

APPLICATIONS OF JUST IN TIME ELEMENTS WITH EVALUATION AND ANALYSIS: A CASE STUDY

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ABSTRACT

Just in Time (JIT) is a production structure calls for purging of inventories that has taken many parts of words by storm of producers and still suppliers are entering into the prominence of this new production system and are seen to be evidently reaping the benefits associated with it. In this research article, "Just in Time" (JIT) is an important tool used in the financial sector and in the banking sector. Financial Services (FS's) have recently attracted growing interest due to the competitive pressures resulting from globalisation through numerous mergers and the distribution of their products to customers. JIT can be defined as a waste disposal system in an organisation. Qualitative investigation was used for the study of questionnaires and other derived data composed. A comparative study is therefore carried out after the survey data are collected from 50 banks and then analysed using the variance analysis (ANOVA) technique. Therefore, in this research paper, a case study is discussed for evaluation and analyses of JIT elements used for banking solutions. This case study recommends the best JIT technique for implementation in banking sectors.

1. INTRODUCTION

According to American Production and Inventory Control Society (APICS) dictionary, just in time technique is expressed as "a tenets of demolition of wastage elements in manufacturing and increase the productivity". This is an approach having goal to produce the accurate part at the right place in the right time (in other words "Just in Time"). The waste results from any activity that increase the project cost without adding value, such as the unnecessary moving of materials, the accumulation of excess inventory or the use of faulty production methods that create products requiring subsequent rework. **Ebrahimpour and Schonberger et al** identified problems of developing countries like India, where stress is on maintaining efficiency rather than reducing cost in contrast to developed countries where better infrastructure and practices automatically result in efficiency. They have also suggested JIT and TQC (Total Quality Control) for developing countries to solve such problems. **Demmy and Constable et al** discussed various techniques of JIT such as quality, work methods, layout, relationships with customers and suppliers and production scheduling and control. It was concluded that JIT is a philosophy of eliminating waste and involvement of people in the management. JIT techniques are particularly useful in repetitive industries whose environments are high volume production of relatively few end products. **Gupta and Haragu et al** had shown that, JIT is not just a way to reduce inventory but it is a mean of solving problems that block the building of an excellent manufacturing organization. Its applications and benefits apply not only to the shop floor but also to the marketing, purchasing and accounting aspects. But benefits from this system cannot be achieved overnight. It is a slow process and takes 5 to 10 years to obtain optimum results.

2. PHILOSOPHY OF JIT

The first basic principle involved in JIT production approach is the elimination of waste. In a JIT system, waste is defined as anything associated with the production process that does not add value to the product. Thus, waste includes quality defects, inventories of all kinds, time spent to move material and time spent in setting up the machines. If the implications of managing the reduction in waste for the categories mentioned above are analyzed, it becomes obvious why JIT is involved in all aspects of the management of production Process. The production worker is also given the responsibility for the maintenance of his equipment. Frequently, a production worker goes through a check list before starting to operate the equipment similar to that done by a pilot before flying an aircraft. Along with the new job responsibility for workers comes the responsibility for management to provide the training, time, tools and, most important, the authority necessary to accomplish the job.

2.2 MOTIVATION OF PRESENT WORK

The present case study identified a detailed list of 26 elements of the JIT system derived from the implementation of the JIT that are suitable for banks. But it may not be easy to implement all the elements of JIT. There is therefore a need to identify those elements of the JIT system that are easy and difficult to implement in the Indian context. Therefore, a case study by a bank can provide useful insights on the basis of the elements and benefits listed above in order to achieve the objectives set out above. Indian banks could become competitive. Figure 1.1 shows the flow diagram of the methodology used.

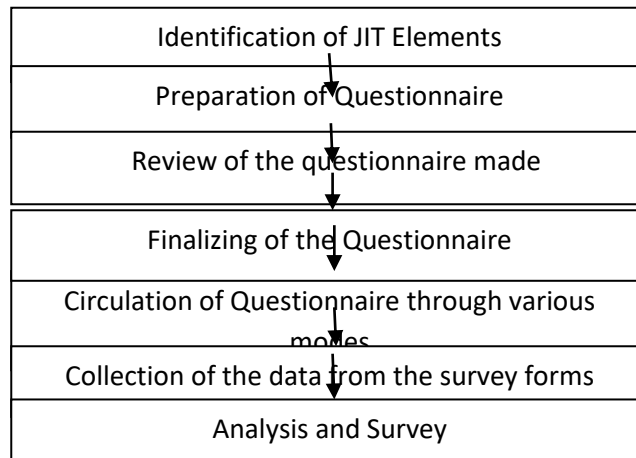


Fig. 1.1 Flow diagram of JIT working based model

3. METHODOLOGY OF JIT

The methodology of JIT technique is described below.

