ISSN : 0974 - 0988

Optimization Journal of Research in Management

Volume No. 15

Issue No. 1

January - June 2023

ENRICHED PUBLICATIONS PVT.LTD

JE - 18,Gupta Colony, Khirki Extn,
Malviya Nagar, New Delhi - 110017.
E- Mail: info@enrichedpublication.com
Phone :- +91-8877340707

ISSN : 0974 - 0988

Optimization Journal of Research in Management

Aims and Scope

Optimization: Journal of Research in Management is a bi-annual peer reviewed journal of G.L. Bajaj Institute of Management and Research, Greater Noida. It aims at bridging the gap between the known and the unknown, between theory and practice and also between perspectives of academics and those of the corporate world. It consists of multi-disciplinary, interdisciplinary empirical and conceptual research work dedicated towards advances in contemporary and futuristic research in the area of management. The Journal focuses on empirical and applied research that is relevant to practicing managers and meets the standards of academic rigor.

ISSN : 0974 - 0988

Optimization Journal of Research in Management

ISSN : 0974 - 0988

Optimization Journal of Research in Management

(Volume No. 15, Issue No. 1, January - June 2023)

Contents

Examination of Tourism Security Concerns with Reference to India

Smita Mishra1*, Tanvi Gupta2 and Mamta Rani3

A B S T R A C T

Purpose: *This research study was conducted to examine the various factors which could be related to the security concerns for tourism industry specifically for India. The study encompasses an empirical assessment of the identified factors through review of literature in terms of their statistically significant relationship with the tourism security. Originality/scope: This study is conducted originally for Indian sub-continent. It has taken into consideration the recent data (2021-2022) collected during the investigation. It has huge future scope as tourism industry one of the largest revenue-generating sectors & studying the trends in security concerns can provide insights for further research. Methodology: The data was collected through a self-structured questionnaire with Cronbach's alpha >.06 from 349 respondents online. The main factors chosen were crime rate, wars, socio-political unrest, environmental threats and spread of infectious diseases. Their summation of score reflected the overall security status of tourism in India. Limitations: Resource limitation is indispensable in any research study and so is the case here. A limited respondent base could be approached due to time constraint. Implications: This study has both academic and practical implications. Apart from adding information to the existing literature, this also goes a long way in understanding how secure is Indian tourism considered and what could be the measure taken for enhancing the security status.*

Keywords: Security concerns, Tourism, Socio-political unrest, Environmental threats, Infectious diseases

INTRODUCTION

India is known as the most popular destination,especially for tourists as it has a rich cultural heritage and myriad attraction places. Every year, millions of visitors from the world are seen in different parts of India. Tourism has a prominent impact on society. Not only society, but it also has a big contribution to the world's economy (Jangra et al., 2021). The Indian government has implemented numerous campaigns and schemes to attract foreign tourists. The government aim to develop tourism industry and also wants to increase revenue in next 10 years while already started working on ultimate tourist place (Hazra, 2018). Focusing on digital promotion of culture tourism in India is highly required over other models of tourism. India is still yet not able to maintain sustainability due to gap between resources available and information provided (Menon et al., 2021). Tourism industry is a stronger pillar of a economy (Yadav Quereshi, 2021). However, after 2019, COVID19 has disturbed almost all the industry. If we talk about the tourism industry, then it was almost over. The sudden closure of everything at the beginning of COVID 19 was a big blow to the tourism industry. When countries started realizing that COVID 19 is a deadly virus, there was no other option but to shut everything down. Now when many countries have already stepped forwarded and decided to lift restrictions, they also believe that proper planning and management will maintain the remarkable progress of the tourism industry (Chang and Wu, 2021).

Tourophobia is common in individual the reason behind its crises that are caused due to some man made or natural disasters. The tourists are very selective in terms of destination selection. They identify the

sensitive place because they believe tourism place should not have any connection with crimes, wars, or any type of threats Kadir Cakar (2020). Crime rate, terrorism, food safety, health issue, natural disasters these are concerning area for all those who wants to enjoy a happy time with friends and family. The example can be learnt from Malaysia who were the safest place for the tourists, are now facing challenges due to some short and long-term incidents (Ayob and Masron, 2014). In many countries, most of the destinations were vulnerable to political, economic and social stability. Security and safety directly influence to the travelers so now international community believe that the government, agency and news media report should always warn about the risk associated with particular destinations. However, now government is more focused and concerned for the safety of tourists and they immediately issue travel advisory (Breda and Costa, 2005).

REVIEW OF LITERATURE

Safety and security whether in India or abroad is a basic need of any citizen. A safe and secure environment is always required for tourists and it is the responsibility of the government to maintain and provide security arrangements at tourist destinations, as tourism sector does not only help in economic development but it has an impact on many other areas (Hamarneh and Jerabek, 2018). From time to time, the rules relating to security and safety in tourism sectors are changed in the tourism sector. Policymakers, social scientists, and specialists need to understand the future of tourism to avoid uncertainty, anxiety, and fear factors in the tourism industry (Korstanj, 2020). India has always been a famous place for international tourists because of the variety of destinations, different types of cultures, and diversity. However, there have also been seen crime graphs, especially among women tourists. Such incidents have maligned India's image, leading to considerable decline in international tourists visiting India. It has declined India's GDP (Basak et al., 2015). In tourism industry, safety and security have been given importance especially after 9/11 incident. Therefore, academicians and practitioners have already started working for the long-term solutions for avoiding the associated negative impact. Kashmir is known as heaven of India, and every year large number of tourists from international community visit and enjoy many beautiful places. However, safety and security perceptions of tourists who visited Kashmir have negative impact due to terror attacks on regular interval (Chauhan, 2007).

The author has examined and assessed the perception of visitors of five developing countries the United Kingdom, the USA, Germany, China and India and has also tried to understand what they think about the information provided to them related to safety and security and whether that information is trustworthy. The author has also found from research that there is no big difference in sense of thought among all five nationalists (Preko and Gyepi Garbrah, 2021). In the research paper (Shaikh, 2018), the author has discussed safety issues in Goa which was known as one of the safest tourist places for international travellers for a long time. However, the incidents like different types of crimes against tourists, deaths of foreign travellers due to natural causes, drowning deaths as well as death due to heavy doses of drugs have now become major issues. In this regard, different perceptions of local and foreign tourists have also been explained. The author has tried to identify the government response to deal with these types of crisis situations as well as the possible actions to fight safety issues. The research paper on Antalya's Tourist Security: A Gap Analysis of Expectations vs Perceptions (Terrah et al., 2020) has found out why the security of tourism is the heart of the prosperity for the tourism sector. For any country, the tourism industry provides a significant role as well as contributes to the country's GDP, thus, it is the responsibility of authorities to make all efforts to protect the tourists. This study has focused on security measures, especially in Antalya hotels, restaurants and shopping malls.

RESEARCH METHODOLOGY

Objectives

Objective 1: To examine the relationship between crime rate and security status in Indian tourism.

Objective 2: To examine the relationship between wars and security status in Indian tourism.

Objective 3: To examine the relationship between socio-political unrest and security status in Indian tourism.

Objective 4: To examine the relationship between environmental threats and security status in Indian tourism.

Objective 5: To examine the relationship between infectious diseases and security status in Indian tourism.

Hypothesis

H1: There is significant relationship between crime rate and security status in Indian tourism.

H2: There is significant relationship between wars and security status in Indian tourism.

H3: There is significant relationship between sociopolitical unrest and security status in Indian tourism.
H4: There is significant relationship between environmental threats and security status in Indian tourism.

H5: There is significant relationship between infectious diseases and security status in Indian tourism.

The data was collected through a self-structured questionnaire with Cronbach's alpha >.06 from 349 respondents online using convenience sampling. The sample size taken for the retail customers taken in the study is 349 (Creative Research Systems, 2003). With this sample size, the marginal error calculated is less than 5%, thus, there is 95% confidence level and hence, the sample size is justified (Niles, 2006). The main factors chosen were crime rate, wars, socio-political unrest, environmental threats and spread of infectious diseases. These factors were marked for responses on Likert's 5-point scale. Their summation of score reflected the overall security status of tourism in India. Multiple regression was used to examine the relationship between the dependent and the independent variables.

DATA ANALYSIS AND INTERPRETATION

Impact of 'Crime rate' on Security Status of Indian Tourism

It was documented from Table 1 that the mean score for security status of Indian tourism was 95 and the highest mean score for 'Crime rate' was the highest for its first variable (CR1) as 2.77 (s.d.=1.18) and the lowest for the third variable (CR3) as 2.70 (s.d.=1.21) for a total of 349 respondents.
Table 2 given below reflected statistically positive correlation between the independent variables of Crime rate component and Tourism security status score as $p<0.05$.

Table 1: Descriptive analysis of 'crime rate' variables and 'Tourism security status'

	Mean	Std. deviation
Tourism security status score	95.00	37.72
CR1	2.77	1.18
CR2	2.71	1.21
CR3	2.70	1.18
CR4	2.72	1.22
CR5	2.72	1.22

Table 3 documented that a fit model was obtained using the given variables. With enter method, $F(5,343)=2788.98$ at $p<0.05$ and from Table 4, the regression equation given below was obtained:

Tourism security status=2.029 + 0.207(CR1) +0.255(CR2) + 0.215(CR3) + 0.223(CR4) +0.189(CR5)

This showed that with 0.207 units change in CR1, the Tourism security status would change by one unit. With 0.255 units change in CR2, the Tourism security status would change by one unit. With 0.215 units change in CR3, the Tourism security status would change by one unit. With 0.223 units change in CR4, the Tourism security status would change by one unit. With 0.189 units change in CR5, the Tourism security status would change by one unit. Since, for all the given variables of 'Crime rate', statistical relationship came out to be significant at 5% level of significance as $p<0.05$. Hence, H0 1 was

Table 2: Correlations for crime rate variables and tourism security status

		Tourism security status score	CR1	CR2	CR3	CR4	CR5
Pearson Correlation	Tourism security status score	1.000	.891	.902	.907	.897	.878
	CR1	.891	1.000	.779	.778	.758	.790
	CR2	.902	.779	1.000	.799	.770	.752
	CR3	.907	.778	.799	1.000	.824	.760
	CR4	.897	.758	.770	.824	1.000	.761
	CR5	.878	.790	.752	.760	.761	1.000
Sig. (1-tailed)	Tourism security status score	.	.000	.000	.000	.000	.000
	CR1	.000	.	.000	.000	.000	.000
	CR2	.000	.000	.	.000	.000	.000
	CR3	.000	.000	.000	.	.000	.000
	CR4	.000	.000	.000	.000	.	.000
	CR5	.000	.000	.000	.000	.000	.

Table 3: ANOVAa for crime rate and tourism security status

Model		Sum of square WR	df	Mean square	F	Sig.
1	Regression	483426.26	5	96685.253	2788.98	0.001[b]
	Residual	11890.73	343	34.667		
	Total	495316.99	348			

a Dependent Variable: Tourism security status; bPredictors: (Constant), CR5, CR2, CR4, CR1, CR3

Table 4: Coefficientsa for crime rate variables

Model		Unstandardized coefficients		Standardized coefficients	T	Sig.
		B	Std. error	Beta		
1	(Constant)	2.029	0.851		2.385	0.018
	CR1	6.571	0.511	0.207	12.863	0.001
	CR2	7.962	0.496	0.255	16.049	0.001
	CR3	6.841	0.550	0.215	12.427	0.001
	CR4	6.888	0.507	0.223	13.592	0.001
	CR5	5.837	0.475	0.189	12.287	0.001

Dependent Variable: Tourism security status

Table 5: Descriptive statistics for wars variables and Tourism security status

	Mean	Std. deviation	N
Tourism security status score	95.00	37.72	349
WR1	2.73	1.18	349
WR2	2.71	1.23	349
WR3	2.72	1.19	349
WR4	2.70	1.16	349
WR5	2.74	1.22	349

rejected and it was documented that crime rate impacted the Tourism security status.

Impact of 'Wars' component on Tourism security status

It was documented from Table 5 that the mean score for security status of Indian tourism was 95 and the highest mean score for 'wars' was the highest for its fifth variable (WR5) as 2.74 (s.d.=1.22) and the lowest for the fourth variable (WR4) as 2.70 (s.d.=1.16) for a total of 349 respondents.

Table 6: Correlation matrix for 'wars' and tourism security status

		Tourism security status score	CR1	CR2	CR3	CR4	CR5
Pearson Correlation	Tourism security status score	1.000	.889	.905	.900	.897	.868
	WR1	.889	1.000	.786	.768	.755	.762
	WR2	.905	.786	1.000	.811	.786	.734
	WR3	.900	.768	.811	1.000	.813	.725
	WR4	.897	.755	.786	.813	1.000	.762
	WR5	.868	.762	.734	.725	.762	1.000
Sig. (1-tailed)	Tourism security status score		.000	.000	.000	.000	.000
	WR1	.000		.000	.000	.000	.000
	WR2	.000	.000		.000	.000	.000
	WR3	.000	.000	.000		.000	.000
	WR4	.000	.000	.000	.000		.000
	WR5	.000	.000	.000	.000	.000	

Table 6 reflected the statistically positive correlation between the independent variables of wars component and the Tourism security status score of as $p<0.05$.

Table 7 showed that a fit model was obtained using the stipulated variables. With enter method, $F(5,343)=2635.93$ at $p<0.05$ and from Table 8, the given regression equation was obtained:

Tourism security status =1.690 + 0.212(WR1) +0.242(WR2) + 0.219(WR3) + 0.208(WR4) + 0.211(WR5)

This implied that with 0.212 units change in WR1, the Tourism security status would change by one unit. With 0.242 units change in WR2, the Tourism security status would change by one unit. With 0.219 units change in WR3, the Tourism security status would change by one unit. With 0.208 units change in WR4, the Tourism security status would change by one unit. With 0.211 units change in Wr5, the Tourism security status would change by one unit. Since, all the variables of wars displayed a statistically significant impact on Tourism security status at 5% level of significance at $p<0.05$. Hence, H02 is rejected.

It can be said that wars impacted the Tourism security status.Impact of 'Socio-political unrest' on Tourism security status

It was represented from Table 9 that the mean score for Tourism security status was 95 and the highest

Table 9: Descriptive statistics for security variable

	Mean	Std. deviation	N
Tourism security status score	95.00	37.72	349
SPU1	2.73	1.22	349
SPU2	2.68	1.22	349
SPU3	2.69	1.15	349
SPU4	2.74	1.17	349
SPU5	2.73	1.23	349

Table 7: ANOVAa for 'wars' and tourism security status score

Model		Sum of square WR	df	Mean square	F	Sig.
1	RegWRsion	482753.39	5	96550.67	2635.93	0.001[b]
	WRidual	12563.60	343	36.62		
	Total	495316.99	348			

a. Dependent Variable: Tourism security status score; b. Predictors: (Constant), WR5, WR3, WR1, Wr4, WR2

Table 8: Coefficientsa for WR variables

Model		Unstandardized coefficients		Standardized coefficients	T	Sig.
		B	Std. error	Beta		
1	(Constant)	1.690	.879		1.923	.055
	WR1	6.757	.515	.212	13.121	.000
	WR2	7.413	.522	.242	14.211	.000
	WR3	6.896	.545	.219	12.659	.000
	WR4	6.716	.550	.208	12.204	.000
	WR5	6.507	.463	.211	14.041	.000

a. Dependent Variable: Tourism security status score

mean score for Security was for its fourth variable (SPU4) with mean score of 2.74 (s.d.=1.17) and the lowest for SPU2 with mean =2.68 (s.d.=1.22) a total sample of 349 Respondents.

Table 10 reflected statistically positive correlation between the independent variables of Security and Tourism security status as $p<0.05$.

Table 11 showed that a fit model was obtained using the variables. With enter method, $F(5,343)=97142.67$ at $p<0.05$ and from Table 12, the given regression equation was obtained: Tourism security status $=1.785+0.210(SPU1)+0.200(SPU2)+0.244(SPU3)+0.208(SPU4)+0.235(SPU5)$

This showed that with 0.210 units change in SPU1, the Tourism security status would change by one unit. With 0.200 units change in SPU2, the Tourism security status would change by one unit.

With 0.244 units change in SPU3, the Tourism security status would change by one unit. With 0.208 units change in SPU4, the Tourism security status would change by one unit. With 0.235 units change in SPU5, the Tourism security status would change by one unit. Since all the variables of security had an impact on Tourism security status which was statistically significant at 5% level of significance with

$p<0.05$. Hence, H0 3 is rejected and it was found that security impacted the Tourism security status.

Table 10: Correlations for security and SPU variables

		Tourism security status score	SPU1	SPU2	SPU3	SPU4	SPU5
Pearson Correlation	Tourism security status score	1.000	.901	.879	.905	.904	.878
	SPU1	.901	1.000	.780	.772	.772	.789
	SPU2	.879	.780	1.000	.789	.759	.700
	SPU3	.905	.772	.789	1.000	.820	.723
	SPU4	.904	.772	.759	.820	1.000	.772
	SPU5	.878	.789	.700	.723	.772	1.000
Sig. (1-tailed)	Tourism security status score		.000	.000	.000	.000	.000
	SPU1	.000		.000	.000	.000	.000
	SPU2	.000	.000		.000	.000	.000
	SPU3	.000	.000	.000		.000	.000
	SPU4	.000	.000	.000	.000		.000
	SPU5	.000	.000	.000	.000	.000	

Table 11: ANOVAa for security and tourism security status

Model		Sum of square WR	df	Mean square	F	Sig.
1	Regression	485713.38	5	97142.67	3469.52	0.001[b]
	Residual	9603.61	343	27.99		
	Total	495316.99	348			

a. Dependent Variable: Tourism security status score
b. Predictors: (Constant), SPU5, SPU2, SPU3, SPU1, SPU4

Table 12: Coefficientsa for security variables

Model		Unstandardized coefficients		Standardized coefficients	T	Sig.
		B	Std. error	Beta		
1	(Constant)	1.785	.763		2.338	.020
	SPU1	6.470	.459	.210	14.088	.000
	SPU2	6.142	.425	.200	14.441	.000
	SPU3	7.951	.491	.244	16.190	.000
	SPU4	6.672	.486	.208	13.716	.000
	SPU5	7.167	.412	.235	17.400	.000

a. Dependent Variable: Tourism security status score

Table 13: Descriptive statistics for environmental threats and tourism security status score

	Mean	Std. deviation	N
Tourism security status score	95.00	37.72	349
ET1	2.68	1.23	349
ET2	2.65	1.18	349
ET3	2.70	1.21	349
ET4	2.74	1.23	349
ET5	2.73	1.22	349

Table 14: Correlations for feedback management and tourism security status

		Tourism security status score	ET1	ET2	ET3	ET4	ET5
Pearson Correlation	Tourism security status score	1.000	.875	.896	.909	.901	.884
	ET1	.875	1.000	.793	.771	.738	.747
	ET2	.896	.793	1.000	.821	.754	.728
	ET3	.909	.771	.821	1.000	.815	.756
	ET4	.901	.738	.754	.815	1.000	.780
	ET5	.884	.747	.728	.756	.780	1.000
Sig. (1-tailed)	Tourism security status score		.000	.000	.000	.000	.000
	ET1	.000		.000	.000	.000	.000
	ET2	.000	.000		.000	.000	.000
	ET3	.000	.000	.000		.000	.000
	ET4	.000	.000	.000	.000		.000
	ET5	.000	.000	.000	.000	.000	

Tourism security status $p<0.05$. Table 15 showed that a fit model was obtained using the stipulated variables. With enter method, $F(5,343)=96914.74$ at $p<0.05$ and from Table 16, the regression equation was as obtained:

Tourism security status=3.367 + 0.176(ET1) + 0.231(ET2) + 0.202(ET3) + 0.245(ET4) + 0.241(ET5)

This implied that with 0.176 units change in Et1, the Tourism security status would change by one unit. With 0.231 units change in ET2, the Tourism security status would change by one unit. With 0.202 units change in ET3, the Tourism security status would change by one unit. With 0.245 units change in ET4, the Tourism security status would change by one unit. With 0.241 units change in ET5, the Tourism security status would change by one unit. Since, all the variables of feedback management impacted the Tourism security status which was statistically significant at 5% level of significance. Hence, H0 4 is rejected as feedback management impacted the Tourism security status.

