–101. https://doi.org/10.1191/1478088706qp063oa

Capaldo, A., & Giannoccaro, I. (2015). How does trust affect performance in the supply chain? The moderating role of interdependence. *International Journal of Production Economics, 166*, 36–49. https://doi.org/10.1016/j.ijpe.2015.04.008

Casley, D. J. K. (2010). *Project monitoring and evaluation in agriculture*. World Bank. https://documents.worldbank.org/en/publication/documents-reports/documentdetail/918581468741299575/project-monitoring-and-evaluation-in-agriculture

Chopra, S., & Meindl, P. (2016). Supply Chain Management Strategy, Planning, and Operation (6th Edition). Pearson Education. https://www.scirp.org/reference/referencespapers?referenceid=3203314

Clark, P., & Martínez, L. (2016). Local alternatives to private agricultural certification in Ecuador: Broadening access to 'new markets'? *Journal of Rural Studies, 45*, 292–302. https://doi.org/10.1016/j.jrurstud.2016.01.014

Costantino, F., Di Gravio, G., Shaban, A., & Tronci, M. (2014). The impact of information sharing and inventory control coordination on supply chain performances. *Computers & Industrial Engineering, 76*, 292–306. https://doi.org/10.1016/j.cie.2014.08.006

Czubala, W., Shepherd, B., & Wilson, J. S. (2009). Help or Hindrance? The Impact of Harmonised Standards on African Exports. *Journal of African Economies, 18(5),* 711–744. https://doi.org/10.1093/jae/ejp003

Danskin, P., Englis, B. G., Solomón, M. R., Goldsmith, M., & Davey, J. (2005). Knowledge management as competitive advantage: lessons from the textile and apparel value chain. *Journal of Knowledge Management, 9(2),* 91–102. https://doi.org/10.1108/13673270510590245

Dania, W. a. P., Xing, K., & Amer, Y. (2018). Collaboration behavioural factors for sustainable agri-food supply chains: A systematic review. *Journal of Cleaner Production, 186,* 851–864. https://doi.org/10.1016/j.jclepro.2018.03.148

Danskin, P., Englis, B. G., Solomón, M. R., Goldsmith, M., & Davey, J. (2005). Knowledge management as competitive advantage: lessons from the textile and apparel value chain. *Journal of Knowledge Management, 9(2),* 91–102. https://doi.org/10.1108/13673270510590245

De Frahan, B. H., & Vancauteren, M. (2006). Harmonisation of food regulations and trade in the Single Market: evidence from disaggregated data. *European Review of Agricultural Economics, 33(3),* 337–360. https://doi.org/10.1093/eurrag/jbl015

Ding, M. J., Jie, F., Parton, K. A., & Matanda, M. J. (2014). Relationships between quality of information sharing and supply chain food quality in the Australian beef processing industry. *The International Journal of Logistics Management, 25(1),* 85–108. https://doi.org/10.1108/ijlm-07-2012-0057

Dias, L. M. (2021, December 1). Making small farms more sustainable — and profitable. Harvard Business Review. https://hbr.org/2021/08/making-small-farms-more-Sustainable-and-profitable

Diaz, C. S. (2021). Transport infrastructure quality and logistics performance in exports. *www.academia.edu*. https://www.academia.edu/114761853/Transport_Infrastructure_Quality_and_Logistics_Performance_in_Exports

Dohse, D., Goel, R. K., & Saunoris, J. W. (2023). Supply chain constraints and research spending: an international investigation. *Journal of Technology Transfer*. https://doi.org/10.1007/s10961-023-10044-8

Dong, Y. (2022). Optimization and analysis of raw material supply chain based on computational intelligence. *Mobile Information Systems, 2022*, 1–9. https://doi.org/10.1155/2022/8683598

Dong, J., Zhang, D., Yan, H., & Nagurney, A. (2005). Multitiered supply chain networks: Multicriteria Decision—Making under uncertainty. Annals of Operation Research/Annals of Operations Research, 135(1), 155–178. https://doi.org/10.1007/s10479-005-6239-3

Drees, J. M., & Heugens, P. (2013). Synthesizing and Extending resource dependence Theory. *Journal of Management, 39(6),* 1666–1698. https://doi.org/10.1177/0149206312471391

Farina, E. M. M. Q., & Reardon, T. (2000b). Agrifood Grades and Standards in the Extended Mercosur: Their role in the changing agrifood system. *American Journal of Agricultural Economics, 82(5),* 1170–1176. https://doi.org/10.1111/0002-9092.00116

Fernandes, F. E. C. V., Soltani, E., & Liao, Y. (2017). The influence of supply chain quality management practices on quality performance: an empirical investigation. *Supply Chain Management, 22(2),* 122–144.https://doi.org/10.1108/scm-08-2016-0286

Fiankor, D. D., Curzi, D., & Olper, A. (2020). Trade, price and quality upgrading effects of agri-food standards. *European Review of Agricultural Economics*, *48*(4), 835–877. https://doi.org/10.1093/erae/jbaa026

Fischer, C. (2013). Trust and communication in European agri-food chains. *Supply Chain Management, 18(2),* 208–218. https://doi.org/10.1108/13598541311318836

Foerstl, K., Azadegan, A., Leppelt, T., & Hartmann, E. (2014). Drivers of supplier sustainability: Moving beyond compliance to commitment. Journal of Supply Chain Management, 51(1), 67–92. https://doi.org/10.1111/jscm.12067

Giovannucci, D., & Reardon, T. (2000). UNDERSTANDING GRADES AND STANDARDS - and how to apply them. *A Guide to Developing Agricultural Markets and Agroenterprises. The World Bank, Washington*. https://www.researchgate.net/publication/24046620

Gong, Y., Jiang, Y., & Jia, F. (2021). Multiple multi-tier sustainable supply chain management: a social system theory perspective. International Journal of Production Research, 61(14), 4684–4701. https://doi.org/10.1080/00207543.2021.1930238

Guja, M. M., & Bedeke, S. B. (2024). Smallholders' climate change adaptation strategies: exploring effectiveness and opportunities to be capitalized. Environment, Development and Sustainability. https://doi.org/10.1007/s10668-024-04750-y

Gumbi, N., Gumbi, L., & Twinomurinzi, H. (2023). Towards Sustainable Digital Agriculture for Smallholder Farmers: A Systematic Literature review. Sustainability, 15(16), 12530. https://doi.org/10.3390/su151612530

Hammond, S. T., Brown, J. H., Burger, J. R., Flanagan, T. P., Fristoe, T. S., Silva, N. M., Nekola, J. C., & Okie, J. G. (2015). Food Spoilage, Storage, and Transport: Implications for a Sustainable future. Bioscience, 65(8), 758–768. https://doi.org/10.1093/biosci/biv081

Hammoudi, A., Hoffmann, R., & Surry, Y. (2009). Food safety standards and agri-food supply chains: an introductory overview. *European Review of Agricultural Economics, 36(4),* 469–478. https://doi.org/10.1093/erae/jbp044

Handayati, Y., Simatupang, T. M., & Perdana, T. (2015). Agri-food supply chain coordination: the state-of-the-art and recent developments. *Logistics Research, 8(1).* https://doi.org/10.1007/s12159-015-0125-4

Handschuch, C., Wollni, M., & Villalobos, P. (2013). Adoption of food safety and quality standards among Chilean raspberry producers – Do smallholders benefit? *Food Policy*, *40*, 64–73. https://doi.org/10.1016/j.foodpol.2013.02.002

Hasan, I., Habib, M. M., Mohamed, Z., & Tewari, V. (2023). Integrated Agri-Food Supply Chain Model: an application of IoT and Blockchain. *American Journal of Industrial and Business Management*, *13*(02), 29–45. https://doi.org/10.4236/ajibm.2023.132003

Hatzenbuehler, P., & Peña-Lévano, L. (2022). Adoption Potential of Sustainability-Related Agriculture Technologies for Smallholder Farmers in the Global South. Sustainability, 14(20), 1–11. https://ideas.repec.org/a/gam/jsusta/v14y2022i20p13176-d941795.html

Henson, S., & Humphrey, J. (2010). Understanding the complexities of private standards in global Agri-Food chains as they impact developing countries. *Journal of Development Studies*, *46*(9), 1628–1646. https://doi.org/10.1080/00220381003706494

Hessels, J., & Terjesen, S. (2008). Resource dependency and institutional theory perspectives on direct and indirect export choices. *Small Business Economics, 34(2),* 203–220. https://doi.org/10.1007/s11187-008-9156-4

Hillman, A. J., Withers, M. C., & Collins, B. (2009). Resource Dependence Theory: A review. *Journal of Management, 35(6),* 1404–1427. https://doi.org/10.1177/0149206309343469

Hui, Y., Zhang, P., & Liu, H. (2023). The influence of the brand image of green agriculture products on China's consumption intention - The mediating role of perceived value. *PloS One*, *18*(10), e0292633. https://doi.org/10.1371/journal.pone.0292633

Ip, W. H., Chan, S. L., & Lam, C. Y. (2011). Modeling supply chain performance and stability. *Industrial Management and Data Systems, 111(8),* 1332–1354. https://doi.org/10.1108/02635571111171649

Jaffee, S., & Henson, S. (2004). *Standards and agro-food exports from developing countries: rebalancing the debate* (Working Paper No. 3348). World Bank Publications. https://econpapers.repec.org/paper/wbkwbrwps/3348.htm

Jaffee, S., & Masakure, O. (2005). Strategic use of private standards to enhance international competitiveness: Vegetable exports from Kenya and elsewhere. *Food Policy*, *30*(3), 316–333. https://doi.org/10.1016/j.foodpol.2005.05.009

Jagdish. (2021). *Crop Monitoring Technology - IoT, Remote Sensing | Agri Farming*. Agri Farming. https://www.agrifarming.in/crop-monitoring-technology-iot-remote-sensing

Jagrarian. (2016). *Basic concepts of Monitoring in Agriculture Extension.* AgriHunt - a Hunt for Agricultural Knowledge. https://agrihunt.com/articles/agricultural-extensions/basic-concepts-of-monitoring-in-agriculture-extension/

Jain, V., & Benyoucef, L. (2008). Managing long supply chain networks: some emerging issues and challenges. Journal of Manufacturing Technology Management, 19(4), 469–496. https://doi.org/10.1108/17410380810869923

Jámbor, A., & Babu, S. C. (2016). Competitiveness: Definitions, Theories and measurement. In *Springer eBooks* (pp. 25–45). https://doi.org/10.1007/978-3-319-44876-3_3

Jha, J., & Roe, T. L. (2021). U.S agricultural export competitiveness and export market diversification. *International Journal of Agricultural Economics*, *6*(3), 122. https://doi.org/10.11648/j.ijae.20210603.15

Jongwanich, J. (2009). The impact of food safety standards on processed food exports from developing countries. *Food Policy, 34(5),* 447–457. https://doi.org/10.1016/j.foodpol.2009.05.004

Kaplinsky, R. (2010). *The role of standards in global value chains*. (Research Working Paper No. 5396). World Bank Policy. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1653682

Katsaliaki, K., Galetsi, P., & Kumar, S. (2021). Supply chain disruptions and resilience: a major review and future research agenda. *Annals of Operation Research/Annals of Operations Research*, *319*(1), 965–1002. https://doi.org/10.1007/s10479-020-03912-1

Kaynak, H., & Hartley, J. L. (2007). A replication and extension of quality management into the supply chain. *Journal of Operations Management*, *26(4)*, 468–489. https://doi.org/10.1016/j.jom.2007.06.002

Kembro, J., Selviaridis, K., & Näslund, D. (2014). Theoretical perspectives on information sharing in supply chains: a systematic literature review and conceptual framework. *Supply Chain Management*, *19(6*), 609–625. https://doi.org/10.1108/scm-12-2013-0460

Kersting, S., & Wollni, M. (2012). New institutional arrangements and standard adoption: Evidence from small-scale fruit and vegetable farmers in Thailand. *Food Policy*, *37(4)*, 452–462. https://doi.org/10.1016/j.foodpol.2012.04.005

Kuei, C., & Madu, C. N. (2001). Identifying Critical Success Factors for Supply Chain Quality Management (SCQM). *Asia Pacific Management Review*, *6(4)*, 409–423. https://doi.org/10.6126/apmr.2001.6.4.02

Kumar, D., & Kalita, P. K. (2017). Reducing Postharvest Losses during Storage of Grain Crops to Strengthen Food Security in Developing Countries. *Foods*, *6*(1), 8. https://doi.org/10.3390/foods6010008

Kusi-Sarpong, S., Gong, Y., Brown, S., Gupta, H., Bai, C., & Orji, I. J. (2023). Multi-tier sustainable supply chains management for global sustainability. International Journal of Production Research, 61(14), 4592–4602. https://doi.org/10.1080/00207543.2023.2216831

Lambert, S. R., Elamin, N. E. A., & De Cordoba, S. F. (2020). Maximizing sustainable agri-food supply chain opportunities to redress COVID-19 in developing countries. *UNCTAD*. https://unctad.org/system/files/official-document/ditctabinf2020d9_en.pdf\

Lehmann, R., Reiche, R., & Schiefer, G. (2012). Future internet and the agri-food sector: State-of-the-art in literature and research. *Computers and Electronics in Agriculture*, *89*, 158–174. https://doi.org/10.1016/j.compag.2012.09.005

Liu, G., Lei, S. I., & Law, R. (2022). Enhancing social media branded content effectiveness: strategies via telepresence and social presence. *Information Technology & Tourism*, *24*(2), 245–263. https://doi.org/10.1007/s40558-022-00225-w

Louw, A., Du Plessis Scheepers Jordaan, D., Ndanga, L. Z., & Kirsten, J. F. (2008). Alternative marketing options for small-scale farmers in the wake of changing agri-food supply chains in South Africa. *Agrekon, 47(3),* 287–308. https://doi.org/10.1080/03031853.2008.9523801

Marra, M., Ho, W., & Edwards, J. S. (2012). Supply chain knowledge management: A literature review. *Expert Systems with Applications, 39(5),* 6103–6110. https://doi.org/10.1016/j.eswa.2011.11.035

Maertens, M., & Swinnen, J. (2006). *Standards as barriers and catalysts for trade and poverty reduction*. (Working Paper No. 13). Leuven Interdisciplinary Research Group on International Agreements and Development. https://doi.org/10.22004/ag.econ.25772

Mena, C., Humphries, A., & Choi, T. Y. (2013). Toward a theory of Multi-Tier supply chain management. *Journal of Supply Chain Management, 49(2),* 58–77. https://doi.org/10.1111/jscm.12003

Negi, S., & Anand, N. (2015). Issues and Challenges in the Supply Chain of Fruits & Vegetables Sector in India: A Review. *International Journal of Managing Value and Supply Chains, 6(2),* 47–62. https://doi.org/10.5121/ijmvsc.2015.6205

Nowell, L., Norris, J. M., White, D., & Moules, N. J. (2017). Thematic analysis. *International Journal of Qualitative Methods, 16(1),* 160940691773384. https://doi.org/10.1177/1609406917733847

Nyaga, G. N., Whipple, J. M., & Lynch, D. F. (2009). Examining supply chain relationships: Do buyer and supplier perspectives on collaborative relationships differ? *Journal of Operations Management*, *28*(2), 101–114. https://doi.org/10.1016/j.jom.2009.07.005

Olhager, J., & Selldin, E. (2004). Supply chain management survey of Swedish manufacturing firms. International Journal of Production Economics, 89(3), 353–361. https://doi.org/10.1016/s0925-5273(03)00029-x

Ouma, S. (2010). Global standards, local realities: private agrifood governance and the restructuring of the Kenyan horticulture industry. *Economic Geography*, *86*(2), 197–222. https://doi.org/10.1111/j.1944-8287.2009.01065.x

Ramzan, M., & Li, H. Y. (2023). An analytical framework to link factors affecting agricultural trade intensity in the world: pathways to sustainable agricultural development 2030 agenda. *Environment, Development and Sustainability*. https://doi.org/10.1007/s10668-023-03908-4

Reardon, T., Barrett, C. B., Berdegué, J. A., & Swinnen, J. F. M. (2009). Agrifood industry transformation and small farmers in developing countries. World Development, 37(11), 1717–1727. https://doi.org/10.1016/j.worlddev.2008.08.023

Rehman, F. U., Noman, A. A., & Ding, Y. (2020). Does infrastructure increase exports and reduce trade deficit? Evidence from selected South Asian countries using a new Global Infrastructure Index. *Journal of Economic Structures*, *9*(1). https://doi.org/10.1186/s40008-020-0183-x

Robinson, C. J., & Malhotra, M. K. (2005). Defining the concept of supply chain quality management and its relevance to academic and industrial practice. *International Journal of Production Economics*, *96*(3), 315–337. https://ideas.repec.org/a/eee/proeco/v96y2005i3p315-337.html

Sardar, M. S., & Rehman, H. U. (2022). Transportation moderation in agricultural sector sustainability — a robust global perspective. *Environmental Science and Pollution Research International*, *29*(40), 60385–60400. https://doi.org/10.1007/s11356-022-20097-1

Schiffauerova, A., & Thomson, V. (2006). A review of research on cost of quality models and best practices. *International Journal of Quality & Reliability Management, 23(6),* 647–669. https://doi.org/10.1108/02656710610672470

Shyu, C., Yen, C., & Lin, C. (2023). The impact of consumer loyalty and customer satisfaction in the new agricultural value chain. *Agriculture*, *13*(9), 1803. https://doi.org/10.3390/agriculture13091803

Simatupang, T. M., & Sridharan, R. (2005). The collaboration index: a measure for supply chain collaboration. *International Journal of Physical Distribution & Logistics Management, 35(1),* 44–62. https://doi.org/10.1108/09600030510577421

Singh, R. K. (2011). Developing the framework for coordination in supply chain of SMEs. *Business Process Management Journal, 17(4),* 619–638. https://doi.org/10.1108/14637151111149456

Skalkos, D. (2023). Prospects, Challenges and Sustainability of the Agri-Food Supply Chain in the New Global Economy II. *Sustainability*, *15*(16), 12558. https://doi.org/10.3390/su151612558

Subramani, M. R. (2004). How Do Suppliers Benefit from Information Technology Use in Supply Chain Relationships? *Management Information Systems Quarterly, 28(1),* 45. https://doi.org/10.2307/25148624

Strauss, J., Barbosa, M., Teixeira, S., Thomas, D., & Gomes, R., Junior. (1991). Role of education and extension in the adoption of technology: a study of upland rice and soybean farmers in Central-West Brazil. *Agricultural Economics*, *5*(4), 341–359. https://doi.org/10.1111/j.1574-0862.1991.tb00162.x

Suroso, A. I., Fahmi, I., Tandra, H., & Haryono, A. (2023). Assessing the Effect of Internet Indicators on Agri-Food Export Competitiveness. *Economies*, *11*(10), 246. https://doi.org/10.3390/economies11100246

Tan, K. C., Kannan, V. R., Hsu, C., & Leong, G. K. (2010). Supply chain information and relational alignments: mediators of EDI on firm performance. *International Journal of Physical Distribution & Logistics Management, 40(5),* 377–394. https://doi.org/10.1108/09600031011052831

Taylor, D. H. (2006). Strategic considerations in the development of lean agri-food supply chains: a case study of the UK pork sector. Supply Chain Management, 11(3), 271–280. https://doi.org/10.1108/13598540610662185

Tian, D., Hu, N., Wang, X., & Huang, L. (2016). Trade margins, quality upgrading, and China's agri-food export growth. *China Agricultural Economic Review, 8(2).* https://doi.org/10.1108/caer-12-2013-0156

Tien, N. H., Anh, D. B. H., & Thuc, T. D. (2019). Global Supply Chain and Logistics Management. Academic Publications. https://www.researchgate.net/publication/338570722_Global_Supply_Chain_And_Logistics_Management

Vidanapathirana, R., & Wijesooriya, N. (2014, June). Export Market for Organic Food: Present Status, Constraints and Future Scope [Research Report]. Hector Kobbekaduwa Agrarian Research and Training Institute. https://doi.org/10.13140/RG.2.2.31015.47528

Wang, J., Zhang, Y., Mustafa, Z., & Canavari, M. (2022). Changes in Agri-Food export competitiveness based on the sophistication analysis: the case of Xinjiang, China. *Sustainability*, *14*(23), 15729. https://doi.org/10.3390/su142315729

Wilhelm, M., Blome, C., Wieck, E., & Xiao, C. Y. (2016). Implementing sustainability in multi-tier supply chains: Strategies and contingencies in managing sub-suppliers. International Journal of Production Economics, 182, 196–212. https://doi.org/10.1016/j.ijpe.2016.08.006

Wisner, J. D., & Tan, K. C. (2000). Supply Chain M anagement and Its Impact on Purchasing. the Journal of Supply Chain Management, 36(3), 33–42. https://doi.org/10.1111/j.1745-493x.2000.tb00084.x