1. Every essential element of the JIT may not be easily implemented and some of the elements are difficult to implement. These issues may be related to an appropriate understanding of the JIT methodology or may be related to technical, operational and human issues.
2. There are a few issues related to the JIT system:
3. What are the key elements of the JIT?
4. What elements are important and difficult to implement?
5. Which elements can be implemented easily?
6. Which elements are of great benefit in banks?

This section details the study procedures in the following subsections:

- Design of research, • the tool, • Participants in the survey • Collection of data and • Analysis of data.

3.1. Research Design

This study used non-experimental quantitative research. Specifically, the design involves the mail survey method, which is the most commonly used descriptive research design. This research design requires the response of banking staff and further quantitative data analysis. In order to increase internal and external validity, a stratified random sampling technique was applied to the sampling procedure in this study.

3.2. Survey of Participants

A survey on the consequence and hitches of the elements of the JIT was planned and disseminated to various banks. The revise uses a mail survey to hand out and collect data.

3.3. Collection of data

Data were collected using a self-governing mail survey method. Self-managed mail surveys have the advantages of relatively low cost and easy access across the board.

3.4. Data Analysis

The data was analysed using the ANOVA (Analysis of Variance) technique. The ANOVA technique is important in all those situations where we want to compare more than two populations, for example, when comparing yields from a number of varieties of seeds. In such circumstances, one generally does not want to consider all possible combinations of two populations at a time for what would require a large number of tests before we could reach a decision.

4. RESULTS AND DISCUSSION

The questionnaire was distributed in 50 banks taking 2 employees from each bank. The questionnaire was collected from all the banks successfully with a very good response. Then all the responses were analyzed. The mean score for each element was calculated. There are two tables giving the mean score of JIT elements for importance and difficulties in context of Indian banks. Table 4.1 and 4.2 reveals the degree of importance and degree of difficulties respectively.

4.1. Degree of Importance of JIT Elements in Indian Banks

The following table gives the mean score of Degree of Importance of JIT elements in various banks.

TABLE 4.1 DEGREE OF IMPORTANCE OF JIT ELEMENTS IN BANKS

Sr. NO.	JIT ELEMENTS	RESPONSE					Mean Score (0-400)
		4	3	2	1	0	
1	Organization Policies	29	18	6	12	35	194
2	Communication and Information Sharing	45	17	13	16	9	273
3	People Strategy	21	25	16	5	33	196
4	Team Work	44	12	16	16	12	260
5	Employee Training	38	28	20	10	4	286
6	Expert Lectures	13	31	17	16	23	195
7	House Keeping (orderliness, cleanliness, discipline, safety)	35	22	18	14	11	256
8	Infrastructure (Aesthetic Value)	18	26	14	13	29	191
9	Job satisfaction	46	28	11	6	9	296
10	Employee Feedback and Suggestions	19	21	13	11	36	176
11	Judoka (use of modern/automatic age)	29	26	20	12	13	246
12	Quality Circles	15	23	22	6	34	179
13	Schedule Stability	14	20	20	12	34	168
14	Sole Sourcing	12	22	14	16	36	136
15	Group Incentive Scheme	24	24	13	21	18	215
16	Frequent and Reliable Service	50	30	13	6	1	322
17	Error Prevention (Poka Yoke)	17	22	19	14	28	186
18	Top Management Support	35	24	16	12	13	256
19	Value Addition Services (SDP)	18	25	14	6	37	181
20	Standardization	30	27	23	4	16	251
21	Degree of Complexity	7	22	22	12	37	150
22	Employee Empowerment	22	23	9	11	35	186
23	Customer Awareness	45	24	22	4	5	300
24	Ergonomics Design (Working Conditions)	32	27	24	8	9	265
25	Customer Satisfaction	43	25	11	9	12	278
26	Commitment	25	26	20	10	19	228

Table 4.1 shows that normal and consistent check has a maximum value (i.e. 322) and therefore the most central element of JIT for Banks and Customer Awareness has a mean value of 300, which is the second most important element of JIT, while Sole Sourcing has a mean value of 136, which is the least important element in Indian banking. Other key elements of Table 4.1 are announcement and Information Sharing, Team Work, Job Satisfaction, Group Incentive Scheme, Top Management Support, Customer Satisfaction.