Table 15: ANOVAa for environmental threats and tourism security status score

Model		Sum of square WR	df	Mean square	F	Sig.
1	Regression	484573.71	5	96914.74	3094.19	0.001[b]
	Residual	10743.28	343	31.32		
	Total	495316.99	348			

a. Dependent Variable: Tourism security status score; b. Predictors: (Constant), ET5, ET2, ET1, ET4, ET3

Table 16: Coefficientsa for environmental threats variables

Model		Unstandardized coefficients		Standardized coefficients	T	Sig.
		B	Std. error	Beta		
1	(Constant)	3.367	.796		4.230	.000
	ET1	5.376	.449	.176	11.977	.000
	ET2	7.377	.503	.231	14.667	.000
	ET3	6.250	.523	.202	11.948	.000
	ET4	7.523	.475	.245	15.840	.000
	ET5	7.390	.437	.241	16.902	.000

a. Dependent Variable: Tourism security status score

Table 18: Correlations for spread of infectious diseases and tourism security status

		Tourism security status score	SID1	SID2	SID3	SID4	SID5
Pearson Correlation	Tourism security status score	1.000	.891	.886	.902	.924	.854
	SID1	.891	1.000	.794	.756	.769	.753
	SID2	.886	.794	1.000	.782	.774	.703
	SID3	.902	.756	.782	1.000	.839	.696
	SID4	.924	.769	.774	.839	1.000	.771
	SID5	.854	.753	.703	.696	.771	1.000
Sig. (1-tailed)	Tourism security status score		.000	.000	.000	.000	.000
	SID1	.000		.000	.000	.000	.000
	SID2	.000	.000		.000	.000	.000
	SID3	.000	.000	.000		.000	.000
	SID4	.000	.000	.000	.000		.000
	SID5	.000	.000	.000	.000	.000	

Table 19: ANOVAa for spread of infectious diseases and Tourism security status

Model		Sum of square WR	df	Mean square	F	Sig.
1	Regression	485892.47	5	97178.49	3536.755	.000[b]
	Residual	9424.52	343	27.47		
	Total	495316.99	348			

a. Dependent Variable: Tourism security status score; b. Predictors: (Constant), SID5, SID3, SID2, SID1, SID4

Table 18 reflected statistically positive correlation between the variables of spread of infectious diseases and Tourism security status as $p<0.05$.
Table 19 showed that a fit model Was been obtained using the stipulated variables. With enter method, $F(5,343)=97178.49$ at $p<0.05$ and from Table 20, the following regression equation was obtained:

Tourism security status =2.357 + 0.212(SID1) +0.196(SID2) + 0.230(SID3) + 0.273(SID4) +0.186(SID5)

This implied that with 0.212 units change in SID1, the Tourism security status would change by one unit. With 0.196 units change in SID2, the Tourism security status would change by one unit. With 0.230 units change in SID3, the Tourism security status would change by one unit. With 0.273 units change in SID4, the Tourism security status would change by one unit. With 0.186 units change in SID5, the Tourism security status would change by one unit. Since, all the variables of spread of infectious diseases impacted the Tourism security status which was statistically significant at 5% level of significance with $p<0.05$. Hence, H0 5 is rejected. This showed that spread of infectious diseases impacted the Tourism security status.

DISCUSSION

From the given analysis, it can be inferred that H01,H02, H03, H04 and H05 are rejected and it has been proven that crime rate, wars, socio-political unrest,

Table 20: Coefficientsa for spread of infectious diseases variables

Model		Unstandardized coefficients		Standardized coefficients	T	Sig.
		B	Std. error	Beta		
1	(Constant)	2.357	.759		3.106	.002
	SID1	6.530	.440	.212	14.854	.000
	SID2	6.298	.453	.196	13.891	.000
	SID3	7.201	.469	.230	15.344	.000
	SID4	8.370	.493	.273	16.991	.000
	SID5	5.850	.403	.186	14.525	.000

a. Dependent Variable: Tourism security score

environmental threats and spread of infectious diseases have a statistically significant impact on the security status of Indian tourism. This revelation is a useful input in understanding the respondents' psychology and this knowledge can be better utilized to work on the identified areas so as to enhance tourism, especially after the COVID-19 ruckus. Since, tourism industry is one of the contributing industries in terms of wealth generation for the economy, thus, all kinds of tourism planning agencies along with the Ministry of Tourism can take concrete steps for its betterment by elevating the level of faith of the travelers.

Limitations and Suggestions for Future Research

Resource limitation is indispensable in any research study and so is the case here. A limited respondent base could be approached due to time constraint. The factors involved in this study that influenced the tourism security concerned are limited in themselves. There may be possibility of some more possible social security concerns that can be studied in future in order to enhance the sustainability in tourism industry.

CONCLUSION

The five major factors involved in this study influence the security concerns of tourism industry. An entity involved to promote the tourism at a location need to consider these factors for filling the gap of related concerns and enhancement in tourism at a remote location. Crime Rate is one such factor that threatens the tourists to visit a place. Thus, it is the need of concern authority to deal with crime rate of the area with tourism centric. Wars also do affect the security concerns of tourists. Generally, they ignore to visit the place where there is any war like situation arises or about to arise. The health of socio-political environment is also major concern for the tourism industry to affect the security concern in a nation. A nation needs to maintain their socio-political concerns controlled so that they did not influence security of tourist who visits from remote location to a common place. Environmental Threats are also some natural concern that signals red for the tourists to ignore the place which are sensitive to environmental calamities. The spread of infectious disease needs to be check on equal interval of time in order to protect the health of local people as well as tourists.

REFERENCES

Ayob, N.M. and Masron, T. (2014). Issues of safety and security: New challenging to Malaysia tourism industry. SHS Web of Conferences, Vol. 12, 2014, 4th International Conference on Tourism Research (4ICTR)

Basak, S., Ghosh, R., Sarkar, A. and Chaudhuri, A. (2015).Tourism and need for tourist's protection in India, August 2015. International Journal of Humanities and Social Science, 20(8): 11-15.

Breda, Z. and Costa, C. (2005). Safety and security issues affecting inbound tourism in the people's republic of China In: Mansfeld, Y. and Pizam, A. (Eds.), Tourism, Safety and Security: From Theory to Practice, Butterworth-Heinemann.

Çakar, K. (2020). Tourophobia: Fear of travel resulting from man-made or natural disasters, Tourism Review, Vol. ahead-of-print No. ahead-of-print.

Chauhan, V. (2007). Safety and security perceptions of tourists visiting Kashmir, India", Chen, J.S. (Ed.) Advances in Hospitality and Leisure (Advances in Hospitality and Leisure, Vol. 3), Emerald Group Publishing Limited, Bingley, pp 3-17.

Chhabra, J. and Bhattacharjee, M. (2019), Analyzing tourist preferences in India to Crime and threat of terrorism. International Journal of Research in Social Sciences, 9(6): 527-542.

Coshall, J.T. (2003). The threat of terrorism as an intervention on international travel flows. Journal of Travel Research, 42: 4-12.

Gautam, S., Tyagi, M., Tyagi, M., Gautam, S. and Gupta, M.K. (2021). Effect of e-crime (Cybercrime) on Indian tourism industry. International Journal of Recent Advances in Multidisciplinary Topics, 2(11): 171– 173.

George, R. (2003). Tourist's perceptions of safety and security while visiting cape town. Tourism Management, 24: 575–585.

Hamarneh, I.I. and Jerabek, M.P. (2018). The impact of the security situation on tourism in the countries of the former Yugoslavia. International Scientific Journal "Security & Future", 2(3): 111-115.

Hanrahan, J.D. and Melly, D. (2019). Biosecurity risk and tourist communication in Ireland. European Journal of Tourism Research, 22: 45–61.

Hazra, G. (2018). Indian tourism: Present and future scenarios. Annals of Art, Culture & Humanities, Peer Reviewed Refereed Research Journal, 3(2): 63-69.

Jangra, R., Kaushik, S.P. and Saini, S. (2021). An analysis of tourist's perceptions toward tourism development:

Study of cold desert destination, India. Geography and Sustainability, 2(1): 48-58.

Khare, A. and Sathe, S. (2021). A study of tourism choices by tourists in India in new normal. International Journal of Engineering Management and Economics, 10(5): 54-64.
Korstanj, M.E. (2020). Tourism security: A critical insight. Tourism, Terrorism and Security, Emerald Publishing, pp 1-20.
Liliana, P. (2011). Safety and security in tourism. Case Study: Romania, Forum geographic, 10(2): 322-328.
Matakovic, H. and Cunjak Matakovic, I. (2019). The impact of crime on security in tourism. Security and Defence Quarterly, 27(5): 1-20.
Mawby, R.I. (2014). Crime and disorder, security and the tourism industry, The Handbook of Security. EFUS Tourism and Security Project, pp 383-403.
Menon, S., Bhatt, S. and Sharma, S. (2021). A study on envisioning Indian tourism – Through cultural tourism and sustainable digitalization, Article: 1903149 Published online: 5 May 2021, https://doi.org/10.1080/23311886.2021.1903149.
Preko, A. and Gyepi-Garbrah, T.F. (2021). Understanding sense of safety and trustworthiness of tourism information among migrant visitors. International Hospitality Review, Vol. ahead-of-print No. aheadof-print.
Rahman, M.K., Gazi, M.A.I., Bhuiyan, M.A. and Rahaman, M.A. (2021) Effect of COVID-19 pandemic on tourist travel risk and management perceptions. PLoS ONE, 16(9): e0256486.
Shaikh, Y.Z. (2018). Safety Issues in Tourism in Goa- A Tourist Perspective, 5(3).
Sigala, M. (2020). Tourism and COVID-19: Impacts and implications for advancing and resetting industry and research. Journal of Business Research, 117: 312–321.
Subhash, T. (2015), Tourism in India: Potentials. Challenges and Opportunities, 21(4).Tan, C.H., Chong, X.W. and Ho, S.B. (2017). Significance of safety and security issues on tourism industry in Malaysia, Sci. Int. (Lahore), 29(2): 471-475.
Tarlow, P.E. (2009). Tourism safety and security, In: T. Jamal, M. Robinson (eds), The SAGE Handbook of Tourism Studies, SAGE Publications Ltd, London, pp 464-480.
Terrah, A., Wildes, V. and Mistry, T.G. (2020). Antalya's tourist security: A gap analysis of expectations vs perceptions. Journal of Global Business Insights, 5(2): 150-168.
Wei, L., Crompton, J.L. and Reid, L.M. (1989). Cultural Conflicts: Experiences of US Visitors to China. Tourism Management, 10(4): 322-332.
Yongguang, Z. and Qionglei, Y. (2022), Sense of safety toward tourism destinations: A social constructivist perspective. Journal of Destination Marketing & Management, 24p.
Zouni, G., and Kouremenos, A. (2008). Do tourism providers know their visitors? An investigation of tourism experience at a destination. Tourism and Hospitality Research, 8(4): 282-297

An Empirical Study on Measuring the Perception for Selected Health Care Services Provided by Primary Health Care Centers (PHCs) in the Selected Villages of Vadodara District

Bhumit A. Shah1* and Parag Shukla2

ABSTRACT

India is currently in a good position to design a particularly Indian set of health reforms to help the health system meet the growing demands of its consumers and personnel. There are several managerial obstacles to ensuring availability, access, affordability, and equity in delivering health services to fulfil community requirements efficiently and effectively for Healthy India's Sustainable Development. In this paper, an attempt has been made to analyse the opinions of users who avail of services offered by Primary Health Centres (PHCs) in selected villages of Vadodara District. The data were analysed using descriptive statistics and the hypothesis is assessed by using Chi Square test as well as Friedman Rank Test was applied to know the preferences and measure perception of users considering the selected criteria of services offered by the PHCs.

Keywords: Healthcare, Sustainable development, Primary health centers (PHCs), Equity, Health reforms

INTRODUCTION

Health care encompasses not just medical care but also all elements of preventative care. Since its independence, the Government of India has given top priority to health issues by preparing and implementing many plans and proposals. But, along with economic growth health continues to remain in the state of greatest predicament. Even the slogan 'Health for All' given by World Health Organization (WHO), 'Millennium Development Goals' and 'Universal Health Care' have not translated into meaningful action for the health care.

Primary Health Care seeks to offer preventative, curative, and rehabilitative medical treatments, which is another aspect of its holistic approach. The many health policies and programmes of India are intended to raise the country's overall population's health to an acceptable level. In the Economic Survey of 2023, India's public expenditure on healthcare stood at 2.1% of GDP in 2021-22 against 1.8% in 2020-21. Growth will be fuelled by rising money, increased health awareness, lifestyle illnesses, and more insurance access. India's government wants to make it a worldwide healthcare powerhouse. In the Union Budget 2023-24, the government allocated Rs. 89,155 crore (US$ 10.76 billion) to the Ministry of Health and Family Welfare (MoHFW). By the year 2030, India would need an additional 2.07 million physicians to reach a doctor-to-population ratio of 1:1000. A vast pool of well-trained medical personnel is available in the nation. From 827,006 in the year 2010, the number of doctors with recognized medical credentials registered with state medical councils/ medical councils of India grew to 1,255,786 in September 2020. The e-health market size is estimated to reach US$ 10.6 billion by 2025. Recently The Government ordered 11 million doses of the Oxford COVID-19 vaccine, Covishield, from the Serum Institute of India (SII) in January 2021. India intends to start its COVID-19 immunization campaign, the world's largest inoculation campaign, on January 16, 2020, with a focus on almost three crore healthcare personnel and frontline workers.

REVIEW OF LITERATURE

Selvaraj and Karan (2009), had argued that India's public healthcare provision has reached unprecedented lows. While private healthcare expenses have risen dramatically, Government health institutions are increasingly pressuring people to seek out private sources for medicines and tests. Millions of households face catastrophic costs as a result of these changes, and millions more are driven below the poverty line each year.

Christiana et al. (2010) had found in their research study that for rural communities, strategies to improve access and availability of health care services are of paramount importance. Monetary assistance allows moms from low-income families to get health services that will benefit them. Health promotion initiatives aimed at low-income moms are critical for raising their knowledge of the need for prenatal care.

Shukla et al. (2011) presented the first three rounds of data gathered and discussed by members of local health committees in Maharashtra's 225 pilot villages and presented strengths and weaknesses, as well as the challenges it faced with the primary health care.

Barbara (2011) studied PHC's contribution as a step toward more sustainable healthcare delivery services outside of the traditional healthcare system, which is primarily concerned with developing and executing long-term healthcare delivery policies.

Thomas (2012) discussed the potential for mobile messaging and various applications to improve health care and service delivery by expanding the use of preventive care, patients and public health professionals can make better choices to successfully change their behavior and become healthy. Joice (2013) had attempted to measure the difficult challenges of appealing, hiring, training, and keeping people engaged in the healthcare business, as well as potential solutions for improved results.

Qadeer (2013) had examined the current concept of Universal Health Care (UHC) in key legislative and policy reports, arguing that the UHC recommendations in these reports imply a disclaimer of state responsibility for health care, with a focus on shifting from a public supply for administrative agencies to simply ensuring universal access to good governance.

The Commission's demonstrations, i.e. public-private partnership [PPP] proposals; Identifying and aligning a basic welfare package for the vulnerable to ensure broad access to minds and oversight will ultimately empower the private and professional sectors. Subsequently, the current UHC technique utilizes value as a device for advancing the private area in clinical consideration as opposed to wellbeing for all.

Mahajan (2013) described several key rules for a better public health system in India and also suggested the principles for the best public health system. The researcher also described a brief evaluation of their viability.

Dar (2015) opined that people are increasingly employing the services of rural Primary Health Centers as a result of their obsession with private medical practitioners and their high treatment fees and inadequate treatment. They found that each PHC obtains 22.5 per cent of its needed medication supply on average. The lack of essential medical supplies creates a barrier between the people and their use of these health centers' services. The findings revealed that individuals are becoming increasingly reliant on rural primary health centers as a result of high treatment expenses and poor care provided by private medical practitioners.

White (2015) found that if rural PHCs and Public health policies work in Raven Pairs, which can be seen as the underlying strengths and solid foundation of universal health insurance.

Kushner et al. (2018) studied the practicality of gathering work-related openness data inside an essential consideration clinical setting. They concluded that when patients have a health problem that they believe is connected to job exposure, physicians ask work exposure-related inquiries. There was no apparent

clinical need for asking exposure questions regularly.
Dowell (2019) discussed the relevance of Telemedicine in rural regions, as well as how Telemedicine programs can be used to provide remote second opinions, on-demand and scheduled visits, triage in the emergency department, and promote outreach between providers.