Wognum, P., Bremmers, H., Trienekens, J. H., Van Der Vorst, J., & Bloemhof-Ruwaard, J. (2011). Systems for sustainability and transparency of food supply chains – Current status and challenges. *Advanced Engineering Informatics, 25(1)*, 65–76. https://doi.org/10.1016/j.aei.2010.06.001

Wu, I., Chuang, C., & Hsu, C. H. (2014). Information sharing and collaborative behaviors in enabling supply chain performance: A social exchange perspective. *International Journal of Production Economics, 148,* 122–132. https://doi.org/10.1016/j.ijpe.2013.09.016

Xiao, Y., & Abula, B. (2023). Examining the Impact of digital economy on agricultural trade efficiency in RCEP Region: A perspective based on Spatial Spillover Effects. *Journal of the Knowledge Economy*. https://doi.org/10.1007/s13132-023-01484-6

Yang, J., Wang, J., Wong, C. W., & Lai, K. (2008). Relational stability and alliance performance in supply chain. *Omega, 36(4)*, 600–608. https://doi.org/10.1016/j.omega.2007.01.00

Youn, S., Yang, M. G., Hong, P., & Park, K. H. (2013). Strategic supply chain partnership, environmental supply chain management practices, and performance outcomes: an empirical study of Korean firms. *Journal of Cleaner Production, 56*, 121–130. https://doi.org/10.1016/j.jclepro.2011.09.026

Yuantari, M. G. C., Van Gestel, C. A. M., Van Straalen, N. M., Widianarko, B., Sunoko, H. R., & Shobib, M. N. (2015). Knowledge, attitude, and practice of Indonesian farmers regarding the use of personal protective equipment against pesticide exposure. *Environmental Monitoring and Assessment, 187*(3). https://doi.org/10.1007/s10661-015-4371-3

Zelbst, P. J., Green, K. W., Sower, V. E., & Bond, P. L. (2019). The impact of RFID, IIoT, and Blockchain technologies on supply chain transparency. *Journal of Manufacturing Technology Management, 31(3),* 441–457. https://doi.org/10.1108/jmtm-03-2019-0118

Zhou, K. Z., Poppo, L., & Yang, Z. (2008). Relational ties or customized contracts? An examination of alternative governance choices in China. *Journal of International Business Studies, 39(3),* 526–534. https://doi.org/10.1057/palgrave.jibs.8400363

Ziggers, G. W. Z., & Trienekens, J. (1999). Quality assurance in food and agribusiness supply chains: Developing successful partnerships. *International Journal of Production Economics, 60*, 271–279. https://www.academia.edu/64056924/Quality_assurance_in_food_and_agribusiness_supply_chains_Developing_successful_partnerships

Enhancing the Lead Time Efficiency in The Global Supply of Apparels in ABC Company: A Study of ABC Company

W.M.J Wassala
Graduate,
Department of International Business, Faculty of Management and Finance, University of Colombo, Sri Lanka (Author)

S.H.T Shanaka
Graduate,
Department of International Business, Faculty of Management and Finance, University of Colombo, Sri Lanka (Author)

D.M.S Wickramasiri
Graduate,
Department of International Business, Faculty of Management and Finance, University of Colombo, Sri Lanka (Author)

Sandun Weerasekera
Senior Lecturer,
Department of International Business, Faculty of Management and Finance, University of Colombo, Sri Lanka (Author and corresponding author)

Abstract

The primary objective of this study is to identify strategies for reducing the unnecessary time consumption of ABC Company's supply chain. During the analysis, we identified that the main cause for longer lead time is in the production process of the company. To make the production line more efficient, several strategies were identified and the research was conducted by using a qualitative approach. Further, all data were collected through semi-structured interviews. According to the data that are collected from 12 employees of ABC Company, the research has introduced several strategies for overcoming the bottlenecks of the supply chain. As results of the comprehensive study, several problematic areas that

cause to a longer lead time were identified as employee dissatisfaction, Lacking the motive for working, language and communication barriers and lack of training opportunities. Further, those practical recommendations as introducing diversified and attractive incentive packages, maintain a proper information flow and communication methods, provide sufficient training regularly will assist to enhance the efficiency of the global supply chain and reduce the overall lead time while overcome the problems of the company

Keywords: *Apparel Industry, Lead time, Efficiency, Global Supply chain, global competition*

1. Introduction

1.1 Background of The Study

Supply chain management is a vital function of a business and it can be considered as the backbone of a business. With the birth of globalization and liberalization, the interdependence of various suppliers, wholesalers, retailers, and other supply chain parties has increased (James, 2012). Therefore, the supply chain of a business consists of various business organizations all over the world as supply chain parties and supply chain become more complex with international engagements. According to Ayers (2001) supply chain can be considered as a life cycle of physical goods, finance, and information that is used to satisfy end customers' requirements by connecting suppliers. Since the supply chain of an organization is more complex, monitoring and maintaining the interaction among supply chain parties becomes a difficult task (Cheng et al., 2014). Therefore, businesses have to manage the supply chain effectively.

Lead time is one of the main factors that can change the efficiency of the supply chain of a company. Lead time can determine the ability of a firm to satisfy its customer needs at the right time in the right way. A longer lead time enhances the complexity of the supply chain through inventory control, order fulfillment, and other supply chain factors (Chang and Lin, 2018). Further, according to Chang and Lin (2018) lead time affects firms' capacity to react to unexpected changers and challengers of a business and encourages maintaining a high level of inventory to face unexpected demand changes. When a company has a longer lead time it causes occur bullwhip effect in the supply chain because of uncertainties. A positive relationship between the bullwhip effect and lead time can be identified (Sadeghi , 2015). On the other hand, a shorter lead time reduces the inventory holding, and obsolescence costs can make a significant impact on customer order quantity and increase satisfaction (Kraiselburd, 2010).

The apparel industry is one of the industries that have a very complex supply chain because usually, they engage with different supply chain parties all over the world. Further, a business in the apparel industry has to supply its products to the market before changing the customer preference for current fashion (Kader and Akter, 2014). Therefore, apparel companies have to manage their supply chain properly with a shorter lead time.

As a developing country, Sri Lanka is famous for quality apparel in the world and the apparel exports cover a considerable amount of Sri Lankan GDP. ABC Holdings is one of the largest numbers of apparel manufacturers in Sri Lanka. ABC Holdings supplies its products under several categories such as sportswear, yoga wear, and medical wear. They are operating their functions with the support of nearly 100,000 employees in nine different countries. As an apparel company, they have given special consideration to innovations, sustainability, and women empowerment. As a company that has diverse supply chain parties along the supply chain, ABC Company has to manage its supply chain properly and

maintain a shorter lead time as much as possible. If not, it will be difficult to remain in the competitive market and the industry.

1.2 Problem Statement

Sri Lanka exports approximately $5500 million worth of garments annually. Sri Lankan apparel has a high demand in European countries such as the United Kingdom, Germany, Netherlands, Italy, and Belgium (Embuldeniya, 2015). However, to compete with apparel giants that have various competitive advantages such as China, India, and Mexico, a country has to maintain a meticulous supply chain (Knutsen, 2003). ABC Holdings contributes significantly to these exports by emphasizing the importance of minimizing product lead times. ABC Company focuses on reducing time consumption to meet customer demands quickly. In this dynamic industry, immediate response to market changes is critical. ABC uses sustainable practices to achieve shorter lead times and adapt rapidly to industry shifts.

However, when ABC Company actually produces apparel for their global customer demand, they spend much more time to provide products to the order than they expected. According to the records of the company, a longer lead time can be identified. As an example, ABC Company received an order in December of 2021. The order was expected to be sent to the customer in 245 days. However, the company took 315 days to send the order. Having a longer lead time impacts on order fulfillment date and when giving the date that can fulfill the customer order, firms have to add a forecasted date gap between actual spending times and expected spending time (Spearman and Hopp, 1990). The following chart represents the lead time gap of their general orders in global supply.

Figure 1

Lead time gap of supply chain in ABC Company.

Product	Country	Quantity	Started date	End date	Actual Days spend	Expected days to spend	Gap (day)
Sports Bras	USA	20000	07/12/2021	22/05/2022	315	245	70
Yoga wear	Belgium	10000	20/01/2022	28/08/2022	220	150	70
Yoga wear	USA	8000	15/02/2022	06/07/2022	170	120	50
Sports Bras	UK	5000	08/04/2022	05/10/2022	180	100	80
Sports Bras	Belgium	6200	16/05/2022	26/11/2022	194	120	74
swimwear	Belgium	9000	02/07/2022	24/12/2022	175	113	62
swimwear	UK	12000	21/08/2022	29/03/2023	220	135	85
Yoga wear	USA	5500	05/01/2023	15/05/2023	130	95	35
swimwear	USA	8000	20/01/2023	05/06/2023	135	85	50

Note. The figure represents the difference between number of expected days and number of actual days that ABC Company had spent in the supply chain of several products which are produced by ABC Company.

As a global apparel supplier, ABC Holdings provides apparel to the market according to the customer orders and their requirements. Since there are many competitors in the apparel market, the company expects to supply its products to the customer immediately. The company tries to maintain a shorter lead time in order to maintain its supply chain efficiency. However, when the company supplies their products to customers it takes much time. Therefore, ABC Company is experiencing actually a longer lead time than their expected lead time.

1.3 Research Questions

1. What are the reasons for the increased lead time of the global supply of ABC company?
2. What strategies can be implemented to improve the lead time efficiency of the global supply of ABC company

1.4 Research Objectives

1. Identify the reasons for increasing the lead time of the global supply of ABC Company.
2. Identify the practical strategies that can be implemented to improve the lead time efficiency of the global supply of ABC Company.

2. Literature review

2.1 Global Supply Chain

The supply chain can be described as a set of organizations that work together for the creation and delivery of products from raw material suppliers to end customers (Manuj and Mentzer, 2008). When considering the supply chain in a global context, it is relatively more complex than a domestic supply chain. According to Manuj and Menzter (2008), the Global supply chain can be identified as a network of companies that are spread over various countries and continents, engage with the creation and delivery of products, and Manage risk and activities of the chain in order to succeed the network. A global supply chain is more complex and riskier than a domestic supply chain because it involves numerous different countries, rules, activities, and risks. Further, there are different sources of raw materials, and different parties in manufacturing, transporting, warehousing, and distributing with different rules and policies in a global supply chain (Manuj and Mentzer, 2008). Moreover, based on Blanchard et al. (2016), the global supply chain is a group of activities of producing goods and services from raw materials to the final value-added product.

When considering the past, the global supply chain was not well established and was not spread all over the world. At that time only economically, matured countries engaged with international sourcing and other international engagements in the supply chain. With the technology and communication revolution, many countries tend to engage with international sourcing and enter into global supply chains. It was a great opportunity for countries that did not have enough resources to complete the whole production by themselves (Baldwin, 2012). According to Koberg and Longoni (2019), the global supply chain is a chain that exists beyond the boundaries of one country. Globalization assists the rapid rise in the global supply chain and firms could achieve competitive advantages through finding competent suppliers and other business partners at low cost (Geriffi and Lee, 2014). Further, the global supply chain leads to international development as well. The ability to succeed in the international market depends on the extent to which a country engages with the global network. When developing a proper supply chain, firms have to consider not only the cost and quality but also the reliability, flexibility, and other special attitudes of the parties (Short et al., 2014).

At present, every company has become a part of the global supply chain. Some of them source globally, sell their products in international markets or compete with firms that connect to the global supply chain. Therefore, the practical importance of the global supply chain has increased (Mentzer et al., 2006). According to Manuj and Mentzer (2008), an effective global supply chain assists in converting various kinds of risks into better financial performance and competitive advantages in a complex environment. When a firm does the entire production by itself, it will be more difficult for the firm and it causes an increase in the cost of production. Further firms have to manage the whole process but a global supply chain conducts different parts of production through different parties. Therefore, the global supply chain makes the production line easy and effective (Blanchard et al. 2016). A firm is able to gain more from operational flexibility and economies of scale through a well-designed global supply chain (Cohen and Mallik, 1997). However, according to Cohen and Mallik (1997), a multinational firm that has a global supply chain can face several risks also such as delays and disruptions, Political uncertainties in different countries, and legal barriers in those countries.

Further global supply chain is important to this study as well because this study is around the global context. This study aims to improve the global supply chain of ABC companies through enhancing Lead time efficiency. As a global apparel company, ABC Company also has to consider and pay much attention to its global supply chain and its parties.

2.2 Time and Motion Study

A time and motion study is used to determine the amount of time required for a specific activity, work function, or mechanical process. (Chattopadhyay et al.,2012). Time study and motion study to determine the standard time for doing an operation simplify jobs and to develop more economical methods of doing work. (Rajiwate et al.,2020).

To improve productivity time study and motion study were found to be effective. (Rajiwate et al.,2020). After successfully analyzing, proper time standards were considered in the industry which increased the production rate by 48 pieces extra per month in one machine. (Rajiwate et al.,2020). Any excess movement that doesn't add value to the product, service, or process. (McGee-Abe,2015). 15 days' time study was taken on the sewing floor department to stimulate the problems on the shop floor during stitching and this study used a stopwatch to measure the performance of each operator. (Rajput et al.,2018). In the time study, each operator's capacity for each operation is measured by Standard Minute Value (SMV). The random sampling is used for this analysis (Kilbridge and Wester,2003)

The productivity and efficiency of each supply chain stage can be evaluated by using the time and motion study through evaluating the processes, tasks, and activities in each department. Further, this theory can be used to identify how the productivity and efficiency of each supply chain stage affect the lead time of production. This study is done to enhance the lead time efficiency in the global supply chain of ABC Company. Therefore, productivity and efficiency of all factors that affect lead time have to be evaluated. Further, the time spent by each section in the production process has to be considered in order to know the productivity of each section. Therefore, this study is done based on the time and motion study theory.

2.3 Improving Efficiency

Improving efficiency refers to the process of maximizing output with the given amount of input (Nabi et al.,2015). In the context of the garment industry, improving efficiency involves optimizing production processes, reducing waste, minimizing idle time of labor or machines, and enhancing the overall productivity of manufacturing operations (Rajput et al.,2018). One of the most complicated

industrial chains can be identified in the textile industry. Because of the wide variety of substrates, procedures, equipment, and components utilized, characterizing its operating parameters is complicated (Lee et al.,2018).

In this study, we focus on facility layout efficiency, interdepartmental operational efficiency, and resource allocation as a means of increasing efficiency related to the ABC Company.

2.3.1 Ways of Enhancing Efficiency

2.3.1.1 Facility layout

A facility layout is an arrangement of everything needed for the production of goods or delivery of services. (Drira et al.,2007) A facility is an entity that facilitates the performance of any job. It may be a machine tool, a work center, a manufacturing cell, a machine shop, a department, a warehouse, etc. (Heragu, 1997).

By making effective layout decisions ability to coordinate management decisions, the use of space, and the long-term flexibility that allows organizations to switch layout positions to suit their current operations are also reasons why managers must pay attention to the layout strategies they adopt (Boateng,2019). The adjustments and the proper use of workstations and their seating gradually reduced the complaints made by the workers thereby increasing their efficiency and productivity (Vandyck and Fianu, 2012).

The arrangement of a company's facility impacts lead time by optimizing processes and minimizing delays. An efficient layout ensures swift product fulfillment. Additionally, it affects the ability to capture global trends by fostering adaptability. Companies with flexible layouts can quickly respond to industry shifts, technological advances, and changing consumer preferences. This adaptability enhances competitiveness and aligns the business with evolving global demands.

2.3.1.2 Interdepartmental Operational Productivity

Companies always try to enhance their efficiency as much as possible. Since firms are doing their operations in a highly dynamic environment, organizations have to enhance their performance and productivity through better coordination and internal integration (Gimenez and Ventura, 2005). One of the ways of enhancing interdepartmental productivity is maintaining better coordination among departments and functions of the organization. Interdepartmental coordination means working together with various departments to enhance the efficiency of the company (Hingorani, 2017).

Firms can use technological solutions such as Enterprise Resource Planning systems to improve interdepartmental productivity. King and Burgess (2006), suggest that ERP systems can be used to facilitate integration and share the data and practices which is common to all departments. Those practices are able to enhance productivity among departments. Further ERP systems are identified as technical tools for coordinating and streamlining data and practices of organizations in order to achieve competitive advantages. This encourages departments to work together other than competing with each other (Madanhire and Mbohwa, 2016).

Interactions between departments are important to enhance interdepartmental productivity. An interaction means communicating properly in meetings and a continuous flow of information among various departments in the production line (Khan and Menzter, 1998). Companies can maintain proper communication by sharing the same values, common goals, and commitment of employees and sharing a common vision in the organization (Hingorani, 2017). Further internal communication leads to developing an effective and suitable set of goals for the organization (Hindi et al., 2004). However,

according to Gondal and Shahbaz (2012), the human resource management department of a firm has to be responsible for maintaining continuous communication in the firm and among departments. As Gondal and Shahbaz (2012), describe proper interdepartmental communication encourages the morale of employees to work as a team, leads to making better decisions, and reduces the conflicts between departments.

Providing cross-training opportunities to employees is also vital to increase productivity among departments. Cross-training enhances the productivity of departments and quality, reduces labor costs, and encourages the sharing of the workload among departments (Slomp and Molleman, 2002). This cross-training facilitates the cooperation skills of employees across different departments and it enhances both employee's work productivity and functional flexibility (Hernaus et al., 2021).

2.3.1.3 Resource allocation

According to Ho et al (2012) resource allocation is distributing appropriate resources to activities so as to achieve the optimal result in an economical way. The effective utilization of limited resources can be avoiding deadline delays and effective resource allocation can lead to improved efficiency and productivity in production operations (Bastos et al.,2005).

In an attempt to become more competitive in their industries, manufacturers attempt to achieve effective resource usage. Effective resource allocation has become essential because of the recent changes in the market, particularly in the apparel industry (Lee et al.,2013). According to Barnes and Greenwood (2006) Textile manufacturers are facing intense pressure to shorten lead time requirements to getting new products into shops and stores. The apparel industry needs to reduce production cycle times as a result of the rapid changes in the fashion sense. The productivity and efficiency of production operations are greatly impacted by the efficient use of resources. Therefore, it is essential for apparel manufacturers to allocate resources efficiently and effectively to adapt to the changing demands of consumers. (Lee et al.,2013). In this study, we focus on evaluate ABC company’s resource allocation process.

2.3.2 Importance of improving efficiency

Although, improving efficiency in the textile industry is very important for various reasons. Firstly, improved efficiency leads to cost reduction, enabling companies to produce textiles at lower cost and maintain competitive prices in the market. According to Hasanbeigi (2010) Improved efficiency leads to cost reduction in various aspects of garment production, including labor, materials, and energy costs. Secondly, efficient production processes result in reduced lead times, enabling faster response to market demands and trends and efficient processes help optimize the use of resources, such as energy, and raw materials (Muthu et al., 2016).

As a Viewpoint of textile manufacture, increased efficiency causes Higher production rates, allowing the industry to meet growing demand and capitalize on market opportunities. Furthermore, Streamlining processes and reducing unnecessary work can contribute to improved working conditions and job satisfaction among employees. Finally improving efficiency reducing resource consumption and waste generation in the textile industry can result in a more environmentally friendly and sustainable manufacturing process.

However, in this study, we mainly focus on the lead time in ABC Company. The purpose is to improve lead time efficiency by identifying the causes that affect to the increased lead time.

2.3.3 Lead Time Role in Enhancing Efficiency

Lead time plays a crucial role in enhancing efficiency in the textile industry. It reduces the risk of delays and stockouts and contributes to the timely availability of raw materials by enabling retailers and manufacturers to more effectively plan and coordinate their delivery and production schedules (Monczka et al., 2015). Properly managing lead time enables businesses to promptly meet customer requirements, ensuring on-time delivery and satisfying their customers (Mangngenre et al.,2020).

Furthermore, shortening lead times helps minimize work-in-process inventory, leading to lower holding costs and increased overall operational efficiency (Stevenson,2018) and effective lead time allows for more flexibility in adapting to changes in production requirements, supporting a more agile and responsive manufacturing process. Reducing the bullwhip effect, reducing the amplification of demand variability through the supply chain is an advantage of having an efficient lead time (Lee et al.,1997) And Short lead times help textile companies remain competitive by allowing them to respond quickly to changes in the market and in fashion trends (Christopher and Towill,2002). Considering the above facts lead time plays an important role in enhancing the efficiency of a company.

