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The Scope of JIT Implementation in India SMES

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Abstract

In the face of global competition, the need of customers demands from the companies to improve the product quality and customer service. The reduction of wastage has long been used by the manufacturing sector as a means to reduce costs and improve the product quality. It is perceived that Just-In-Time (JIT) is highly beneficial in manufacturing industry. However recent studies revealed that service industries are improving their operations using JIT. The operations and activities in many service systems are sequentially similar to activities in manufacturing system. But there is a need to assess the critical elements of just in time specific to service industries. In this paper, the critical elements of the JIT in the context of Indian service industries were identified using a mail survey approach. The questionnaire was sent to the 60 service industries and 30industries responded. On the basis of the responses, critical elements were identified. Attempts have been made to examine the degree of importance and degree of difficulties of these critical elements in Indian service industries. Amatrix has been suggested to branch off the difficult and important elements. The results revealed that JIT plays important role in service industries. It is suggested that the elements which are less difficult but more important should be implemented at the initial stage.

I. INTRODUCTION

Most successful companies develop and implement strategies that will give them a competitive advantage. A company that improves performance on a regular and continuous basis certainly will gain a competitive edge. Companies seek competitive advantage by emphasizing on performance factors such as flexibility, quick responsiveness, cost, efficiency, quality, reliability and service. JIT manufacturing is the ideal strategy to achieve these desired objectives. JIT is indeed a system, which consists of a series of techniques. JIT provides cost efficient production in an organization and delivery of only the necessary parts in the right quantity at right time and place while using the minimum facilities.JIT enables one to conceive, design, implement and operate a manufacturing and supporting systems, as an integrated whole, based on the principles of continuous improvements and elimination of all kind of waste.

In the nick of time (JIT) is an assembling reasoning that was produced by the Japanese. It is centered around streamlining generation effectiveness by finding the harmony among quality and amount to portray a stylish perfect (Wyk and Naidoo, 2016). This logic was first connected in the 1970's. Taiichi Ohno first created it at Toyota. Initially JIT was actualized essentially to guarantee the conveyance of merchandise to clients precisely, with respect to request time, item quality and amount. In any case, this comprehension and utilization of JIT has turned out to be increasingly mind boggling in the ongoing years. JIT is currently a key player in guaranteeing that generation of products happens with least waste. Toyota being one of the main cars makes, following quite a while of consistent enhancement, went to an acknowledgment that there are seven kinds of waste constantly present in assembling. These squanders result from: overproduction, misuse of holding up time, transportation squander, process squander, stock waste, misuse of movement and waste from item deserts (Suzaki, 1989).

JIT contains eight components which incorporate consistent enhancement, disposing of waste, great housekeeping, setup time decrease, leveled/blended generation, Kanban, Jidoka and Andon. Japan is known for its real fares of cars, buyer gadgets and PCs, therefore it ought not to come as an unexpected that it was the Japanese that created and reasoning that would reform the manner in which the world does assembling and handle stock. The world has been watching, taking in and actualizing different methods of insight from the Japanese with regards to assembling and JIT is one of those rationalities.

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II.ORIGIN OF JIT

JIT was developed by Toyota's vice president Taiichi Ohno. In 1960's, the idea was formalized into a management system, when TOYOTA sought to meet the precise demand of customers for different models andcolors with minimum delay. Toyota production system has played a vital role in the development and popularization of JIT all over the world. By 1972, newapproaches have begun to attract wide attention in Japan. In mid 1970's other Japanese companies began to experiment to adopt these approaches. Then, by the end of 1970's JIT system at tracted the attention in the west. The JIT concept was first transferred to the United\States around 1980 at Kawasaki's Lincon, Nebrasks. Since then many of the best corporations in the United States, including those in the automotive and electronics industries, have followed suit and have begun implementing JIT. But still concept is just beginning to be understood and used by many industrial enterprisesthroughout the world today.

III. LITERATURE REVIEW

Many researchers have carried out significant work inthe area of JIT. The literature related to the present work was reviewed. Inmam and Mehra (1990) stressed upon the applicability of JIT in service environments, including service part of manufacturing line. Some benefits of JIT were reported as improved communication, elimination of warehouses, reduced supplier base, improved vendor performance, improved quality, improved service, lower price levels, quick response time etc. Benson (1996) reported that diverse service organizations from bank cheque processing centers to hospital operating rooms are now applying JIT philosophy to the special problem of service production. It was hoped that service industries will continue to investigate the potential advantages of JIT and soon the list of successful case histories will include hotels, educational facilities and leisure establishments Garg et al. (1996) analyzed some vital issues in JIT purchasing in an Indian context on the basis of aquestionnaire (n=28) sent to 80 different Indian Industries. The issues include the importance of JIT attributes, problems in implementing JIT, and expected benefits from JIT purchasing implementation. Some research directions were also identified for future work. Garg and Deshmukh(1999) said that JIT have great importance in Indian context due to its wide range of benefits. Although, the success stories of these management philosophies are limited in India yet, several Indian Industries areimplementing basic principles of JIT.