RESEARCH GAP

There appears to be a practical- knowledge gap (Miles, 2017) in the prior research and a lack of rigorous research in the prior literature, some of these unexplored criteria and dimensions/ variables of Healthcare Services appear to be lacking in the practice of Primary Healthcare Centers. However, here in this study researcher will attempt to measure the perception of Patients and users towards the selected health care services as provided by rural Primary Healthcare Centers (PHCs) in selected villages of the Vadodara District of the Gujarat State which includes several unexplored dimensions that lately have engrossed research attention. However, there are very few practical studies or action research in the field of evaluating the experience of users of Primary Health Care Services to offer meaningful suggestions for policy reforms as well as for improving the state of affairs of the Primary Health care delivery system functioning in the selected villages of the Vadodara District of Gujarat State to provide health coverage for all.
Thus, an investigation of these issues is important because this study shall serve a clear picture of the Primary Health Centers to better understand expected service quality outcomes in the healthcare setting.

Conceptual Model Developed for the Research Study

The review of the relevant past research served as the basis for the development of the research model (Figure 1).
Based on the above model, an attempt was made in this research study to empirically study and examine the relationship between Primary Health Care Services, the Selected Service Quality Criteria and the Effectiveness of Health Care Service Delivery on health and healthiness.

RESEARCH METHODOLOGY

The researcher's goal is to provide a concise overview of the various methodological steps and conceptual aspects of the research methodology. These primarily include the objectives, hypotheses, sources of primary and secondary data, sampling designs, data analysis, and interpretation of the research study.

OBJECTIVES OF THE RESEARCH STUDY

The key objective of the proposed research study is to measure the perception of patients and users towards the selected health care services as provided by rural Primary Health Care Centers (PHCs) in selected villages of the Vadodara District of the Gujarat State.

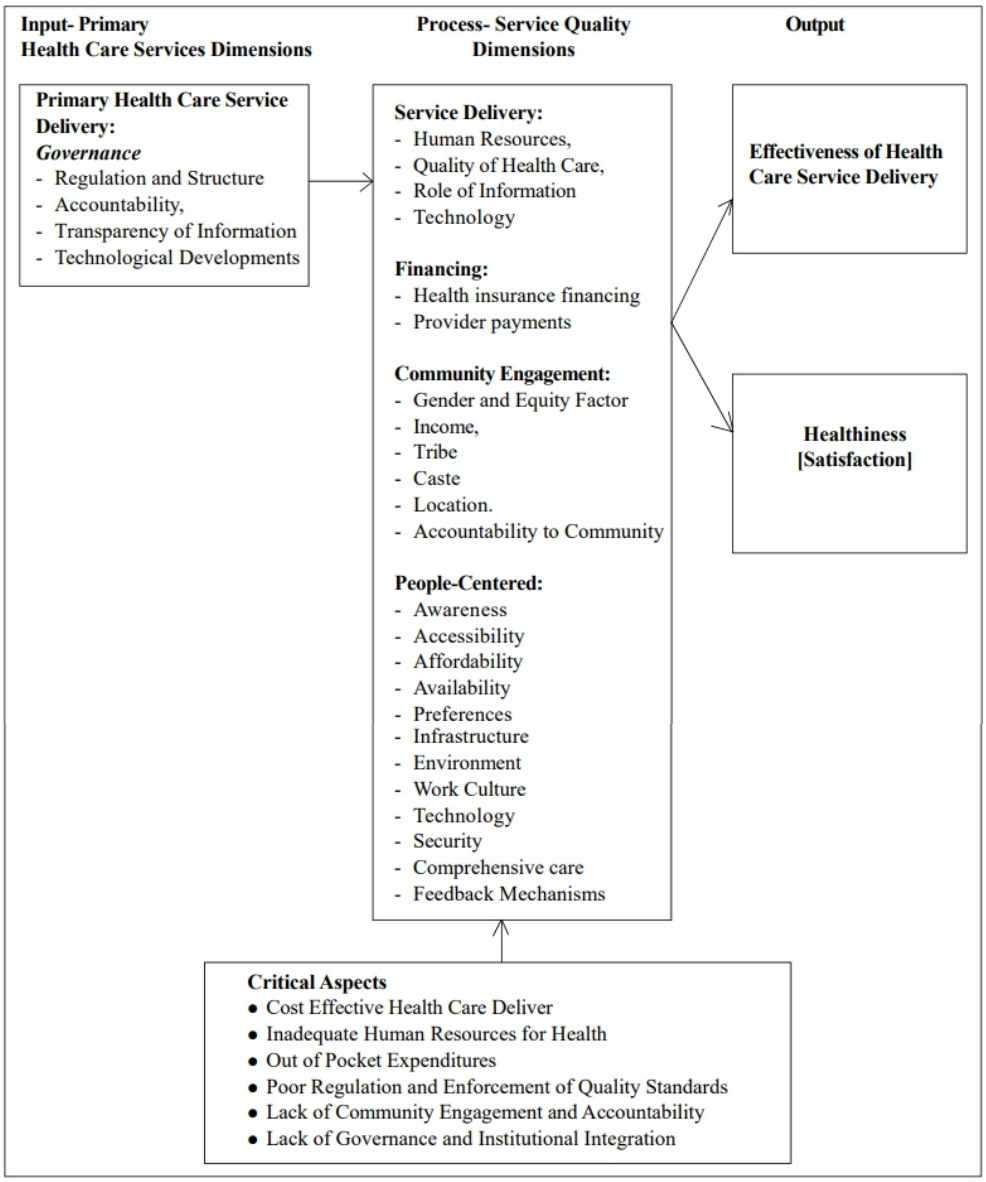

Figure 1: The Conceptual Model of the Research Study
Source: Model of Research Study Adapted from Priya Anant et al. (2016)

Other Objectives of the Research Study

To study the awareness among the villagers who are users of Health Care Services and its facilities as provided to them by selected rural Primary Health Care Centres (PHCs);

To understand the influence of demographic factors having an impact on the acceptance of available Health Care facilities as availed by the users of the selected health care services as to them provided by the rural Primary Health Care Centres (PHCs) in the selected villages of the Vadodara District of the Gujarat State;

To study the primary health care services as offered by the Government and its linkages with the effectiveness of health care service delivery, and health of users of selected health care services as provided to them by rural Primary Health Care Centres (PHCs) in selected Villages of the Vadodara District of the Gujarat State;

Sources of Information

Secondary data

To obtain information about rural PHCs, the researcher employed a variety of secondary sources, including research journals, business magazines, business newspapers, research reports, published and unpublished studies, websites, and search engines.

Primary data

The primary data was gathered from a cross-section of people who used specific health services offered by rural PHCs in a few villages in Gujarat State's Vadodara District. These people came from different age groups, professions, occupations, and genders. A sample of 102 respondents who utilise the rural PHCs has been selected for this study.

RESEARCH INSTRUMENT

For the purpose of gathering the necessary primary data, the researcher has employed a personal interview schedule in conjunction with structured, non-disguised questionnaires. Before using a structured questionnaire that will be created for the collection of the essential primary data, the researcher would conduct reliability and validity testing as well as scale measurements as needed and as the case may be.

Sampling Decisions

It would mainly consist of the following.

A Representative Sample

At the time of primary data collection, the users of this research study's representative sample were those who utilised health services offered by rural PHCs in particular villages in the Vadodara District of Gujarat State.

Sampling Frame

The cross-section of users availing health care services provided by rural PHCs has been drawn based on data published by the Government of Gujarat State and data procured from Gram-Panchayat office, Sarpanch, various local bodies, and opinion leaders shall be taken into consideration for drawing the sample from the selected cities selected villages of the Vadodara District of the Gujarat State.

Sample Size

For this research study, a sample has been drawn of 102 respondents who are users of the services of rural PHCs. This research study has been conducted in the selected villages of the Vadodara District of Gujarat State.

Sampling Design and Methods

The non-probability sampling design has been applied based on a convenience sampling method for purposively drawing the selected beneficiaries availing primary health care services from amongst the selected villages of the Vadodara District of the Gujarat State.

Sampling Medias

In this research study, the structured non-disguised questionnaire was personally administered to beneficiaries receiving primary health care services from among the chosen villages in the Vadodara District of the Gujarat State.

Reliability and Validity of the Research Instrument

To test the reliability and validity of various constructs of the questionnaire, the Cronbach coefficient alpha (equivalent to the average of all the split-half correlation coefficients) will be used by the researcher.

Table 1: Reliability of Opinion of Users of Rural Primary Health Centres [PHC]

Variables	Cronbach's Alpha
Accessibility	0.865
Affordability	0.703
Availability	0.749
Environment	0.735
Infrastructure [Physical Faculties]	0.817
Work Culture	0.865
Service Delivery	0.821
Community Engagement	0.772
Perception for use of PHC Services	0.823
Preference for PHC	0.737
Overall Reliability of All Criteria	0.942

Source: Field Work

As given in the Table 1 the Cronbach Alpha score (Cronbach, 1991) showed the value of the opinion of users of rural Primary Health Centers [PHC] ranging from 0.703 to 0.865 that showed internal reliability of the scale and reflected the degree of cohesiveness amongst the selected items (Malhotra, 2007 and Nunnally, 1981).

Data Analysis and Interpretation

The aims and parameters of the research study will be taken into consideration when we analyse and evaluate the data we've collected. The research study's findings have been inferred using a variety of statistical techniques. The mean has been calculated by the researcher using frequency analysis. The significance of the statistical hypotheses that were developed was examined using the chi-square test before the study's findings were presented. Data analysis has outlined the demographics of the chosen respondents who visited the rural PHCs in the villages of the Vadodara District and their awareness of, access to, and participation with PHCs in the community.

The researcher assessed validity by comparing scale mean scores to other measures of the same concept. The above-mentioned Table 2 clearly shows that the identical construct's means were evaluated, and less variation was seen in the given question categories, as well as similarity in the average satisfaction score. The majority of replies were determined to be somewhere between Agree and Strongly Agree, satisfying the validity criteria.

Demographic Profile of the Respondents

Table 3 shows the Demographic profile of the selected respondents. Male respondents were 86 per cent using rural Primary Health Centers (PHCs) more than the female respondent which was 14 per cent. Considering the education, 36 per cent of respondents possess only primary education, 32 per cent possess a graduation degree and only a handful number of respondents possess a post-graduation Degree. Considering occupation Mix responses were received from the people of different occupations. In the terms of occupation, 42.2 per cent were farmers followed by service-going people 35.3 per cent, and 13.7 per cent were homemaker's/house wife. Traders and students were minimum in numbers.

Ranking of the Selected Criteria of Rural PHCs

The Friedman Test was applied to compare the mean rank preference for the Selected Criteria of PHCs and its result is shown in Table 4.

Table 2: Comparison of Mean Scores Opinion of Users of Rural Primary Health Centres [PHCs]

Opinion of Users of Rural Primary Health Centers (PHCs) concerning Criteria (Q. 10 – Item 1 to 96). Rating Scale 1 [Strongly Disagree] to 5 [Strongly Agree]		**Overall Opinion of Users of Rural Primary Health Centers (PHCs) concerning Criteria (Q. 11 – Item 1 to 10). Rating Scale 1 [Strongly Disagree] to 5 [Strongly Agree]**		**The difference in Mean Count [Column B - Column D]**
Average Score	**Mean Score**	**Average Score**	**Mean Score**	**Mean Score**
(Q- 10 - 1 to 96)	**(Rank)**	**(Q-11 -1 to 10)**	**(Rank)**	**(Rank)**
A	**B**	**C**	**D**	**B-D**
Accessibility	4.09	Accessibility	4.48	-0.39
Affordability	3.95	Affordability	4.57	-0.62
Availability	4.26	Availability	4.51	-0.25
Environment	4.31	Environment	4.71	-0.4
Infrastructure [Physical Faculties]	4.21	Infrastructure [Physical Faculties]	4.55	-0.34
Work Culture	4.36	Work Culture	2.50	1.86
Service Delivery	4.21	Service Delivery	4.44	-0.23
Community Engagement	4.42	Community Engagement	4.53	-0.11
Perception for use of PHC Services	4.31	Perception for use of PHC Services	4.52	-0.21
Preference for PHC	4.58	Preference for PHC	4.66	-0.08
Overall Average	4.27	Overall Average	4.35	-0.08

Source: Field Work

Table 3: Demographic Details

Parameters		Responses	Percentage
Age (Years)	Below 30 Years	12	11.8
	31 to 50 Years	45	44.1
	50 Years an Above	45	44.1
	Total	102	100
Gender	Male	88	86.3
	Female	14	13.7
	Total	102	100
Educational Qualifications	No Formal Education	4	3.9
	Primary	36	35.3
	12th Pass	22	21.6
	Graduation	33	32.4
	Post-Graduation	7	6.9
	Total	102	100
Parameters		**Responses**	**Percentage**
Occupation	Farmer	43	42.2
	Trader	7	6.9
	Home Maker/House Wife	14	13.7
	Student	2	2.0
	Service	36	35.3
	Total	102	100
Monthly Family Income	Below Rs. 10,000	19	18.6
	Rs. 10,001 to Rs. 20,000	18	17.6
	Rs. 20,001 to Rs. 30,000	22	21.6
	Rs. 30,001 and Above	43	42.2
	Total	102	100

Source: Field Work

Table 4: Ranking of The Selected Criteria of PHCs

Descriptive Statistics (N= 299)					Mean Rank	Median Value	Friedman Test Score Value	Rank
Selected Criteria of PHCs	N	Percentiles						
		25th	50th (Median)	75th				
Accessibility	102	3.82	4.29	4.57	5.06	4.29	χ^2 =	4
Affordability	102	3.40	3.80	4.65	3.92	3.80	166.396	8
Availability	102	3.89	4.22	4.56	5.35	4.22	df = 9	3
Environment	102	3.78	4.33	4.81	4.75	4.33	P-Value	5
Infrastructure (Physical facilities)	102	3.91	4.00	5.00	4.68	4.00	=0.000	6
Work Culture	102	4.11	4.22	5.00	6.07	4.22		2
Service Delivery	102	3.82	4.00	5.00	4.68	4.00		7
Community Engagement	102	4.17	4.25	5.00	6.77	4.25		1

Source: Field Work

Table 4 displays the results of a Friedman Test, which was used to compare respondents' mean rank preference for the Selected Criteria of rural PHCs from villages in the Vadodara District. With an *x 2* value (DF 9) = 166.396, p 0.00, it was discovered that there is an overall statistically significant difference between the mean rankings of the associated groups. This section presents the research study's major results. The collected primary data were tabulated and evaluated using various technologies in order to make significant conclusions and give implications.

Kolmogorov-Smirnov Test of Normality

A normality test was performed to determine the correlation test to be used on the data. The test results are shown in Table 5. The table shows that the p values for all variables range from 0.000 to 0.05, indicating significant results; hence, we reject the null

Table 5: Kolmogorov-Smirnov test of Normality

Factors	Statistic	df	P-value
Accessibility	.209	102	.000
Affordability	.119	102	.001
Availability	.107	102	.006
Environment	.163	102	.000
Infrastructure (Physical facilities)	.279	102	.000
Work Culture	.262	102	.000
Service Delivery	.217	102	.000
Community Engagement	.289	102	.000
Perception	.287	102	.000
Preference	.234	102	.000

Source: Field Work

hypothesis H0 that the data is regularly distributed.

Findings of Applications of Chi-square Test

The chi-square test was applied to test the association between the age and Accessibility, Affordability, Availability, Environment, Infrastructure Facilities, Work Culture, Service Delivery, Community Engagement, Perception of use of PHC services, and preference for PHC.

Hypotheses of the Research Study

H0: Accessibility, Affordability, Availability, Environment, Infrastructure Facilities, Work Culture, Service Delivery, Community Engagement, Perception for use of PHC services, and preference for PHC has not significant relationship with the age of users of medical services offered by PHCs.

H1: Accessibility, Affordability, Availability, Environment, Infrastructure Facilities, Work Culture, Service Delivery, Community Engagement, Perception for use of PHC services, and preference for PHC

H1: Accessibility, Affordability, Availability, Environment, Infrastructure Facilities, Work Culture, Service Delivery, Community Engagement, Perception for use of PHC services, and preference for PHC has a significant relationship with the age of users of medical services offered by PHCs.

Implications of the Research Study based on Results of Chi-square test between Age and Factors under Study

It can be inferred that the H0 is rejected by the criteria marks with * and facts of the data obtained from the variables from the respondents. It can be derived from the study that age has a key role in the relationship with the said criteria and sub-variables. We fail to reject H0 for criteria not marked with * as it showing non-significant relationship between the age and selected criteria to related factors.
Overall Implications of The Research Study It implies that overall services offered at the rural PHCs are easily accessible and rural communities easily avail the services of the rural PHCs. The rural people have shown satisfaction in reaching out to the rural PHCs without any disturbance. It also implied that the rural PHCs are less expensive and people easily afford the charges taken by the rural PHCs. The infrastructure of the rural PHCs was not properly planned but the basic amenities were always available all the time with good medical services. Doctors of rural PHCs have shown positive attitudes towards the patients and maintain equality while treating patients.
The rural population is satisfied with the services provided by the doctors and the staff of the rural PHCs. Community Engagement is the topmost iority of the rural PHCs as the main goal of the rural PHCs is Patients Centric Approach while providing service to the rural people. It was also observed that the rural people are happy with the behaviour of staff of the rural PHCs for their services provided. As the rural people are satisfied with services provided by the rural PHCs So, they would prefer others to take services from rural PHCs.