2.4 Conclusion

In conclusion, the literature review provides better insights for the study of enhancing the lead time efficiency in the global supply of apparel in ABC Company. The global supply chain is one of the major concepts explained in the literature review of this study. As most literature describes, the global supply chain is vital to a company but it is more complex and riskier than a local supply chain (Manuj and Mentzer, 2008). However, companies may face several risks related to the international context when they have a global supply chain (Cohen and Mallik, 1997). As a suitable theory for the study, time and motion study manage the period of activity in the production process to obtain the highest productivity (Prakash et al, 2020). Since this study focuses on enhancing efficiency, several methods that can enhance efficiency are described through previous studies such as facility layout efficiency, and resource allocation among departments. Companies have to improve the efficiency of the production process because the current marketplace is more dynamic, and competitive and expects the highest quality product in a short time (Araujo et al., 2017). Finally, the study is done in order to improve the lead time efficiency. Therefore, all concepts discussed in the literature review are bound with the lead time and enhance its efficiency.

3. Research Methodology

3.1 Research approach

When conducting research, a research methodology plays a critical role because it assists in shaping the direction and results of the research (Abutabenjeh and Jaradat, 2018). However, when referring to the literature related to the global supply chain, many researchers follow the qualitative approach for their studies, and many research with concepts related to our study such as lead time, facility layout, and interdepartmental productivity are done using the qualitative approach. (Baldwin, 2012; Cohen and Mallik,1997; Deerasingha, 2009; Janivier-James, 2011; Kader and Aktar, 2014; Knutsen, 2003; Manuj & Mentzer, 2008). Therefore, this study adopted the qualitative methodology as the research approach. Further, in terms of the research strategy, the case study approach was be adopted similar to related studies (Azizi, 2015; Carlo et al., 2013). Data was collected through in-depth interviews based on

semi-structured interview guides. The sample size was 17 employees (Refer to Table 1 for more details). The collected data was analysed based on the thematic analysis technique (Braun & Clark, 2006)

Table 1

Sample size of the study.

Designation of the Interviewees	Sample Size
General manager	01
Operational manager	01
Supervisors	05
Production employees	10

Note. Sample size and the roles of ABC Company that use to collect data.

3.2 Profile of the Participant

We interviewed a diverse range of participants from upper management to lower-level employees at ABC Company. Our interviews were conducted in Sinhala due to the linguistic diversity within the company and the necessity for efficient communication. We conducted 12 interviews and our participants represent various operational departments crucial to the manufacturing process. Furthermore, top management provides insight into broader strategies and objectives, while lower-level employees provide valuable perspectives on practical challenges and operational constraints. Each interview lasted between 20 and 30 minutes and allowed for comprehensive discussions about the reasons behind increased lead times.

Table 2

Profile of the participants

Name	Designation	Code
Madhawa	General Manager	01
Kamal	Operation manager	02
Nuwan	Supervisor	03
Nimesh	Supervisor	04
Taniya	Employee	05
Devinda	Employee	06
Sanka	Employee	07

Raveen	Employee	08
Kaveesha	Employee	09
Ruwan	Employee	10
Bimal	Employee	11
Kasun	Employee	12

Source: Author's Contribution

3.5 Sample and Sampling Procedure

This study has used 12 participants comprising general managers, operational managers, supervisors, and production employees from ABC Company. The sample size in this study is based on the principles of qualitative research; it gives more prominence to the depth and richness of data collection rather than the number (Creswell, 2014). A small sample size is effective in qualitative research that is based on an in-depth study where detailed individual opinions and experiences need to be identified. The chosen sample size provided adequate data saturation, a period when no additional themes or insight emerged from further interviews (Guest et al., 2006), thus making the data that was collected to be comprehensive, representative of a wide range of perspectives. Similar qualitative studies on organizational processes and supply chain challenges have also used sample sizes within this range without any problem to their findings (Patton, 2002; Singh, 2015).

Table 1

Sample size of the study.

Designation of the Interviewer's	Sample Size
General manager	01
Operational manager	01
Supervisors	05
Production employees	10

Note. Sample size and the roles of ABC Company that use to collect data.

3.5.1 Sampling Method

The study adopted a purposive sampling approach, a widely used method in qualitative research for selecting participants who can provide rich, relevant, and detailed information related to the research objectives (Yin, 2018). Participants were selected based on their involvement in key stages of the production and operational processes at ABC Company, ensuring that their insights were directly aligned with the study's aim of understanding and addressing lead time inefficiencies. This thus meant that purposeful sampling allowed the taking of a diverse participation group, ranging across the different tiers of the company.

This would ensure that an understanding of the problem was both at a strategic and operational level of analysis. Participation selection criteria had been guided in relation to role, responsibility, and first-hand experience related to the organizational supply chain process. This purposive sampling method befits recommendations by Rai and Thapa, who observe that it is efficient in exploratory studies, especially when the intention is to elicit nuanced insights from people with relevant expertise or unique experiences. By limiting selection to those directly involved in the production and supply chain processes, this sampling strategy ensured the capture of meaningful and actionable data. The sample size and sampling method were selected to correspond with the qualitative research approach. The size was adequate to allow for an in-depth analysis of the data, while the purposive sampling ensured the inclusion of participants with critical knowledge and experience about the objectives of the study. This therefore provides a solid basis to address the research questions and achieve the goals of the study.

3.5.2 Duration of the Study and Geographical Location

As an apparel company, ABC is an employee-oriented business organization. The geographical location that has been focused on in this study to gather the most relevant data is the Awissawella area. The main reason for collecting data from the Awissawella area is the closest area for ABC company. According to the interview with the general manager, more than 75% of employees of the company are residing in the Awissawella area and they are mostly familiar with the organization's operations, culture, and challenges. Therefore, the sample that is used to gather data for the study is spread in the Awissawella area.
Further, the duration of the study was approximately six months which was required to gather data with in-depth interviews and analyze the current status of the organizational practices. The duration was mainly allocated to conduct the interviews with different level employees without making disturbances to the company operations and the privacy. Further, the six months assist in identifying the seasonal changes and the changes and behaviors of the lead time of the company.

4. Data Analysis

4.1 Familiarization with Data

In order to achieve the objectives of the study, data was collected through conducting interviews with ABC Company. Various opinions, experiences, and ideas were collected from different levels of employees. Semi-structured interviews were conducted through both physical meetings and calls.

Managerial-level interviewees were interviewed via telephone conversations because of their busy schedules. Lower-level employees were interviewed through physical meetings. However, we had to use both Sinhala and English languages. The lower-level employees were not fluent in the English language. Therefore, we conducted interviews in Sinhala language. After listening to the interviews several times carefully, the interview audios were translated into Sinhala and the interview transcript was created.

After studying the interview transcript several times, we were able to learn different opinions and experiences related to ABC Company. Those interviews give us a better idea and a holistic understanding of the problematic points that cause a long lead time for ABC Company. Further, the collected data is analyzed by using the thematic analysis method with several steps.

4.2 Initial code generation

After reading each interview transcript, relevant codes were identified about the research topic and objectives. These codes were generated considering experience, ideas, and common emotions. and also these codes were generated according to the lead time efficiency of the global supply of ABC company and the resulting codes are presented in the table below.

Table 3

Core themes, Subthemes and Codes

Core themes	Subthemes	Codes
1. Employee dissatisfaction	1.1motive of working	Achieving targets Incentives
	1.2 Demotivation	self-respect, working pressure Insufficient salary Psychological matters
2. Language and barriers	2.1 Language barriers	different language Communication speaking employees Misunderstandings
	2.2 Lack of communication	weak interdepartmental communication Weak information access
Upper-level decisions	3.1 Changing managerial decisions	changing working conditions adaptability
	3.2 Training	Lack of practice
3. Resources and production Matters	4.1 resource allocation and defects	Raw material delays Lacking fixed resources Stockpiling
	4.2 Lack of Employee engagement	Unnecessary movements Unnecessary time -consumption

Source: Author's Contribution

4.3 Search for Themes

This key step involves a subtle process of analyzing the codes derived from our research inquiries, closely examining their characteristics and discerning patterns that connect them. Through rigorous comparison and thoughtful analysis, we group similar codes into distinct themes and generate initial core themes.

4.4 Review and Refine the Themes.

According to Terry et al. (2017) Reviewing and refining themes can be identified as an important process that comprises a comprehensive evaluation of themes generated through various codes. In this step, the themes are examined to know whether those themes have captured the meanings of codes and collected data. In this study, every theme is closely connected to the main ideas and objectives of the study and it covers all different meanings of codes.

By carefully reviewing and refining themes, we can make stronger data analysis and gain the best insights of data.

4.5 Findings of the study

4.5.1 Employee Dissatisfaction

Employees are unhappy or discontent with various aspects of their work environment, job roles, or organizational policies. This dissatisfaction stems from factors such as inadequate compensation, long working hours, lack of career advancement opportunities, poor working conditions in factories, ineffective communication channels, insufficient training and development programs, or perceived injustices in management practices.

Motive of Working

Islam and Ismail (2008) suggested that motivation is an important aspect by leading function in influencing others to work toward the company's goals. Motivation is the internal and/or external drive that initiates, guides, and sustains goal-directed behavior. In the context of work, motivation influences an employee's willingness to exert effort, engage in their tasks, and contribute to the success of the company. when we conducted interviews, we identified employee motivation is very crucial for the company.

"They choose the best employee every year and give prizes. It was easy to get incentives just a year ago, but now they have increased the target, so it has become difficult to get incentives." (05)

"They choose the best employee based on covering the target. But now the target is high, so our interest is low." (09)

Demotivation.

Demotivation is defined as a lack of motivation combined with inaction (Elwood and Hood, 2009). Demotivation can affect employee performance and commitment, it must be sought for factors that greatly influence it in order to be overcome so as not to threaten the sustainability of the company (Sohail et al., 2014). opposite of motivation is demotivation. It's the feeling of lacking enthusiasm, drive, or interest in something that was previously motivating. In the workplace. demotivation can lead to decreased productivity, performance, and engagement. Employee demotivation also directly impacts on production. through interviews, we identified a lack of employee enthusiasm, interest commitments, and so on. These things come from working pressures, insufficient salary, and so on.

"Sometimes we have to stand and work all day. Also, if a small mistake is made, supervisor blame to us.it affect to our self-respect" (05)

"The greatest challenge to my motivation is when there are sudden changes in work conditions or tight deadlines that are difficult to meet and we work for the target and we feel a pressure when we cover them. We are pressured by higher management." (06)

4.5.2 Language and communication barriers.

Language and communication barriers can create significant challenges in communication between individuals or groups who do not share a common language. This can be especially troublesome in multicultural settings where workers may speak different languages. A communication barrier is anything that holds us back from receiving and understanding the messages others use to convey their information, ideas, and thoughts (Rani,2016). Under language and communication barriers, language barriers and lack of communication can be identified as sub-themes.

Language barriers.

Language barriers are barriers that impede effective communication between individuals or groups who speak different languages or have different levels of proficiency in a shared language. The difficulties that arise when individuals have different language proficiency and make it difficult to communicate effectively are referred to as language barriers (Blume and Board, n.d)

The employees of ABC company have to face language and communication problems. Misunderstandings have also happened because of this language problem when dealing with employees who speak other languages. Some participants pointed out the difficulties they have to face because of the language barrier.

"However, there are language barriers for some Tamil-speaking employees, which can lead to misunderstandings or missed information" (07)

"In my company there are so many Tamil employees, some employees don't understand Sinhala or English.so, there are language barriers for some Tamil-speaking employees, which sometimes leads to misunderstandings or missed information" (08)

Lack of Communication

Communication deficits are the absence or insufficient exchange of information, thoughts, or feelings between individuals or groups. In an organization lack of communication refers to a situation in the workplace where there is a breakdown or insufficient exchange of information, feedback, and dialogue between managers and employees (Campbell et al., n.d)

In ABC company we can identify some communication deficits. Managers are mentioned that the communication between divisions is done only through emails and the employees between the divisions have a lack of access to communicate with the information of the other divisions. The participants confirm that in the following statements.

"We communicate only through emails" (01).

"Managerial levels of different divisions communicate only through emails. (02)

workers do not have a chance to communicate with other divisions but there are informal ways. Workers have information that is only relevant to their division." (03)

4.5.3 Upper-Level Decisions

Upper-level management of a company can be considered as a foundation of a company. The whole company is building on this foundation. Usually, the most crucial decisions of the company are taken by top management. Based on those decisions all other decisions were taken and all employees were led. Upper-level decisions are taken for shaping the company through various aspects such as expansions, investments, and organizational restructurings. Overall, upper-level decisions can create a direction and trajectory of the organization.

Changing Managerial Decisions

Changing managerial decisions can be identified as potential changes and modifications made by managers in their decision-making in an organization. Changing decisions involves changing the way decisions are formulated, implemented, and communicated to employees (Habanik, 2020). Those changes can negatively affect organizational performance, especially for employees. Frequent changing managerial decisions may cause to confusion and less commitment among employees (Singh and Greenhaus, 2014).

According to the employees of ABC Company, sometimes their top management also changes decisions again and again. During the interviews, many employees criticize this frequent decision-changing behavior. In employee's opinion, when management changes working conditions, it is hard to adapt to new conditions quickly. Every interviewee is looking for an adjustment period.

"It is difficult to give my best in the two or three days after the work conditions change, but I can work at my best in a week or two." (10)

"When they change our working conditions, we cannot work at our best as before. It is hard to adapt those chargers in one or two days. They give us one week of training. So we must adapt to the new work within one week. Sometimes one week is not enough." (05)

"Whenever there are changes in work conditions, such as new procedures or equipment, it usually requires some adjustment period. While the company provides training to facilitate this transition, sometimes the allocated time may not be sufficient, leading to temporary disruptions in task time." (07)

When management changes their decisions and working conditions, employees try to adapt to it and it causes to decrease in their working speed also. Decreased working speed causes delayed production and reduced efficiency.

"Unfamiliar work takes more time in the initial period. I think it's hard for every worker. In some periods when there is a change, we are not able to complete our targets. But later it can be done in less time. Then we can do it to our maximum" (09)

"Sometimes it takes some time to perform as before when the manager changes the work status. Sadly, sometimes our supervisors expect the same performance as before even though we have changed"(11)

According to the interviews, those frequent changes in managerial decisions directly cause to production delays. Further, it causes to longer lead time also. According to Habanik (2020), ABC Company also can establish a stable decision-making framework and if it is not necessary, it is better to avoid frequent decision changes. Further, maintaining clear communication for communicating the actual reasons behind the changed decisions will help to reduce the uncertainty and communication among employees.

Training

Training can be identified as a method for an organization to develop the required knowledge and other skills for present and future job requirements. Training can enhance the capabilities of employees that are required to current and future job requirements (Owoyemi, 2011). Further training programs are designed to fill the gap between the existing performance level and the expected performance level of an employee (Amir and Amen, 2013). Training programs assist in being familiar with the environmental changes and motivate them to commit with confidence.

Since ABC Company is a company that changes its working conditions frequently, employees want to be more familiar with new conditions and work environment. Providing training is a good method to provide more practice to employees. However, ABC Company has not provided enough training to their employees and many employees believe that if they are provided sufficient training they can be more successful than current performance.

"While the company provides training to facilitate this transition, sometimes the allocated time may not be sufficient, leading to temporary disruptions in task time." (07)

"If they change our working conditions, they give us one week of training. But sometimes it takes more time to adapt to the new working conditions and it takes more time to do the new work as efficiently as the previous work." (06)

Not only giving insufficient training periods when they have changes in working conditions, ABC Company did not provide any training program to develop the skills of employees during the last six months. During the interview, we identified that many employees are willing to participate in training programs and enhance their skills.

"There haven't been any training development programs in the past six months specifically for the printing department." (07)

"I would like to join a training program. I believe continuous learning is essential for personal and professional growth."(07)

"There haven't been any training development programs specifically for the embroiling department in the past six months." (08)

"Yes of course. Not only me but also other employees willing to get training." (09)

"No. A few years ago, there were such programs. Recently, there were none. Because we are the oldest employees, we do not provide training development programs." (05)

When employees do not have proper practice it will cause to reduce the productivity of employees. Less productivity may lead to a high defect rate and it can be caused by a longer lead time. To reduce the lead time ABC Company can implement various effective methods such as proper training programs, mentoring and coaching employees, ask performance feedback, and conducting individual development plans (Amir and Amen, 2013).

4.5.4 Resources and Production Delays Matters

Resources are anything that can be used to achieve a goal or complete a task. They can be tangible or intangible. limitations or problems encountered with the people, equipment, materials, time, or budget needed to complete a task or project, it can be a resource issue. With these resource issues, production delays can happen.

Resources Allocation and Defects

Resource allocation is regarded as the assignment of appropriate resources to activities so as to obtain an optimal solution in an economic way. (Lee,and Mou,2012). Effective resource allocation can improve production operations in terms of productivity and efficiency by providing efficient usage of limited resources while avoiding deadline delays. (Bastos, et al 2005). Resource allocation refers to the process of distributing available resources, such as time, money, manpower, or materials, among various tasks or projects to achieve specific objectives or goals efficiently. It involves making decisions about how to best utilize limited resources to maximize productivity and achieve desired outcomes. Another thing that we discovered while conducting these interviews was the resource-related problems. lack of quality materials lack some fixed materials, and also suppliers are not supplying at the right time. therefore, these things affect the proper resource allocation.

"There are some issues with supplying raw materials at the right time. When we evaluate them we *attack them through a balanced scorecard and we deal with them according to the situation." (01)*

"Yes, it can happen, we have our method to evaluate suppliers. when suppliers delay supplying raw materials, we consider it in supplier evaluation. Then we discuss about the mistakes that they have made with the suppliers who are in lower levels" (02).

Lack of employee engagement

According to Perrin (2003) employee engagement is employees' willingness and ability to help their company succeed, largely by providing discretionary effort on a sustainable basis." Robinson et al. (2004) define employee engagement as "a positive attitude held by the employee towards the organization and its value. Lack of employee engagement refers to a state where employees are not fully invested in their work. They may go through the motions to complete their tasks but lack the motivation, enthusiasm, or commitment to contribute their best effort. Engaged employees are enthusiastic about their work,

deeply invested in the company's success, and willing to go above and beyond their job requirements. This often leads to higher productivity, better performance, and increased loyalty among employees.

"Yes of course, in the factory many unnecessary movements of workers can be seen. To be honest, sometimes workers spend more time than they actually need to complete that task. So we try to check and reduce those unnecessary time consumptions." (02)

"Yes, I think. Many unnecessary movements can be seen in the layout. So we have to check again and again and reduce those movements but it is hard to do so" (01)

5. Recommendations and implications of the study

Through the interview which was conducted using employees from different levels of ABC Company, several matters were identified in their supply chain, especially in their production lines. In order to overcome the identified problems, we provide several recommendations to the ABC Company to enhance the efficiency of their supply chain.

01. Introducing diversified and attractive incentive packages

As we identified during the interview, many employees are not satisfied with the benefits that the company provides to the employees. Therefore, many employees do not have the motivation to provide their best to the company. According to Ritala P. et al. (2020), both intrinsic and extrinsic incentives assist in enhancing employee motivation and employee performance. By identifying different types of incentives, needs, and expectations of employees and aligning incentives with company objectives, motivation, and best performances can be achieved for the company (Rital P. et al., 2020). Providing financial incentives such as salary increments and nonfinancial incentives such as appreciations, and rewards will encourage employees to build a better perception of the company. In ABC Company, the only incentive is the reward for the best employee of the year. Providing diversified tangible and intangible benefits will motivate employees and assist in creating a good picture of ABC Company in employees' minds.

02. Maintain a proper information flow and communication methods

Employees in ABC Company do not have sufficient access to information in addition to their work. Therefore, the employees do not have a better idea about the production process or the next levels of production. During the interview, we identified that some employees have communication problems since they speak different languages. As a solution to this problem, ABC Company can establish a proper flow of information according to its hierarchy. Further ABC Company can use visual aids and symbols for basic communication in the company and the company can hire bilingual staff, providing training related to improving employee language proficiency in the company's primary language. An effective communication and information flow of an organization will lead to enhanced operating performance by providing good coordination, decision-making, and solving problems effectively (Forza C. and Salvador F.,2001). According to Kologiannidis S. (2020), Maintaining effective communication assists in boosting the motivation of employees, increases productivity, and highly contributes to achieving competitive advantages.

03. Provide sufficient training regularly

According to the information given by employees of the ABC Company in the interview, any employee did not participate in a training program during the last year. When observing the interviews, we identified that employees expect training for the changing conditions. Therefore, this study recommends providing a proper training series to the employees according to a suitable basis as annually or semi-annually. Since ABC Company requires reducing the lead time and enhancing the supply chain efficiency, the company has to extract the best performance from their employees and increase the production efficiency of employees. Regular training allows employees to develop their necessary knowledge, and skills, and enhance their effectiveness and overall productivity (Sultana A. et al., 2013). As Sultana A. et al. (2013) explain, organizations that invest in training and development have achieved a high level of production, and performance and achieve their objectives and goals at the right times. Further providing a proper training program can make workers feel like insiders of the company and they try to commit to their best performances (Owoyemi et al., 2011).

