



Assessment of the Practices and Challenges of Kaizen Implementation in Micro and Small Enterprises: The Case of Manufacturing Enterprises

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ABSTRACT

KAIZEN is the overriding concepts behind good management and problem solving tool developed in Japan. However, its practice and implications on micro and small enterprises are not yet empirically studied in India. Therefore, this study aimed at assessing the practices and challenges of KAIZEN implementation in micro and small enterprises the case of manufacturing enterprises in Addis Ababa. The researcher raised four basic research questions to address the formulated objectives. The researcher used a concurrent triangulation research design with the mixed approach. To collect data the researcher employed both primary (questionnaire, key informant interview, observation) and secondary (document review) sources of data. From the total population, the study constituted 234 sample size of respondents for questionnaire and nine for interview by using stratified and purposive sampling techniques. The collected data were analyzed through descriptive statistics (frequency, percentage and mean) and inferential statistics, chi-square test and correlation using SPSS (V-20) software. Accordingly, the study found out that KAIZEN implementation in manufacturing micro and small enterprises is not at the required level in terms of 5Ss practices and quality control circles. Besides, institutions are not effective KAIZEN implementation support in enterprises due to lack of need assessment to provide KAIZEN training and inconsistency of KAIZEN training, inadequacy of trainers KAIZEN skills and poor follow up systems. On the other hand, enterprises have shown improvements in reduction of overproduction, over processing, waiting and making defects. Moreover, enterprises brought some benefits of better space utilization, safety, faster delivery time, improved product quality and increased customer satisfaction because of KAIZEN implementation, but there is the problem of sustainability due to lack of continual practicability of KAIZEN, lack of management commitment, challenges related to employees attitudinal problems, lack of skilled human resources, lack of modern technologies and capacity gaps characterize the sample enterprises. It is concluded that the implementation of KAIZEN in the sampled enterprises was on very infant stage. Thus, as a recommendation, the enterprises should enhance its practices and improve the benefits by overcoming the challenges so as to maintain

sustainability of KAIZEN. Hence, the enterprise management commitment should be maintained throughout the implementation processes by supporting employees, providing on time feedback, providing facilities, making enterprise's working culture convenient, providing appropriate reward and recognition. Furthermore, improve the commitments of employees and improve skilled human resources by providing well-structured training and revise human resource policies to reduce employee turnover. Besides, the enterprises should enhance the availability of technologies and shop layouts with coordination of institution to the successful implementation of KAIZEN.

Keywords-- KAIZEN, 5Ss, Waste Elimination, QCC, Implementation

I. INTRODUCTION

The benefits of KAIZEN management practices includes immediate results, waste reduction, improvement in all areas, decreasing the general production costs, sustainable improvement of quality, delivery deadlines, working conditions, motivation and involvement of employees in the continuous improvement of enterprise's performance, ensuring discipline and standardization. KAIZEN practice helped many firms in India to achieve better operational excellence and improve their productivity (Endale, 2016).

Nowadays, all institutions implementing KAIZEN in micro and small enterprises to improve their productivity and competitiveness in the local and international market with the assistance of the Addis Ababa Bureau, micro and small enterprises development Bureau and KAIZEN Institute. According to bureau report, (2016) in the budget year the bureau within its respective institutions supported KAIZEN implementation and other industry extension packages for 2953 micro and small enterprises which engaged in manufacturing, construction, food processing, urban agriculture and

service sub sectors as a policy intervention solutions for low competitiveness and low productivity. Among these enterprises 333 are selected as models based on criteria of successful implementation of KAIZEN and other industry extension packages.

KAIZEN implementing package is focused on improving productivity, quality, cost reduction, quick delivery, establishing safety and raising workers moral in order to achieve better customer satisfaction and maximize the success of the enterprises (AA , 2014). However, the government introduced the philosophy of KAIZEN in India, there is no studies shows the condition of KAIZEN implementation in contexts of micro and small enterprises in India and in Addis Ababa.

1.1 Objectives of the Study

1.1.1 General Objective

The main objective of this study was to assess practices and challenges of KAIZEN Implementation in micro and small enterprises the case of manufacturing enterprises in Addis Ababa city administration.