Recommendations and Suggestions for the Research Study

Rural Primary health centers are one of the essential services for the rural people who often

Table 6: Results of Chi-square test Between Age and Selected Factors under study

Statements	'P' Value of Chi-square
Accessibility	
Easily visit of PHC	0.000*
Convenient location of PHC	0.085
Availability of medical services	0.001*
Medical services to all income group	0.079
Gender equality at PHC	0.081
Patients easily approach doctors at PHC	0.080
Affordability	
Patients easily approach paramedical staff at PHC	0.012*
PHC is inexpensive	0.022*
Patients are not to spend for medical services at PHC	0.161
Charges as per rules at PHC	0.503
Patients can spend money to reach PHC	0.285

Affordability of hospitalization at the PHC	0.007*
Availability	
Doctors Availability at PHC	0.094
Medicines prescribed by doctors are available at the PHC	0.094
Patients get all the medicines free of cost at the PHC	0.013*
PHC offers services of testing blood, urine, and sputum of patients	0.221
Hospitalization is available at PHC	0.968
Minor surgeries are available at PHC	0.428
Ambulance service available at PHC	0.002*
Laboratory technicians available at PHC	0.008*
Pharmacist available at PHC	0.004*
Environment	
Water logging around PHC	0.044*
Clean PHC in village	0.523
Garbage around PHC in village	0.972
PHC has drainage facilities	0.197
People in the village have jobs survival	0.059
Availability of schools in the village	0.672
Natural Lights in PHC	0.083
PHC noise pollution free in village	0.387
PHC is infection-free in village	0.177

Statements	**'P' Value of Chi-square**
Infrastructure	
PHC is in good condition	0.139
PHC building are painted	0.703
The doors and windows of PHC are in good condition	0.156
Water leakages in rooms of PHC	0.032*
Electricity supply in PHC	0.001*
Drinking water facilities at PHC	0.513
Toilet facilities at PHC	0.801
Availability of beds for patients at PHC	0.066
Testing of blood, urine, sputum for patients at PHC	0.152
Ambulance available at PHC	0.020*
Medical equipment available at PHC	0.117
Work Culture	
Doctors explain illness to patients	0.538
Doctors supports patients while treatment	0.180
Doctors behave politely with patients	0.130
Doctors show a positive attitude towards patients	0.029*
Doctors take patients into confidence while testing	0.437
Paramedical staff explains medical treatment	0.080
Paramedical staff are polite	0.190

Doctors supports patients while treatment	0.180
Doctors behave politely with patients	0.130
Doctors show a positive attitude towards patients	0.029*
Doctors take patients into confidence while testing	0.437
Paramedical staff explains medical treatment	0.080
Paramedical staff are polite	0.190
Paramedical staff answers to quarries of patients	0.972
Paramedical staff listen to suggestions of patient	0.246
Service Delivery	
Patients feel safe while availing medical treatment at PHC	0.195
Doctor, Nurse, or any other PHC worker does not ask for money other than for the case paper	0.550
The staff of PHC collects feedback from the patient	0.161
Doctors refer to other doctors online for giving medical treatment	0.140
Rules, procedures are followed by PHC	0.580
Doctors ask patients to visit their own or any other doctor's private clinic	0.553
Doctors examine patients using the stethoscope	0.770
The doctor explains about patient's illness in his/her language	0.951
The behaviour of the nurse, pharmacist, and lab technician is polite and courteous	0.989
PHC staff wears the hygienic gloves	0.712
Post medical treatment is explained by doctors to patients	0.030*
Community Engagement	
The staff of PHC organizes meeting with the sarpanch and community	0.393
The staff of PHC gives a presentation in the village about health/medical issues	0.573

Statements	**'P' Value of Chi-square**
The staff of PHC visits families in the village to advise about precautions for maintaining good health	0.000*
The staff of PHC show posters to inform people of the village about good health	0.952
The staff of PHC train people of the village to develop awareness about medical issues	0.453
The staff of PHC gives health education to children in the school in the village	0.661
The staff of PHC organizes health camps	0.695
The staff of PHC goes to gram panchayat meetings to make people aware of health issues	0.517
The staff of PHC collects feedback from people of the village on services provided by PHC	0.006*
The staff of PHC meets Mahila mandals to develop an awareness of health issues	0.784
The staff of PHC assesses the health need of the people of the village	0.295
The health care center organizes free medical check-ups in the village	0.313
Perception for use of PHC Service	
People visit PHC when the first symptoms of dieses arise	0.134
People visit PHC when dieses in its advanced stage	0.010*
Medication should be continued as recommended by PHC	0.071
People follow the advice given by PHC	0.811
People accept the advice of the doctor at PHC on the prevention of medical illness	0.009*
People feel happy when doctors ask questions about my medical illness	0.591
People feel comfortable while sitting inside PHC	0.335

Attitude of PHC staff is positive	0.972
People are satisfied with the medical treatment provided by PHC	0.150
Hygiene and sanitary conditions of PHC are good	0.313
People visit PHC again if medical services of PHC have improved my health	0.365
People visit Higher-level health facilities if PHC's medication did not help them in becoming physically fit	0.163
Preference for PHC	
PHC charges are reasonable	0.453
People prefer PHC as quality service acceptable	0.287
Health personnel remain available at PHC	0.290
Availability of drugs at PHC	0.015*
Good behavior of health staff at PHC	0.048*
People have faith in doctors at PHC	0.018*
People get treatment at PHC as the response of staff positive	0.406
Not much waiting time at PHC	0.035*
People found hygiene at PHC	0.456
Provision for health information at PHC	0.656

*. Association is significant at the 0.05 level (2-tailed); **. Association is significant at the 0.01 level
Source: Field Work

tend to treat themselves with superstitions and other home remedies which may not always help them. It becomes a need for these rural people to adopt modern health care services at the same time there should availability of PHC in their respective rural areas.

It is suggested that the rural authorities should create transport facilities for access to these rural primary health centers which are not located in their areas. It is also implicit that if there are no transport facilities, the government officials need to consider this and do the needful.

It is suggested that the authorities governing the rural areas need to consider the idea of having sanctioned rural PHCs in the areas which do not have them.

It is suggested that the authorities governing the rural areas need to consider the location for the ease of access to the rural PHCs and this enables the smooth functioning of the very purpose of having rural PHCs.

It is suggested that the authorities governing the rural areas need to keep in mind the transport facilities and location before finalizing the spot of the PHC buildings.

It is suggested that the authorities governing the rural areas need to keep in mind the distance of PHC buildings because there are fair chances of snake bites, road accidents, and other mishaps which may need urgent treatment.

It is suggested that the governing body that is Ministry of Health and Family Welfare should hire specialized doctors who are available on all days for the PHCs in the rural areas.

Nevertheless, it is suggested that the governing body that is Ministry of Health and Family Welfare should hire more doctors and staff not only to face situations of calamities and sudden mishaps but also to cater to the needs of the population which may access the rural PHCs from other places.

CONCLUDING REMARKS

The health of the population significantly affects both social development and economic progress. Given the relevance of health for human well-being and social welfare, it is important to ensure equitable access to healthcare services by identifying priority areas and ensuring improvements in the

the quality of healthcare services.

As stated by PWC Report (2017) the Funding by the Government in Indian healthcare need to improvise and rise in cost of healthcare demands on India's health systems. Governments are expected to focus on challenges faces for funding in the and skilled labour shortages. Availability of fund has been one of the biggest roadblocks to the growth of the Indian healthcare sector. Along with building highways, collecting implementation in power plants, and ensuring there is a roof over every Indian's head, there is a need to focus on healthcare in the country. The private sector has contributed in building the healthcare infrastructure in the country, with active participation from private equity players and an increase in FDI. However, to meet India's burgeoning healthcare needs, both the public and private sectors will have to join hands to build infrastructure and the skill sets required to deliver care.

This means that conventional modes of healthcare funding will need to be aided by innovative modes of funding to improve healthcare investments. The government will need to play a critical role as a catalyst by creating an enabling ecosystem that draws investments from both domestic and international players. Thus it is concluded that the Government should recruit more staff at the rural PHCs because rural people can get the easy facility of healthcare. It is also suggested that there should be free medical camps for the rural people so that they are aware of the rural PHCs and start taking service from there. The maximum access to these services will have more implications for achieving Universal Healthcare Standards. It is also suggested that the rural PHCs should also provide Ambulance services in the rural areas in an emergency. Also, it is suggestive that the environment of the Laboratory should be proper for the diagnosis of the diseases. Rural PHCs should continue to offer medical services in the interest of rural people for the sustainable development of a healthy India. Government should focus on developing the proper framework of rural healthcare as half of the population are residing in rural areas. It is also recommended that the government scheme structure should also be available at the rural PHCs so rural people can understand the scheme and take the maximum advantage of the same and which leads to the sustainable development of a healthy India.

LIMITATIONS OF THE RESEARCH STUDY

With the first-hand data and information from rural communities, it was incorrect to generalize that it was accurate and applied to Gujarat State's entire population.

The research was primarily conducted in selected villages in the Vadodara District. Therefore, this study did not intend to provide a comprehensive picture of all Gujarat State's village healthcare service customers.

The research study's conclusions suffered from constraints such as a small sample size and the use of a convenience sampling method.

The findings of the research study may not have been generalized

It was not easy to obtain basic information on healthcare service users because they were dynamic and constantly fluctuated over time.

Results were influenced since the research study's time limit and funding was constrained.

The skewed viewpoint of healthcare service users may not have conveyed honest and accurate facts.

The various model viewpoints of experts may have varied in this regard.

DIRECTION FOR FUTURE RESEARCH STUDY

In order to gain a more comprehensive understanding of the perception, behavioural intention, and future usage of healthcare services throughout India, it may be beneficial for future researchers to conduct studies on healthcare service stakeholders in other districts of Gujarat as well as in other states

of India. By expanding the scope of the research beyond the Vadodara District, researchers may be able to obtain a more diverse sample of healthcare service users with a variety of perspectives and experiences. This would help to ensure that any conclusions drawn from the research are more representative of the broader population of healthcare service users in India. In addition to expanding the scope of the research geographically, future studies may also consider using different research methods to overcome some of the limitations of the previous study. For example, a larger sample size and a more representative sampling method could help to increase the generalizability of the findings. Additionally, researchers may consider conducting longitudinal studies to track changes in perception and usage of healthcare services over time. Overall, by conducting future studies on healthcare service stakeholders in other districts of Gujarat and other states of India, researchers may be able to provide valuable insights that could inform the development of healthcare policies and services throughout the country.

REFERENCES

Dar, K. (2015). Utilization of the services of the primary health centers in India– An empirical study. Journal of Health, Medicine and Nursing, 16: 56-59.

Dowell, M.A. (2019). Federally qualified health center and rural health center telemedicine compliance and legal issues. Journal of Health Care Compliance, 21(2): 5-18.

http://shodhganga.inflibnet.ac.in Accessed on 22-03-22

https://www.ibef.org/download/Healthcare-February2021.pdf. Accessed on 22-03-2

Joice, M.B. (2013). A study on workforce challenge in healthcare industry: An imperative factor. Indian Journal of Applied Research, 3(12): 354-356.

Kushner, R., Kramer, D.M. and Holness, D.L. (2018). Feasibility of clinicians asking patients about their exposure to occupational hazards: An intervention at five primary care health centers. Work, 60(3): 365- 384.

Mahajan, P. (2013). Regulations and their Scope in Public Health. PARIPEX: Indian Journal of Research, 2(8): 192-193.

Miles, D.A. (2017). A taxonomy of research gaps: Identifying and defining the seven research gaps, doctoral student workshop: Finding research gaps - Research methods and strategies, dallas, texas, 2017.

PWC Report (2017). NATHEALTH- Funding Indian healthcare Catalysing the next wave of growth.

Qadeer, I. (2013). Universal health care in India: Panacea for whom? Indian Journal of Public Health, 57(4): 225-231.

Selvaraj, S. and Karan, A.K. (2009). Deepening health insecurity in India: evidence from national sample surveys since the 1980s. Economic and Political Weekly, pp 55-60.

Shukla, A., Scott, K. and Kakde, D. (2011). Community monitoring of rural health services in Maharashtra. Economic and Political Weekly, pp 78-85.

Thomas, D.S. (2012). Affordable mobile towards preventive health care: Rural India. IOSR Journal of Dental & Medical Sciences, 3(3): 32-36.

Titaley, C.R., Dibley, M.J. and Roberts, C.L. (2010). Factors associated with underutilization of antenatal care services in Indonesia: results of Indonesia Demographic and Health Survey 2002/2003 and 2007. BMC Public Health, 10(1): 1-10.

White, F. (2015). Primary health care and public health: foundations of universal health systems. Medical Principles and Practice, 24(2): 103-116

Application of Single Minute Exchange of Die Lean Method in Improving

Tarannum Mohan

ABSTRACT

This paper investigates reduction in work-in-process inventory by implementing Single-Minute Exchange of die technique and Kanban System in injection molding process of automotive parts manufacturing organization. Data was collected regarding setup time for most voluminous produced emblem, recognition of tasks involved in method of change over, finding and removing unnecessary internal activities and standardizing the modified process through Kanban implementation. Findings indicated that after SMED implementation setup-time was cut by 53% and 25 minutes per set up were saved implying saving of total 750 minutes of production time per month which is almost equivalent to improvement in 2% productivity. Daily production quantity was reduced by 25% and WIP stock of injection molding process was reduced by 50%. Demonstration of application of SMED in an automobile parts company showing real time reduction in inventory and productivity improvement was core of this paper. The results can apply to other intermediate component manufacturers to have wider beneficial implications for the entire supply chain.

Keywords: Kanban, SMED, Setup time, Lean manufacturing, Work-in-process, Daily production quantity, Productivity

INTRODUCTION

Fickle and continuous changing demand of customer has put enormous pressure to manufacturing processes enforcing organizations to be lean enough to respond to such changes. However, demand for increased variety forces machines to undergo change over frequently, that is, preparation time among two manufacture instructions has increased (Arasanipalai et al., 2014). This time is considered as wasteful activity as it is not adding any value to the production process (Carrizo and Campos, 2011). One way to decrease time lost in setting of machines is to produce in mass by applying a particular operation before switching to production of another type. However, such way results in compiling of unwanted quantity causing heavy inventory.

Thus, production process faces a dilemma between producing in excess to lessen change over frequency and producing smaller batches of different variety, thus perpetuating need for recurrent change over and subsequently higher set-up times. This current study proposes application of SMED method to resolve such dilemma. The technique as a lean method has been extensively applied in different production setups to achieve reduction in set-up times by recognizing and removing appropriately wasteful tasks (Shinde et al., 2014). Though reducing set-up time completely has been recognized as almost impossible and unnecessary but it is essential to classify supplementary tasks, which needlessly driveup set-up time. Consequently, key factor in purpose of SMED is to categorize tasks into activities that tangibly add value to the production process and those that do not (Singh et al., 2018).

An attempt has been made by this study to add to lean production literature in general and SMED in particular by examining the SMED method and its impact on improving key metrics of productivity such as set-up time, safety stock and inventory in a large scale auto parts company involved in manufacturing of emblems for various car companies. Considering sales data of past one year, the study

ensured to examine largest selling by volume emblem, which was Emblem Maruti Suzuki. Method of mapping all tasks involved in the entire production process identified that this part was produced based on push system and no process was producing parts based on customer demand. High inventory levels were found in injection molding process of this part. Thus, this part was considered suitable for implementation of SMED. Though such implementation has been comprehensively documented, however, its influence is not examined among suppliers that form the vital link in entire supply chain. With increasing encouragement from original equipment manufacturers suppliers intend to accrue benefits of lean principles to make their processes leaner that are easily responsive to changes in processes without resulting in cost pressures. This extracts its novelty from documenting the practical implementation of SMED in same endeavor.

REVIEW OF LITERATURE

Among different established lean production principles SMED has been established as massively effective in reducing wasteful non-value adding tasks, over production by enabling production of smaller batches and yet has smaller set-up times (Tekin et al., 2019).

Over production refers to tendency to manufacture in excess of demand, or creating the output too early before required. This amplifies the danger of products getting obsolete or producing erroneously (Ravichandran and Kumar, 2015). Surplus inventory augment lead-time, eat useful floor-space, impede the detection of troubles, and restrains Over-production is simply producing anything that does not need to be produced (Olaitan et al., 2017). To mitigate the waste of over-production established primarily to off-set the variations in demand SMED provides redesigning of processes that would be responsive to such variations by producing smaller batches of different range of products (Rosa et al., 2017). In the method the emphasis is on reducing the time involved in setting up machines for production by combining or removing unnecessary activities.

The first step of SMED very importantly involves classifying tasks during machine preparation into external and internal. This difference is vital in exercising SMED. Task required in production process but performed when machine is engaged in manufacturing another part is called as external to the process. This is done so as to perform two different activities involved in production of an output simultaneously, rather than sequentially. On the hand, tasks performed on the machine when it is inoperable are called as internal (Sayem et al., 2014). As the purpose is to mitigate impact of set-up times on production output by reducing them, thus vital purpose of SMED method is finding out specifically those tasks that can be carried out as external. This is critically important in reducing set-up time during transition from one process to other. Lastly, after removing external tasks and engaging the machine only on internal tasks new operation is rationalized by automation, standardization, and training (Da Silva et al., 2019).

Appropriate implementation of these steps has been found to provide significant improvement in productivity among different processes of variety of industries (Rodriguez-Mendez et al., 2015). Sayem et al. (2014) showed that practicing SMED in furniture manufacturing processes caused enhancement in productivity by 66% as its implementation reduced lead-time and inventory. Similarly, study by Bevilacqua et al. (2015) done in pharmaceutical packaging processes further instituted the importance of SMED method as results when compared with Bevilacqua et al. (2013) showed that detailed seven step application of SMED is vastly effective in reducing set-up time, enhancement in manufacturing capacity by small improvements in tasks without incurring any cost increments. Authors Garg et al. (2016) demonstrated similar results in a small enterprise, wherein application of SMED showed decrease in set-up times to the extent of 87%.

Furthermore, SMED has gained lot of attention when production processes in addition to intend to

achieve benefits not only in lessening of set-up times or over-production but also of permanent progress (Karam et al., 2018; Palanisamy and Siddiqui, 2013). This was amply illustrated (Azizi, 2015; Junior et al., 2022) where in mapping method was designed to identify non-value adding tasks and then apply in collaboration with SMED to successfully advance the procedure in an assembly line. Brito et al. (2017) allied SMED with ergonomics to cut set-up time and advance due delivery time. These studies specify vast consequence of productivity augmentation as an imperative index of a firm's competitiveness through function of SMED.

Thus, literature clearly elucidates the significance of implementation of SMED to improve production processes. Subsequent sections provide real time application in the injection molding process of an emblem manufacturer.

METHODOLOGY

Data Collection

Data as shown in Table 1 was collected regarding customer requirement per day, daily production quantity by each process, cycle-time of process, process flow of the part, standard quantity of parts kept in bin for every process, change-over time,process wise safety stock and replenishment stock (quantity which is needed between time interval of one order and the next order).

The data clearly indicated work-in-process inventory in the process to be very high. For instance, for emblem, Maruti Suzuki 10560 units were produced after injection molding and they were kept as in process material to be asked for processing by next step of plating. Data collection involved discussion with process owners which resulted in indicating that such huge WIP is kept in stock due to elevated mold change over time and lack of capacity. This problem was rectified by applying SMED technique. In this endeavor following steps were undertaken.