04. Plan and invest in purchasing essential resources

ABC Company is an apparel exporting company. Therefore, the company needs many fixed and variable resources. However, as interviewees comment, the company has a lack of fixed resources such as sufficient machines and some delays in raw material supply. Therefore, this study recommends planning the purchasing process in advance. Further, if the company can evaluate the resource requirements, the company can invest in essential resources. Having readily available fixed and variable resources is important to compete internationally and increase lead time efficiency (Deerasinghe R., 2009). According to DeerasingheR.(2009), investing in machines with high technology can add value to production through less time consumption and waste. However, it can be costly to small-scale organizations.

Investing in sufficient and required fixed assets and raw materials may assist in reducing the unnecessary time consumption of production in ABC Company as well. Further, it will assist to get the highest productivity of labor hours.

6. Limitation

In conducting the research on enhancing lead time efficiency in the global supply of apparel for ABC Company several limitations were encountered that significantly impacted the lead time efficiency. One of the main challenges was the data collection process. Due to the limited availability of detailed operational data from the company, the research could not fully access the internal processes and proprietary data that would have provided deeper insights into lead time inefficiencies. Although significant efforts were made to gather comprehensive information. the unavailability of certain critical data points constrained the ability to identify and analyze specific inefficiencies within the company's supply chain operations.

The research methodology relied heavily on qualitative data obtained from interviews with employees and managers. While these sources offered valuable perspectives and contextual understanding, the inherent subjectivity of qualitative data posed a potential bias that could affect the reliability and objectivity of the findings. Personal experiences and opinions, while insightful, do not always capture the full picture and can introduce variance that might skew the results.

Another significant limitation was the temporal scope of the study. We Conducted within a specific time frame, the research did not account for seasonal variations and demand fluctuations that can profoundly impact lead time in the apparel industry. Supply chain efficiency often varies with seasons, trends, and market conditions, and a short-term study may not capture these dynamic changes adequately. Longitudinal studies extending over multiple seasons or years would be necessary to accurately reflect these variations and offer a more comprehensive understanding of lead time efficiency over time.

Further the study did not cover the influence of external factors such as global economic conditions, trade policies, and supply chain disruptions like pandemics and natural disasters. These external variables can significantly affect lead time and supply chain operations but were beyond the scope of this research. Global economic shifts can alter consumer demand and production costs, trade policies can impact the flow and tariffs on goods, and unexpected disruptions can cause significant delays. Future research should consider these things to provide a more holistic and resilient analysis of lead time efficiency in the global supply chain.

7. Conclusion

The study identified key factors contributing to increased lead times in ABC Company's global apparel supply and proposed strategies for improvement. Four primary issues were identified employee dissatisfaction, communication barriers, frequent changes in managerial decisions, and resource allocation problems. Employee motivation was low due to high targets and inadequate incentives, impacting productivity. Communication barriers, particularly language differences, hindered effective coordination and information flow. Frequent managerial changes caused confusion and adaptation challenges while insufficient training limited employees' ability to adjust to new work conditions. Resource allocation issues, including delays in raw material supply and a lack of essential resources, further exacerbated lead times. To address these issues several recommendations were proposed. Introducing diversified and attractive incentive packages can boost employee motivation. Establishing clear communication channels and providing language proficiency training can improve coordination. Implementing regular training programs will help employees adapt more effectively to new work conditions. And also planning and investing in essential resources can prevent production delays. Creating a stable decision-making framework and effectively communicating changes can reduce confusion and improve adaptability. The study faced limitations including data collection constraints, the subjectivity of qualitative data, and the exclusion of external factors such as economic conditions. This study provides a comprehensive analysis for increasing the global supply of ABC company.

References

Abutabenjeh, S., and Jaradat, R. (2018). Clarification of research design, Research Methods, and research methodology. *Teaching Public Administration*, *36*(3), 237–258. https://doi.org/10.1177/0144739418775787

Ailing, , C. (2009). Facility layout improvement using systematic layout planning (slp) and ARENA. *Universiti Teknologi Malaysia.* https://doi.org/https://d1wqtxts1xzle7.cloudfront.net/52583090/DOC-20170305-WA0017-libre.pdf?1491928434=andresponse-content-disposition=inline%3B+filename%3DFACILITY_LAYOUT_IMPROVEMENT_USING_SYS

TEM.pdfandExpires=1717114331andSignature=Enh6KCrYfFeXBzO4fanlqEUCAYRQRk60r~flqkJA6YtM3zokbadczl-WwCy~yQHon1SsDoZTg-ilbX5GCsExGYloOYbu4TIK22p8VxEyaEZ0cT28aUrtHbzrUkKc6JK1NvBo-XgoDGIUox6507Wjct~4Gh5lsW4q~O-9pdIWw1FKviMnyF5IkYFBKtNCq4mT3nAVi~dMcWVtBgwJYrO4dOhShfXwdPHEVRjFBzeykex2Pfr5Mx5OcrS-bl8rP4HLb-QnV67mOtFwvadZVqXVPwiC1gGh-qyH5D5uijeIE9v2RPDrUwFlsuxQ8aqB1yvNRxap29heKpAoZTdtz9qd3g__andKey-Pair-Id=APKAJLOHF5GGSLRBV4ZA

Albino, V., Messeni, A., and G, O. (2009). Managing logistics flows through enterprise Input-Output models. In *InTech eBooks*. https://doi.org/10.5772/6652

Ayers, J. (2001). A Primer on Supply Chain Management. *Resource Management*, 3–17. https://doi.org/10.1201/9781420000191.ch1

Azizi, A. (2015). Designing a future value stream mapping to reduce lead time using SMED-A case study. *Procedia Manufacturing*, *2*, 153–158. https://www.sciencedirect.com/science/article/pii/S2351978915000281?via%3Dihub

Baldwin, R. E. (2012). Global Supply Chains: Why they emerged, why they matter, and where they are going. *Global Value Chains in a Changing World*, 13–59. https://doi.org/10.30875/3c1b338a-en

Barnes, L., and Lea-Greenwood, G. (2006). Fast fashioning the supply chain: shaping the research agenda. *Journal of Fashion Marketing and Management*, *10*(3), 259–271. https://doi.org/10.1108/13612020610679259

Bastos, R. M., De Oliveira, F. M., and De Oliveira, J. P. M. (2005). Autonomic computing approach for resource allocation. *Expert Systems With Applications*, *28*(1), 9–19. https://doi.org/10.1016/j.eswa.2004.08.014

Bevilacqua, M., Ciarapica, F. E., Crosta, A., Mazzuto, G., and Paciarotti, C. (2013). Designing an efficient production system: A case study of a clothing company. *International Journal of Engineering Business Management*, *5*, 36. https://doi.org/10.5772/56842

Blanchard, E., Bown, C., and Johnson, R. (2016). *Global Supply Chains and Trade Policy*. https://doi.org/10.3386/w21883

Blume, A., and Board, O. (2013). *Language barriers* (2nd ed., Vols. 781–812). "Language barriers." Econometrica.

Bastos, A., Chimimba, C. T., Von Maltitz, E. F., and Belmain, S. R. (2005). Identification of rodent species that play a role in disease transmission to humans in South Africa. *ResearchGate*. https://doi.org/10.13140/2.1.2629.4563

Campbell, S., Campbell-Phillips, N. S., and Phillips, N. D. (2020). Lack of Communication between Management and Employees. *SIASAT Journal*, *5*(3), 32–39. https://doi.org/10.33258/siasat.v5i3.67

Chang, W.-S., and Lin, Y.-T. (2019). The effect of lead-time on Supply Chain Resilience Performance. *Asia Pacific Management Review*, *24*(4), 298–309. https://doi.org/10.1016/j.apmrv.2018.10.004

Cheng, C.-Y., Chen, T.-L., and Chen, Y.-Y. (2014). An analysis of the structural complexity of Supply Chain Networks. *Applied Mathematical Modelling*, *38*(9–10), 2328–2344. https://doi.org/10.1016/j.apm.2013.10.016

Christopher, M. (1994). *Logistics and Supply chain Management*. https://ci.nii.ac.jp/ncid/BB05643450

Christopher, M. (2016). *Logistics and Supply Chain Management: Logistics and Supply Chain Management*. Pearson UK.

COHEN, M. A., and MALLIK, S. (1997). Global Supply Chains: Research and Applications. *Production and Operations Management*, *6*(3), 193–210. https://doi.org/10.1111/j.1937-5956.1997.tb00426.x

Cheng, B., Ioannou, I., and Serafeim, G. (2011). Corporate social responsibility and access to finance. *Social Science Research Network*. https://doi.org/10.2139/ssrn.1847085

Darko, S., Terkper, V. D., Novixoxo, J. D., andAnning, L. (2018). Assessing the effect of lead time management on customer satisfaction. *International Journal of Developing and Emerging Economies*, *6*(1), 1-22.

Dheerasinghe, R. (2009). Garment industry in sri lanka challenges, prospects and strategies. *Staff Studies*, *33*(1), 33. https://doi.org/10.4038/ss.v33i1.1246

Embuldeniya, A. (2015). *Impact of Apparel Industry on the Economy of Sri Lanka*. https://doi.org/ http://repository.kln.ac.lk/handle/123456789/10625

Forza, C., and Salvador, F. (2001). Information flows for high-performance manufacturing. *International Journal of Production Economics*, *70*(1), 21–36. https://doi.org/10.1016/s0925-5273(00)00038-4

Gimenez, C., and Ventura, E. (2005). Logistics-production, logistics-marketing and External Integration. *International Journal of Operations andamp; Production Management*, *25*(1), 20–38. https://doi.org/10.1108/01443570510572222

Gondal, , H. U., and Shahbaz, , M. (2012). Interdepartmental communication increases organizational performance keeping HRM as a mediating variable. *Ournal of Asian Business Strategy*. https://doi.org/https://citeseerx.ist.psu.edu/document?repid=rep1andtype=pdfanddoi=b12e7539f51df2c113b4f9ef4f03f878a70c0793

Habanik, J., Martosova, A., and Letkova, N. (2020). The impact of managerial decision-making on employee motivation in manufacturing companies. *Journal of Competitiveness*, *12*(2), 38–50. https://doi.org/10.7441/joc.2020.02.03

Halcomb, E., and Hickman, L. (2015). Mixed methods research. *Nursing Standard*, *29*(32), 41–47. https://doi.org/10.7748/ns.29.32.41.e8858

Hasanbeigi, A. (2010). *Energy-Efficiency improvement opportunities for the textile industry*. https://doi.org/10.2172/991751

Hernaus, T., Černe, M., and Škerlavaj, M. (2021). The interplay between relational job design and cross-training in predicting employee job/task citizenship performance. *Human Resource Development Quarterly*, *32*(4), 625–646. https://doi.org/10.1002/hrdq.21427

Ho, G., Ip, W., Lee, C., andMou, W. (2012). Customer grouping for better resources allocation using GA based clustering technique. *Expert Systems With Applications*, *39*(2), 1979–1987. https://doi.org/10.1016/j.eswa.2011.08.045

HOPP, W. J., and SPEARMAN, M. L. (1991). Throughput of a constant work in process manufacturing line subject to failures. *International Journal of Production Research*, *29*(3), 635–655. https://doi.org/10.1080/00207549108930093

Hox, J. J., andBoeije, H. R. (2005). Data Collection, Primary vs. Secondary. In *Elsevier eBooks* (pp. 593–599). https://doi.org/10.1016/b0-12-369398-5/00041-4

Islam, R., and Ismail, A. Z. H. (2008). Employee motivation: a Malaysian perspective. *International Journal of Commerce and Management*, *18*(4), 344–362. https://doi.org/10.1108/10569210810921960

Janvier-James, A. (2011). A new introduction to supply chains and supply chain management: Definitions and theories perspective. *International Business Research*, *5*(1). https://doi.org/10.5539/ibr.v5n1p194

Janvier-James, A. M. (2011b). A New Introduction to Supply Chains and Supply Chain Management: Definitions and Theories Perspective. *International Business Research*, *5*(1). https://doi.org/10.5539/ibr.v5n1p194

Kalogiannidis, S. (2020). Impact of effective business communication on employee performance. *European Journal of Business and Management Research*, *5*(6). https://doi.org/10.24018/ejbmr.2020.5.6.631

Kandel, , B. (2020). *Qualitative versus Quantitative Research. Journal of Product Innovation Management*. https://doi.org/https://d1wqtxts1xzle7.cloudfront.net/67682126/Qualitative_Vs_Quantitative_Research-libre.pdf?1624173033=andresponse-content-disposition=inline%3B+filename%3DQualitative_Versus_Quantitative_Research.pdfandExpires=1717112409andSignature=ctEcR21pvzsV~AP8fRGN-yHOuS2-UlzhOhtx0cyrT2p2a1kp-Ctx48Gall3KnaSd6l-oPEhYXdDOsjrhuvJBDe3QqbTWezWGCAUpT8YCBIXi1jaCdbNd5EGzVmhRANpwO-9ODFAfFIg-dC0KcSbdTY7JtgEdRkiz2DOlSc6RDTjEkLvX2MFTye2riSTSJYy6Q0VFERzFuJpJ~mgo8lVvU9Kz7-~Cp9PwqYntW-Fx6DLwi4tVxUV49ozh2FTe62t10UNyurYysmK6Qq-aLze-3IA80rY6R6sRKCreQ~tvDBKO8FyQCUIOdslYVp-kUhTTTNkuJm9pvnZUBGUcGKc1vQ__andKey-Pair-Id=APKAJLOHF5GGSLRBV4ZA

King, S. F., and Burgess, T. F. (2006). Beyond critical success factors: A dynamic model of enterprise system innovation. *International Journal of Information Management*, *26*(1), 59–69. https://doi.org/10.1016/j.ijinfomgt.2005.10.005

Knutsen, H. M. (2003). Globalisation and the garment industry in Sri Lanka. *Journal of Contemporary Asia*, *33*(2), 225–250. https://doi.org/10.1080/00472330380000141

Kraiselburd, S., Pibernik, R., and Raman, A. (2011). The manufacturer's incentive to reduce lead times. *Production and Operations Management*, *20*(5), 639–653. https://doi.org/10.1111/j.1937-5956.2010.01192.x

kraiselburd 2010).pdf - Google Search. (n.d.). https://www.google.com/search?q=kraiselburd+2010).pdfandoq=Kraiselburd%2C+2010).andgs_lcrp=EgZjaHJvbWUqBwgEECEYoAEyBggAEEUYOTIHCAEQIRigATIHCAIQIRigATIHCAMQIRigATIHCAQQIRigAdIBCDUyNDNqMGo3qAIUsAIBandclient=ms-android-samsung-gj-rev1andsourceid=chrome-mobileandie=UTF-8#vhid=zephyr:0andvssid=atritem-https://asrames.org/wp-content/uploads/2012/04/Kraiselburd-and-Yadav-Supply-Chains-and-Global-Healt.pdf

Knutson, S. (2003). Experiential learning in Second-Language classrooms. *TESL Canada Journal*, *20*(2), 52. https://doi.org/10.18806/tesl.v20i2.948

Lakens, D. (2022). Sample size justification. *Collabra. Psychology*, *8*(1). https://doi.org/10.1525/collabra.33267

Lee, C., Choy, K., Ho, G., and Law, K. (2013). A RFID-based Resource Allocation System for garment manufacturing. *Expert Systems With Applications*, *40*(2), 784–799. https://doi.org/10.1016/j.eswa.2012.08.033

Madanhire, I., and Mbohwa, C. (2016). Enterprise resource planning (ERP) in improving operational efficiency: Case study. *Procedia CIRP*, *40*, 225–229. https://doi.org/10.1016/j.procir.2016.01.108

Manuj, I., and Mentzer, J. T. (2008). Global Supply Chain Risk Management Strategies. *International Journal of Physical Distribution andamp; Logistics Management*, *38*(3), 192–223. https://doi.org/10.1108/09600030810866986

Meixell, M. J., and Gargeya, V. B. (2005). Global Supply Chain Design: A literature review and Critique. *Transportation Research Part E: Logistics and Transportation Review*, *41*(6), 531–550. https://doi.org/10.1016/j.tre.2005.06.003

Mentzer, J. T., Stank, T. P., and Myers, M. B. (2007). Why Global Supply Chain Management? *Handbook of Global Supply Chain Management*, 1–16. https://doi.org/10.4135/9781412976169.n1

Msimangira, K. A. B., and Tesha, C. P. (2014). Global supply chain practices and problems facing developing countries: A study in Tanzania. *Operations and Supply Chain Management: An International Journal*, 130–138. https://doi.org/10.31387/oscm0180119

Mulugeta, L. (2014). Productivity improvement through lean manufacturing tools in Ethiopian Garment Manufacturing Company. *Materials Today: Proceedings*, *37*, 1432–1436. https://doi.org/10.1016/j.matpr.2020.06.599

Making supply chain management work. (2001). In *Auerbach Publications eBooks*. https://doi.org/10.1201/9781420000191

Murphey, T., Falout, J., Elwood, J. A., and Hood, M. (2009). Inviting Student voice. *ResearchGate*. https://www.researchgate.net/publication/281307225_Inviting_Student_Voice

Nabi, F., Mahmud, R., and Islam, M. M. (2015). Improving Sewing Section Efficiency through Utilization of Worker Capacity by Time Study Technique. *International Journal of Textile Science*, *4*(1), 1–8. http://www.sapub.org/global/showpaperpdf.aspx?doi=10.5923/j.textile.20150401.01

Owoyemi, A. O., Oyelere, , M., Elegbede, T., and Gbajumo-Sheriff, , M. (2011). Enhancing employees' commitment to organisation through training. *International Journal of Business and Management*. https://doi.org/https://d1wqtxts1xzle7.cloudfront.net/80069010/3b2bc5686b4ede0ad41167b19377fb234be2-libre.pdf?1643769089=andresponse-content-disposition=inline%3B+filename%3DEnhancing_Employees_Commitment_to_Organi.pdfandExpires=1717117309 9o2s742lILwebyV1I59Qq5m-z7lsXaVxRK9Jn

Prakash, C., Prakash Rao, B., Shetty, D. V., and Vaibhava, S. (2020). Application of time and motion study to increase the productivity and efficiency. *Journal of Physics: Conference Series*, *1706*(1), 012126. https://doi.org/10.1088/1742-6596/1706/1/012126

Rajput, D., Kakde, M., Chandurkar, P., andRaichurkar, P. P. (2018). Enhancing efficiency and productivity of garment industry by using different techniques. *International Journal on Textile Engineering and Processes*, *4*(1), 5-8.