Table 1.1 Frequencies tables for the general profiles of the company

Statistics

		JIT training carried by You	Type of Company	Category of the company	JIT implemented or not
N	Valid	107	107	107	107
	Missing	0	0	0	0
Mean		.0654	1.1028	2.4860	.1495
Std. Deviation		.24843	.30513	.60446	.35829

JIT training carried by You

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	100	93.5	93.5	93.5
	yes	7	6.5	6.5	100.0
	Total	107	100.0	100.0	

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JIT training carried by You

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	100	93.5	93.5	93.5
	yes	7	6.5	6.5	100.0
	Total	107	100.0	100.0	

JIT training carried by You

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	100	93.5	93.5	93.5
	yes	7	6.5	6.5	100.0
	Total	107	100.0	100.0	

JIT training carried by You

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	100	93.5	93.5	93.5
	yes	7	6.5	6.5	100.0
	Total	107	100.0	100.0	

Yasin and Small(1994) concluded on the basis of investigation of 86organizations of US public sector, that JIT is a form of "managerialism", has the potential to increase the operational efficiency, service quality and organizational effectiveness of public sector organizations. Sharma and Singh (2005) conducted a case study on two Indian agricultural equipment-manufacturing companies, which have implemented JIT. In one case the profits of the company were found to have increased by 10%. While in the second case the company was successful in reducing the level of inventory by over 20%

IV-RESEARCH METHODOLOGY

The elements of JIT, which affect the performance of Indian service industries, were identified through literature survey [8,6] etc. A questionnaire was designed to collect the relevant data regarding the quantum of importance, difficulties, expected benefits and the possible constraints in the implementation of JIT in Indian industries. Questionnaire had two sections A and B. Section A carried general information regarding the industries like, annual turn-over, number of employees, ISO certification, whether they are implementing JIT or not, type of product manufactured etc. In section B main emphasis was given to degree of importance, and degree of difficulties regarding JIT in Indian service industries. The questionnaire prepared was based on 5 point Likert scale. This questionnaire was then sent to the various service industries (N=60). Industries were selected from northern India and are situated at Chandigarh, Delhi, Punjab, Haryana, Himachal Pradesh etc. Out of 60 the 30responses were collected. The collected data was arranged in order and analyzed by checking it at 95%acceptable limit through t-test. SPSS-11.0 software was used to make the calculation work easy. Conclusions were then drawn on the basis of this analysis. Here importance of JIT elements means that how much an element is important for the industry i.e. automation, bar code technology etc., whether it is important for the industry or not, if yes, then how much. Similarly, difficulties of JIT elements show that how much an element is difficult to implement in industry. For this, forty most important elements, according to the Indian service industries, were chosen on the basis of literature survey (Anderson and Elziabeth 2000,Billesbach 1991, Vikas and Garg 2000, Garg and Gupta2003).The importance and difficulties of JIT elements were evaluated by 5 point Likert method. The mathematical analysis was done according to the score of each element. Cross tables to check the impact of company profile on the use of JIT.

Table 1.2 JIT implemented or not * JIT training carried by You Crosstabulation

Count

		JIT training carried by You		Total
		No	yes	No
JIT implemented or not	No	88	3	91
	Yes	12	4	16
Total		100	7	107

JIT implemented or not * Type of Company Crosstabulation

Count

		Type of Company		Total
		Manufacturing	processed	
JIT implemented or not	No	82	9	91
	Yes	14	2	16
Total		96	11	107

JIT implemented or not * Category of the company Crosstabulation

Count

		Category of the company			Total
		Large	Medium	Small	Large
JIT implemented or not	No	3	32	56	91
	Yes	3	11	2	16
Total		6	43	58	107

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V- DEGREE OF IMPORTANCE IN SERVICE INDUSTRIES

The data was collected from the selected service industries and analyzed. The results of degree of importance are given in the table 1.The table consists of mean value, standard deviation and value of t-calculated. The values of five elements i.e. group technology, process simplification; statistical process control, wastereduction and zero defects did not fall in the acceptable range. Figure 1 represents the score of each important element for all the selected service industries. The elements are plotted along x-axis while their scores are along the y-axis. The most important element recognized by the Service industries was waste reduction (mean=0.8929). The least important element wasJIDOKA (mean=0.5625).