4.2. Degree of Difficulties of JIT Elements In Banks

Sr. NO.	JIT ELEMENTS	RESPONSE					Mean Score (0-400)
		4	3	2	1	0	
1	Organization Policies	12	16	24	10	38	154
2	Communication and Information Sharing	10	15	22	21	32	150
3	People Strategy	20	16	27	16	21	198
4	Team Work	15	12	27	25	21	175
5	Employee Training	19	19	27	23	12	210
6	Expert Lectures	21	20	32	19	8	227
7	House Keeping (orderliness, cleanliness, discipline, safety)	25	24	16	14	21	218
8	Infrastructure (Aesthetic Value)	16	16	22	25	21	181
9	Job satisfaction	24	18	25	29	4	229
10	Employee Feedback and Suggestions	14	19	26	22	19	187
11	Judoka (use of modern/automatic age)	27	21	22	17	13	232
12	Quality Circles	27	18	24	21	10	231
13	Schedule Stability	10	21	30	11	28	174
14	Sole Sourcing	22	25	28	15	10	234
15	Group Incentive Scheme	28	22	22	17	11	239
16	Frequent and Reliable Service	11	12	24	23	30	151
17	Error Prevention (Poka Yoke)	16	18	28	21	17	195
18	Top Management Support	31	23	21	20	5	255
19	Value Addition Services (SDP)	14	20	22	17	27	177
20	Standardization	30	20	24	22	4	250
21	The most difficult elements of the above table are: Top Management Support, Standardization, Group Incentive Scheme, Sole Sourcing, Quality Circles, Judoka (Use of Modern/Auto Age), Job Satisfaction, Expert Lectures, Employee Training, Housekeeping (Orderly, Cleanliness, Discipline, Safety), Employee Empowerment, Ergonomics Design (Working Conditions) and Customer Satisfaction.	10	20	28	21	21	177
22	Employee Empowerment	25	22	21	16	16	224

Table	23	Customer Awareness	9	18	14	24	35	142
	24	Ergonomics Design (Working Conditions)	22	22	23	14	19	214
	25	Customer Satisfaction	25	20	22	19	14	223
	26	Commitment	10	13	24	20	33	147

4.2 gives the mean score of Degree of Difficulties of JIT elements in various banks

4.3. Difficulties of JIT Elements in Banks

The most difficult elements of the above table are: Top Management Support, Standardization, Group Incentive Scheme, Sole Sourcing, Quality Circles, Judoka (Use of Modern/Auto Age), Job Satisfaction, Expert Lectures, Employee Training, Housekeeping (Orderly, Cleanliness, Discipline, Safety), Employee Empowerment, Ergonomics Design (Working Conditions) and Customer Satisfaction. Customer Awareness, Commitment, Complexity Degree, Value Adding Services (SDP), Frequent and Reliable Service, Stability Schedule, Employee Feedback and Suggestions, Infrastructure (Aesthetic Value), Teamwork, People Strategy, Communication and Information Sharing, Organization Policies and Error Prevention are the least difficult elements of Table 4.2 (Poka Yoke).

4.4. XY SCATTER CHART

The XY scatter chart is drawn between the importance of abscises and the difficulty of the coordinate. The axis crosses at its relative population mean value (μ) i.e. it is 200 for the x axis and 200 for the y axis.

Figure 1.2 shows the lower right quarter, i.e. Part-1 highlights those elements of the JIT that are very important and very easy to implement. These are Communication and Information Sharing, Teamwork, Frequent and Reliable Service, Customer Awareness and Commitment.

The upper right quarter, that is. Part-2 shows those elements that are very important but difficult to implement. These elements include Employee Training, Housekeeping (orderliness, cleanliness, discipline and safety), Job satisfaction, Judoka (Use of Modern/Auto Age), Group Incentive Scheme, Top Management Support, Standardization, Ergonomics Design (Working Conditions) and Customer Satisfaction.