Rani, K. (2016). COMMUNICATION BARRIERS. *OURNAL OF ENGLISH LANGUAGE AND LITERATURE*, *3*(2), 74–76. https://www.researchgate.net/profile/Usha-Kumbakonam/publication/304038097_COMMUNICATION_BARRIERS/links/57641fd708aedbc345ecb7e2/COMMUNICATION-BARRIERS.pdf

RITALA, P., VANHALA, M., and JÄRVELÄINEN, K. (2019). The role of employee incentives and motivation on organisational innovativeness in different organisational cultures. *International Journal of Innovation Management*, *24*(04), 2050075. https://doi.org/10.1142/s1363919620500759

Robinson, D., Perryman, S. and Hayday, S. (2004) The Drivers of Employee Engagement Report 408. Institute for Employment Studies, UK. - References - Scientific Research Publishing. (n.d.). https://www.scirp.org/reference/ReferencesPapers?ReferenceID=1869878

S Kader, and M.M.K. Akter. (2014). (PDF) analysis of the factors affecting the lead time for export of readymade apparels from Bangladesh; proposals for strategic reduction of Lead Time. https://www.researchgate.net/publication/328943449 h_proposals_for_strategic_reduction_of_lead_time

Sadeghi, A. (2015). Providing a measure for bullwhip effect in a two-product supply chain with exponential smoothing forecasts. *International Journal of Production Economics*, *169*, 44–54. https://doi.org/10.1016/j.ijpe.2015.07.012

Seppälä, T., Kenney, M., and Ali-Yrkkö, J. (2014). Global Supply Chains and transfer pricing. *Supply Chain Management: An International Journal*, *19*(4), 445–454. https://doi.org/10.1108/scm-01-2014-0049

Seth *, D., and Gupta, V. (2005). Application of value stream mapping for lean operations and cycle time reduction: An indian case study. *Production Planning andamp; Control*, *16*(1), 44–59. https://doi.org/10.1080/09537280512331325281

Shahbaz, M. S., Rasi, R. Z. R., Ahmad, M. F. B., andSohu, S. (2018). The impact of supply chain collaboration on operational performance: Empirical evidence from manufacturing of Malaysia. *International Journal of Advanced and Applied Sciences*, *5*(8), 64–71. https://doi.org/10.21833/ijaas.2018.08.009

Short, J. L., Toffel, M. W., and Hugill, A. R. (2015). Monitoring Global Supply Chains. *Strategic Management Journal*, *37*(9), 1878–1897. https://doi.org/10.1002/smj.2417

Sillanpää, I. (2011). *Supply Chain Performance Measurement in the Manufacturing Industry: A Single Case Study Research to Develop a Supply Chain Performance Measurement Framework.* https://doi.org/https://oulurepo.oulu.fi/bitstream/handle/10024/34642/isbn978-951-42-9326-9.pdf?sequence=1

Şimşit, Z. T., Günay, N. S., andVayvay, Ö. (2014). Theory of Constraints: A Literature review. *Procedia: Social and Behavioral Sciences*, *150*, 930–936. https://doi.org/10.1016/j.sbspro.2014.09.104

Singh, K. D. (2015). Creating your own qualitative research approach: Selecting, integrating and operationalizing philosophy, methodology and methods. *Vision: The Journal of Business Perspective*, *19*(2), 132–146. https://doi.org/10.1177/0972262915575657

Singh, R., and Greenhaus, J. H. (2014). *The Relation between Career Decision-Making Strategies and Person–Job FIt: A Study of Job Changers*. https://doi.org/https://www.researchgate.net/publication/35738463_The_effectiveness_of_different_career_decision-making_behaviors_development_and_test_of_a_model

Slomp, J., and Molleman, E. (2002). Cross-training policies and Team Performance. *International Journal of Production Research*, *40*(5), 1193–1219. https://doi.org/10.1080/00207540110098823

Snyder, H. (2019). Literature review as a research methodology: An overview and guidelines. *Journal of Business Research*, *104*, 333–339. https://doi.org/10.1016/j.jbusres.2019.07.039

Sultana, , A., Irum, S., Ahmed, K., and Mehmood, N. (2012). Impact of training on employee performance: A study of telecommunication sector in Pakistan. *Interdisciplinary Journal of Contemporary Research in Business.*

Susanty, A., and Kenny, E. (2015). The Relationship between Brand Equity, Customer Satisfaction, and Brand Loyalty on Coffee Shop: Study of Excelso and Starbucks. *Asean Marketing Journal/Asean Marketing Journal (Depok)*, *7*(1). https://doi.org/10.21002/amj.v7i1.4481

Syduzzaman, M., Biswas, M. a. S., andYeasmin, D. (2016). Developing a Framework for Implementing Total Quality Management in the Apparel Industry: Case Study on a Bangladeshi Apparel Manufacturing Factory. *International Journal of Textile Science*, *5*(5), 87–95. http://article.sapub.org/10.5923.j.textile.20160505.01.html

S. Heragu, "Facilities design," Massachusetts PWS Publishing Company, Boston, 1997. – References - Scientific Research Publishing. (n.d.). https://www.scirp.org/reference/referencespapers?referenceid=23808

Subhashini, R., and Varghese, N. (2021). Methods of improving productivity in apparel industry. *International Journal of Research in Engineering, Science and Management*, *4*(4), 130–141. https://doi.org/10.47607/ijresm.2021.671

Terry, G., Hayfield, N., Clarke, V., and Braun, V. (2017). Thematic analysis. *The SAGE Handbook of Qualitative Research in Psychology*, 17–36. https://doi.org/10.4135/9781526405555.n2

Tien, N. H., Anh, D. B. H., and Thuc, T. D. (2019). *Global Supply Chain and Logistics Management*. Academic Publications.

Williams, M. (2007). Avatar watching: Participant observation in graphical online environments. *Qualitative Research*, *7*(1), 5–24. https://doi.org/10.1177/1468794107071408

Yin, R. K. (1981). The case study crisis: Some answers. *Administrative Science Quarterly*, *26*(1), 58. https://doi.org/10.2307/2392599

Increasing Sales Volume of Bunkering: The Case of ABC Marine Services

D.H.L.A. Arachchi
Graduate,
Department of International Business, Faculty of Management and Finance, University of Colombo, Sri Lanka (Author)

M.M.T.K. Ariyasinghe
Graduate,
Department of International Business, Faculty of Management and Finance, University of Colombo, Sri Lanka (Author)

H.P.B.P. Lakhiru
Graduate,
Department of International Business, Faculty of Management and Finance, University of Colombo, Sri Lanka (Author)

Sandun Weerasekera
Senior Lecturer,
Department of International Business, Faculty of Management and Finance, University of Colombo, Sri Lanka (Author and corresponding author)

Abstract

ABC Lanka Marine Services, a leading provider of bunkering services in Sri Lanka, has experienced a significant decline in bunkering sales volume. This research investigates the factors contributing to this drop, employing a multi-faceted approach. We examine internal factors such aspiring strategies of ABC Lanka along with external factors encompassing regional and global maritime trends, fluctuations in fuel prices, and competitor analysis are also explored. The research methodology involves in-depth analysis of company data, interviews with company experts, and a comprehensive review of relevant maritime literature; through that, three core themes emerged. Firstly, infrastructure changes, particularly

technological advancements and adaptation challenges, have influenced operational efficiency, with regulatory constraints limiting the adoption of optimal pricing methods. Secondly, stakeholder influence, including intense competition and evolving regulatory frameworks, has reshaped the market landscape, requiring strategic adjustments to maintain a competitive edge. Lastly, bunkering sales volume is significantly impacted by vessel movements and price fluctuations, driven by geopolitical tensions, taxation policies, and supply chain disruptions. The findings highlight the necessity for ABC Lanka Marine Services to enhance its technological adaptability, strengthen regulatory compliance strategies, and refine competitive positioning to sustain and improve bunkering sales in the Sri Lankan maritime sector. This study aims to identify the root causes of the decline and propose a set of actionable recommendations to improve ABC Lanka Marine Services bunkering sales volume and enhance its competitive advantage in the Sri Lankan maritime sector.

Keywords: *Bunkering Sales volume, Maritime industry, ABC Marine Services, Sustainability and Environmental compliance*

1. Introduction

1.1 Background

Bunkering is the process of supplying fuel to ships for their propulsion and other onboarding operations. It is a crucial aspect of the maritime industry to facilitate a smooth movement of goods and contribute to the growth of the global economy (Yao et al., 2012). Bunkering operations can occur at ports or in anchorage locations, and the bunkering industry plays a vital role in ensuring reliable, safe, and secure fuel supply to vessels (Doymus et al., 2022).

Factors such as fuel prices, quality of services, geographical advantage, and regulatory compliance significantly influence the competitiveness and dynamics of the bunkering industry. Additionally, environmental regulations, technological advancements, and market trends play pivotal roles in shaping the future of bunkering as the industry adapts to evolving global standards and sustainability initiatives presence of restrictive environmental regulations (Zero North, 2024).

In this study, we focused on the sales level of ABC Marine Services. The sales volume of the ABC Marine Service significantly dropped with the impact of COVID-19 mainly. Several factors affect the sales volume of bunkering such as fuel prices, geographical advantage, quality of services, regulatory environment, port tariffs and fees, supply waiting time, simplicity of operations, and presence of restrictive environmental regulations (Doymus et al., 2022). This study focuses on the identification of the internal and external factors affecting the persistent drop in sales of ABC Marine Service and the actions that should be implemented to increase the sales level.

1.2 Company Profile

ABC Marine Services mainly provides Bunkering, Marine Lubricants, and Fresh Water as services and they provide LSMGO (Low Sulfur Marine Gas Oil) and LSFO (Low Sulfur Fuel Oil) as products.

ABC Marine Services owns and operates a fleet of bunker barges which are regularly maintained to ensure zero disruptions and product contamination during bunker deliveries. They undertake deliveries in compliance with all regulatory, legal, and environmental standards, including the guidelines stipulated in MARPOL Annex VI. They are also the only bunkering service provider in Sri Lanka with OHSAS 18001-2007 certification, further exemplifying our dedication to delivering unparalleled service to all their customers.

As a leader in bunkering in Sri Lanka, they offer LSMGO and LSFO as bunker fuel which are sourced from leading suppliers in the world mainly based in Singapore, Fujairah and India. They perform regular quality checks of ABC marine services' storage facilities to ensure the reliability of the product specifications they offer.

ABC Marine Services is the sole stockiest and delivery agent in Sri Lanka for leading global petroleum brands. They maintain substantial stocks of marine lubricant at private bonded warehouses under the direct supervision of Sri Lanka Customs.

ABC Marine Services has dedicated equipment and infrastructure to supplying fresh water to any vessel. Their equipment has a carrying capacity of 130 tons of fresh water and the capability to deliver to vessels calling OPL and anchorage with flow metering. The fresh water they supply is sourced from the municipal supply facility at the Colombo port.

As a leader in providing bunkering and other services for vessels coming to Sri Lankan ports, they maintain dedicated equipment and partnerships forming an extensive infrastructure network which enables them to deliver world-class services to their clients with a customer-centric approach. They currently own and operate a fleet of barges with a total capacity exceeding 3,000 tons.

1.2. Problem Statement

Bunkering sales are one of the highest revenue-earning products of ABC Marine Services. According to the company, they are engaging in bunkering as they purchase the product from international suppliers considering the dynamic price changes and selecting the lowest price. Changing global bunker fuel prices enables the company to have a constant price for the product. After purchasing bunker fuel, they generally stock the purchased fuel in a general tank or engage in transactions with shipping companies in the sea without landing at the port. During the entire process, other than the cost of bunker fuel have to bare the taxes, customs fees, storage fees, and others which influence the price of the final bunkering product including inflation within the country and the world (Zero North, 2024).

Since the COVID-19 outbreak in 2019 affected the entire international business and their industries, it seriously affected the bunkering sales volume of the company as well it led to a reduction in the sales level accordingly. Moreover, as a country, almost all international business transactions were

restricted to mitigate the spread of the virus over the country. The crisis led to the drastic reduction of the bunkering sales volume of ABC Marine Services. The company is still facing challenges in the sales volume of bunkering to their expected level. As the product generates the highest portion of the sales, the sales volume drop affected the overall revenue of the organization.

Table 1

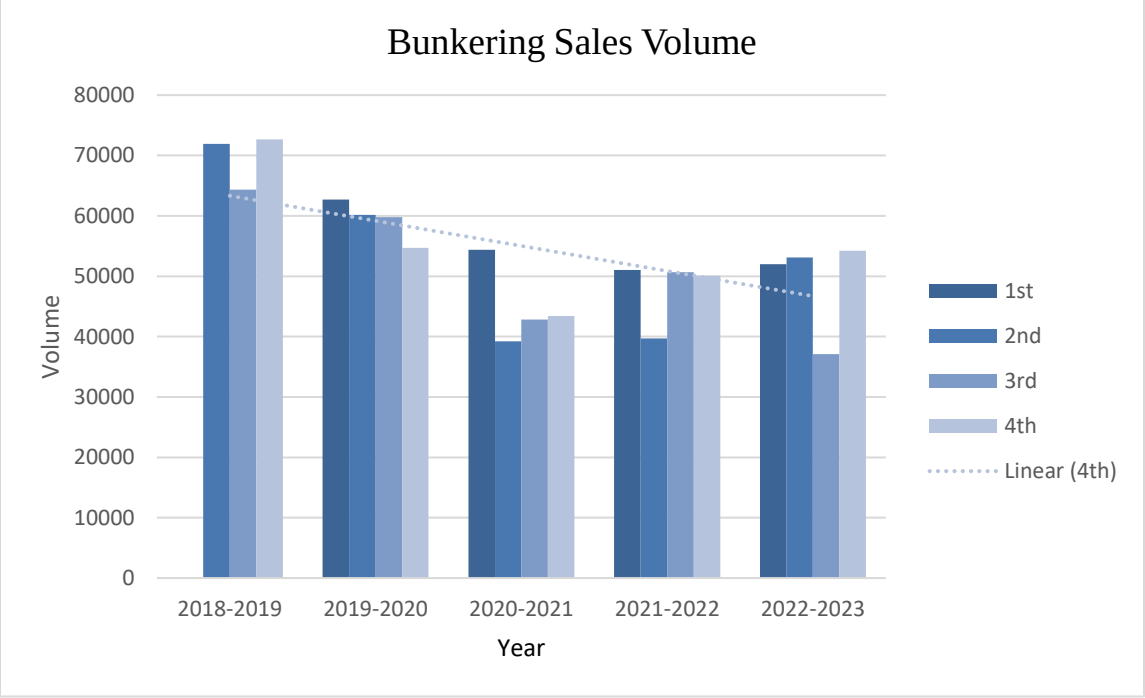
Bunkering Sales from 2017 to 2022

Years	17/18	18/19	19/20	20/21	21/22
Sales Volume	72,163	67,782	59,326	35205	47,871
% of Volume Change (Based year of volume 2017)	100	93.92	82.21	48.78	66.33

Note. This table represents ABC Marine Services' bunkering average sales in sales volume in tons throughout the year 2017 to 2023 collected directly from the company.

Figure 1

Approximate Total Bunkering Sales Volume from 2018 - 2022



Note. This table represents ABC Marine Services' bunkering approximate total sales in sales volume in tons throughout the year with representation of each quarter from 2018-2019 to 2022-2023 collected directly from the company.

From 2019 there has been a drastic decline in the sales level. Even though there is a slight boost in the sales volume, it is visible a significant different compared to 2019. Though the company intends to improve sales level to the previous level utilizing diversified strategies by looking at the actual sales level it is obvious that boosting the sales level is challenging with the current strategies.

1.4 Research Questions

1. Why has bunkering sales volume not reached the company's expected sales level?
2. What are the recommendations to increase the sales volume?

1.5 Research Objectives

1. To identify the reasons for not having the company's expected sales volume level in bunkering.
2. To explore the recommendations to boost the sales volume.

2. Literature Review

2.1 Sales Volume

According to empirical studies, the sales volume of goods refers the number of product units sold by a company within a significant period. For further clarification, the period can be mentioned as a day, month, quarter, or year (Lyu & Choi, 2020). Sales volume plays a crucial role in an organization, as it measures the profitability and the success of an organization. During a period of economic instability and full of inflationary effects, more than the sales revenue of the products the sales volume or the number of products sold will provide insights to identify the success or the loss of an organization (Wijaya et al., 2022).

The studies suggest that the sales volume is having a significant positive impact on the organization's profitability. According to that higher the sales volume of products, the higher the profitability achieved by the organization. Although sales are significant they are uncertain as the increment of sales volume is achieved by the cost of sales increment. Moreover managing the sales volume and the increment of it reduces the financial risk. The management of a company has to carefully consider the sales strategies and other operational strategies to improve the sales volume while increasing profitability (Wijaya et al., 2022).

Within the maritime industry, the sales volume of bunkering fuel could be defined as the amount of fuel sold for the usage of ships and other marine vessels. As a crucial component of the marine industry, it provides energy to the vessels for transportation, currently; the global bunker fuel market is having an

increasing pattern (Research Reports World, 2023). As the component marine industry that is being used internationally, it is unpredictable and unrealistic to manage the prices of the fuel. The prices are changing as the global market changes and various factors including the implementation of new regulations, global crisis, and the pandemic situations. Those factors influence the entire fuel market, for the organization choosing with the consideration of fuel quality, and safety (Merien-Paul et al., 2018).

The sales volume of bunkering fuel is more important for the industry as the fuel prices cannot be affected by individual companies. Generally, the price of fuel is ever-changing according to the market leader fuel suppliers. The high fuel prices have led to changes in vessel usage at the point of the design of transportation; changes in the vessel types for efficiency, and route changes (Notteboom & Vernimmen, 2009). Therefore the organization would be able to manage the sales volume on their own and assure the organization's success.

2.2 Theoretical Framework

2.1.1. Fuzzy Set Theory

Fuzzy set theory had been introduced by Zadeh (1965). This is used to derive a score indicating the goodness of a specific bunkering or supplier. This can be used for the membership function to categorize bunkering or suppliers as a mathematical framework that deals with uncertainty and imprecision (Chrysafis et al., 2022), based on how close or far away 8 they are from the best practice benchmark. The membership function is a mathematical function that maps the input values (in this case, density reporting strategies) to a score indicating how close they are to the best practice benchmark (Jørgen Anfindsen et al., 2012).

Furthermore, the fuzzy set theory demonstrates the decision-making, reliability analysis of suppliers and quality improvement within related industries. In addition, this has been applied to investigate measures of the environmental impact of bunkering that improve the effectiveness (Gupta, 2021).

2.3 Factors Affecting Sales Volume

Multifaceted elements considering the bunkering sales volume play a pivotal role in the decision-making process of bunkering. The maximization of bunkering sales volume is affected by both internal factors and external factors of the organization. In every operation, the related costs should be considered with the intention of competing with the competitors.

Since bunkering is the refuelling fuel to ships for propulsion and other operations, and plays a pivotal role in the maritime industry, momentous changes in the bunkering service can be done regarding the operating cost; and fuel costs Ghosh et al. (2015). Several studies have mentioned the pivotal role of signing a service contract with their fuel suppliers in order to lead a lower-cost operational process in bunkering service. The continuation of the fuel oil supply and the avoidance of fluctuations in the external environment can be mitigated moderately. Elaborating, once the contract is signed between the fuel supplier and the bunkering service company, the fuel price that the bunkering company has to purchase

and the amount of the fuel is fixed and that would be an advantage of the company to mitigate the continuous changes in the spot price and the ambivalent utilization of the fuel consumption between the ports.

The optimal bunkering strategy to enhance the performance of the bunkering depends on the whole parameters of the contract together. Therefore, in order to capture the benefits of the increased trade over the last few decades through shipping lines as opposed to the other trade modes, according to Brønmo et al. (2007) bunkering companies should seek ways to lower their operating costs to experience a cost-effective strategy.

On the other hand, varieties of ship types and fuel consumption should be considered in the bunkering service due to the varied types of cargo (container ships, tankers, bulk carriers). Obtaining the multiple cargos would provide an opportunity for the bunkering company to strategize the overall cost of the bunkering. According to Psaraftis & Kontovas (2013), the consumption of fuel depends on the speed of each cargo and bunkering operators are allowed to implement different strategies to reduce the costs like steaming techniques in their operation with the usage of the appropriate cargo or vessel since each type have their capable speed and diversified capacity to provide the bunkering service Brønmo et al. (2007) has highlighted that seeking the objectives of the operators' is quite important and based on those operations of the bunkering should be formulated.

When entering into a supplier contract, mainly three factors should be considered the price, quantity, and the port of bunkering this will eliminate the risk for both suppliers for having a fixed price or a floating range though the global prices are lower and the bunkering company to have the continuous fuel supply to engage in the bunkering operations for a longer period. BP Marine (2012) stated that several types of service contracts can be seen in the marine industry and based on the intention and the circumstances the ideal option should be taken into consideration. This will be a benefit when the required fuel amount exceeds the contracted amount and the additional amount should be bought at a spot rate which the service contract will fix. With the ideal contracts with the correct statements, the bunkering company is in a position to supply the service of bunkering and have a higher sale.

Moreover, considering the environmental awareness, people are insisting on engaging in the operations that are played in an environmentally healthy manner. Fagerholt and Psaraftis (2015) highlight that to optimize bunkering sales while maximizing daily profit, utilization of low sulfur fuel oil (LSFO) like marine gas oil (MGO) in the Emission Control Areas (ECA) to reduce the emission from the operations preliminary. According to Fagerholt and Psaraftis (2015), bunkering companies have options to comply with ECA sulfur regulations such as fuel switching which is installing two sets of fuel tanks for LSFO and HSFO and using in need, installing a scrubber to remove sulfur from the exhaust, and usage of the Liquified Natural Gas oil (LNGO).

Organizations such as the International Maritime Organization (IMO) lead for the safety and security of the shipping the prevention of marine and atmospheric pollution by ships is one of their major concerns that address which support The United Nations Sustainable Development Goals. Moreover, a smooth sale of bunkering will always depend on complying with the rules and regulations set by the government authorities. ABC Lanka Marine Service should also operate under the Marine Pollution Prevention Act No. 35 of 2008 according to the Marine Environment Protection Authority (MEPA).

Likewise, the total bunkering volume of the sales will depend on the application of the environmental regulation compliances.