Listing of Activities in Change-over and Performance Time

This step focused on collecting information about setup tasks and time taken for each task. Times were estimated by observing change over operation five times. As discussed set-up time is time between last production of prior order and first order of next production. Thus list of activites (Table 2) involved

Table 1: Process wise data collection of part

Part name	Customer requirement/ day	Process	Daily production quantity	Cycle time (seconds)	Change Over time (Minutes)	Lot size	Safety stock
Emblem Maruti Suzuki	2640	Injection molding	3500	40	47	972	10560

Table 2: Listing of activities in change-over and performance time

Mold unloading time study		Mold loading time study	
Activity	**Time (min.)**	**Activity**	**Time (min.)**
Crane movement from fixed location to machine	3	Parameter loading from m/c/ memory	1
Collection necessary tools for mold change	3	I-bolt tighten on the mold	1
Injection unit backword	1	Mold movement from storage to machine	3
MTC pipe removal from mold	2	Mold loading and matching	3
Antirust spray application on core and cavity	1	Mold clamp	5
Lock plate fixation	1	Lock plate removal	1
I-bolt and crane fixation	2	Crane removal from mold	1
Clamp removal from core and cavity	3	MTC connection	1
Moving plate open	1	HRTC connection	2
Mold removal from machine	1	Core and cavity cleaning	2
Mold movement to its fixed location	3	Setting locking tonnage	2
		05 shot approval	4
Total	21	Total	26

mold unloading and mold loading. Times for activities in both processes were also calculated.
According to Table 2, unloading task takes 21 minutes while loading task takes 26 minutes. Total time taken for mold change-over is almost 47 minutes. All activities were performed as internal activity. Reasons for a high set-up time were observed to be lack of coordination among workers involved in the set-up, lack of fulfillment of the pre-established procedures for carrying out the setup, lack of knowledge of the procedures for carrying out the set up and die tools in poor conditions. Thus, lot of scope was found to reduce the mold change over time.

Separation of Internal and External Activities

Observation of processes and dialogue with their owner, following activites were separated into internal and external for mold unloading and mold loading (Table 3).
Data in Table 3 shows that if some of the activites are performed externally (before the change over starts or after the change over ends) 09 minutes can be saved in mold unloading activity and 09 minutes can be saved in mold loading activity. Thus, total 18 minutes can be saved in total mold setup time only by converting feasible internal activities into external activities. Almost 38% of the change over time can be reduced or saved through this method only.

FINDINGS AND ANALYSIS

Removal or Time Reduction of Internal Activities

After formal discussions with process owners and understanding the process some of the activities were considered which can be removed or their time can be reduced. Table 3a showed such activities for mold unloading.
Table 3b showed posible improvement methods for each activity with regard to mold loading.

Reduction in Safety Stock

Above data shows that mold unloading time provides a reduction from 21 to 7.5 minutes and mold

loading from 26 to 14.5 minutes in case of synchronizing and

Table 3: Separation of internal and external activities

Mold unloading time study			**Mold loading time study**		
Activity	**Time (min.)**	**Activity type**	**Activity**	**Time (min.)**	**Activity type**
Crane movement from fixed location to machine	3	External	Parameter loading from m/c memory	1	External
Collection of necessary tools for mold change	3	External	I-bolt tighten on the mold	1	External
Injection unit backword	1	Internal	Mold movement from storage to machine	3	External
MTC pipe removal from mold	2	Internal	Mold loading and matching	3	Internal
Antirust spray application on core and cavity	1	Internal	Mold clamp	5	Internal
Lock plate fixation	1	Internal	Lock plate removal	1	Internal
I-bolt and crane fixation	2	Internal	Crane removal from mold	1	External
Clamp removal from core and cavity	3	Internal	MTC connection	1	External
Moving plate open	1	Internal	HRTC connection	2	External
Mold removal from machine	1	Internal	Core and cavity cleaning	2	Internal
Mold movement to its fixed location	3	External	Setting locking tonnage	2	Internal
			05 shot approval	4	Internal
Total	21		Total	26	

Table 3a: Mold unloading time study

Activity	**Time (min.)**	**Improvement method**	**Revised time (min.)**
Crane movement from fixed location to machine	3	Convert into external	0
Collection of necessary tools for mold change	3	Convert into external	0
Injection unit backword	1	No scope	1
MTC pipe removal from mold	2	Can be done inparallel by foreman and machine operator	2
Antirust spray application on core and cavity	1		
Lock plate fixation	1		
I-bolt and crane fixation	2	Can be done inparallel by foreman and machine operator	1
Clamp removal from core and cavity	3	Can be done inparallel by foreman and machine operator	1.5
Moving plate open	1	No scope	1
Mold removal from machine	1	No scope	1
Mold movement to its fixed location	3	Convert into external	0
Total	21	Total	7.5

Table 3b: Mold loading time study

Activity	Time (min.)	Improvement method	Revised time (min.)
Parameter loading from m/c/ memory	1	Convert into external	0
I-bolt tighten on the mold	1	Convert into external	0
Mold movement from storage to machine	3	Convert into external	0
Mold loading and matching	3	No scope	3
Clamp the mold	5	Can be done inparallel by foreman and machine operator	2.5
Lock plate removal	1	No scope	1
Crane removal from mold	1	Convert into external	0
MTC connection	1	Convert into external	0
HRTC connection	2	Convert into external	0
Core and cavity cleaning	2	No scope	2
Setting locking tonnage	2	No scope	2
05 shot approval	4	No scope	4
Total	26	Total	14.5

standardizing the change over process through some improvements. Furthermore, the results showed change over time reduction to 22 minutes from 47 minutes implying a saving of 53%. Lastly, efficacy of SMED method was ascertained by comparing set up time and safety stock before and after implemetnation of the lean method. The outcomes of the results are shown through following Table 4.

Table 4: Before-After evaluation data

Part name	Set up time (minutes)		Safety Stock (qty.)	
	Before	After	Before	After
Emblem Maruti Suzuki	47	22	10560	5280

Before – After data available in above Table 4 clearly shows that set-up time or mold change over time is reduced by more than 50%. Before SMED, implementation set-up time was 47 minutes while after SMED implementation set-up time is 22 minutes, that means almost 53% time is saved or reduced in change over activity. So safety stock is also reduced by 50%. After working on safety stock, our next target was to reduce the chances of increase in inventory / safety stock. This was done by fixing the daily production involving customer demand and by effective visualization of any abnormality in inventory levels. This was done by implementation of Kanban (Savino and Mazza, 2015).

To implement the kanban system, pre-requisite data already collected in Table 1 was utilized. Next setps were deciding number of kanban needed & implementation of kanban system.

Kanban Implementation

Identifying number of kanban for each task was critical so that regular customer supply could be maintained and optimum inventory could be kept. Number of kanban required for each process was decided by the following formula derived from production processes of Toyota Kirloskar Motor Pvt. Ltd.

$$\text{Number of Kanban} = \frac{\text{(Customer requirement per day + Safety Stock + Replenishment Stock)}}{\text{Quantity per bin}}$$

The formula is explained by illustrating number of Kanban required for Emblem Maruti Suzuki at injection molding process. Customer demand of Emblem Maruti Suzuki per day is 2640 units (Table 1). A lot of 972 units (Table 1) is produced in injection molding (M1) process as first batch after receiving raw material from store (M0) and finally finished product moves to next process of plating (M2). It was decided that a safety stock of 5280 (Table 4) molded units has to be kept so M1 has to produce these parts as well. After manufacturing 2640 + 5280 = 7920 units, the process will stop as demand is fulfilled. However, M1 has to produce 2640 units for next day. So, an order of 2640 units or 2640 Kanban are sent back to raw material section. It is important to remember that Kanban control system is a system of communication between workstations so total stock for which number of Kanban has to be generated is combination of actual products produced which goes for processing on next machine (2640 units) plus safety stock (5280 units) and signal of replenishment stock of next day's demand (2640 units) which goes to previous workstation.

Thus,

Number of Kanban for Emblem Maruti Suzuki after injection molding would be

$$= \frac{\text{\{Customer requirement per day (2640) + Safety Stock (5280) + Replenishment Stock (2640)\}}}{\text{Quantity/bin (972)}}$$

$$= 7920 / 972$$

$$= 8.14 = \text{aprroximated to } 9$$

Implementation of kanban will ensure sustainability in daily production quantity and WIP stock. In case of any variation in daily production quantity or WIP stock, number of kanban cards needs to be revised because as per kanban rules, parts were moved only with kanban. Implementation of kanban showed daily production quantity reduced from 3500to 2640.

Evaluation

Evaluation of SMED and kanban system performance was done by using lean metrics of change over time, daily production and WIP stock / safety stock. Assessment of before and after results of SMED and kanban system validated application of these lean methods. The outcomes are shown in Table 5.

Before – After data shown in Table 5 clearly illustrates that daily production quantity is reduced. Initially, before condition process was not producing the part based on daily customer demand. After implementation of SMED and kanban process has to produce only customer demand on daily basis and also, rejection or breakdowns can be managed through safety stock/WIP stock. Safety stock was also reduced after implementation of SMED. Reduction in setup time, daily production quantity and safety stock/ WIP stock leads space availability, machine availability or spare capacity generation for production of other parts.

LIMITATIONS AND SUGGESTIONS FOR FUTURE RESEARCH

The present research study has been conducted in large scale company of Indian automotive manufacturing organizations only, while in future, similar research can be conducted in medium and

small-scale manufacturing industries in order to understand the compatibility of findings. Furthermore, this study focused on batch production system.
However, future studies adopting this approach to hybrid systems would provide interesting results applicability of SMED and kanban.

Table 5: Before - After Evaluation Data

Part name	Process	Change over time (Minutes)		Daily production (qty.)		WIP stock/safety stock (qty.)	
		Before	After	Before	After	Before	After
Emblem Maruti Suzuki	Injection molding	47	22	3500	2640	10560	5280

CONCLUSION

Based on above result it is concluded that SMED helped in achieving total discipline in mold change over process. The SMED is one of the proactive steps to gain the competitive advantage & productivity improvement. This paper presented a real industrial case study of SMED implementation at manufacturing site. Approx. 30 change overs take place on 50-ton machine per month, that means if 25 minutes are saved / set up, total 750 minutes are saved per month. 750 minutes is almost 2% of total production time available on 50-ton machine per month. Which means 2% productivity is increased through SMED implementation. Implementation of kanban ensured sustainability in daily production quantity and WIP stock. In case of any variation in daily production quantity or WIP stock, numbers of kanban cards needs to be revised because as per kanban rules parts has to be moved only with kanban. The results exemplify the advantages of implementing the proposed method that include reducing set-up time noticeably, growing machine utilization, reducing daily production quantity, increasing spare availability, and improving productivity.

REFERENCES

Arasanipalai, R.V., Yoon, S. and Srihari, K. (2014). Lean transformation in a high mix low volume electronics assembly environment. International Journal of Lean Six Sigma, 5(4): 342-360.

Azizi, A. (2015). Designing a future value stream mapping to reduce lead time using SMED-A case study. Procedia Manufacturing, 2: 153-158.

Bevilacqua, M., Ciarapica, F.E., De Sanctis, I., Mazzuto, G. and Paciarotti, C. (2015). A Changeover Time Reduction through an integration of lean practices: a case study from pharmaceutical sector. Assembly Automation, 35(1): 22-34.

Bevilacqua, M., Ciarapica, F.E., Mazzuto, G. and Paciarotti, C. (2013). The impact of RFID technology in hospital drug management: an economic and qualitative assessment. International Journal of RF Technologies: Research and Applications, 4(3/4): 181-208.

Brito, M., Ramos, A.L., Carneiro, P. and Gonçalves, M.A. (2017). Combining SMED methodology and ergonomics for reduction of setup in a turning production area. Procedia Manufacturing, 13: 1112-1119.

Carrizo Moreira, A. and Campos Silva Pais, G. (2011). Single minute exchange of die: a case study implementation. Journal of Technology Managementand Innovation, 6(1): 129-146.

Da Silva, I.B. and Godinho Filho, M. (2019). Single-minute exchange of die (SMED): a state-of-the-art literature review. The International Journal of Advanced Manufacturing Technology, 102: 4289-4307.

Garg, G., Gupta, A., Mor, R.S. and Trehan, R. (2016). Execution of single minute exchange of die on corrugation machine in cardboard box manufacturing company: a case study. International Journal of

Lean Enterprise Research, 2(2): 133-145.
Junior, R.G.P., Inácio, R.H., da Silva, I.B., Hassui, A. and Barbosa, G.F. (2022). A novel framework for single minute exchange of die (SMED) assisted by lean tools. The International Journal of Advanced Manufacturing Technology, 119(9-10): 6469-6487.
Karam, A.A., Liviu, M., Cristina, V. and Radu, H. (2018). The contribution of lean manufacturing tools to changeover time decrease in the pharmaceutical industry. A SMED project. Procedia Manufacturing, 22: 886-892.
Olaitan, O., Yu, Q. and Alfnes, E. (2017). Work in process control for a high product mix manufacturing system. Procedia CIRP, 63: 277-282.
Palanisamy, S. and Siddiqui, S. (2013). Changeover time reduction and productivity improvement by integrating conventional SMED method with implementation of MES for better production planning and control. International Journal of Innovative Research in Science, Engineering and Technology, 2(12): 7961-7974.
Ravichandran, V. and Kumar, N.G. (2015). Implementation of Kanban system for inventory tracking and establishing pull production (a case study).
International Journal of Advances in Production and Mechanical Engineering, 1(3): 31-37.
Rodriguez-Mendez, R., Sánchez-Partida, D., Martínez Flores, J.L. and Arvizu-BarrÓn, E. (2015). A case study: SMED & JIT methodologies to develop continuous flow of stamped parts into AC disconnect assembly line in Schneider Electric Tlaxcala Plant. IFAC-Papers On Line, 48(3): 1399-1404.
Rosa, C., Silva, F.J.G., Ferreira, L.P. and Campilho, R. (2017). SMED methodology: The reduction of setup times for Steel Wire-Rope assembly lines in the automotive industry. Procedia Manufacturing, 13: 1034-1042.
Savino, M.M. and Mazza, A. (2015). Kanban-driven parts feeding within a semi-automated O-shaped assembly line: a case study in the automotive industry. Assembly Automation, 35(1): 3-15.
Sayem, A., Islam, M.A. and Khan, M.M.A. (2014). Productivity enhancement through reduction of changeover time by implementing SMED technique– in furniture industry. International Journal of Industrial and Systems Engineering, 17(1): 15-33.
Shinde, S., Jahagirdar, S., Sane, S. and Karandikar, V. (2014). Set-up time reduction of a manufacturing line using SMED technique. International Journal of Advanced Industrial Engineering, 2(2): 50-53.
Singh, J., Singh, H. and Deep, I.S. (2018). SMED for quick change over in manufacturing industry–a case study. Benchmarking: An International Journal, (Accepted).
Tekin, M., Arslandere, M., Etlioglu, M., Koyuncuoglu, Ö. and Tekin, E. (2019). An application of SMED and Jidoka in lean production. In: Proceedings of the International Symposium for Production Research 18: 530-545. Springer International Publishing.

The Integrated Management System ISO Audit Benefits Over Individual ISO Audits

Rohit Kenge

A B S T R A C T

The research study intends to analyse the effectiveness of the Integrated Management System over an individual management system or ISO audits like ISO45001:2018, ISO 14001:2015, and ISO 9001:2015. We prepared the hypothesis model to understand the IMS effectiveness over individual standards or management systems during the ISO audits at the company. We used the quantitative research technique with independent variable as IMS and dependent variable as operation performance evaluated during ISO audit. We prepared questionnaires to check the improvement of some key objectives of the company after the IMS application. The questionnaires were circulated among a sample of the 150 employees working in the company of 10,000 employee population. We received 110 responses. We concluded from the above study that IMS helps to save repetitive documentation time, improve synergy between different auditing systems, audit efficiency, and final customer trust with satisfaction.

Keywords: Integrated management system, ISO 45001:2018, ISO 14001:2015, ISO 9001:2015, ISO audits

INTRODUCTION

Background

Organizations improve their safety, environment, and quality management performance through management systems. These management systems are certified with the ISO 45001- an occupational health and safety standard, ISO 14001-the environment standard, and ISO- 9001 a quality standard respectively (Jim Wilber, 2020). As many companies are dealing with one-plus management systems, this builds the question - Can companies club the standards to take the benefit of current synergies between them and is it effective over the separate management systems? (ISO Consultant Kuwait, 2019).

Definitions

a. ISO 45001:18001: ISO 45001 is the occupational health and safety standard practiced to safeguard employees and all other people entering an organization from accidental injuries, non repairable harm, and diseases by control of elements that could probably lead to incidents. Also, this ISO 45001 standard is designed to cover all current occupational health and safety standards including OHSAS 18001, ILO labour standards, and other required safety rules (NQA, 2020).

b. ISO 14001:2015: ISO 14001 standards are built by the ISO in 1996 to guide the environmental management system (British Assessment, 2019). Any company that wants to improve its operations to better control its impact on the environment may adopt it (You matter, 2020).

c. ISO 9001:2015: ISO 9001 is a standard for a quality management system practiced internationally. Company's practice the standard to show their ability to produce products and required services that complete customer needs (ASQ, 2020).

d. IMS: Integrated Management System- IMS is a single management system built to manage multiple standards like safety, environment, and quality at a time. A good IMS eliminates the unwanted obstacles and excess work of multiple systems. It combines all the audit processes to cover all requirements for individual standards simultaneously (Pegasus, 2016).

RESEARCH OBJECTIVE

The main objective of this research paper is to analyse the Integrated Management System's effectiveness on the company performance over separate management systems.

REVIEW OF LITERATURE

ISO 45001:18001

Every day, preventable accidents due to unsafe workshop situations result in the thousands of workers fatality (ISO Update, 2018). ILO says that 2.7 millionplus fatality happens worldwide due to incidents at the workshop (ISO, 2018). ISO 45001 provides a breakthrough on the above issues by providing a single window (NQA, 2021). ISO 45001:2018 specifies requirements for an occupational health and safety (OH&S) management system, and gives guidance for its use, to enable organizations to provide safe and healthy workplaces by preventing workrelated injury and ill health, as well as by proactively improving its OH&S performance. ISO 45001:2018 is applicable to any organization that wishes to establish, implement and maintain an OH&S management system to improve occupational health and safety, eliminate hazards and minimize OH&S risks (including system deficiencies), take advantage of OH&S opportunities, and address OH&S management system nonconformities associated with its activities. ISO 45001:2018 helps an organization to achieve the intended outcomes of its OH&S management system. Consistent with the organization's OH&S policy, the intended outcomes of an OH&S management system include:

a) Continual improvement of OH&S performance
b) Fulfilment of legal requirements and other requirements
c) Achievement of OH&S objectives

ISO 45001:2018 is applicable to any organization regardless of its size, type, and activities. It is applicable to the OH&S risks under the organization's control, considering factors such as the context in which the organization operates and the needs and expectations of its workers and other interested parties. ISO 45001:2018 does not state specific criteria for OH&S performance, nor is it prescriptive about the design of an OH&S management system. ISO 45001:2018 enables an organization, through its OH&S management system, to integrate other aspects of health and safety, such as worker wellness/wellbeing. ISO 45001:2018 does not address issues such as product safety, property damage or environmental impacts, beyond the risks to workers and other relevant interested parties (Junghyun Lee et al., 2020, p. 418-424) ISO 45001:2018 can be used in whole or in part to systematically improve occupational health and safety management. However, claims of conformity to this document are not acceptable unless all its requirements are incorporated into an organization's OH&S management system and fulfilled without exclusion.