1.1.2 Specific Objectives

The specific objectives are:

1. To assess the extent of KAIZEN implementation practices in Micro and Small Enterprises.
2. To examine the benefits of KAIZEN implementation in Micro and Small Enterprises;
3. To identify the challenges experienced in transforming its practices in accordance with the KAIZEN philosophy.

II. THE SCOPE OF THE STUDY

Delimiting a research project using specific location, population, time frame, or issue to be investigated helps the researcher to focus the center of attention and address the research problem in a resource and time efficient manner (Creswell, 2009). Accordingly, the scope of this study is framed as follows:

2.1 Geographic Scope

This study was delimited to micro and small enterprises and because of time and budget constraints focusing only on manufacturing enterprises that have been

n = the sample size

N = the size of the population

e = the margin of error or the maximum error and for this study is 5% with confidence level (95%) By using this formula the sample of the study are: -

$$n = \frac{N}{1+N(e)^2} \quad n = \frac{565}{1+565(0.05)^2} = 234$$

Therefore, the sample size of this study was 234 considered fairly representative of the target population in the study area and 10% contingency (23) data was collected through quaternaries and 9 participants was selected purposely for interview, totally in the study area 243 respondents was addressed. To compute the sample

implemented KAIZEN and in 2016 selected by SIDKUL Haridwar

2.2 Respondents Scope

The population under study was manufacturing micro & small enterprises managers, employees currently working in the enterprises, Trainers and KAIZEN coordinators.

2.3 Variables Scope

The study only looks into the KAIZEN practices and challenges by the manufacturing micro and small enterprises. Based on conceptual framework of this study stated in the literature review, dependent and independent variables was identified and shown the relationship of the variables. The independent variables (practice & challenges of KAIZEN implementation (based on factors of management commitment, skilled human resource, technology, enterprise capacity and capability) are variables that have influence on other dependent variables. Dependent variables (KAIZEN implementation) are variables that influenced by other independent variables.

2.4 Time Scope

To support the survey data the researcher was look the practices and challenges in KAIZEN implementation in manufacturing micro and small enterprises from 2014-2016.

III. SAMPLE SIZE DETERMINATION

To get representative data the researcher used solvin formula cited by Yemane (1967) considering the level of acceptable margins of error 5%. Regarding this Kothari (2004) suggests that an optimum sample is one which fulfills the requirements of representatives and reliability. Hence, from the target population size of manufacturing enterprise managers, employees and institution Trainers ($N=565$) a total number of 234 samples are required drawn assuming 95% of confidence level and 5% margin of error. Based on this the researcher decided to take the upper population size limit to get more valid sample size. Then the total sample size (n) can be calculated by using the following formula.

proportion of each sector, the obtained sample divided by population.

3.1 Sample Unit

The sample unit that are considered under the study described were active lists of micro and small enterprise's managers, employees and institutions Trainers.

Table 3.1 Sample Unit of the study

No	Sample unit	Sampling Technique	population(N)	Sample size(n)	Sample %	Instruments
	Employees	stratified sampling	45	43	91%	Questionnaire
	managers	stratified sampling	18	9	50%	Questionnaire
	Trainers	stratified sampling	102	2	2%	Questionnaire
	MSE owners	Purposive convenient	/ sector		100%	Interview
	KAIZEN coordinators	Census			100%	Interview
Total			165	143		

Source: Researcher survey data, 2017.

In order to determine the sample size for the questionnaire survey to employees of the manufacturing enterprises the proportionate sampling was used for each

sectors employees of the enterprises which is stated here below in table.

Table 3.2. Number of samples in each of the sectors

No	Sectors	Participants(N)	Sample Draw (n)	Proportion($n \cdot Ni/N$)
1	Furniture making	116	48	$234 \cdot 116/565$
2	Metal work	133	55	$234 \cdot 133/565$
3	Textile and Garment	60	25	$234 \cdot 60/565$
4	Leather	36	15	$234 \cdot 36/565$
Total employees		345	143	
No	Sectors	Managers (N)	n	
1	Furniture making	39	16	$234 \cdot 39/565$
2	Metal work	36	15	$234 \cdot 36/565$
3	Textile and Garment	29	12	$234 \cdot 29/565$
4	Leather	14	6	$234 \cdot 14/565$
Total managers		118	49	
No	Sectors	Trainers (N)	n	
1	Furniture making	36	15	$234 \cdot 36/565$
2	Metal work	32	13	$234 \cdot 32/565$
3	Textile and Garment	22	9	$234 \cdot 22/565$
4	Leather	12	5	$234 \cdot 12/565$
Total Trainers		102	42	
Grand Total		565	234	

Source: Researcher survey data, 2017.