On the other hand, according to Ronen (1983) proper feet routing and scheduling assist in the process of optimising the sales volume. Ships often plan their routes to take advantage of convenient and cost-effective bunkering opportunities, impacting sales volume at different ports. Therefore, route optimization satisfies the conditions such as required time arrival (RTA) motion criteria, and land escape conditions (Kim et al. 2020). IMO report elaborates that the decision-making process of the bunkering routes impacts fuel oil consumption by saving 5% - 7%. Environment, geographical conditions, and vessel responses should be considered according to Kim et al (2020) as the parameters of the achievements of the ships including resistance, propulsion, environmental loads and the route of the maritime line. In addition to that Zaccone et al. (2018) have mentioned the significant role played by the weather to assist in the process of choosing the best route for the voyage to sail. So, studies have stated how route optimization could lead the organization to provide bunkering service effectively within the constraints that would lead to experiencing a higher sales volume ultimately with a proper resource allocation.

Moreover, Psauaftis and Kintivas (2013) have acknowledged that speed is a prominent factor in the whole operation of the bunkering company and the comprehensive supply chain and due to the influence on the fleet size, ship size, and cargo inventory costs company has to implement strategies related on how the cargos are used in the maritime industry by optimizing the speed to increase the sales volume. Therefore, the company should decide how to utilize the cargo considering the negative relationship between speed and fuel consumption. Lindstad et al. (2011) mentioned that by assigning profitable cargoes in the bunkering service the cost allocation will be reduced while increasing the profit. With a well-planned schedule of cargo and voyages, the company will be able to optimize the available carriers and increase the sales volume gradually.

Acosta et al. (2011) stated the importance of port competitiveness in order to have a competitive advantage over the other competitors considering the quality of the service such as tariffs of the port, supply waiting time, service rates, and customs strictness. On the other hand, adequate infrastructure that the bunkering company obtain, and a good location that ABC Lanka Marine Services is already experiencing will directly and indirectly affect the sales volume of the bunkering.

The existing literature identifies several key factors influencing bunkering sales volume. Internal factors include contracting strategies with fuel suppliers (Ghosh et al., 2015; Bronmo et al., 2007), vessel type and cargo management (Psaraftis & Kontovas, 2013), and operational efficiency achieved through route optimization and speed management (Ronen, 1983; Kim et al., 2020; Zaccone et al., 2018). External factors encompass fuel price fluctuations (Notteboom & Vernimmen, 2009), environmental regulations (Fagerholt & Psaraftis, 2015; MEPA), and port competitiveness (Acosta et al., 2011). While the global bunker fuel market exhibits growth potential (Research Reports World, 2023), effective sales volume management remains critical due to the volatility of fuel prices, which are susceptible to global events (Merien-Paul et al., 2018). Although the literature addresses these individual factors, a research gap exists regarding the *combined* impact of these factors on bunkering sales volume, particularly within the specific context of a company like ABC Lanka Marine Services. Furthermore, current research provides limited practical recommendations for bunkering companies to effectively manage these interacting factors and

achieve desired sales targets which ABC Marine Services fail to be captured in last years. Fuzzy set theory (Zadeh, 1965; Chrysafis et al., 2022; Jorgen Anfindsen et al., 2012; Gupta, 2021) offers a potential framework for analyzing this complex interplay, but its application to bunkering sales volume optimization requires further investigation. This research seeks to address these deficiencies by examining the specific reasons underlying ABC Lanka Marine Services' underperformance in bunkering sales volume and developing tailored recommendations to enhance sales performance.

3. Research Methodology

The study follows the qualitative research approach, gaining an in-depth understanding of specific experiences, and opinions of the small sample of individuals as it addresses the contextual richness of the setting (Yin, 2016). With the usage of the qualitative approach aims to acquire the opinions and the experiences of the organization regarding the sales reduction experienced during past years including the in-depth analysis of recommendations that should be undertaken. Furthermore, through qualitative analysis, the study would be able to analyse the situation with a border coverage rather than just a statistical data analysis since the outcome addresses one of the strategic level issues faced by the organization and the industry.

The related studies also adopted qualitative study as the methodology for their studies as it provides reliable information and leads the study into a more realistic in-depth study (Harahap et al., 2023; Schinas and Ourolidis, 2022; Viktorelius et al., 2022).

For a mindful analysis of the study, the sample was selected as the managerial level staff at the organization that is one of the market-leading bunkering sellers in Sri Lanka. From this selection, the study will provide the most reliable findings as the organization covers almost half of the bunker sales market in the country. Furthermore, the managerial level became the sample as they are the people who make strategic decisions and engage with the lower-level staff and clients. As the sampling method, the study has been conducted through a purposive sampling method. To collect certain information about the bunkering procedure and deliberately choose people to be interviewed for an in-depth analysis, the purposive sampling method would be the best match.

To conduct the research on-site, semi-structured interviews were conducted with the procedure covering all managerial departments at the organization. Moreover, those insights aim to critically define the problem and solutions. A case study in bunkering research would delve into a specific situation or challenge faced by a particular player in the bunkering industry. It would analyze the context, the decisions made, the results, and the lessons learned. Data was collected from a sample size of 10 managers in the positions of operations, marketing, internal affairs, and external affairs will be interviewed thoroughly. Aronietis et al. (2017) The sample size covers 50% of the managerial level of the organization. Consulted with the relevant personnel directly responsible for bunkering decisions within the organization to collect the information for this case study. Likewise, here we have also chosen people who are directly involved in operations for a better outcome of the analysis. The collected data was analysed based on the thematic analysis technique (Braun & Clark, 2006).

The study has been conducted over four months with engagement of the organization and the key supervision of the general manager. At the first stage we have analysed the general issues facing and conclude the research area and the research gap. As the next step with the literature analysis and the real data analysis the study was conducted. Moreover, within the study time frame the sales volume changes were analysed closely and selected as the research area with the pattern of changes and increments.

4. Data Analysis and Findings

4.1 Profile of the Participants

The interviews were conducted through both physical interviews and Zoom meetings due to the different circumstances that happened during their career. Moreover, those interviews were conducted in both Sinhala and English Languages, since managerial-level professionals are familiar with the usage of the English language certain extent according to their job roles and Sinhala is their mother tongue to express their pure ideas about the study. The sample consisted of ten managerial level staff of the organization who are dealing with the bunkering sales of the company with more than two years of experience at the company. The participants were selected from different departments of the organization (operation, commercial, finance, marketing) including the heads of the departments and the executives. The interviews lasted approximately about 30 to 60 minutes and participants were engaged through senior manager recommendations and personal contact within the organization. The profiles of the participants are drafted in the table below.

Table 2

Profile of Participants

Name	Designation	Department	Code
Kawya	Executive	Marketing	001
Nimal	Head	Commercial	002
Madushi	Manager	Marketing	003
Saman	Head	Finance	004
Praneeth	Executive	Finance	005
Kevin	Executive	Finance	006
Raveen	Executive	Commercial	007
Damith	Executive	Operation	008
Sachin	Head	Operation	009
Amaya	Head	Marketing	010

4.1 Data Analysis

Thematic analysis was adopted to assess the data gathered from semi-structured interviews and identify patterns of meaning, or themes that are included in the data set gathered (Clarke & Braun, 2016). With the process of thematic analysis outlined by Braun and Clarke (2006), the study also applied a six phases approach as it led to a pathway to conclude with proper guidance. This process of the six phase approach of thematic analysis is divided into specific stages and here onwards the chapter will discuss the prominent stages of the approach.

4.1.1 Familiarization with the Data

The gathered data was collected through both onsite visits and remotely using physical interviews and Zoom meetings with the participants as those were the best methods to engage with the participants in their busy schedules. Both Sinhala and English were used as the language of the interviews since to a certain extent they are using English as their communication and Sinhala to capture the pure idea for the questions that needed in-depth answers. After conducting the interviews all of them were translated to English language and created the transcript in written form.

4.1.2 Initial Code Generation

Following a review of each interview transcript, relevant codes about the research topic and objectives were identified. The initial codes were derived from analysing each interview including the situation that the organization came across, the issues, strategies undertaken and the effectiveness of each of those codes. These codes are relevant to the study and are shown in the below table.

Table 3

Core themes, subthemes, and initial codes

Core themes	Subthemes	Codes
1. Technological change and adaptation inability	1.1. Technological change 1.2. Adaptation Inability	Online transactions, new procedures Adopt critical technical processes, adopt to the regulations
2. Stakeholder Influence	1.1. Competition 1.2. Regulatory Approach	Framework, Competitor awareness
3. Bunkering sales volume	2.1. Vessel Movement 2.2. Price Fluctuations	Price derivatives ,competitiveness

4.2 Findings

In this stage of the process the interview findings are written down in the exact words of the participants used during the interviews conducted. Furthermore, to present the relevant data the themes

are generated related to the study. With the identification of patterns and the common phenomenon three core themes have derived.

1. Infrastructure
2. Stakeholder Influence
3. Bunkering sales volume

1. Infrastructure changes

From the most of the interviews conducted, the participants have mentioned that with the time pass the dynamic changes in the infrastructure impacted the performance of the sales volume in both positive and negative manner.

- Technological Change

According to the research articles, technology has a big influence on how much bunker fuel sales fluctuate. Bunker firms make decisions based on cost and market demand, which are influenced by technological developments in refining (Zhou, Gao and Yuen, 2021; Schinas and Ourolidis, 2022; Harahap et al., 2023). Additionally the advancement and the decline of the bunker fuel sales market are driven by the new technology usages as it plays a crucial role in the process of transaction. Every participants from marketing department and finance department have pointed out the difficulties they experienced in dynamic changes of technical changes.

"During the COVID-19 period, the company had to adapt to remote work, where the finance team could not physically access important documents like the Bunker Delivery Note (BDN) to complete invoicing." (004)

"Prior to COVID-19, the company had to courier original invoices and supporting documents to customers, this was no longer feasible during the pandemic. The company adapted by transitioning to electronic invoicing, where they would email PDF versions of the invoice and supporting documents to customers, eliminating the need for physical document delivery although we did the entire process with tangible documents." (006)

- **Adaptation Inability**

Inability to adopt critical technical processes and the regulations directly impact the demand dynamics, transparency and the supply chain of the global bunker fuel market, leading for changes in sales volume (Tolson, 2024). The participants of the study have mentioned certain scenarios that the organization could not adapt to the most efficient methods or the technologies those would be perfectly suited for the bunkering process.

"In pricing methods there is another option that is not currently operating due to inability getting authorization from CBSL which is still on research." (009)

"Commodity hedging is the best way to do the pricing and reduce the volatility. Currently it is not permitted in Sri Lanka but we are in the process of trying to get the permission." (005)

2. Stakeholder Influence

- Competition

Indispensable component which lead the ABC Marine Services to acquire higher bunker sales is being competitive in bunkering industry and acknowledge the competitor's actions of boosting the sales. Since the bunker industry competitiveness depends on many components organization should identify those determinants and implement strategies based on that. (Lam et al., 2011)

The marketing department of ABC Marine Services is "handling all the customers" to execute a satisfied service ensuring the continues orders may arrive. Since "95% customers are international customers" quality plays a vital part of the bunkering service to obtain the competitive advantage over rivals. Currently, ABC company have "*three main competitors and three new companies who got bunker license last year*" (010). Company A, the biggest rival of ABC Marine Services "*obtained three bunker licenses for Lanka bunkering Services, Lanka Maritime Services, and Moserti. Further, "They own 25% of the market share". Moreover, other competitor, Company B has own "20% of the market share and finally, company C has around 15% to 10% market share*" (010).

In addition to that the government has issued new bunker licenses and "*which six companies captured the opportunity"*. But, it is important to be active and implement strategies based on the current economic condition in order to survive. "*Due to the competition three companies already left the bunkering operations and other three companies execute their operations while being competitive start-ups companies." (010)*

Likewise, for the survival of the ABC marine Services, acquiring a good awareness on the competitors would be an added advantage to boot the bunkering sales.

- Regulatory Approach

Smooth operation lies under a good framework of the regulatory approaches ensuring all organizations are adhering to the rules and regulations. ABC Marine Services follows guidelines mainly from International Maritime Organization (IMO) which is the United Nation's specialized agency which address issues related to international shipping industry and pollution of maritime mainly. On the other hand, International Organization for Standardization (ISO) develops standards on international level for a sustainable approach in bunkering industry (*LNG Bunkering: A Risk Assessment*, 2020).

Once the inquiries are handled carefully, and if ABC Marine Services receive an order from a supplier, it is "*mandatory to focus on the sanctions that have been implemented specially by European Union and other related bodies"(004).* They have to ensure all the regulations are followed by gathering information from "*with whom the ownership prevails? Especially when it comes to Russia, Cuba, and Iran" (005).* ABC Marine Services "After all things are cleared out only we supply" to preserve the good image that they have been aerated so far.

On the other hand*," the parent company's regulations also should be followed*". Each steps will be followed by "*sending the standards documents to the relevant party*" keeping the proof organized manner to avoid any difficulties in the bunkering process. In each document first "*we specially mention the ABC Marine Services terms and conditions that the customer needs to acknowledge with"* (004).

Likewise, by applying the necessary steps in whole bunkering operation, continuous sales will exist and would avoid future unforeseen circumstances from regulatory bodies which could cease the whole operations of ABC Marine Services.

3. Bunkering sales volume

- **Vessel Movement**

According to Notteboom and Vernimmen (2009), the sales volume of bunkering is closely related to vessel movements. As vessels require fuel for their operations, the volume of bunkering sales is influenced by the movement of vessels in and out of ports. This connection underscores the importance of understanding vessel schedules and traffic patterns in assessing bunkering sales volume.

The Commercial Executive of ABC Marine Service, who was interviewed by us, replied below to the question that was directed toward him,

"Vessel movement affects sales volume. Due to the decrease in the number of ships that import oil during the COVID-19 crisis period, the freight charges of those ships increased and the product availability decreased. Therefore, we have to increase our prices. Due to this price increase sales volume was decreased." (008)

- **Price fluctuations**

According to Hemmings, B. (2011), it discusses the potential for an EU-wide CO2 tax or carbon tax on bunker fuels used for intra-EU shipping. This would increase the price of bunker fuels and could lead to a decline in bunker sales volumes, as ships may choose to bunker at neighboring ports with cheaper fuel prices. The taxes have a significant effect on bunkering fuel prices. The carbon tax policy outlined in the document increases future fuel prices based on the CO2 emissions factor for bunker fuels. For instance, a carbon tax starting in 2021 and rising annually at $7.5 per tonne of CO2 would lead to a substantial increase in fuel prices by 2030 and beyond. This tax trajectory is designed to align with or even exceed the prices expected in other carbon pricing schemes in the coming years. Additionally, the revenue-neutral carbon tax policy also impacts fuel prices similarly to the pure carbon tax but without revenue implications. The document highlights that these tax policies have a notable impact on reducing carbon intensity per tonne-mile without significantly affecting tonne-miles, thus influencing the overall carbon emissions from the maritime sector (Parry et al., 2018).

The Finance Manager stated, *"Inland Revenue Department does not accept marine service as an export, since we have no certain destination point. Due to that, we cannot claim input vat 18%. Normally vat VAT-registered exporters can claim that input tax. Bunkering has no output tax. According to standard law, if it has no output tax, it can claim input tax in P&L. but we cannot do that since we get all the services from local suppliers. Therefore, we have to claim that input tax as a refund, but IRD does not accept our service as an export we cannot claim that refund. Due to that our price will be high and lose the competitive advantage in the market."* (001)

Furthermore, The Operation Manager of ABC Marine Services we interviewed responded as below when asked about the reduction of bunkering.

"There were a lot of market fluctuations like the Syria war, Ukraine- Russia war. Due to those external shocks, we have to change our bunkering prices and also the quantity of cargo issued to the market during last year" (007)
"Indeed, if we have less cargo quantity, we set high prices until the next shipment arrives" (008)

5. Recommendations and implications

Within the transportation industry, transportation through sea or waterways holds an iconic place, especially in goods transportation. Therefore, bunkering is one of the most important industries for a state. ABC Marine Services has a significant place in the Sri Lankan bunkering industry with a large market proportion. When paying attention to the factors that led to experiencing lower sales volume in bunkering sales, the researcher has identified the technological advancements, adaptation inabilities, stakeholder or market influences and vessel movement fluctuations as factors along with huge impact on the performance.

Hence, this study proposes the following options for ABC Marine Services to increase the sales volume and enhance the total performance for continuous growth.

1. Establish an expert team to identify market trends and technological improvements

When paying attention to the factors that led to reduce the sales volume of bunkering reduce the sales volume of bunkering the researcher has discussed technological changes that impacted more for the volume fluctuation. Therefore, ABC Marine Services has to have an expert team to engage with the following areas.

- Technological changes

Rapid technological advancements and the digitalization of global processes have become important things to consider within the process of the organization. Since the entire process of bunkering is linked to the global market, it is essential to adapt to the new trends of technological advancements. Therefore, they should have a group of experts to mitigate the risk of technological obsolesce. According to Mumtaz et al. (2024) More global trade, complex deals across borders, and all the people involved make the maritime industry a tough business to operate and therefore, technological advancements can be significant factors in increasing a company's competitive edge in the market which LMS can applicable

- Market trends

Due to internal and external changes in the market such as regulatory changes and issues, global economic fluctuations such as the Israel-Palestine war and Red Sea scenario and also competitors' strategic actions which affect competitive advantage and market trends the organization faces a troublesome situation. To reduce these kinds of situations also ABC Marine Services should have an expert team to research market trends identify the opportunities and trends and adjust them for the best performance.

2. Research and introduction on the more effective pricing method

As mentioned in the interviews conducted within the organization, the price volatility between fixed with the buyer or the vessel owner and the selling plays an important role in the sales volume fluctuation of bunker fuel. ABC Marine Services currently follows derivative pricing as their pricing methodology to minimize the price volatility between the fixed price and the selling price of the bunker fuel since it takes some time for the supply process. Within the global market bunker fuel uses more efficient methods of pricing as their pricing methodology such as commodity hedging.

Bunker fuel is a vital component of the shipping industry, and commodity derivatives are useful in controlling its price volatility. It is mostly used in the global market and there are several important ways in which commodity derivatives might be applied to lessen the volatility of bunker fuel prices as hedging with call options, fractional cointegration analysis and monitoring delivery infrastructure (Dang Ben Nguyen, 2007), (Energy, 2015), (Monge, 2022). When it comes to the Sri Lankan context CBSL did not allow ABCMarine Services to operate commodity derivatives since the organization is not under the category of financial organizations. Although it is still under the discussion phase of providing approval for the usage of commodity hedging in CBSL, the organization has to pay attention to the process of getting approval and have one of the globally used efficient pricing methods to face the dynamic nature of the market.

3. Focus on sustainable practices and environment compliance

Sustainable methods ought to be given top priority in ABC Marine Services' bunkering operations, given the growing emphasis on sustainability worldwide and the environmental legislation governing the maritime sector. strict regulations on pollution, implemented by both individual countries and international organizations, have compelled companies in the maritime and port industries to adopt environmentally friendly strategies and make investments in technologies that reduce emissions and other negative impacts on the environment (Lam & Notteboom, 2014).

. This entails making investments in environmentally beneficial technologies, encouraging the use of low-sulfur fuels, and making sure that global environmental regulations—like those established by the International Maritime Organisation (IMO)—are followed. ABC Marine Services can stand out in the market and draw in clients who care about the environment by showcasing their dedication to environmental responsibility.

4. Diversify Product Offerings and Services

Diversifying their product and service offerings could be a viable strategy for ABC Marine Services to broaden their clientele and boost revenue. This can entail launching new fuel products, like biofuels or alternative fuels, to meet changing consumer demands and market trends. Furthermore, adding value-added services like waste management, lubricant supply, and vessel maintenance to their service portfolio can increase income streams and improve client loyalty. ABC Marine Services can enhance their competitive edge in the bunkering industry and adjust to evolving market demands by broadening their range of solutions.

6. Limitations

One obvious limitation be the constant changes in customer behavior, market conditions, and regulations because of the pandemic may make it difficult to determine what internal and external factors bring about this continual drop in sales.

Access to real-time sales data or historical records may be hindered, hence affecting the depth and accuracy of internal and external variables that affect sales performance. A lack of comprehensive and up-to-date data might confine the depth and accuracy of the research findings.

Indeed, the sample size and diversity of perspectives may be limited, drawing exclusively on middle-level managers in ABC Marine Services as the primary source of information. Focusing strictly on this group within the organization, the research might fall short in seeking valuable insights from other levels of the organization or other stakeholders who could provide alternative viewpoints or give further context to the sales challenges the company has been facing.

The focus on just one case of ABC Marine Services may result in limited generalizability of the findings of the research and subsequently of the recommendations. The characteristics and conditions of this single organization may not be representative of the whole maritime industry at large. It might be inappropriate to extrapolate the results to other companies in the sector, since different firms operate in different market environments with distinct challenges.

7. Conclusion

ABC Marine Services, one of the major players in Sri Lanka's bunkering industry, has been grappling with a continual decline of international sales volume since 2019. ABC Marine Services, as a major bunkering services provider, plays an important role in sustaining efficient movement of goods and contributing to worldwide economic progress. To deal with this very important issue, a comprehensive research initiative was undertaken to identify the root causes of the declining sales and provide actionable recommendations for improvement.