ISO 45001 changes compared to OHSAS 18001

Context of the organization (Clause 4.1): The organization shall determine internal and external

Table 1: Plan-Do-Check-Act Cycle in ISO 45001:2018 with respective clauses

Plan				Do	Check	Act
4 Organization Context	5 Leadership Parameters	6 Objectives Planning	7 Management Support	8 Company Operations	9 Performance Check	10 Continual Improvement
4.1 Study of the organization context	5.1 Commitment of Leader	6.1 Risks and opportunities finding and actions over it	7.1 Operational Resources	8.1 Company planning of operation and its control	9.1 Performance review, data collection, analysis, and check	10.1 NC with corrective action over it
4.2 Study of the needs and expec-tations, interested parties	5.2 OH&S Policy	6.2 OH&S objectives with achievement plan	7.2 Skills and Competence	8.2 Preparations in case of emergency	9.2 Audit by internal teams	10.2 Consistent improvement
4.3 ISO 45001 scope determination	5.3 Organization structure as per roles & authorities		7.3 Operational awareness		9.3 Review by management	
4.4 OH&S MS			7.4 Business Communication			
			7.5 Documentation of the information			

issues that are relevant to its purpose and that affect its ability to achieve the intended outcome(s) of its OHS management system.

Understanding the needs and expectations of workers and other interested parties (clause 4.2): Interested parties are workers, suppliers, subcontractors, clients, regulatory authorities.

Risk and opportunities (Clauses: 6.1.1, 6.1.2.3, 6.1.4): Companies are to determine, consider and, where necessary, take action to address any risks or opportunities that may impact (either positively or negatively) the ability of the management system to deliver its intended results, including enhanced health and safety at the workplace.

Leadership and management commitment(Clauses: 5.1) has stronger emphasis on top management to actively engage and take accountability for the effectiveness of the management system.

Planning: (clause 6)

Scope of ISO 45001:2018

The scope of the ISO 45001:2018 in an organization is (PECB, 2018):

1. Provision of a healthy and safe work area (BSI Group, 2018)
2. Proactive prevention of an injury at work
3. Remove hazards, reduce risks, and identify opportunities at OH&S
4. Comply with the legal requirements and fulfil objectives of OH&S

Clauses of ISO45001:2018

ISO 45001 follows the systematic PDCA cycle approach for continual improvements in the OH&S through its clauses as shown in the Table 1 (Bureau veritas, 2020).

ISO 14001:2015

ISO 14001 standard guides on the waste reduction, resource optimum utilization, and reuse of resources. ISO 14001:2015 Standard extended its scope by demanding an analysis of internal and external issues impacting the environmental management service (EPA, 2020). It also asks to strengthen the commitment of top managers by aligning the EMS with the strategic goals of the company with clear communication (BSI GROUP, 2020). ISO 14001:2015 specifies the requirements for an environmental management system that an organization can use to enhance its environmental performance. ISO 14001:2015 is intended for use by an organization seeking to manage its environmental responsibilities in a systematic manner that contributes to the environmental pillar of sustainability. ISO 14001:2015

specifies the requirements for an environmental management system that an organization can use to enhance its environmental performance. ISO 14001:2015 is intended for use by an organization seeking to manage its environmental responsibilities in a systematic manner that contributes to the environmental pillar of sustainability. ISO 14001:2015 helps an organization achieve the intended outcomes of its environmental management system, which provide value for the environment, the organization itself and interested parties. Consistent with the organization's environmental policy, the intended outcomes of an environmental management system include:

Enhancement of environmental performance
Fulfilment of compliance obligations
Achievement of environmental objectives

ISO 14001:2015 is applicable to any organization, regardless of size, type, and nature, and applies to the environmental aspects of its activities, products, and services that the organization determines it can either control or influence considering a life cycle perspective. ISO 14001:2015 does not state specific environmental performance criteria. ISO 14001:2015 can be used in whole or in part to systematically improve environmental management. Claims of conformity to ISO 14001:2015, however, are not acceptable unless all its requirements are incorporated into an organization's environmental management system and fulfilled without exclusion (Massoud, 2010. p-1884-1887).

Scope of ISO 14001:2015

The scope of the ISO 14001:2015 in an organization is (Johan Nolan, 2016):

Table 2: Plan-Do-Check-Act Cycle in ISO 14001:2015 with respective clauses

Plan				Do	Check	Act
4 Organization Context	5 Leadership Parameters	6 Objectives Planning	7 Management Support	8 Company Operations	9 Performance Check	10 Continual Improvement
4.1 Study of the organization context	5.1 Commitment of Leader	6.1 Risks and opportunities finding and actions over it	7.1 Operational Resources	8.1 Company planning of operation and its control	9.1 Performance review, data collection, analysis, and check	10.1 NC with corrective action over it
4.2 Study of the needs and expectations, interested parties	5.2 Quality Policy	6.2 Quality objectives with achievement plan	7.2 Skills and Competence	8.2 Preparations in case of emergency	9.2 Audit by internal teams	10.2 Consistent improvement
4.3 ISO9001 scope determination	5.3 Organization structure as per roles & authorities		7.3 Operational awareness		9.3 Review by management	
4.4 QMS			7.4 Business Communication			
			7.5 Documentation of the information			

1. Allowing the environmental value for the interested parties in an organization

2. Environment performance improvements (SEASPANCORP, 2020)

3. Achievement of all compliance actions

4. Achievement of organizational goals set for the environment

Clauses of ISO14001:2015

ISO 14001 follow the PDCA cycle approach for continual improvements in the EMS through standard clauses as shown in the Table 2 (IMSM, 2019).

ISO 9001:2015

In 2014 the ISO studied some cases in more than 25 nations companies that adopted ISO 9001. This study explained that the ISO 9001 applications benefits had been internal such as increased customer happiness, engaged and empowered employees, enhanced quality of the products, efficient processes, and reduced quality risk through continual improvements (9001 Simplified, 2021). ISO 9001:2015 specifies requirements for a quality management system when an organization:

a) Needs to demonstrate its ability to consistently provide products and services that meet customer and applicable statutory and regulatory requirements, and

b) Aims to enhance customer satisfaction through the effective application of the system, including processes for improvement of the system and the assurance of conformity to customer and applicable statutory and regulatory requirements.

All the requirements of ISO 9001:2015 are generic and are intended to be applicable to any organization, regardless of its type or size, or the products and services it provides (Sampaio, 2009).

The ISO 9000 series seven Quality Management Principles (QMP)

The seven quality management principles are explained below in Table 3.

Table 3: 7 Quality Management Principles

QMP 1	Customer Focus	Organizations depend on their customers and therefore should understand current and future customer needs, should meet customer requirements and strive to exceed customer expectations.
QMP 2	Leadership	Leaders establish unity of purpose and direction of the organization. They should create and maintain the internal environment in which people can become fully involved in achieving the organization's objectives.
QMP 3	Engagement of People	People at all levels are the essence of an organization and their full involvement enables their abilities to be used for the organization's benefit.
QMP 4	Process Approach	A desired result is achieved more efficiently when activities and related resources are managed as a process.
QMP 5	Improvement	Improvement of the organization's overall performance should be a permanent objective of the organization.
QMP 6	Evidence-Based Decision Making	Effective decisions are based on the analysis of data and information.
QMP 7	Relationship Management	An organization and its external providers (suppliers, contractors, service providers) are interdependent and a mutually beneficial relationship enhances the ability of both to create value.

Evolution of Standard

The ISO 9000 standard is continually being revised by standing technical committees and advisory groups, who receive feedback from those professionals who are implementing the standard as shown in Table 4.

Table 4: Evolution of ISO 9001 standard

Year	Edition of ISO 9001
1987	1st Edition
1994	2nd Edition
2000	3rd Edition
2008	4th Edition
2015	5th Edition

Scope of ISO 9001:2015

The scope of the ISO 9001:2015 in an organization is:
1. Achievement of customer satisfaction without considering the nature and size the company (Richard Keen, 2021)
2. Compliance with all the required legal needs
3. A justification for not applicable clauses (MASQuality, 2018)
4. Achievement of organizational objectives set forquality management

Clauses of ISO9001:2015

ISO 9001 follow the PDCA cycle approach for continual improvements in the QMS through standard clauses as shown in the Table 5 (Aura Quality Management, 2016).

IMS (Integrated Management System) IMS is an integrated management system that integrates all company management systems or standards with the single smart system (Timothy Wood come, 2016). This integration saves repeated documentation time and creates synergy due to considerable similarities in defined 10 clauses (Quality Mag, 2020). Figure 1 shows the probable integration of the safety, environmental, and quality standards.

Table 5: Plan-Do-Check-Act Cycle in ISO 9001:2015 with respective clauses

Plan			Do	Check	Act
4 Organization Context	5 Leadership Parameters	6 Objectives Planning	8 Company Operations	9 Performance Check	10 Continual Improvement
4.1 Study of the organization context	5.1 Commitment of Leader	6.1 Risks and opportunities finding and actions over it	8.1 Company planning of operation and its control	9.1 Performance review, data collection, analysis, and check	10.1 NC with corrective action over it
4.2 Study of the needs and expectations, interested parties	5.2 Environmental Policy	6.2 Environmental objectives with achievement plan	8.2 Preparations in case of emergency	9.2 Audit by internal teams	10.2 Consistent improvement
4.3 ISO14001scope determination	5.3 Organization structure as per roles & authorities			9.3 Review by management	
4.4 EMS					

Figure 1: Integrated Management System (QMSUK,2020)

Table 6: Comparison of ISO standard clauses

Clauses	**ISO 45001:2018**	**ISO 14001:2015**	**ISO 9001:2015**
4 Organization Context	Yes	Yes	Yes
4.1 Study of the organization context	Yes	Yes	Yes
4.2 Study of the needs and expectations, interested parties	Yes	Yes	Yes
4.3 Scope determination	Yes	Yes	Yes
4.4 MS	Yes	Yes	Yes
5 Leadership Parameters	Yes	Yes	Yes
5.1 Commitment of Leader	Yes	Yes	Yes
5.2 Policy	Yes	Yes	Yes
5.3 Organization structure as per roles and authorities	Yes	Yes	Yes
6 Objectives Planning	Yes	Yes	Yes
6.1 Risks and opportunities finding and actions over it	Yes	Yes	Yes
6.2 Objectives with achievement plan	Yes	Yes	Yes
7 Management Support	Yes	Yes	Yes
7.1 Operational Resources	Yes	Yes	Yes
7.2 Skills and Competence	Yes	Yes	Yes
7.3 Operational awareness	Yes	Yes	Yes
7.4 Business Communication	Yes	Yes	Yes
7.5 Documentation of the information	Yes	Yes	Yes

Clauses	ISO 45001:2018	ISO 14001:2015	ISO 9001:2015
8 Company Operations	Yes	Yes	Yes
8.1 Company planning of operation and its control	Yes	Yes	Yes
8.2 Preparations in case of emergency	Yes	Yes	Yes
9 Performance Check	Yes	Yes	Yes
9.1 Performance review, data collection, analysis, and check	Yes	Yes	Yes
9.2 Audit by internal teams	Yes	Yes	Yes
9.3 Review by management	Yes	Yes	Yes
10 Continual Improvement	Yes	Yes	Yes
10.1 NC with corrective action over it	Yes	Yes	Yes
10.2 Consistent improvement	Yes	Yes	Yes

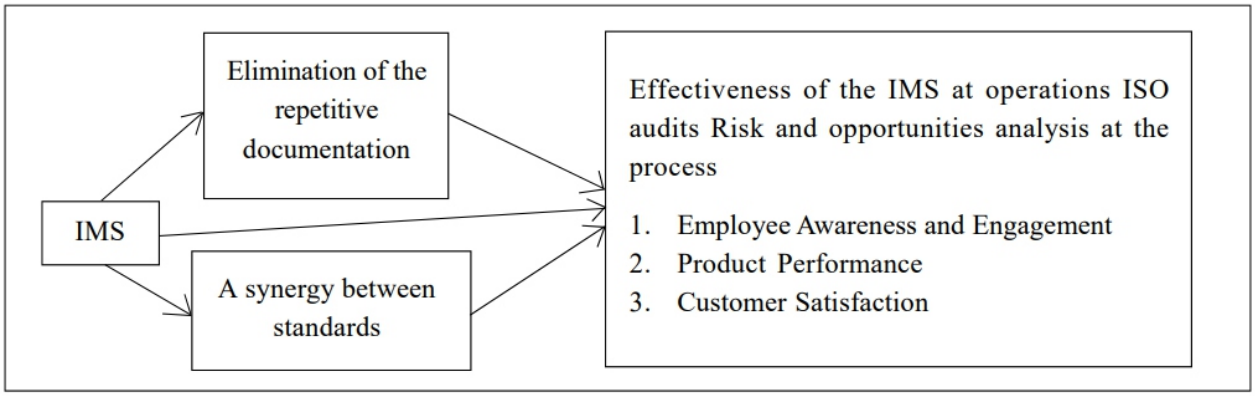

Figure 2: Research Hypothesis Model

over individual standards during the ISO audits at the company. From this "Research Hypothesis Model",we built the Hypothesis as shown in Table 7.

RESEARCH METHODOLOGY

Data Collection

We used the quantitative research technique with,

a. Independent Variable: IMS

b. Dependent Variable: Operation Performance judged during ISO audit

We prepared questionnaires to check the improvement of some key objectives of the company after IMS application. The questionnaires were circulated among a sample of the 150 employees working in the company of 10,000 employee population. We received 110 responses. We prepared the following correlation and regression to analyse the effects of IMS application on company performance as shown in Table 8. We verified further the hypothesis and analysed it as shown in Table 9. The Hypothesis test results are shown in the Table10.

RESULTS

We analysed the Hypotheses as mentioned in Table 9 and Table10.

Table 7: Hypothesis built

Hypothesis	Description	Path
H1	IMS eliminates the repetitive documents for individual ISO standards	IMS → Eliminations of the repetitive documentation
H2	IMS improves synergy between the different ISO standards	IMS → The synergy between the different ISO standards
H3	IMS saves the time and improves operation performance through overall ISO audit process	IMS → Operations performance at ISO audit

Table 8: Correlation and regression of IMS and its effectiveness at operations ISO audit

Variable	Mean	SD	1	2	3	4	5
Risk and opportunities analysis at the process	4.39	529	1				
Employee awareness and engagement	4.27	502	296**	1			
Product performance	4.09	532	332**	0.012	1		
Customer satisfaction	3.99	589	346**	60**	34**	1	
Elimination of the repetitive documentation	4.26	604	349**	23**	52**	432	1

Note: * p <0.05, **p<0.01

Table 9: Hypothesis test

Path	Model I Standard Coefficient	Model II Standard Coefficient	Model III Standard Coefficient	Model IV Standard Coefficient	Conclusion
IMS → Eliminations of the repetitive documentation	7.9***	7.9***	0.56***	24**	Partial Mediation
IMS → The synergy between the different ISO standards	0.27***	0.49***	0.59***	12**	Partial Mediation
IMS → Operations performance at ISO audit	0.29***	0.31***	0.59***	13**	Partial Mediation

Table 10: Hypothesis test results

IMS R2 (ΔR2)		32.01(0.33)
F-statistic		110.92
Eliminations of the repetitive documentation R2 (ΔR2)	0.121(0.10)	0.122(0.09)
F-statistic	16.44	15.62
The synergy between the different ISO standards R2 (ΔR2)	0.021(0.020)	0.17(0.172)
F-statistic	10.09	19.09
Operations performance at ISO audit (ΔR2)	0.22(0.209)	0.219(0.20)
F-statistic	26.32	44.52

Notes: **p<.01, ***p<0.001

1. Hypothesis one confirms that IMS eliminates the repetitive documentation during the ISO audits saves time significantly with β =0.19. IMS improves operations performance with β =0.32.
2. Hypothesis two confirms that IMS improves synergy between the different ISO standards significantly with β =0.28 and Operations performance with β =0.45.

Hence, IMS helps to save repetitive documentation time, improve synergy between different auditing systems, audit efficiency, and final customer trust with satisfaction.

CONCLUSION

We conclude based on the above empirical research studies that IMS significantly improves the ISO audit performance over individual ISO audits. IMS helps to save repetitive documentation time, improve synergy between different auditing systems, audit efficiency, and final customer trust with satisfaction.