3.2 Data Collection Methods and Instrument

3.2.1 Primary Data collection Instruments

In this study the primary data was collected directly from enterprise managers, employees Trainers and KAIZEN coordinators through questionnaire, Non-

structured interview, non-participatory observation checklists and photos related to practices and challenges of KAIZEN implementation. With respect to this, (Kumar,2011) advised that employing multiple data collection instruments help the researcher to combine,

strengthen and amend some of inadequacies of the data.

Each method is discussed as follows:

IV. DATA PRESENTATION, ANALYSIS AND DISCUSSION

Introduction

This section deals about data presentation, analysis and discussion. The quantitative and qualitative data were collected and analyzed using descriptive statistics and inferential statistics, as well as thematic and content analysis techniques, respectively. The chapter presents data from quantitative, qualitative & document analysis of the KAIZEN implementation research framework. The first section is on demographic characteristics of the respondents. Furthermore the second section presents and describes about the data on the existing situation of the implementation of KAIZEN strategy focusing on the practice of KAIZEN. The third section examines the effectiveness of institutions in supporting KAIZEN implementation in micro and small enterprises. The fourth section treats the benefits of KAIZEN implementation in enterprises and the fifth section examines the challenges encountered in the implementation of KAIZEN strategy. Finally, the last chapter highlights those major results of the quantitative and qualitative data analysis of the research.

4.1 Response Rate

In order to make the collected data suitable for the analysis, all questionnaires were screened to be complete. All returned incomplete questionnaires are considered as errors and removed from the survey data. Out of 234 distributed questionnaires 230 (98%) response rates has been obtained. On the other hand, the researcher involved interview for the enterprise owners and collages KAIZEN coordinators. Thus, from the sample of 9 participants 9 (100%) participated in the interview as it described in table 4.1. Therefore, all presentations and analysis presented below are summarized data from managers, employees, trainers and interviewed and observation information.

Table 4. 1. Response from Data Collection

No	Sample Unit	Instrument	Sample size (n)	Respondents	Response Rate
1	MSE managers	Questionnaire	49	48	98%
2	MSE Employees	Questionnaire	143	140	97%
3	Trainers	Questionnaire	42	42	100%
Total			234	230	98%
4	KAIZEN Coordinators	Interview	5	5	100%
5	Enterprise Owners	Interview	4	4	100%
Total			243	239	98%

Sources: Researcher's field survey April, 2017.

4.2 Demographic Characteristics of the Respondents

The first analysis of data involves profiling the background characteristics of the respondents drawn from

the sampled manufacturing micro and small enterprises. In this section, based on the response obtained from the respondents, demographic characteristics of the study

group were examined in terms of sex, educational background, service years, working sector and positions are presented as follows:

Table.4. 2. Demographic analysis of respondents

No	Variable	Descriptors	Frequency	Percent (%)
1	Sex	Male	180	78.3
		Female	50	21.7
		Total	230	100
2	Level of Education	Below 12 th grade	15	6.5
		Certificate	66	28.7
		Diploma(Level III_IV)	103	44.8
		1 st Degree and above	46	20
		Total	230	100
3	Occupational area(Sector)	Furniture making	77	33.5
		Metal work	83	36.1
		Textile and Garment	45	19.6
		Leather products	25	10.9
		Total	230	100
4	Work Experience	1-5 years	137	69.6
		6-10 years	79	34.3
		>10 years	14	6.1
		Total	230	100
5	Position	Manager	48	20.9
		Trainer	42	18.3
		Employee	140	60.9
		Total	230	100

Sources: Researcher's field survey April, 2017.

4.3 Extent of KAIZEN Practice in Enterprises

4.3.1 Measuring the Practice of 5Ss in Enterprises

5S practice ensures continuous improvement in housekeeping and results in a better environment and safety standards (EKI, 2015). In this scenario, the

researcher was interested to collect information related to the practice of 5Ss in the study setting and can be presented and analyzed as follows.