The data for this study was collected from middle-level managers at ABC Marine Services, specifically from departments such as marketing, commercial, finance, and operations. The participants included executives, heads of departments, managers, and other key personnel directly involved in bunkering sales within the organization. The data collection process involved conducting in-depth interviews with these selected participants to gather insights and perspectives on the factors influencing sales volume and performance at ABC Marine Services.

More important findings from this thematic analysis indicated internal and external factors significantly impact sales performance in the bunkering industry, highlighting the need for ABC Marine Services to adapt to changing market dynamics and geopolitical influences. Port competitiveness and sustainability play crucial roles in influencing bunkering sales volume, emphasizing the importance of strategic positioning and environmental considerations in operations. Strategic actions, such as optimizing sales volume and enhancing profitability, are essential for ABC Marine Services to navigate industry

complexities and maintain a competitive edge in the market. Recommendations for future research include exploring the interplay between bunkering sales volume and organizational profitability within the maritime industry, suggesting avenues for further investigation and strategic development.

This research presents the importance of addressing challenges that ABC Marine Services faces regarding bunkering sales and consequently stresses the importance of strategic actions in overcoming these obstacles for sustained growth and competitiveness in the industry.

References

Acosta, M., Coronado, D., & Del, M. C. M. (2011). Bunkering competition and competitiveness at the ports of the Gibraltar Strait. *Journal of Transport Geography*, *19*(4), 911–916. https://doi.org/10.1016/j.jtrangeo.2010.11.008

Aronietis, R., Sys, C., Van H. E., & Vanelslander, T. (2017). Investigating the bunkering choice determinants: the case of the port of Antwerp. *Journal of Shipping and Trade*, *2*(1). https://doi.org/10.1186/s41072-017-0025-7

BP Marine. (2018). Terms and Conditions of Sale - Marine Fuels BP Marine. People with Energy. https://www.bp.com/content/dam/bp/business-sites/en/global/bp-trading-and-shipping/documents/bp-marine-fuels-terms-conditions.pdf

Brønmo, G., Christiansen, M., & Nygreen, B. (2007). Ship routing and scheduling with flexible cargo sizes. *Journal of the Operational Research Society*, *58*(9), 1167–1177. https://doi.org/10.1057/palgrave.jors.2602263

Chrysafis, K. A., Theotokas, I. N., & Lagoudis, I. N. (2022). Managing fuel price variability for ship operations through contracts using fuzzy TOPSIS. *Research in Transportation Business & Management*, *43*(100778), 12. https://doi.org/10.1016/j.rtbm.2021.100778

Clarke, V., & Braun, V. (2017). Thematic Analysis. *The Journal of Positive Psychology*, *12*(3), 297–298. https://doi.org/10.1080/17439760.2016.1262613

Dang B. N. (2007). Investigating the effectiveness of hedging bunker price fluctuation.

Doymus, M., Denktas Sakar, G., Topaloglu Yildiz, S., & Acik, A. (2022). Small-scale LNG supply chain optimization for LNG bunkering in Turkey. *Computers & Chemical Engineering*, *162*, 107789. https://doi.org/10.1016/j.compchemeng.2022.107789

Energy, M. (2015, September). Bunker Fuel Hedging & Price Risk Management - Call Options. *Www.mercatusenergy.com*. https://www.mercatusenergy.com/blog/bid/75373/hedging-bunker-fuel-price-risk-with-call-options-updated

Fagerholt, K., & Psaraftis, H. N. (2015). On two speed optimization problems for ships that sail in and out of emission control areas. *Transportation Research Part D: Transport and Environment*, *39*, 56–64. https://doi.org/10.1016/j.trd.2015.06.005

Ghosh, S., Lee, L. H., & Ng, S. H. (2015). Bunkering decisions for a shipping liner in an uncertain environment with service contract. *European Journal of Operational Research*, *244*(3), 792–802. https://doi.org/10.1016/j.ejor.2015.02.012

Gibson, W., & Brown, A. (2009). Working with Qualitative Data. In *Google Books*. SAGE. https://books.google.lk/books?hl=en&lr=&id=zdzYwxtXKWQC&oi=fnd&pg=PP2&dq=qualitative+data&ots=NX2qLKe08M&sig=00nQOzsZIQpzEBox_q1UnuoYn-U&redir_esc=y#v=onepage&q=qualitative%20data&f=false

Gupta, M. (2021). A Fuzzy Decision-making Approach to Evaluate CO2 Emissions Reduction Policies. *Global Business Review*, 097215092110140. https://doi.org/10.1177/09721509211014000

Harahap, F., Nurdiawati, A., Conti, D., Leduc, S., & Urban, F. (2023). Renewable marine fuel production for decarbonised maritime shipping: Pathways, policy measures and transition dynamics. *Journal of Cleaner Production*, *415*, 137906. https://doi.org/10.1016/j.jclepro.2023.137906

Hemmings, B. (2011, June). The CO2 Taxation Option for an EU Shipping Measure. In Background Document prepared for ECCP WG Ships Meeting (Vol. 2, pp. 22-23).

International Maritime Organization. (2019). *International Maritime Organization*. Www.imo.org. https://www.imo.org/en/

Jørgen A. O., Løvoll, G., & Mestl, T. (2012). Benchmarking of marine bunker fuel suppliers: the good, the bad, the ugly. *Benchmarking: An International Journal*, *19*(1), 109–125. https://doi.org/10.1108/14635771211218399

Kim, S. W., Jang, H. K., Cha, Y. J., Yu, H. S., Lee, S. J., Yu, D. H., Lee, A. R., & Jin, E. J. (2020). Development of a ship route decision-making algorithm based on a real number grid method. *Applied Ocean Research*, *101*, 102230. https://doi.org/10.1016/j.apor.2020.102230

Lam, J. S. L., & Notteboom, T. (2014). The Greening of Ports: A comparison of port management tools used by leading ports in Asia and Europe. *Transport Reviews*, *34*(2), 169–189. https://doi.org/10.1080/01441647.2014.891162

Lindstad, H., Asbjørnslett, B. E., & Strømman, A. H. (2011). Reductions in greenhouse gas emissions and cost by shipping at lower speeds. *Energy Policy*, *39*(6), 3456–3464. https://doi.org/10.1016/j.enpol.2011.03.044

Lyu, F., & Choi, J. (2020). The Forecasting Sales Volume and Satisfaction of Organic Products through Text Mining on Web Customer Reviews. *Sustainability*, *12*(11), 4383. https://doi.org/10.3390/su12114383

Mao, X., Rutherford, D., Osipova, L., & Georgeff , E. (2022). *Exporting Emissions: Marine Fuel Sales at the Port of Singapore*. https://doi.org/10.13140/RG.2.2.19050.18886

Marine Environment Protection Authority. (2021). Bunkering - Marine Environment Protection Authority-Sri Lanka. *Marine Environment Protection Authority-Sri Lanka*. https://mepa.gov.lk/bunkering/

Merien-Paul, R. H., Enshaei, H., & Jayasinghe, S. G. (2018). In-situ data vs. bottom-up approaches in estimations of marine fuel consumptions and emissions. *Transportation Research Part D: Transport and Environment*, *62*, 619–632. https://doi.org/10.1016/j.trd.2018.04.014

Monge, M. (2022). *Bunker fuel, commodity prices and shipping market indices following the COVID-19 pandemic. A time-frequency analysis*. International Economics, 172, 29–39. https://doi.org/10.1016/j.inteco.2022.08.003

Mumtaz, U. U., Bergey, P., & Letch, N. (2024). Assessing the role of blockchain technology for marine bunkering operations – A case study of task technology fit. *Marine Policy, 159*, 105909. https://doi.org/10.1016/j.marpol.2023.105909

Notteboom, T. E., & Vernimmen, B. (2009). The effect of high fuel costs on liner service configuration in container shipping. *Journal of Transport Geography*, *17*(5), 325–337. https://doi.org/10.1016/j.jtrangeo.2008.05.003

Park, N. K., & Park, S. K. (2019). A study on the estimation of facilities in LNG bunkering terminal by simulation—Busan Port case. *Journal of Marine Science and Engineering*, *7*(10), 354. https://doi.org/10.3390/jmse7100354

Parry, I., Heine, D., Kizzier, K., & Smith, T. (2018). Carbon taxation for international maritime fuels: Assessing the options. *IMF Working Paper*, *18*(203), 1. https://doi.org/10.5089/9781484374559.001

Podimatas, V. (2020). LNG Bunkering: A Risk Assessment. https://dspace.lib.ntua.gr/xmlui/bitstream/handle/123456789/51391/Podimatas%20LNG%20Bunkering%20QRA%20report.pdf?sequence=1

Priya, A. (2020). Case Study Methodology of Qualitative Research: Key Attributes and Navigating the Conundrums in Its Application. *Sociological Bulletin*, *70*(1), 94–110. Sagepub. https://doi.org/10.1177/0038022920970318

Psaraftis, H. N., & Kontovas, C. A. (2013). Speed models for energy-efficient maritime transportation: A taxonomy and survey. *Transportation Research Part C: Emerging Technologies*, *26*, 331–351. https://doi.org/10.1016/j.trc.2012.09.012

Rahman, S. (2020). The Advantages and Disadvantages of Using Qualitative and Quantitative Approaches and Methods in Language "Testing and Assessment" Research: a Literature Review. *Journal of Education and Learning*, *6*(1), 102–112. https://doi.org/10.5539/jel.v6n1p102

Ravitch, S. M., & Carl, N. M. (2021). *Qualitative research: Bridging the conceptual, theoretical, and methodological*. Thousand Oasks, Sage Publications.

Research Reports World. (2023, September 11*). Bunker Fuel Market 2023 Size, Share, Scope, and Growth Predictions by 2030. Www.linkedin.com.* https://www.linkedin.com/pulse/bunker-fuel-market-2023-size-share-scope-growth/

Ronen, D. (1983). Cargo ships routing and scheduling: Survey of models and problems. *European Journal of Operational Research*, *12*(2), 119–126. https://doi.org/10.1016/0377-2217(83)90215-1

Schinas, O., & Ourolidis, G. (2022). Assessing the impact of sulfur cap on bunkering spot selection in the ARA region. *WMU Journal of Maritime Affairs*, *21*(1), 25–58. https://doi.org/10.1007/s13437-021-00257-9

Schwandt, T. A., Lincoln, Y. S., & Guba, E. G. (2007). Judging interpretations: But is it rigorous? trustworthiness and authenticity in naturalistic evaluation. *New Directions for Evaluation*, *2007*(114), 11–25. https://doi.org/10.1002/ev.223

Sharma, R. (2020, December 1). 4 Types of Data: Nominal, Ordinal, Discrete, Continuous. *UpGrad Blog*. https://www.upgrad.com/blog/types-of-data/

Singh, R. (2019). SAMPLING PROCEDURE AND TYPES OF SAMPLING. *Www.academia.edu*. https://www.academia.edu/41929754/SAMPLING_PROCEDURE_AND_TYPES_OF_SAMPLING

Tolson, A. (2024). Modernising marine fuel delivery: Transparency, digitalisation and decarbonisation – the case for standards-compliant mass flow metering. Retrieved from https://www.tfgmarine.com/media/lz3kqjq3/2024_tfgmarine_modernising_marine_fuel_delivery_whitepaper.pdf

Viktorelius, M., Varvne, H., & von Knorring, H. (2022). An overview of sociotechnical research on maritime energy efficiency. *WMU Journal of Maritime Affairs*, *21*(3), 387–399. https://doi.org/10.1007/s13437-022-00263-5

Wijaya, T. A., Ardina, C., & Wahyuni, L. M. (2022). *Effect of Capital Structure and Sales Volume on Profitability of UD XY*. Repository Polytechnic Bali Country.

Yao, Z., Ng, S. H., & Lee, L. H. (2012). A study on bunker fuel management for the shipping liner services. *Computers & Operations Research*, *39*(5), 1160–1172. https://doi.org/10.1016/j.cor.2011.07.012

Yin, R. K. (2016). Qualitative Research from Start to Finish (2nd ed.). The Guilford Press.

Zaccone, R., Ottaviani, E., Figari, M., & Altosole, M. (2018). Ship voyage optimization for safe and energy-efficient navigation: A dynamic programming approach. *Ocean Engineering*, *153*, 215–224. https://doi.org/10.1016/j.oceaneng.2018.01.100

Zero North. (2024, April 3). *From supply chain dynamics to sustainable futures*. Zeronorth.com. https://zeronorth.com/unravelling-the-complex-challenges-of-maritime-bunkers

Zhou, Q., Gao, R. and Yuen, K.F. (2021). Marine fuel refining technology improvement trade-offs: A game theoretic approach. *Marine Policy*, 132, p.104677. doi:https://doi.org/10.1016/j.marpol.2021.104677.

Importance of Factors affecting Accessibility of Financial Services in Context of Financial Inclusion from view point of bank employees in Gujarat State

Dr Rima Amrutlal Kalola
Assistant Professor (Accountancy & Commerce)
Dr Urmilaben Chimanbhai Arts and Commerce College, Ahmedabad
Email id: rpp.rk84@gmail.com

Abstract

For any economy to grow it is essential that all segments of the society must have an access to different financial services. If this happens then the financial inclusion in right perspective is envisaged. The factors such as Income & Poverty Levels, Proximity to Financial Institutions, Financial Literacy & Awareness, Access to banking Infrastructure, Access to Digital Infrastructure, Regulatory Framework, Demographics, Transaction Costs and Trust are very important from viewpoint of Financial Inclusion as per guidelines of RBI. The paper examines the perceptions of the bank employees with respect to the factors affecting the access to financial services which in turn contributes towards meeting the objectives of financial inclusion thereby leading to the sustainable development. Further the researcher also substantiates that which factor is significant for financial inclusion from the perspective of male as well as female bank employees.

Key Words – *Bank Employees, Financial Services, Financial Inclusion, Perceptions, Sustainability*

1. Introduction

Ideally it is learnt from the studies which took place that a country's progress is measured in terms of how the people living in the country have progressed. This scenario talks about every individual belonging to any segment whether from economically weak segment or rich class must be able to avail the different types of financial services without any impediments. If such scenario exists then it can be called as Financial Inclusion is witnessed. The government of any country insists upon that their citizens can access different financial services such as banking , insurance, consumer credit, home finance etc very easily.

For this purpose the role of financial inclusion becomes very important. The Financial inclusion to succeed Importance of Factors affecting Accessibility of Financial Services in Context of Financial Inclusion must not be forgotten. The factors such as Income & Poverty Levels, Proximity to Financial Institutions, Financial Literacy & Awareness, Access to banking Infrastructure, Access to Digital Infrastructure, Regulatory Framework, Demographics, Transaction Costs and Trust are very important from viewpoint of Financial Inclusion

2. Literature Reviews

Ramesh M (2015) in the paper titled ***Financial Inclusion in Pondy*** stated that Poverty levels are significant determinants of financial inclusion. Those households who are having very insufficient means are unable to use the different banking and financial services very easily. It is the bank's initiative along with the government support which can ensure that such low income households can have access to basic banking and financial services very easily.

Leeladhar, V (2016) in the paper titled ***Taking the Business Services to the Common Man*** states that if the banking and financial service institutions are nearby the locality, the bank customers can get all the different types of financial services in one roof, will suffice the purpose of financial inclusion. Thus banks are encouraged to open more branches in nearby proximity, thereby contributing towards financial inclusion.

Mahendra Dev S (2017) in the paper titled ***Financial Inclusion- Issues and Challenges*** opined that the customers availing the various banking services are not always aware of its usage. Further every customers are not tach savy, hence sometimes it finds difficult for them to embrace the financial services in its totality. Thus the banks should conduct the programs to educate the customers and increase their financial literacy, which in turn promotes the financial inclusion.

T. Pratima (2018) in the paper ***Financial Inclusion: A Must for Financial Stability*** states that the highly technologized banking services as well as financial services are very important now a days. Digital Infrastructure, Robotic Lockers, Mechanization Processes, Smart Technologies are various technical aspects which every banks now a days embrace.

M. Devaki (2019) in the ***paper Financial Inclusion - A Review*** emphasized about the regulatory framework's role in financial inclusion. The variety of financial products can be properly accessed easily by all the customers if regulatory framework is observed properly by all the banks. This measure will also promote financial inclusion.

Sarma M (2020) in the paper titled ***financial inclusion, gender dimension, and economic impact on poor households Gender and Social Norms*** stats that banks must carry out the measures to educate more female customers, make them aware about the different financial services which they can avail and contribute towards financial inclusion.

Bhanot D. (2021) in the paper titled ***Studying Financial Inclusion in India*** is of the viewpoint that customers are not always able to use financial products as well as various financial services because of high fees, costs, charges etc. The banks must ensure that they can sell their products and services at affordable rates.

Nandru (2022) in the paper titled ***Exploring Factors affecting the Financial Inclusion*** explains that bank should take the steps to remove financial illiteracy of their customer and ensure that the customers get easy access to all the banking, insurance and financial services.

3. Research Gap

The above reviews talk about the importance of financial inclusion as well as determinants of financial inclusion. However, the male and female bank employee's perceptions are not examined with respect to the factors such as Income & Poverty Levels, Proximity to Financial Institutions, Financial Literacy & Awareness, Access to banking Infrastructure, Access to Digital Infrastructure, Regulatory Framework, Demographics, Transaction Costs and Trust affecting the access to financial services. So, our research study focuses on the. Importance of Factors affecting Accessibility of Financial Services in Context of Financial Inclusion from view point of bank employees in Gujarat State

4. Research Objective

To examine the perceptions of the bank employees with respect to the factors affecting the access to financial services which in turn contributes towards meeting the objectives of financial inclusion thereby leading to the sustainable development.

5. Research Hypothesis

Male as well as female bank employees do not perceive Importance of Factors affecting Accessibility of Financial Services in Context of Financial Inclusion.

6. Research Methodology

The research methodology is divided in to below mentioned five steps

1. The researcher has considered Top 4 Banks among NSE 50 (S& P CNX Nifty) companies which have average market capitalization of 5 billion rupees or more during last six months. These banks are State Bank of India, Axis Bank, ICICI Bank Ltd and HDFC Bank Ltd and the respondents are the bank employees of NSE 50 banks in Gujarat State.
2. The survey of 200 bank employees of NSE 50 banks was carried out by the researcher on the basis of non-probability convenience sampling method.
3. A self-administered questionnaire was devised whereby the questionnaire was sub divided into two categories'. The target questions focus on the perceptions of the NSE 50 bank employees with respect to financial inclusion as well as also covered the demographic details such as age, education, gender and income of the bank employees. The scaling used in this research is the 5-point Likert scale of 1-Not Important, 2-Least Important, 3-Somewhat Important, 4-Important, 5-Most important. The questions contained in the questionnaire were close ended questions.
4. The duration of the research work is one year (financial year 2023-2024).

5. The limitation of the study is that the survey was carried out only in Gujarat State and the survey was limited to 200 bank employees.

Results

Table 1: Sample Characteristics of NSE 50 Bank Employees Surveyed

Sr. No.	Particulars	Category	Count of Bank Employees	Percentage Count of Bank Employees
1	**Gender**	Male	135	67.5
		Female	65	32.5
Total			**200**	**100**
2	**Age Group**	18-30 years	120	60
		31-40 years	72	36
		41-50 years	06	03
		Above 50 years	02	01
Total			**200**	**100**
3	**Education**	Graduate	130	65
		Post Graduate	60	30
		Others	10	05
Total			**200**	**100**
4	**Annual Income**	Below Rs. 1,00,000	10	05
		Rs. 1,00,000 -3,00,000	50	25
		Rs. 3,00,001 -5,00,000	136	68
		More than Rs. 5,00,000	04	02
Total			**200**	**100**

Source – Survey

Table 2

Ranking the Importance of Factors affecting Accessibility of Financial Services in Context of Financial Inclusion from view point of bank employees

No	Factors	Male (n =135)		Female (n = 65)		t – test	Sig. level
		Mean	Rank	Mean	Rank		
1	Income & Poverty Levels	4.15	3	3.67	8	0.862	0.384
2	Proximity to Financial Institutions	4.48	2	4.05	6	3.048	0.001*
3	Financial Literacy & Awareness	4.62	1	4.23	3	4.343	0.000*
4	Access to banking Infrastructure	3.94	6	4.41	2	7.232	0.000*
5	Access to Digital Infrastructure	3.82	8	4.17	4	0.413	0.634
6	Regulatory Framework	3.52	9	3.74	7	1.912	0.054
7	Demographics	3.91	7	4.13	5	2.033	0.000*
8	Transaction Costs	4.02	4	3.57	9	5.918	0.000*
9	Trust	3.98	5	4.53	1	5.722	0.196

Note - * Significant at $p<0.05$

7. Discussion

On the basis of above survey results it is deduced that Male bank employees perceive that

1. Financial Literacy & Awareness,
2. Proximity to financial institutions,
3. Income and poverty levels,
4. Transaction costs as well as
5. Trust

are most important factors that affect the access to financial services which in turn contributes towards meeting the objectives of financial inclusion thereby leading to the sustainable development. On the other hand the female bank employees surveyed exclaimed that Trust, Access to banking infrastructure, financial literacy and awareness, access to digital infrastructure, and demographics contributes towards meeting the objectives of financial inclusion thereby leading to the sustainable development.