REFERENCES

9001 Simplified. (January 14, 2021). Reasons for ISO 9001. Retrieved from https://www.9001simplified.com/learn/reasons-for-iso-9001.php

ASQ. (2020). ISO 9001. Retrieved from https://asq.org/quality-resources/iso-9001

Aura Quality Management. (November 14, 2016). Top 10-clauses-iso-90012015. Retrieved from http://www.auraqualitymanagement.com/blog/top-10-clauses-iso/

British Assessment. (August 22, 2019). What-are-the-iso 14001-requirements? Retrieved from https://www.british-assessment.co.uk/insights/what-arethe-iso-14001-requirements/

BSI GROUP. (2020). ISO-14001-Environmental Management. Retrieved from https://www.bsigroup.com/en-IN/ISO-14001-Environmental-Management/

BSI Group. (March 2018). ISO-45001-guide-final. Retrievedfrom https://www.bsigroup.com/globalassets/localfiles/en-in/resources/ISO%2045001/iso-45001-guide-final-mar2018.pdf

Bureau veritas. (August 20, 2020). Understanding-iso 45001-clause-clause-guide. Retrieved from https://certification.bureauveritas.com/magazine/understanding-iso-45001-clause-clause-guide

EPA. (2020). Learn-about-environmental-management systems. Retrieved from https://www.epa.gov/ems/learn-about-environmental-management-systems

IMSM. (December 16, 2019). What-are-the-10-clauses-of iso-14001? Retrieved from https://www.imsm.com/gb/news/what-are-the-10-clauses-of-iso-14001/

ISO Consultant Kuwait. (June 24, 2019). IMS Manual.Retrieved from https://isoconsultantkuwait.com/2019/06/24/ims-manual-iso-90012015-iso-140012015-and-iso-450012018/

ISO Update. (February 06, 2018). Understanding-context organization-iso-45001. Retrieved from https://
isoupdate.com/resources/understanding-contextorganization-iso-45001/

ISO. (March 12, 2018). ISO-45001-occupational-health and-safety. Retrieved from https://www.iso.org/iso 45001-occupational-health-and-safety.html Jim Wilber. (June 17, 2020). What exactly is ISO certified and what does it mean? Retrieved from https://www.meadmetals.com/blog/what-exactly-is-isocertified-and-what-does-it-mean

Johan Nolan. (February 01, 2016). How-to-determine-the scope-of-the-ems-according-to-ISO? Retrieved from https://advisera.com/14001academy/blog/2016/02/01/ how-to-determine-the-scope-

Challenges and Implementation Strategies.Environmental Science & Technology, 44(6): 1884-1887. doi: 10.1021/es902714u

NQA. (2020). ISO 45001. Retrieved from https://www.nqa.com/en-in/certification/standards/iso45001

NQA. (2021). NQA-ISO-45001-Implementation-Guide.Retrieved from https://www.nqa.com/medialibraries/NQA/NQA-Media-Library/PDFs/NQA-ISO-45001-Implementation-Guide.pdf

PECB. (March 16, 2018). ISO-45001-occupational-health and-safety-management-system-requirements.Retrieved from https://pecb.com/whitepaper/iso 45001-occupational-health-and-safety-managementsystem-requirements

Pegasus. (March 29, 2016). Integrated-management systems-benefits-and-constraints. Retrieved fromhttps://www.pegasuslegalregister.com/2016/03/29/integrated-management-systems-benefits-and constraints/

QMSUK. (July 07, 2020). What is an integratedmanagement system? Retrieved from https://www.qmsuk.com/news/what-is-an-integratedmanagement-system

Quality Mag. (May 09, 2020). Using-an-integrated management-system-in-your-organization. Retrieved from https://www.qualitymag.com/articles/using-an integrated-management-system-in-your-organization

Richard Keen. (February 03, 2021). How-to-write-your scope-for-ISO-9001? Retrieved from https://www.iso9001-checklist.co.uk/4.3-how-to-write-your-scopefor-ISO-9001-with-7-examples.htm

Sampaio, P., Saraiva, P. and Guimaraes Rodrigues,A. (2009). ISO 9001 certification research: questions, answers and approaches. International Journal of Quality & Reliability Management, 26(1): 38- 58. https://doi.org/10.1108/02656710910924161

SEASPANCORP. (March 03, 2020). ISO-140012015- SCOPE. Retrieved from https://www.seaspancorp. com/wp-content/uploads/ISO-140012015-SCOPE.pdf

Timothy Woodcome. (October 26, 2016). What-integratedmanagement-system? Retrieved from https://www.qualitydigest.com/inside/iso/what-integratedmanagement-system-102616.html

You matter. (March 12, 2020). Definition ISO 14001 standard CSR definition. Retrieved from https://youmatter.world/en/definition/definitions-iso-14001- standard-csr-definition

A Literature Review on Impact of Customer Service in Logistics Sector

Saket Joshi

A B S T R A C T

Customer service plays a vital role in organizations. It can prove helpful to companies looking for having a competitive edge over others. With main objective of communicating at all stages with clients, it can also assist in resolving complex situations in a subtle manner. This research paper is based on secondary resources and examines the working platform, process flow and importance of logistics service providers with respect to client retention, loyalty and perception of service quality of logistics versus actual services offered by logistics service provider (LSP) to their customer (exporters/ importers). The derivation of service quality gap is client expectation minus the service offering to them. This paper highlights customer service aspects important for any logistics service provider to sustain in long run. The outcome of this study uncovers impact of customer service on logistics company and their customers' business performance.

Keywords: Customer service, Logistics, Supply Chain Management (SCM), Quality gap, Customer loyalty, Export import (EXIM), Logistics Service Provider (LSP), Third Party Logistics (3PL), Standard Operating Procedure (SOP), Multinational Companies (MNC), Customer Relationship Management (CRM)

INTRODUCTION

"Change is the only constant in life" mentioned by Heraclitus, a Greek Philosopher refers to the inevitable change. In today's context businesses - work processes, thought processes, business ideas, mindsets are also constantly evolving.

Global markets continue to grow in terms of Third-Party Logistics (3PL), logistics and supply chain management demands. Because of vast opportunities and a highly fragmented market it provides humungous opportunities for organizing, structuring, governing, and building a sustainable supply chain in coming times.

For companies engaged in export-import activitiesthe choice of a dynamic supply chain partner has seen a significant surge. Over the last decade, term logistics vendor has seen upgrade as – logistic partner. Because, managers have started understanding the importance of reliable Logistics Service Providers (LSP's) and treat them as a part of their team.

Sometimes, even before executing international business orders managers consult and appoint a reliable LSP rather than deciding on choosing them for services directly. We can observe recent practical trends wherein overseas traders prefer to make LSP a part of their execution team to take care of third party logistics activities and understand requirements from manufacturing till last mile delivery, which in turn helps them to retain foreign clientele in long run. Also, from a reliable and quality offering Supply Chain LSP, it is perceived by customers to be cost effective, will deliver on-time, may have a dedicated team and in special cases - a Single Point of Contact (SPOC) for key clients, which in turn would lead to client satisfaction. As international trade has grown, the world has become smaller in terms of reach, shipping, customer demands at both ends have evolved and will continue, which need to be addressed.

REVIEW OF LITERATURE

Parasuraman et al. (1988) had discussed in their paper about 22 item factor, SERVQUAL model, potential applications in future of their model. The authors explained about definitions, meaning and link of quality, expectations and actual deliverance to customers. Various related aspects like perceived versus objective quality; quality as attitude; quality versus satisfaction; and expectations compared to perceptions were discussed.

As per Cronin, Jr. and Taylor (1994) consumer satisfaction exerts a stronger influence on purchase/ loyalty than service quality. SERVQUAL serves partial purpose in understanding service quality, but the perception versus deliverance of service and cost association also needs to be considered.

Voss et al. (1998) in their study showed that price fluctuations is common among services industries. When price and performance are consistent, expectations have an assimilation effect on performance and satisfaction judgments and when it is inconsistent, expectations have no effect on performance and satisfaction.

Sinha and Babu (1998) had discussed about measuring the efficiency of the supply chain. Also, companies use two performance measures that is fraction of overall demand satisfied during the month and overall inventory system. This is how improving demand fulfilment forces company management to have more inward attention and stay focused on customer.

As per Durvasula et al. (1999) logistics is challenging and is complex also. Relationship development, vendor development, service improvisation are its key parts. SERVQUAL has received most recognition amongst all proposed quality measures. Relationship marketing has less power over customers perception of performance quality service influencing customer decisions. To succeed liners/ LSP's need not only offer quality services but also need to quantify customers feedback towards the offered services. In Business to Business (B2B) - fulfilled commitments rather than over-promising acts would give repeated business.

As per Dabolkar et al. (2000) understanding whether service quality and customer satisfaction are same or is customer satisfaction a result of service quality is crucial to understand. Though disconfirmation model had been studied, many researchers had raised issues with it. Experience of Church Directory (before and after sales from sales of National Photographic Company, with (Service Quality) SERVQUAL scale measure, was taken into consideration. Customer perception plays a major role over disconfirmation. For future, measured disconfirmation was suggested rather than longitudinal study.

As per Payne and Frow (2005) the role of Customer Relationship Management (CRM) is to enhance customer and shareholder value. Authors had identified five key cross-functional CRM processes: a strategy development process, a value creation process, a multichannel integration process, an information management process, and a performance assessment process.

Seth et al. (2006) advised that logistics impacts not only own business, but consumers across the globe with its quality. Despite its importance - service quality in supply chain management (SCM) has been less researched. Study on forward and reverse logistics gaps had been done in this paper. As per author there are no standard instruments to measure 3PL service quality with businesses, different dimensions need to be studied which impacts final consumer, inter-organizational gaps etc. Extent of outsourcing logistics needs to be defined by organization in all sectors. 3PL decision is influenced by perception of decision maker and client relations at all levels.

As per Davis and Mentzer (2006) there have been many studies on SCM and customer service but gap identification on perception of customer and LSP for offering service is less explored. One of the important function identified by authors was developing relation at organizational level with relevant department or manager. Another aspect identified was size of the customer, which may directly impact deliverance towards client like big sized or small sized,big clients were identified as already having a setperception that they want responsibility along with desired service levels from their LSP's. Tolerance levels in big customers is narrow and in small ones there may be a wider acceptance. In logistics there are

two important aspects: CS and responsiveness. Different types of gaps identified by researchers are service gap and perception gap.

Rust and Chung (2006) in their study showed that a firm improves its profitability when it can observe the reservation prices of the different consumers. This can be done by observing consumer purchasing behaviour. One way for a firm to know what kind of pricing strategy it should adopt is by looking at the type of service the firm provides.

Sahay and Mohan (2006) had discussed that 3PL practices have gained a slow pace in Indian economy, more than 55% of businesses prefer a good 3PL partner for timely and efficient delivery, along with warehousing, distribution services. There is consideration of logistics cost control, focus on core product manufacturing and, improvised return on asset investment. Infrastructure in India was found poor with reference to road / rail / water draught, as compared to nations like Singapore, European Union and United States of America.

Seth et al. (2006) in a framework for measurement of quality of service in supply chains,discussed that poor quality service ultimately leads to depleting business. In past, many studies have focused on service industries but not SCM as a whole. Gap analysis would help in improvising SCM service quality. He also discussed about implications of various factors on SCM, and also considered minimum input and maximum output concepts. This paper also discussed about forward and reverse logistics management along with the concept of Quality Loss Function (QLF).

As per Forslund (2007) Logistics Quality Deficiencies (LQD) examples include delayed lead time and incorrect deliveries. Author elaborated on inter organizational performance gaps, impact of choosing low cost LSP's, and how customer may not be happy with delivery or final product receiving process/ over production, stock piling up etc.

Lumsden and Mirzabeiki (2008) discussed in their paper about value level of information in supply chain, its importance with all the relevant partners. This study showed that there is a positive relationship between a company's supply chain and their customers with reference to decision of reducing or highlighting certain information in their supply chain management.

According to Theeranuphattana and Tang (2008) SCM theories have gained attention, but supply chain (SC) performance measurement has not yet grabbed attention. Defining SC metrics is a barrier. SC Council (2006) listed 05 attributes of (Internal) SC performance: SC reliability, responsiveness, flexibility,costs, asset management. The authors discussed Chan and Qi's model of SCM performance metrics: cost, time, capacity, capability, productivity, utilization and outcome. Authors elaborated on supply chain operations reference (SCOR) weaknesses - it focuses on process and efficiency and not strategy and suggested that it is better to measure SCM performance as a whole rather than a collection of separate processes. Customer facing metrics were identified as - reliability, responsiveness, and flexibility and internal facing metrics as - costs and assets.

Despite having a significant positive impact on Indian businesses, 3PL is still in nascent stage compared to business opportunities ahead.

Bienstock et al. (2008) discussed on aspects of logistics service quality (LSQ), LSP's perception, customer perception about company/ service. Authors had discussed Technology Acceptance Model (TAM) and about understanding the intent of technology and then implementing it. LSP's play vital role in process but information technology (IT) plays a booster in terms of transparency, long term relationship. IT tools perception of client plays a vital role especially in a global supply situation. As per author logistics process leads to logistics success, and high quality consistent delivery creates loyalty. They had also identified that clients would prefer to use LSP's IT tools, if they find it easy to recall and operate.

Carter and Rogers (2008) discussed how to define sustainability and link with SCM and discussed how would it create a long term economic success. The authors discussed definition of sustainability with

ecological reference and identified triple bottom line of sustainability and linked that SCM risk management for a firm means managing: economic risk, environmental risk and social risk. Mostly modern times organizations have started shifting definition of bottom line from profit generation to sustainable workplace. The concept and the term seems attractive, but it brings meaning in long term only.

Some companies were identified as exploiting resources and in turn providing stale wages and poor living conditions to workers. On other hand cost of illegalities create expensive environment for the whole society. Often corporate social responsibility (CSR) overtakes this thought and creates a rift among managers and management in understanding meaning of sustainable supply chain management (SSCM) versus CSR.

As per Baki et al. (2009) an application of integrating SERVQUAL and Kano's Model into Quality Function Deployment (QFD) for logistics services, authors had discussed about understanding gaps between customer perceptions and expectations in SCM. Kano model is implemented by many researchers to discuss customer service and customer satisfaction. SERVQUAL 5 dimensions, SERVQUAL gap analysis have been discussed and need analysis has been considered helpful in understanding practical and applied information. Global business competition has raised a surge in requirement of competitive SCM solution providers. Apart from cost control - transparency, deliverance, reliability have also become important as per author.

Beheshti (2010) discussed that firms are trying to achieve operational efficiency and cost control by methods like - Economic Order Quantity (EOQ), Economic Production Quantity (EPQ) and, Just in Time (JIT). He also said that total SCM costs are sum of all individual member costs. The author had identified that focus on demand versus supply gap, managing people / inventory and acting as a team would assist a lot in controlling SCM costs.

Cahill et al. (2010) had studied that price satisfaction and relational satisfaction seemed to be of little relevance to loyalty. The authors examined moderating effect of conflict frequency on the satisfaction-loyalty linkage in logistics outsourcing relationships, high levels of customer conflict mixed with low relational satisfaction was found as leading to different type of conflicts between service provider and customer, such as dysfunctional, disruptive, and "disease-like" in nature harming business relationships. It had been identified by authors that a good business relationship should appreciate and accept healthy conflict, and is one of the factors that does not impact loyalty negatively or lower business share.

Soinio et al. (2012) had researched that Finnish companies spend 13-16% of total sales on logistics, the logistics model was examined from client and service providers perspectives. Authors identified that small and medium enterprises (SME's) did not consider implementing logistics seriously as compared to larger corporations. More than logistical movement, it is logistics network design implementation is a challenge, due to lack of need and understanding of skills concepts like - just in time (JIT), logistics get ignored. If SME's bifurcate choosing as per requirements, logistics service providers' on asset based / non-asset based services can provides a greater efficiency in logistics services.

Wieland and Wallenburg (2012) discussed that supply chain risk management (SCRM) helps in improving organizations performance. They found that agility and robustness have a positive impact on supply chains and performance dimensions and customer value.

As per Jang et al. (2013) world would not have globalised as we see now, if shipping didn't exist; as ocean freight constitutes 60% of global shipping. 23 studies since 1990 have been published discussing shipper, shipping line and perspectives of both for identifying service perception gap. Author had discussed about importance of two aspects:Operational Logistics Service Quality (OLSQ) and Relational Logistics Service Quality (RLSQ), research proved clients are behaviourally attached than

being emotional towards LSP. OLSQ ensures customer satisfaction but misses trust and RLSQ influences trust and satisfaction but doesn't impact commitment.

Morali and Searcy (2013) did a content analysis of 100 Canadian corporate sustainable development reports and in-depth interviews with 18 Canadian experts on SCM, based on primary and secondary research, it was understood from respondents how SSCM can be implemented in long run. The results showed sustainability in SCM is a strategic call based on stakeholders reviews. Sustainability referred to concerns of- economic, environmental and social implications of business decision. This can be improvised by educating vendors about collaboration, performance measurement and timely monitoring and audits of vendors.

Setia et al. (2013) discussed importance of understanding customer requirements, aligning own company policies with customer demands and implementing a user friendly digital business strategy. The authors illustrated its importance on how digital technologies can be leveraged to build customer centric organization, create information quality and enhance customer service performance.

As per Haque and Islam (2013) collaboration and information sharing along with logistics design and IT infrastructure have significant impact on customer satisfaction. As per Kumar et al. (2013) managers in MNC's, firstly monitor the factors and examine the degree of comfort before implementing any strategies. Kalia et al. conducted a web survey among 308 respondents, who had made at least one online shopping in past six months from any given four retail websites and they concluded that the satisfaction level of consumer through online shopping acted as an intermediary between online service quality and future purchase intentions.

As per Bell et al. (2013) a cost-based maritime container assignment model involves three evolution stages of a port - setting, expansion and specialization. Author said that microscopic studies are extensive and impossible due to confidentiality reasons and macroscopic study prove helpful while studying global containerization improvement / methods. Route, link, leg/ s, path are important to be understood. Point (Origin) to Point (Destination) (P2P), Point (Origin) - Transhipment Point - Point (Destination (P-T-P), Point - Transhipment 1 - Transhipment 2 - Point (destination) (P T-T-P). Container ship sizes affect the route capacity/ optimization. Investment to revenue calculation is important for each defined route, such as Evergreen Shipping Line may operate: Mundra (Origin) to Colombo (Transhipment point) to Hamburg (Destination) and COSCO Shipping Line may operate Mundra (Origin) to Hamburg (Destination) on direct service, the decision lies with line manager as to which route to use to optimize vessel operational cost and turn that route choice profitable. As per Sebjan et al. (2014) organizational factors are reflected in the three types of orientations - process, technological and innovation orientation of organization.

As per Bompolis and Boutsouki (2014) the companies are moving from product centric to customer centric business culture. Traditional customer relationship management (CRM) is moving to social CRM and the key concept in this new marketing and business environment is customer engagement.

Zhang et al. (2015) the managers of MNC's who perceive higher legitimacy pressure, tend to have broad local knowledge which leads to increase in customer involvement. As per Bolumole et al. (2016) 3PL places their employees near to their customer manufacturing sites or where they are conducting their business. More freedom to employee in their job functions leads to clarity of their role and increases customer responsiveness. As per Kilibarda et al. (2016) discussed that there have been many papers in past for measuring service quality of logistics but quality assessment from customer perspective is lacking. LSP's are fragmented due to scattered industrial clusters. Recent trend of increasing logistics outsourcing had been identified. Assessment of service quality for logistics companies can be based only on basis of services provided like: transport, freight booking, customs brokerage, insurance or any combination of them. Service quality is directly related with relation level between LSP and clients and

type of services offered by LSP to clients.

Robert and Adina (2016) discussed that definition of CS has been evolving over decades. From just simple end to end delivery, it has evolved to need analysis, time stipulation, JIT, considering negative impact of delays etc. LSP was identified as creator of balance between offered / committed services and financial gains. In the present business environment, the customer service is essential for any company which wants to be successful. Sohn et al. (2017) had discussed that semiconductor companies expect small and medium enterprises (SME's) / SCM companies to operate in a qualitative manner till last delivery. Since 1900's there have been many researches on product quality and logistics quality but Kano approach is less applied in logistics. Also, very few studies have been conducted on triadic relation - Supplier - Buyer - LSP. Gaps can be identified by understanding supply context and buyers requirements. Service quality dynamics can be: delivery on time, with minimized claims, with minimum / no damages at correct place and with proper packaging. Also the gaps can be perceived versus actual delivery and purchase versus actual experience. The SCM companies need to adjust their perception to customers' perception in order to attain contractual longevity, and process quality along with capability must go hand in hand with IT investment by LSP.