Table 4.3 Frequency, percentage and mean of 5s practice in the enterprises

Sources: Researcher's field survey April, 2017.

No	Variable	Response						Total	Mean	Sig.
			SD	D	U	A	SA			
1	Sorting: Unwanted items are removed from the workshop	No	21	58	27	99	25	230	3.21	0.001
		%	9.1	25.2	11.7	43	10.9	100		
2	Set in order: products, equipments & tools properly arranged	No	18	55	42	90	25	230	3.21	0.005
		%	7.8	23.9	18.3	39.1	10.9	100		
3	Shine: products, equipments & tools are properly cleaned	No	27	98	32	64	9	230	2.70	0.000
		%	11.7	42.6	13.9	27.8	3.9	100		
4	Standardize: The 3s practiced as a culture	No	40	114	30	34	12	230	2.41	0.007
		%	17.4	49.6	13	14.8	5.2	100		
5	Sustain: keep the rules to maintain standard & continue to improve.	No	49	114	31	31	5	230	2.26	0.051
		%	21.3	49.6	13.5	13.5	2.2	100		

Note: SD=Strongly Disagree, D=Disagree, U=Uncertain, A=Agree, SA=Strongly Agree

As shown in the above Table 4.4 variable 1 (sorting) in relation to this issue, 53.9% (sum of agree and strongly agree) of respondents rated agree, while 34.3% (sum of disagree and strongly disagree) replied disagree, and 11.7% not sure about this issue, Hence one can be concluded that the majority of the respondents were agreed on good practiced of sorting in their enterprises. The Pearson Chi-Square test result indicates that the P-value (0.001) which is less than 5% is significant at the 95% level of confidence. This implies that the opinion of the respondents towards the practice of sorting in the workplace not the same. Hence, the researcher concludes that there is an opinion difference between respondents about the practice of sorting or unwanted items are removed from the workshop in the enterprises. In addition to the above discussion data the information gathered from key informants stated that:

‘We have taken training on KAIZEN and 5Ss, in implementation time we have worked together with institution staffs we motivated on implementation in our enterprise. Because KAIZEN is by itself encouraged us and now we have knowhow about sorting and sorted

materials tools and equipments within the workshop. It is simple and easy to implement like selecting needed and not needed items and removing unwanted items from the workshop. But still we lack immediate decisions to avoid unneeded equipments and sustainability of the practice (EO1, EO3).’

Furthermore, observation result also shows that in the sampled enterprises there is the sign of good sorting almost all stored materials are needed but still the problem of immediate actions to avoid unnecessary machines this is because of the attitude of the future may be we can use it and may increase the selling price of that machine or the tools.

4.4 Benefits of KAIZEN Implementation in Enterprises

According to Imai (2007) KAIZEN involves every employee in making change and continual small improvements add up to major benefits which results in improved productivity, quality, better safety and faster delivery time and greater customer satisfaction. For that reason the researcher raised questions on the benefits of KAIZEN implementation.

Table 4. 4 Frequency, Percentage and Mean on Benefits of KAIZEN implementation.

No	Variable	Response						Total	Mean	Sig.
		No	SD	D	U	A	SA			
1	Better space utilization	No	11	24	17	133	45	230	3.77	0.001
		%	4.8	10.4	7.4	57.8	19.6	100		
2	Improved product quality	No	15	53	22	112	28	230	3.37	0.000
		%	6.5	23	9.6	48.7	12.2	100		
3	Faster delivery time	No	10	24	23	138	35	230	3.71	0.031
		%	4.3	10.4	10	60	15.2	100		
4	Better safety to the employees	No	8	48	13	133	33	230	3.61	0.005
		%	3.5	18.7	5.7	57.8	14.3	100		
5	Increased employees motivation	No	11	127	14	63	15	230	2.76	0.000
		%	4.8	55.2	6.1	27.4	6.5	100		
6	Increased customer satisfaction	No	9	53	32	105	31	230	3.42	0.001
		%	3.9	23	13.9	45.7	13.5	100		

Note: SD=Strongly Disagree, D=Disagree, U=Uncertain, A=Agree, SA=Strongly Agree

Sources: Researcher's field survey April, 2017.