Table 1.3 One-Sample Test Mean Value of Problem in implementation of JIT (P1 to P4)

	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
	Lower	Upper	Lower	Upper	Lower	Upper
Resistence offered from management	14.216	106	.000	2.51402	2.1634	2.8646
Resistence offered from management	18.677	106	.000	2.58879	2.3140	2.8636

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Lesser interest to innovation and change	20.227	106	.000	2.55140	2.3013	2.8015
Lack of training for managers	16.168	106	.000	2.72897	2.3943	3.0636
Problem in the identification of areas where to apply JIT	16.856	106	.000	3.26168	2.8780	3.6453
Management resistance to share authority with the employees	18.100	106	.000	2.69159	2.3968	2.9864
Continuous improvement	19.491	106	.000	3.06542	2.7536	3.3772
Customers satisfication	21.515	106	.000	3.24299	2.9442	3.5418
Employee involvement in decision making	23.442	106	.000	3.31776	3.0372	3.5984
Flexible workforce	21.220	106	.000	3.52336	3.1942	3.8526
Team work	21.744	106	.000	3.32710	3.0237	3.6305
Quality circles	19.796	106	.000	3.70093	3.3303	4.0716
Quality function deployment	20.720	106	.000	3.77570	3.4144	4.1370
Flow layout	18.070	106	.000	3.59813	3.2033	3.9929
Preventive maintenance	19.395	105	.000	3.49057	3.1337	3.8474
Total productive maintenance	20.405	106	.000	3.39252	3.0629	3.7221
Group technology	19.933	106	.000	3.49533	3.1477	3.8430
Automation	22.912	105	.000	3.60377	3.2919	3.9157
Process flexibility	17.342	106	.000	3.53271	3.1288	3.9366
Standardisation	20.937	106	.000	3.28972	2.9782	3.6012
Product simplication	21.566	106	.000	3.59813	3.2673	3.9289
Process simplication	20.669	106	.000	3.59813	3.2530	3.9433
House keeping	20.641	106	.000	3.51402	3.1765	3.8515
Kanban card or system	18.019	106	.000	3.58879	3.1939	3.9837
Standard containers	19.185	106	.000	3.44860	3.0922	3.8050
Statistical process control	20.572	106	.000	3.67290	3.3189	4.0269
Waste reduction	19.660	106	.000	3.47664	3.1260	3.8272
Zero defects	20.735	106	.000	3.73832	3.3809	4.0958
Setup time reduction	21.552	105	.000	3.59434	3.2637	3.9250
Smooth flow of materials	19.401	106	.000	3.57944	3.2137	3.9452
Work in process reduction	20.748	105	.000	3.37736	3.0546	3.7001
JIT purchasing	19.614	106	.000	3.95327	3.5537	4.3529
Buffer stock removal	24.754	106	.000	3.73832	3.4389	4.0377
Inventory reduction	22.759	106	.000	3.66355	3.3444	3.9827
Lead time reduction	22.935	106	.000	3.90654	3.5688	4.2442
Small lot size	23.594	106	.000	4.00000	3.6639	4.3361
Lack of tranparency in the organisation	16.874	106	.000	2.73832	2.4166	3.0600