Carman (2017) had identified that Parasaruman et al. made substantial contribution by making people understand concept of quality and factors influencing it by identifying gaps. Different industries may have multiple layers of service, such as in air travel an amalgam of services includes booking, boarding, in flight experience, baggage and departure. One important highlight was how to gauge SERVQUAL by asking users about their expectations but there may be a biased constraint, whereas based on experience of product, users can give a clear input on perception minus the expectation.

Ali and Kaur (2018) had discussed that global 3PL is rapidly growing, the industry is mainly dependent on mergers and acquisitions or takeovers for further scope of expansion. Indian logistics and supply chain market (L & SCM) is highly fragmented. The L & SCM market is optimistic with Government initiatives like Dedicated Freight Corridor (DFC), Hyperloop, dedicated commercial highways etc. In India customization has taken over the concept of uniformity because of robust market size and demand.

According to author, some studies indicated satisfaction is related to product/ s ability to match expectations whereas some suggested it is perception which affects (pre / post consumption). Need analysis rather than fixed set of services was identified as the need of hour along with strong trust levels with clients.

As per Bae and Park (2018) LSP's play a vital role for providing quality service to shippers by collaborating with ports. Authors claimed no research was done on relation between international LSP's with ports. They also discussed level of inter-corporate relations in port process and performance dimension in port logistics. All shipping origin movement activities were described by the author. For shipping lines - freight forwarders are Non-Vessel Operating Common Carriers (NVOCC's) but for a shipper the same LSP becomes a common carrier. Communication with ports is in line with requirements of exporters. Once committed task is executed successfully, fulfilment leads to repeated business for an LSP. ANCOVA is used for analysing gaps in performance in clusters. ANCOVA represents the financial performance which is affected by customer performance.

Wudhikarna et al. (2018) in their literature review showed the four different gaps in the literature such as limited adoption of intellectual capital (IC) method in logistics studies in their paper. Organizations fail to consider human capital, and lack of academic research among different IC elements.

As per Lata and Narta (2019) unlike old times, emerging telecom companies are facing competition in terms of better infrastructure and service providing for clients. Focus has shifted from only revenue increase to clientele increase and creating loyal base. CS and service quality are the keys to retain existing clients. Company image, higher initial charges, low connectivity, slow after sales response

were a couple of reasons found affecting the customer network operator switching reasons. As per Daugherty et al. (2019) many companies routinely mine information from customer phone calls, online / social media responses. This can maintain the transparency and communications to help shippers and logistics providers understand each other's operations and collaborate in positive ways). Service satisfaction is the most important factor having direct impact on customer loyalty, and price is secondary factor that has influences loyalty (Singh, 2015).

As per Patel et al. (2020) the Service Profit Chain (SPC) showed that loyal, capable and satisfied employees drive higher customer satisfaction and loyalty. The study was conducted in a branch of a bank of northern state in India, and this study demonstrated the importance of throughput orientation in service chains. Study by Gomez et al. (2020) validated the effects of the three CRM components (sales, marketing and services) on customer knowledge management and innovation, as well as on the companies' efforts toward digital transformation and sustainable business model innovation.

As per Kumar et al. (2020) Information and Communication Technology (ICT) and SCM have significant impact on performance of the organisation. Unal and Metin (2021) suggested that most important aspect in foreign trade is transportation cost and least one is firm size. The nature of international trade lies in sharing risk and responsibilities between buyer and seller. The most important factor concluded to be influencing decision is cost and other factors play minor role in affecting Incoterms selection decision.

Contreras et al. (2022) in their study explored the resilience of Puerto Rican companies after Hurricane Maria. They identified how all companies faced critical issues with business continuity and restoration as infrastructure failed which was affecting their CRM activities. The study described the CRM resilience strategies to mitigate the damages from two aspects i.e. external like natural disasters or terrorism and internal like sabotage, strikes etc. Their model

employed the event driven process chain (EPC) to establish relation between key CRM elements and resilience strategies.

Singh et al. (2022) had investigated the logistics, store environment, store communication, assortment, perceived price and employee impact on customer satisfaction in multi-brand apparel retailing. The authors collected responses from the top multi-brand apparel retail outlets located in a tier-II city in India and identified value perceptions in apparel retailing, customer satisfaction leading factors and factors affecting customer loyalty.

According to Gupta (2022), employees directly relate customer service output to human resource practices, also interpersonal relations within an organization may positively or negatively impact customer service delivery. Factors like employee handling, teamwork, inter-departmental information sharing and communications play a positive/ negative impact on employee for customer service delivery. Managerial practices that think from customer perspective and inculcate organizational positive values in employees has a direct relation with customer service output and satisfaction.

CONCLUSION

The world is shrinking in terms of connectivity between buyers and suppliers. One of the key factors which impacts the business across the world is logistics and supply chain management. In today's scenario organizations are trying to attain financial success with decisions based on cost control and optimum performance. An organizations financial and business performance may get positively or negatively impacted based on their logistics decisions. With vast opportunities in 3PL market, there is a stiff competition amongst logistics service providers to offer sustainable, cost effective logistics solution and retain clients in long run. Managers seek to have better control on procurement and supplies, at an optimum level of cost, this is where concepts like JIT play a vital role in inventory

management, order management and cost control. When LSP's understand gap and bridge them for their clients, it becomes easier for both the manager and LSP to do business hand in hand with minimum conflicts, resulting in customer loyalty. Some aspects which are noticeable with respect to customer service activity are as follows - clients have high level of expectations from their service providers, the degree of professionalism in terms of solution offering, sales and after-sales services, the quality levels of customer service, the loyalty of clients gradually takes a shift towards LSP's that enable and provide a seamless end to end customised solution, relationship management at all levels with internal customers (within own organization) as well as external customers (clients organization) and in global business environment, customer service has become an important aspect for any organization to be successful in long run.

REFERENCES

Ali, S. and Kaur, R. (2018). An analysis of satisfaction level of 3PL service users with the help of ACSI.Benchmarking: An International Journal, 25(1): 24-46.

Baki, B. et al. (2009). An application of integrating Servqual and Kano's model into QFD for logistics services A case study from Turkey. Asia Pacific Journal of Marketing and Logistics, 21(1): 106-126.

Beheshti, H. (2010). A decision support system for improving performance of inventory management in a supply chain network. International Journal of Productivity and Performance Management, 59(5).

Bel, M. et al. (2013). A cost-based maritime container assignment model. Transportation Research.

Bienstock, C. (2008). An expanded model of logistics service quality: Incorporating logistics information technology. International Journal Production Economics, 113: 205-222.

Bolumole, B. et al. (2016), Customer service responsiveness in logistics outsourcing contracts: the influence of job autonomy and role clarity among on site representatives. Transportation Journal, 55(2): 124-148.

Bompolis, C. and Boutsouki, C. (2014). Customer relationship management in the era of social web and social customer: An investigation of customer engagement. Procedia - Social and Behavioral Sciences 148: 67-78.

Cahill, D. et al. (2010). Customer loyalty in logistics outsourcing relationships: An examination of the moderating effects of conflict frequency. Journal of Business Logistics, 31(2).

Carman, J. (1990). Consumer perceptions of service quality: An assessment of the Servqual dimensions. Journal of Retailing, 66(1): 33-55.

Carter, C. and Rogers, D. (2008). A framework of sustainable supply chain management: moving toward new theory. International Journal of Physical Distribution and Logistics Management, 38(5): 360-387.

Contreras, F. et al. (2022). Adaptive customer relationship management contingency model under disruptive events. Journal of Advances in Management Research, 19(2): 198-219.

Cronin, J. and Taylor, S. (1994). Servperf Versus Servqual: Reconciling performance-based and perceptions-minus-expectations measurement of service quality. Journal of Marketing, 58: 125-131.

Dabolkar, P. et al. (2000). A comprehensive framework for service quality: An investigation of critical conceptual and measurement issues through a longitudinal study. Journal of Retailing, 76(2).

Daugherty, P. et al. (2019). The new age of customer impatience an agenda for reawakening logistics customer. International Journal of Physical Distribution & Logistics Management, 49(1): 4-32.

Davis, B. and Mentzer, J. (2006). Logistics service driven loyalty: An exploratory study. Journal of Business Logistics, 27(2).

Durvasula, S. et al. (1999). Testing the Servqual scale in the business-to business sector: The case of ocean freight shipping service. Journal of Services Marketing, 13(2): 132-150.

Forslund, H. (2007). Towards a holistic approach to logistics quality deficiencies. International Journal of Quality and Reliability Management, 24(9).
Gomez, H. et al. (2020). Customer relationship management: Digital transformation and sustainable business model innovation. Economic Research,33(1): 2733–2750.
Gupta, A. (2022). Impact of service climate dimensions on customer service quality: Test of a multilevel model. South Asian Journal of Management, Vol. 29.
Haque, M. and Islam, R. (2013). Effects of supply chain management practices on customer satisfaction: Evidence from pharmaceutical industry of Bangladesh. Global Business and Management Research: An International Journal, 5(2&3): 120-136.
Jang, H. et al. (2013). The effect of logistics service quality on customer loyalty through relationship quality in the container shipping context.
Transportation Journal, 52(4): 493-521. Kalia, P. et al. (2016). E-service quality, consumer satisfaction and future purchase intentions in eretail. E-service Journal, 10(1): 24-41.
Kilibarda, M. et al. (2016), Measurement of logistics service quality in freight forwarding companies a case study of the Serbian market. The International Journal of Logistics Management, 27(3): 770-794.
Kumar et al. (2013). Establishing profitable customer loyalty for multinational companies in the emerging economies: A conceptual framework. Journal of International Marketing, 21(1): 57-80.
Kumar, A. et al. (2019). Exploring the relationship between ICT, SCM practices and organizational performance in agri-food supply chain. Benchmarking: An International Journal, 27(3): 1003-1041.
Lata, K. and Narta, S. (2019). Managing the service quality: Comparative study on the behaviour and switching intentions of the customers. International Journal of Research in Commerce and Management, 10(3).
Lumsden, K. and Mirzabeiki, V. (2008). Determining the value of information for different partners in the supply chain. International Journal of Physical Distribution and Logistics Management, 38(9): 659- 673.
Morali, O. and Searcy, C. (2013). A review of sustainable supply chain management practices in Canada. Journal of Business Ethics, 117(3): 635-658.
Parasuraman, A. et al. (1988). Servqual: A multiple-item scale for measuring consumer perceptions of service quality. Journal of Retailing, 64(1)
Patel, P. et al. (2020). Service profit chain and throughput orientation: a manager-employee-customer triad perspective in services. International Journal of Production Research, 58(17): 5196-5217.
Payne, A. and Frow, P. (2005). A strategic framework for customer relationship management. Journal of Marketing, 69(4): 167-176.
Robert, C. and Adina, M. (2016); The impact of customer service on logistics. Revista Economica, 68(3).
Rust, R. and Chung, T. (2006). Marketing models of service and relationships. Marketing Science, 25(6): 560-580.
Sahay, B. and Mohan, R. (2006). 3PL practices: An Indian Perspective. International Journal of Physical Distribution and Logistics Management, 36(9): 666- 689.
Sebjana, U. et al. (2014). Organizational factors influencing effective use of CRM solutions. Organizing Committee of Centeris.
Seth, N. et al. (2006). A conceptual model for quality ofservice in the supply chain. International Journal of Physical Distribution and Logistics Management,36(7): 547-575.
Seth, N. et al. (2006). A framework for measurement of quality of service in supply chains. Supply Chain Management: A International Journal, 11(1): 82-94.
Setia, P. et al. (2013). Leveraging digital technologies: How information quality leads to localized

capabilities and customer service performance. MIS Quarterly, 37(2): 565-590. Singh, A. et al. (2022). Understanding customerperceived values for apparel retailing in India. International Journal of Retail and Distribution Management, 50(11): 1337-1357.
Singh, S. (2015). The impact of service satisfaction, relational satisfaction and commitment on customer loyalty in logistics outsourcing relationship. Journal of Supply Chain Management Systems, 4(1&2).
Sinha, R. and Babu, A. (1998). Quality of customer service in supply chain system: a diagnostic study. International Journal of Quality and Reliability Management, 15(8/9): 844-859.
Sohn, J. et al. (2017). Assessment of logistics service quality using the Kano model in a logistics-triadic relationship. The International Journal of Logistics Management, 28(2): 680-698.
Soinio J. et al. (2012). How logistics-service providers can develop value-added services for SMEs: A dyadic perspective. The International Journal of Logistics Management, 23(1): 31-49.
Sung, H. and Jin, D. (2018). Gaps in performance between the levels of inter-corporate relationships in port logistics processes. The Asian Journal of Shipping and Logistics, 34(3): 209-217.
Theeranuphattana, A. and Tang, J. (2008). A conceptual model of performance measurement for supply chains Alternative considerations. Journal of Manu facturing Technology Management, 19(1): 125-148.
Unal, T. and Metin, I. (2021). Do the factors affecting incoterms selection differ for exporters and importers? a fuzzy analytical hierarchy process (FAHP) application. Scientific Journal of Logistics, 17(2): 299-309.
Voss, G. et al. (1998). The roles of price, performance, and expectations in determining satisfaction in service exchanges. Journal of Marketing, 62(4): 46-61.
Wieland, A. and Wallenburg, C. (2012). Dealing with supply chain risks Linking risk management practices and strategies to performance. International Journal of Physical Distribution and Logistics Management, 42(10): 887-905.
Wudhikarna, R. et al. (2018). A literature review on performance measures of logistics management: An intellectual capital perspective. International Journal of Production Research, 56(13): 4490–4520.
Zhang, X. et al. (2015). Customer involvement and service firm internationalization performance: An integrative framework. Journal of International Business Studies, 46(3): 355-380.

Instructions for Authors

Essentials for Publishing in this Journal

1 Submitted articles should not have been previously published or be currently under consideration for publication elsewhere.

2 Conference papers may only be submitted if the paper has been completely re-written (taken to mean more than 50%) and the author has cleared any necessary permission with the copyright owner if it has been previously copyrighted.

3 All our articles are refereed through a double-blind process.

4 All authors must declare they have read and agreed to the content of the submitted article and must sign a declaration correspond to the originality of the article.

Submission Process

All articles for this journal must be submitted using our online submissions system. http://enrichedpub.com/ . Please use the Submit Your Article link in the Author Service area.

Manuscript Guidelines

The instructions to authors about the article preparation for publication in the Manuscripts are submitted online, through the e-Ur (Electronic editing) system, developed by **Enriched Publications Pvt. Ltd**. The article should contain the abstract with keywords, introduction, body, conclusion, references and the summary in English language (without heading and subheading enumeration). The article length should not exceed 16 pages of A4 paper format.

Title

The title should be informative. It is in both Journal's and author's best interest to use terms suitable. For indexing and word search. If there are no such terms in the title, the author is strongly advised to add a subtitle. The title should be given in English as well. The titles precede the abstract and the summary in an appropriate language.

Letterhead Title

The letterhead title is given at a top of each page for easier identification of article copies in an Electronic form in particular. It contains the author's surname and first name initial .article title, journal title and collation (year, volume, and issue, first and last page). The journal and article titles can be given in a shortened form.

Author's Name

Full name(s) of author(s) should be used. It is advisable to give the middle initial. Names are given in their original form.

Contact Details

The postal address or the e-mail address of the author (usually of the first one if there are more Authors) is given in the footnote at the bottom of the first page.

Type of Articles

Classification of articles is a duty of the editorial staff and is of special importance. Referees and the members of the editorial staff, or section editors, can propose a category, but the editor-in-chief has the sole responsibility for their classification. Journal articles are classified as follows:

Scientific articles:

1. Original scientific paper (giving the previously unpublished results of the author's own research based on management methods).

2. Survey paper (giving an original, detailed and critical view of a research problem or an area to which the author has made a contribution visible through his self-citation);

3. Short or preliminary communication (original management paper of full format but of a smaller extent or of a preliminary character);

4. Scientific critique or forum (discussion on a particular scientific topic, based exclusively on management argumentation) and commentaries. Exceptionally, in particular areas, a scientific paper in the Journal can be in a form of a monograph or a critical edition of scientific data (historical, archival, lexicographic, bibliographic, data survey, etc.) which were unknown or hardly accessible for scientific research.

Professional articles:

1. Professional paper (contribution offering experience useful for improvement of professional practice but not necessarily based on scientific methods);
2. Informative contribution (editorial, commentary, etc.);
3. Review (of a book, software, case study, scientific event, etc.)

Language

The article should be in English. The grammar and style of the article should be of good quality. The systematized text should be without abbreviations (except standard ones). All measurements must be in SI units. The sequence of formulae is denoted in Arabic numerals in parentheses on the right-hand side.

Abstract and Summary

An abstract is a concise informative presentation of the article content for fast and accurate Evaluation of its relevance. It is both in the Editorial Office's and the author's best interest for an abstract to contain terms often used for indexing and article search. The abstract describes the purpose of the study and the methods, outlines the findings and state the conclusions. A 100- to 250-Word abstract should be placed between the title and the keywords with the body text to follow. Besides an abstract are advised to have a summary in English, at the end of the article, after the Reference list. The summary should be structured and long up to 1/10 of the article length (it is more extensive than the abstract).

Keywords

Keywords are terms or phrases showing adequately the article content for indexing and search purposes. They should be allocated heaving in mind widely accepted international sources (index, dictionary or thesaurus), such as the Web of Science keyword list for science in general. The higher their usage frequency is the better. Up to 10 keywords immediately follow the abstract and the summary, in respective languages.

Acknowledgements

The name and the number of the project or programmed within which the article was realized is given in a separate note at the bottom of the first page together with the name of the institution which financially supported the project or programmed.

Tables and Illustrations

All the captions should be in the original language as well as in English, together with the texts in illustrations if possible. Tables are typed in the same style as the text and are denoted by numerals at the top. Photographs and drawings, placed appropriately in the text, should be clear, precise and suitable for reproduction. Drawings should be created in Word or Corel.

Citation in the Text

Citation in the text must be uniform. When citing references in the text, use the reference number set in square brackets from the Reference list at the end of the article.

Footnotes

Footnotes are given at the bottom of the page with the text they refer to. They can contain less relevant details, additional explanations or used sources (e.g. scientific material, manuals). They cannot replace the cited literature.
The article should be accompanied with a cover letter with the information about the author(s): surname, middle initial, first name, and citizen personal number, rank, title, e-mail address, and affiliation address, home address including municipality, phone number in the office and at home (or a mobile phone number). The cover letter should state the type of the article and tell which illustrations are original and which are not.