8. Recommendations / Policy Implications

More financial education awareness programs drive the success of the financial inclusion and thereby the scope of the usage of the financial services are enlarged. The government's initiatives to eradicate the poverty and uplift the low-income households also gives impetus to the financial inclusion. Bank employees view that nearness of the financial institutions, lower transaction costs and subsidized rates of

the financial services will also contribute towards the development of the individual and bring good to the society.

9. Conclusion

In nutshell, it can be concluded from the study that bank employee's perception about the Importance of Factors affecting Accessibility of Financial Services in Context of Financial Inclusion plays a very vital role in enriching the economy of any country. If their perceptions are considered than it will ensure that the financial inclusion in the country takes place ion proper shape. The factors which affect the accessibility of financial services as perceived by the bankers must be duly considered while taking any decision pertaining to the financial inclusion. Not only that these factors must be inculcated in the policy document of every bank thereby contributing towards the financial inclusion.

References

1. Ramesh M (2015), Financial Inclusion in Pondy, *The Journal of Indian Institute of Banking and Finance, April-June,* Issue 1, Volume 1, Pg. no. 262–268.
2. Leeladhar, V (2016), Taking the Business Services to the Common Man, *Journal of Research in Management & Technology,* Vol. 28 No. 2, pp. 115-136.
3. Mahendra Dev S (2017), Financial Inclusion- Issues and Challenges, *The International Journal of Bank Marketing,* 53(2), pg no. 202–213.
4. T. Pratima (2018), Financial Inclusion: A Must for Financial Stability, M. Devaki (2019), Financial Inclusion - A Review, *Journal of Research in Management & Technology,* Vol. 1 No. 1, pg no. 24-34.
5. Sarma M (2020), Financial inclusion, gender dimension, and economic impact on poor households Gender and Social Norms, *The Journal of International Development,* 23(5), pg. no. 65-72.
6. Bhanot D. (2021), Studying Financial Inclusion in India, *The Economic Journal, 28(1*), pg no. 299–325.
7. Nandru (2022), Exploring Factors affecting the Financial Inclusion, *Annual Research Journal of SCMS,* Volume 2, Issue 4, pg no. 1-15.
8. Research Methodology (Methods and Techniques) by C.R. Kothari, *New Age International (P) Limited, Publishers, ISBN (13) : 978-81-224-2488-1*
9. Marketing Research, An Applied Orientation by Naresh K. Malhotra, *Pearson Education, ISBN – 81-7808-368-X*
10. Marketing Research Concept and Cases by Donald R. Cooper, Pamela S. Schindler, *Tata Mcgraw Hill, and ISBN-13: 978-0-07-060091-1, ISBN-10: 0-07-060091-0.*

E-Commerce retailing in India - With Special Reference to Jio Mart

Dr. Swati Saxena
(Corresponding author)
Chimanbhai Patel Institute of Management & Research,
Sardar Vallabhbhai Global University, Ahmedabad, Gujarat,India
swatisaxena@cpi.edu.in

Sweta Parmar
MBA student
Batch 2022-24

1. Introduction to E-Commerce Industry

E-commerce means using the Internet and the web for business and/or commercial transactions. These typically involve the exchange of value (e.g., money) across organizational or individual boundaries in return for products and services. Here, we focus on digitally enabled commercial transactions among organizations and individuals.

E-business applications turn into e-commerce precisely when an exchange of value occurs. Digitally enabled transactions include all transactions mediated by digital technology and platforms; that is, transactions that occur over the Internet and the web.

Hence, e-tailing is a subset of e-commerce, which encapsulates all "commerce" conducted via the Internet. It refers to that part of e-commerce that entails the sale of product merchandise and does not include the sale of services, namely railway tickets, airline tickets, and job portals.

Three types of destinations cater to retail sales:

i. Traditional retail- brick-and-mortar
ii. Corporatized retail- brick-and-mortar
iii. Corporatized retail- e-tailing

Source: (E-Commerce: Introduction, n.d.)

2. Introduction to Company JIO Mart

At JioMart, the goal is to make shopping easier, faster, and more convenient than ever before for our customers. We are committed to our mission to build a trustworthy online marketplace that offers the widest range of products across the country. With our proven user experience and reliable services, we are committed to providing customers in India with a trusted and hassle-free one-stop-shop for all their shopping needs across various categories such as Electronics, Grocery, Fashion, Home & Kitchen, etc.
For over 17 years of operations with Reliance Retail, we have built the most reliable retail presence that caters to the unique needs of customers in India, and we are committed to bringing a similar experience online with JioMart. Our vast exceptional selection of products makes our online portal the preferred shopping destination for all kinds of customers.
With our convenient payment options, on-time delivery services, dependable customer service, and secure online transactions, you can now shop smarter, faster, and more seamlessly within a few clicks. Our commitment to excellence has been recognized worldwide, and we look forward to offering our customers a delightful shopping experience online with JioMart. #Happy Shopping with JioMart.
Source: (Jiomart.com, n.d.)

3. Introduction to the topic: Impact of E-Commerce and Big Sales on India's Retail Sector: A Case Study of JioMart

Reliance Retail's JioMart and SMART Stores today announced the rollout of the 'Bestival Sale', one of India's largest omnichannel Diwali fiestas from October 14th to 24th, marking the e-marketplace's rapid expansion into several new categories including fashion and lifestyle, consumer electronics, home, and kitchen. The sale will be live on the JioMart, e-marketplace platform as well as 3000+ SMART Stores, which include SMART Bazaar, SMART Superstore, and SMART Point, across the country.
Over the last two years, the SMART Stores have expanded across value shopping, destination shopping, and convenience shopping formats. With this huge network of physical stores, strong partner network, sourcing capability, and deep insights gained through serving Reliance Retail's 20 crore+ registered customer base, the 'Bestival Sale' brings the best of the exclusive offers and deals, bank tie-ups and special discounts on Diwali essentials and general merchandise, apparel, beauty products, electronic exclusively available online through JioMart and at the neighborhood SMART Stores, thus providing consumers with the best shopping experience as per their preference – be it online or at the neighborhood store, a true omnichannel shopping experience.
Damodar Mall, CEO, of Grocery Reliance Retail, said, "The powerful combination of 3000+ SMART Stores and JioMart is a boon for consumers across India. The sourcing strength of stores and JioMart is ensuring unmatched prices during the 'Bestival Sale'. This confluence of a nationwide network of stores and digital shopping at the same great prices is unique in Retail. I am sure, families will love the choice of buying groceries both in-store and on the app this season."
Shoppers can get up to 80% off across categories and choose from a carefully curated collection of Diwali Special deals on diyas, candles, gifts, sweets, snacks, and rangolis to meet their festive needs this season. In addition, they can avail up to 50% off on Indian sweets and dry fruits gift packs.

Sandeep Varaganti, CEO, of JioMart, said, "We are thrilled about the success of our cross-category expansion focus, which has been well embraced across the nation. We have seen a 3x increase in sales of non-grocery categories during the past 15 days of the sale. The overall response has far exceeded our expectations."
Source: (News18, n.d.)

4. Indian Retail Industry Overview

- The retail industry in India accounts for over 10% of the country's GDP and employs around 8% of the workforce.
- The industry is projected to grow at a 9% compound annual growth rate (CAGR) from 2019 to 2030, expanding from $779 billion in 2019 to an estimated $1.8 trillion by 2030.
- India ranks third in the world for the largest base of online shoppers (140 million), trailing only China and the United States, but with significant untapped potential due to the large internet user base (approximately 625-675 million).

5. Retail Evolution

- The retail landscape in India has evolved from local stores to organized retail and online platforms (e-commerce and quick commerce).
- Traditional retail still dominates but is gradually shifting towards organized retail and online shopping, particularly in urban areas.

6. Supply Chain in Retail

- Retail supply chains include manufacturing units, warehouses, distributors, retail stores, and customers.
- Organized retail has introduced speed and agility into supply chain management, emphasizing customer experience.

7. Key Elements of the Retail Supply Chain

- Warehousing: Efficient storage and management of goods.
- Technology: Using data analytics and automation to streamline operations.
- Segmenting customers: Understanding customer needs to optimize inventory.
- Delivery orders and stocking shelves: Ensuring timely restocking.
- Monitoring inventory levels: Maintaining the right balance of stock.

8. Stock Keeping Units (SKUs)

- SKUs help in tracking specific products easily. For instance, "ELX-1001-BLK-M" might denote an electronic item, brand, color, and size.

9. Retail Metrics

- **Sales Metrics:** Sales per square foot, conversion rate, and average order value.
- **Inventory Metrics:** Considers inventory turnover, sell-through rate, and shrinkage.
- **Customer Metrics:** Measures foot traffic, retention rates, and same-store sales.
- **Profit Metrics:** Focus on gross margin return on investment (GMROI).

In India, 3rd Largest Online Shopper Base is 140 million (Reliance)
Retail Evolution 2019-2020

- Local Store
- Organized / Modern Trade
- E-Commerce
- Q-Commerce

After Covid-19 people are moving faster to shift to E-commerce and the Q-commerce platform numbers are getting increased
Consumer Growth In The Retail Market

Source: (India's E-Commerce Statistics: Industry Trends, n.d.)

Competitive Landscape
Intense Competition:
Amazon and Flipkart engage in fierce competition, driving innovation and attracting investments.

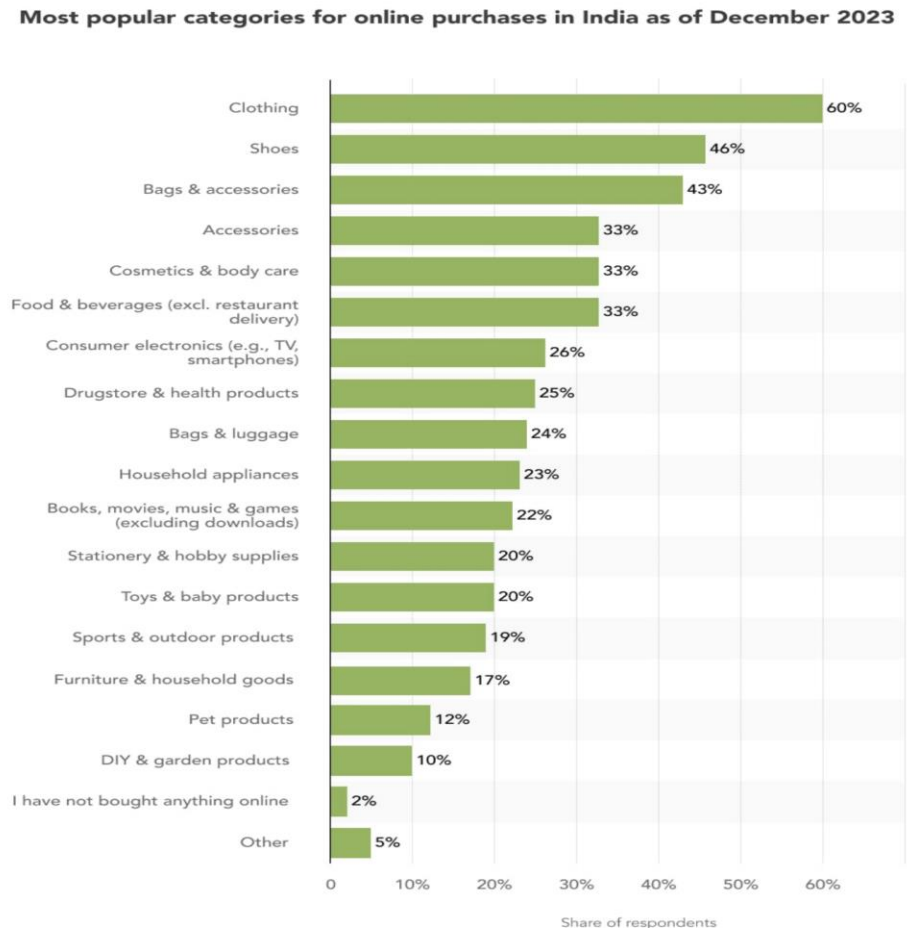
Emerging Players:

Reliance, Tata, Nykaa, and other players are joining the race.

As the competition heats up, companies are focusing on improving their logistics network, increasing product offerings, and enhancing the overall customer experience. This has led to a highly competitive market, with all players vying for a larger share of the e-commerce pie.

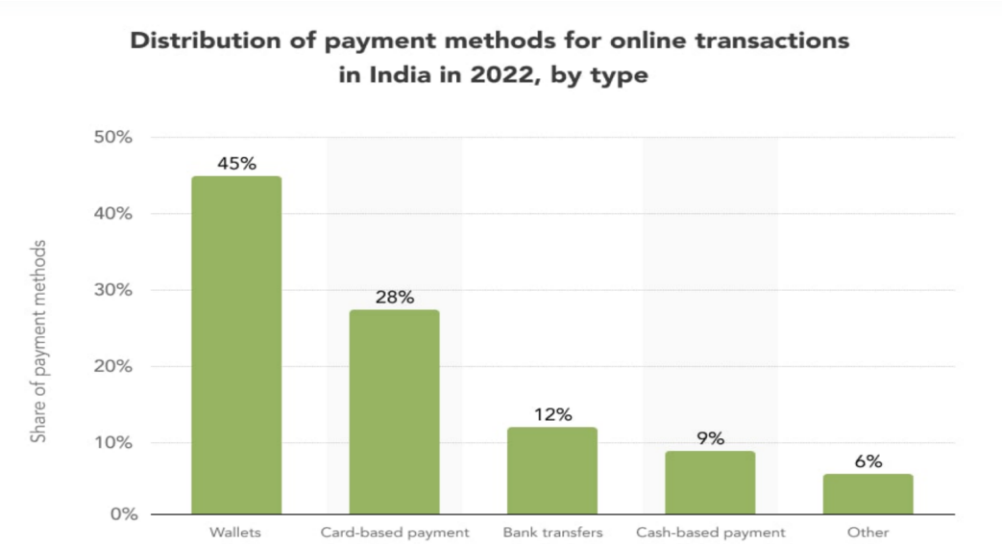
Source: (India's online shopping market: How Flipkart, n.d.)

Popular Category in Indian E-Commerce Industry:



Source: (https://www.statista.com/forecasts/823376/most-popular-categories-for-online-purchases-in-india, n.d.)

Popular Payment Method In Indian E-Commer Market



Source: (https://www.statista.com/statistics/1176683/india-payment-methods-online-transactions/, n.d.)

- **Wallets:** Wallets were the dominant payment method for e-commerce transactions in India in 2022, accounting for a substantial **45%** share. These digital wallets facilitate convenient and secure online payments.
- **Credit and Debit Cards:** Credit and debit cards followed closely, with a **28%** share. Due to their ease of use and widespread acceptance, these cards are widely used for online shopping.
- **Net Banking:** Net banking, which allows users to make payments directly from their bank accounts, constituted **12%** of the total. It remains a reliable option for many Indian consumers.
- **Cash-Based Payment:** Surprisingly, cash-based payment still held a **9%** share of online shopping. Despite the digital revolution, some consumers in India continue to prefer cash transactions.
- **UPI:** As of January 2024, the **Bharat Interface for Money (BHIM)** Unified Payments Interface (UPI) was the top digital payment mode in India, with over **100 billion transactions** in sectors like online retail, food delivery, mobility, and e-health in FY 2023.

4. Literature Review

The Evolution of the Indian Retail Industry

The transformation of India's retail industry is a subject of extensive research, reflecting significant shifts from traditional shops to organized retail formats. According to a study by Singh & Sharma (2020), the Indian retail market has grown rapidly due to increasing urbanization, rising disposable incomes, and changing consumer preferences. The study highlights that organized retail in India, which includes

supermarkets, department stores, and e-commerce platforms, is steadily gaining market share, although unorganized retail still dominates.
Invalid source specified.

E-Commerce's Role in Transforming Retail Supply Chains

Research by Kumar & Mahajan (2021) discusses how e-commerce has reshaped traditional retail supply chains by integrating advanced logistics, technology, and warehousing solutions to meet consumer demands. The paper argues that companies like JioMart and Amazon have made significant investments in supply chain technology to offer same-day or next-day delivery, which has become a competitive advantage in the online retail space.
Invalid source specified.

The Impact of Big Sales on Retail Performance

An analysis by Banerjee & Das (2019) shows that big sales events like Black Friday and Amazon Prime Day lead to a temporary surge in sales, often by as much as 100-200%. The research indicates that such sales events are used not only to increase revenue but also to attract new customers and clear excess inventory. JioMart, which follows a similar strategy with its "Big Sales Days," aligns with these global retail trends.
Invalid source specified.

JioMart's Market Penetration and Consumer Base Expansion

Patel & Mehta (2022) explored how JioMart has used digital integration, especially with WhatsApp and other social media platforms, to expand its customer base in both urban and rural areas. The study found that JioMart's mobile platform offers accessibility and convenience, which significantly enhances customer engagement and market penetration in India's diverse regions.
Invalid source specified.

Technology and Stock-Keeping in Organized Retail

Gupta (2020) discusses the importance of technology in stock-keeping and inventory management within organized retail. The paper outlines how the use of SKUs and automated warehousing technologies in companies like JioMart helps maintain inventory accuracy and reduce overhead costs. These practices are crucial for efficiently managing the supply chain and meeting customer expectations.

Customer Experience and Digital Traffic in Retail Metrics

A study by Verma & Singh (2021) focused on how digital traffic and customer experience metrics like conversion rate, average order value, and customer retention have become vital indicators of retail performance in e-commerce. The paper notes that companies such as JioMart leverage a user-friendly digital interface and quick order processing to enhance these metrics, leading to higher online traffic and customer loyalty.
Invalid source specified.

Challenges and Future Trends in E-Commerce and Q-Commerce

Sharma & Kumar (2022) discuss the emerging trends in quick-commerce (Q-commerce), which requires extremely agile supply chains to fulfill orders within minutes. JioMart, along with other players in the industry, is investing in AI-driven inventory management to meet these challenges and cater to the growing demand for instant delivery. The research highlights the need for predictive analytics and real-time data management in the future of retail.

5. Methodology

The study utilizes a mixed-method approach, combining secondary data analysis with a case study on JioMart. Data was sourced from industry reports, e-commerce analytics, and company publications to understand JioMart's impact on retail metrics, supply chain efficiency, and sales growth.

6. Discussion

JioMart has capitalized on India's digital transformation by incorporating technology into its supply chain. The company's focus on big sales events has not only boosted sales but also enhanced its brand recognition among consumers. These strategies align with global trends in retail, where companies emphasize speed, convenience, and inventory management to stay competitive.

7. Conclusion

JioMart's integration of e-commerce strategies into the retail landscape has redefined customer expectations and supply chain dynamics. Big sales events, advanced stock-keeping practices, and digital traffic management have positioned JioMart as a leader in India's retail evolution. Future research should explore the long-term effects of Q-commerce on consumer behavior and retail supply chains.

Reference

The Research Paper is formed from TEAM (Towards Excellence in Academic and Management) marketing & general management expert sessions on *"Unlocking Retail Success - A Day of Insights & Innovation"* Date: 27.9.2024 (Friday) By Mr. Jimit Shah & Mr. Anjum on Supply Chain & Metrix

Bibliography

E-Commerce: Introduction, M. H. (n.d.).

https://www.statista.com/forecasts/823376/most-popular-categories-for-online-purchases-in-india. (n.d.).

https://www.statista.com/statistics/1176683/india-payment-methods-online-transactions/. (n.d.).

India’s E-Commerce Statistics: Industry Trends, M. S. (n.d.).

India's online shopping market: How Flipkart, A. a.-T. (n.d.).

Jiomart.com, A. u. (n.d.).

News18, J. a. (n.d.).

E-Commerce: Introduction, M. H. (n.d.).

https://www.statista.com/forecasts/823376/most-popular-categories-for-online-purchases-in-india. (n.d.).

https://www.statista.com/statistics/1176683/india-payment-methods-online-transactions/. (n.d.).

India’s E-Commerce Statistics: Industry Trends, M. S. (n.d.).

India's online shopping market: How Flipkart, A. a.-T. (n.d.).

Jiomart.com, A. u. (n.d.).

News18, J. a. (n.d.).