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Lack of coooeration with suppliers	16.739	106	.000	2.75701	2.4305	3.0836
Lack of mutual trust and cooperation with the employees	15.864	106	.000	2.87850	2.5188	3.2382
Lack of communication with the company	17.818	106	.000	2.89720	2.5748	3.2196
Lesser knowledge about JIT	18.932	106	.000	3.13084	2.8030	3.4587
Lesser awareness of JIT among employees	20.303	106	.000	3.06542	2.7661	3.3648
Lack of support from emplyees	17.933	106	.000	2.94393	2.6185	3.2694
Lack of flexible workforce	17.777	106	.000	2.85047	2.5326	3.1684
Lesser reponse to innovation and change by employees	16.680	106	.000	3.17757	2.7999	3.5553
Lack of motivated workforce	20.595	106	.000	2.72897	2.4663	2.9917
Lack of mutual trust and cooperation with the employees	14.318	106	.000	2.92523	2.5202	3.3303
lack of knowledge about JIT on part of suppliers	18.727	106	.000	3.14019	2.8077	3.4726
Lack of communication and cooperation with management	17.106	106	.000	2.53271	2.2392	2.8263
Lesser support from suppliers	19.285	106	.000	2.73832	2.4568	3.0198
Quantity problem with supplied materials	17.319	106	.000	2.64486	2.3421	2.9476
Quality problems with supplied materials	19.162	106	.000	2.62617	2.3544	2.8979
Timing problems with supplied materials	18.733	106	.000	2.75701	2.4652	3.0488
Lack of suppliers training and development	20.616	106	.000	2.71028	2.4496	2.9709
Lack of standardisation	15.307	106	.000	2.82243	2.4569	3.1880
Lack of perforamance measure system	16.633	106	.000	2.96262	2.6095	3.3158
Lack of technology	20.088	106	.000	2.79439	2.5186	3.0702
Lack of transportation and material handling facility	17.269	106	.000	2.83178	2.5067	3.1569
Lack of machinery and equipment	19.618	106	.000	2.57944	2.3188	2.8401
Problems in using Kanban	18.186	106	.000	2.97196	2.6480	3.2960
Problems in maintenance	17.569	106	.000	3.02804	2.6863	3.3697

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VI. DEGREE OF DIFFICULTIES IN SERVICE INDUSTRIES

To check the degree of difficulties in case of service industries the same procedure was adopted as in case of degree of difficulties. The data was collected from the service industries and then analyzed. Table 2 illustrates the mean value, standard deviation and value of the t-calculated. Analysis disclosed that all the values come in the acceptable range. The score of each difficult element is shown in figure 2.The most difficult element recognized by the service industries was total productive maintenance (mean=0.4911). The least difficult element was automation (mean=0.2232).

Table 1.4 Descriptive Statistics For Degree of Difficulties (E1 to E4)

	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
	Lower	Upper	Lower	Upper	Lower	Upper
Continuous improvement	29.589	106	.000	3.59813	3.3570	3.8392
Customers satisfication	29.403	106	.000	4.03738	3.7651	4.3096
Employee involvement in decision making	30.967	106	.000	3.67290	3.4377	3.9080
Flexible workforce	30.810	106	.000	3.80374	3.5590	4.0485
Team work	34.107	106	.000	4.00000	3.7675	4.2325
Quality circles	30.713	106	.000	3.61682	3.3833	3.8503
Quality function deployment	25.955	106	.000	3.92523	3.6254	4.2251
Flow layout	22.328	106	.000	3.97196	3.6193	4.3246
Preventive maintenance	28.117	106	.000	3.82243	3.5529	4.0920
Total productive maintenance	25.469	106	.000	3.92523	3.6197	4.2308
Group technology	28.796	106	.000	3.63551	3.3852	3.8858
Automation	29.027	106	.000	3.92523	3.6571	4.1933
Process flexibility	23.118	106	.000	3.62617	3.3152	3.9371
Standardisation	26.927	106	.000	4.06542	3.7661	4.3648
Product simplication	25.437	106	.000	3.74766	3.4556	4.0398
Process simplication	25.167	106	.000	4.39252	4.0465	4.7386
House keeping	30.808	106	.000	3.58879	3.3578	3.8197
Kanban card or system	19.922	106	.000	4.12150	3.7113	4.5317
Standard containers	27.511	106	.000	3.87850	3.5990	4.1580
Statistical process control	26.408	106	.000	3.82243	3.5355	4.1094
Waste reduction	24.873	106	.000	4.12150	3.7930	4.4500
Zero defects	24.862	106	.000	3.72897	3.4316	4.0263
Setup time reduction	25.778	106	.000	4.07477	3.7614	4.3882
Smooth flow of materials	22.553	106	.000	4.06542	3.7080	4.4228
Work in process reduction	22.736	106	.000	3.85981	3.5232	4.1964
JIT purchasing	21.639	106	.000	3.74766	3.4043	4.0910
Buffer stock removal	24.663	106	.000	3.67290	3.3776	3.9682
Inventory reduction	27.234	106	.000	3.65421	3.3882	3.9202
Lead time reduction	23.191	106	.000	3.74766	3.4273	4.0680
Small lot size	22.192	106	.000	3.93458	3.5831	4.2861

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Table 1.5 Descriptive Statistics For Degree of Difficulities (D1 to D4)