The upper left quarter, that is. Part-3 depicts those elements that are less important and difficult to implement in banks. These are Expert lectures, Quality Circles, Sole Sourcing and Employee Empowerment.

The lower left quarter, that is. Part-4 shows those elements that are less important but are easy to implement. These are the Organization policies, the People's Strategy,

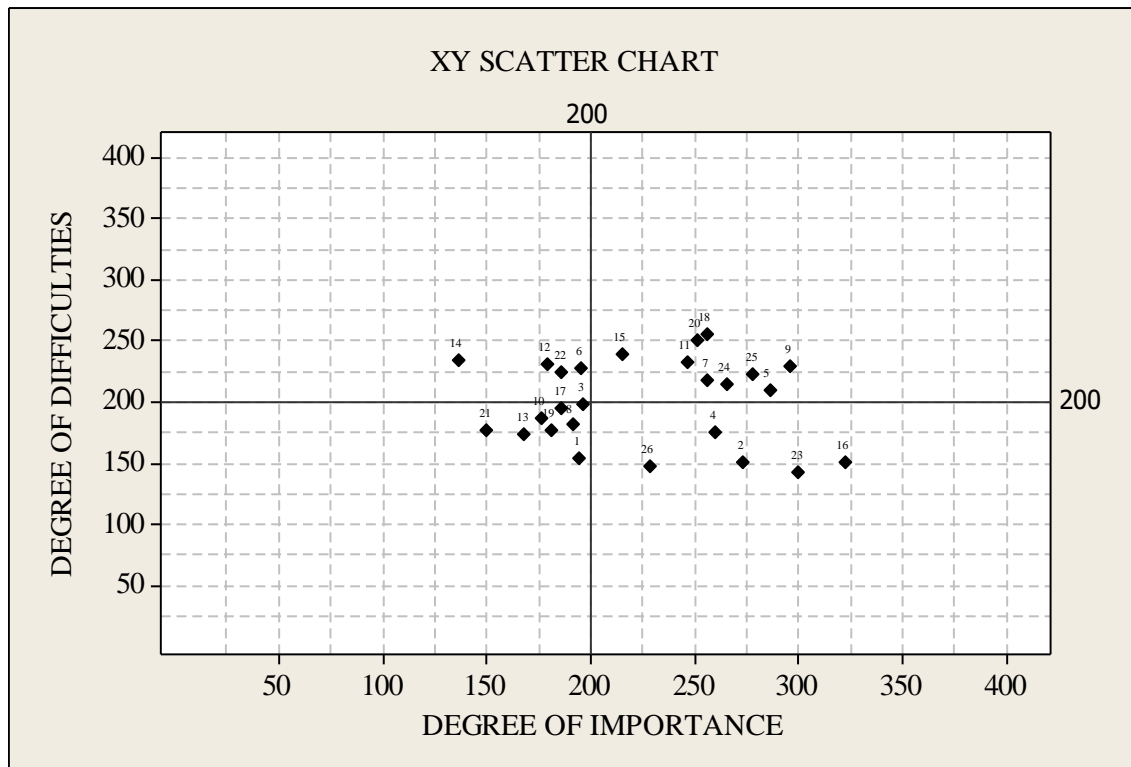


Fig. 1.2 Variation of degree of difficulties with the degree of freedom

5. CONCLUSIONS

The following conclusion are drawn on the basis of this case study in the presented research article are as follows

1. JIT means doing the job first time and permanently solve problems as appears. It means the efficient use of resources and the elimination of system deficiencies.
2. It concludes that the Banks have different priorities with respect to important and difficult elements for the implementation of the JIT.
3. The most important elements for banks concerning the implementation of the JIT are:
 - Frequent and reliable service (mean=322);
 - Awareness of the customer (mean=300),
 - Communication and information sharing (Mean=273);
4. Five elements have been observed to be the most important and relatively less difficult to implement. These include Communication and Information Sharing, Teamwork, Frequent and Reliable Service, Customer Awareness and Commitment.

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OFFLINE RESOURCES:

1. A Text book of "Research Methodology Methods and Techniques", by C.R. Kothari. New Age International publishers, 2nd Revised Edition, New Delhi, pp. 256-282.