	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
	Lower	Upper	Lower	Upper	Lower	Upper
Continuous improvement	19.491	106	.000	3.06542	2.7536	3.3772
Customers satisfication	21.515	106	.000	3.24299	2.9442	3.5418
Employee involvement in decision making	23.442	106	.000	3.31776	3.0372	3.5984
Flexible workforce	21.220	106	.000	3.52336	3.1942	3.8526
Team work	21.744	106	.000	3.32710	3.0237	3.6305
Quality circles	19.796	106	.000	3.70093	3.3303	4.0716
Quality function deployment	20.720	106	.000	3.77570	3.4144	4.1370
Flow layout	18.070	106	.000	3.59813	3.2033	3.9929
Preventive maintenance	19.395	105	.000	3.49057	3.1337	3.8474
Total productive maintenance	20.405	106	.000	3.39252	3.0629	3.7221
Group technology	19.933	106	.000	3.49533	3.1477	3.8430
Automation	22.912	105	.000	3.60377	3.2919	3.9157
Process flexibility	17.342	106	.000	3.53271	3.1288	3.9366
Standardisation	20.937	106	.000	3.28972	2.9782	3.6012
Product simplication	21.566	106	.000	3.59813	3.2673	3.9289
Process simplication	20.669	106	.000	3.59813	3.2530	3.9433
House keeping	20.641	106	.000	3.51402	3.1765	3.8515
Kanban card or system	18.019	106	.000	3.58879	3.1939	3.9837
Standard containers	19.185	106	.000	3.44860	3.0922	3.8050
Statistical process control	20.572	106	.000	3.67290	3.3189	4.0269
Waste reduction	19.660	106	.000	3.47664	3.1260	3.8272
Zero defects	20.735	106	.000	3.73832	3.3809	4.0958
Setup time reduction	21.552	105	.000	3.59434	3.2637	3.9250
Smooth flow of materials	19.401	106	.000	3.57944	3.2137	3.9452
Work in process reduction	20.748	105	.000	3.37736	3.0546	3.7001
JIT purchasing	19.614	106	.000	3.95327	3.5537	4.3529
Buffer stock removal	24.754	106	.000	3.73832	3.4389	4.0377
Inventory reduction	22.759	106	.000	3.66355	3.3444	3.9827
Lead time reduction	22.935	106	.000	3.90654	3.5688	4.2442
Small lot size	23.594	106	.000	4.00000	3.6639	4.3361

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Table 1.6 Degree of Expected Benefits (B1 to B3)

	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
	Lower	Upper	Lower	Upper	Lower	Upper
Impovement in competitive position	23.014	106	.000	2.95327	2.6989	3.2077
Improved customer relations	27.526	106	.000	3.35514	3.1135	3.5968
Improvement in vendor performance	24.061	106	.000	3.28972	3.0187	3.5608
Improvement in relation with suppliers	25.054	106	.000	3.49533	3.2187	3.7719
Reduction in the number of suppliers	23.292	106	.000	3.38318	3.0952	3.6712
Improvement in equipment efficiency	21.858	106	.000	3.52336	3.2038	3.8429
Reduction in transportation time	21.388	106	.000	3.56075	3.2307	3.8908
Improvement in process flexibility	23.899	106	.000	3.38318	3.1025	3.6638
Reduction in scrab	22.028	106	.000	3.56075	3.2403	3.8812
Improvement in productivity	21.364	106	.000	3.59813	3.2642	3.9320
Improvement in system flexibility	24.575	106	.000	3.45794	3.1790	3.7369
Reduction in WIP	23.479	106	.000	3.47664	3.1831	3.7702
Reduction in overhead	23.892	106	.000	3.49533	3.2053	3.7854
Reduction in inventories	22.422	106	.000	3.47664	3.1692	3.7841
Reduction in lot size	24.115	106	.000	3.36449	3.0879	3.6411
Reduction in production lead time	22.661	106	.000	3.51402	3.2066	3.8215
Reduction in space requirement	26.146	106	.000	3.56075	3.2907	3.8307
Increase in profit	22.603	106	.000	3.39252	3.0949	3.6901
Improvement in manpower utilization and efficiency	22.395	106	.000	3.40187	3.1007	3.7030
Reduction in receiving materials inspection	22.164	106	.000	3.73832	3.4039	4.0727
Improvement in worker motivation	24.545	106	.000	3.16822	2.9123	3.4241
Improvement in team work	24.224	106	.000	3.36449	3.0891	3.6398
Improvement in materials handling	23.265	106	.000	3.45794	3.1633	3.7526

Improvement in manpower utilization and efficiency	25.076	106	.000	3.51402	3.2362	3.7918
Reduction in receiving materials inspection	25.973	106	.000	3.34579	3.0904	3.6012
Improvement in product	25.082	106	.000	3.16822	2.9178	3.4187
Improvement in quality	28.255	106	.000	3.39252	3.1545	3.6306
Improvement in frequent deliveries	22.725	106	.000	3.61682	3.3013	3.9324

VII. PRESENT STATUS OF IMPORTANCE AND DIFFICULTIESOF JIT ELEMENTS IN SERVICE INDUSTRIES

To check the status of degree of importance and degree of difficulties, a graph was prepared as shown in figure 3. The graph was divided in to four zones such as; zone 1- less important and high difficult elements to implement, zone 2- less important and less difficult elements to implement, zone 3- most important and less difficult elements to implement and zone 4- most important and high difficult elements to implement. It is clear from the graph that the most of the elements fall in the zone 3 i.e. most important and less difficult. Hence, for the successful implementation of JIT, concentration should be focused upon these elements. The elements, which lie in the zone-1, are less important and difficult to implement; the industries can neglect these JIT elements to implement. It is concluded from the study that the elements which are less difficult and more important should be implemented at the initial stage. Group Technology, Product simplification, Process improvement, Customer Care, Process simplification.

Hypothesis testing: H0: company profile has significant impact on the implementation of JIT

Univariate Analysis of Variance

Table 1.7 Two way ANOVA to test the hypothesis Between-Subjects Factors

		Value Label	N
JIT training carried by You	.00	No	100
	1.00	yes	7
Type of Company	1.00	Manufacturing	96
	2.00	processed	11
Category of the company	1.00	Large	6
	2.00	Medium	43
	3.00	Small	58

Table 1.8 Tests of Between-Subjects Effects

Dependent Variable: JIT implemented or not

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	2.671(a)	4	.668	6.227	.000
Intercept	2.259	1	2.259	21.065	.000
X	.637	1	.637	5.939	.017
X1B	.036	1	.036	.339	.562
X1C	1.332	2	.666	6.213	.003
Error	10.937	102	.107		

Total	16.000	107			
Corrected Total	13.607	106			

a R Squared = .196 (Adjusted R Squared = .165)
X= JIT training
X1B= Type of company
X1C= Category of company

Table1.9 One Way ANOVA to prove the impact of training on JIT implementation

JIT implemented or not

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.333	1	1.333	11.405	.001
Within Groups	12.274	105	.117		
Total	13.607	106			

ANOVA Type of company

JIT implemented or not

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.013	1	.013	.099	.754
Within Groups	13.595	105	.129		
Total	13.607	106			

ANOVA(Category of company)

JIT implemented or not

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.990	2	.995	8.909	.000
Within Groups	11.617	104	.112		
Total	13.607	106			

Table 1.10 Kruskal Wallis Test

Test Statistics(a,b)

	JIT implemented or not
Chi-Square	10.385
df	1
Asymp. Sig.	.001

a Kruskal Wallis Test
b Grouping Variable: JIT training carried by You

Test Statistics(a,b)

	JIT implemented or not
Chi-Square	.100
df	1
Asymp. Sig.	.752

a Kruskal Wallis Test
b Grouping Variable: Type of Company

Test Statistics(a,b)

	JIT implemented or not
Chi-Square	15.505
df	2
Asymp. Sig.	.000

a Kruskal Wallis Test
b Grouping Variable: Category of the company

VIII. CONCLUSION

The objectives of this research paper were to Identify the impact that JIT has had on Indian SME's (positive or negative) and Investigate if JIT is an applicable philosophy for Indian SME's. After all the research has been conducted, it has been reached that companies in the India are testing the application of Just In-Time production and are eventually displaying enormous improvements, both in monetary terms and in the loyalty displayed by their customers including the morale of their workforce. JIT production has provided an influence that is positive on small businesses productivity in South Africa. It is a simple and applicable philosophy to follow, with many benefits to reap. Further research should be conducted within the India SME's sector comprising of manufacturing companies by including larger samples in various locations to investigate the impact JIT manufacturing has on the company's cultures as well as on productivity in relation to the country's economy.

The following conclusions were drawn form this study:

1. Most important elements for service industries are total productive maintenance, process flexibility, JIT purchasing, smooth flow of materials, house keeping, pro cess flexibility, set up time reduction, administrative efficiency.
2. The difficult elements for service industries are total productive maintenance, quality function deployment,standardization, standard containers, and quality circles.
3. It is recommended that the service industries should implement most important and less difficult elements at the initial stage

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