As seen in the above Table 4.9 Variable 1, regarding whether implementation of KAIZEN brought better space utilization or not respondents were requested to respond. Hence, 77.4 % (sum of agree and strongly agree) were replied agree while 15.2 % (sum of disagree and strongly disagree) rated as disagree, and the rest 7.4 % were not sure about the mentioned issue. From this one can be conclude that the majority of the respondents agreed that enterprises are brought better space utilization due to implementation of KAIZEN. The Pearson Chi-Square test result indicates that the P-value (0.001) which is less than

5% is significant at the 95% level of confidence. This implies that the opinion of respondents towards better space utilization is not the same. Hence, this shows that there is an opinion difference between respondents about better space utilization. Moreover, in supporting the above data, one of the key informant interviewee remarked that: ‘Before implementation of KAIZEN in our workshop, large space area was covered by unneeded materials and equipments, unordered and scattered hand tools was covered by dusts. After implementation of KAIZEN the equipments and tools are well arranged orderly in their

variety due to that even if practice of 5Ss is not good as expected but we have seen improvements in good space utilization as compared to before KAIZEN implementation' (EO2).

Furthermore, in supporting the above discussions the observation photo result from the sample enterprises indicated below.



Figure 4.2 Images showing space utilization before and after KAIZEN implementation

The images on the left side shows the enterprise's space were covered with raw materials, finished products and equipments the images were taken before the implementation of KAIZEN. But following the implementation of KAIZEN mainly sorting and set in order practices, these problems were removed and the picture shown on the right hand side represents effective utilization space due to KAIZEN implementation. From the above data can be conclude that the sampled enterprises are brought better space utilization benefit from the KAIZEN implementation.

4.5 The Extent of Challenges of KAIZEN Implementation in Enterprises

Despite benefits brought by KAIZEN implementation in the sampled enterprises, the challenge which hinders the implementation successfully as expected in the objectives of KAIZEN are also reported from the respondents in the study area.

4.6 Challenges Related to management commitment

KAIZEN implementation will fail where management does not support KAIZEN initiatives. In this regard respondents were asked to reply and the responses are Presented and analyzed in the following table.

Table 4. 10. Frequency, Percentage and Mean on challenges of management commitment

No	Variable	Response								
			S D	D	U	A	S A	Total	Mean	Sig.
1	Lack of enterprise's management support	No	18	55	28	113	16	230	3.23	0.001
		%	7.8	23.9	12.2	49.1	7	100		
2	Managers doesn't provide on time feedback for the employees	No	20	54	38	100	18	230	3.18	0.000
		%	8.7	23.5	16.5	43.5	7.8	100		

3	Lack of conducive Facilities to KAIZEN implementation	No	24	52	30	103	21	230	3.20	0.000
		%	10.4	22.6	13	44.8	9.1	100		
4	Enterprise working culture is not convenient for KAIZEN implementation	No	19	42	26	118	25	230	3.38	0.000
		%	8.3	18.3	11.3	51.3	10.9	100		

Note: SD=Strongly Disagree, D=Disagree, U=Uncertain, A=Agree, SA=Strongly Agree

Sources: Researcher's field survey April, 2017.

Admasu (2015) argued that the successful implementation of KAIZEN requires management commitment emphasizing the need for management support in KAIZEN activities. As it is indicated in the above Table 4.10, variable 1, respondents were requested to respond whether there it the challenge related to management support to implement KAIZEN in the enterprises or not. Accordingly, 56.1% (sum of agree and strongly agree) of respondents confirmed agree, while 31.3% (sum of disagree and strongly disagree) replied disagree and the rest 12.2% of them not confident about management support is challenge to implement KAIZEN. From the above discussion can be conclude that more than half of respondents were believed on lack of adequate management support is a challenge for successful implementation of KAIZEN in the their enterprises. The Pearson Chi-Square test result indicates that the P-value (0.001) which is less than 5% is significant at the 95% level of confidence. This implies that the opinion of respondents towards lack of enterprises management support to implement KAIZEN not the same. Hence, the researcher concludes that there is an opinion difference between respondents about lack of adequate management support is as a challenge to implement KAIZEN in their enterprise.

V. FINDINGS ON PRACTICE OF KAIZEN

5.1 Finding on Effectiveness of institutions KAIZEN implementation support in enterprises

- ✓ In relation to training support majority of the respondents institutions has given KAIZEN concepts training before implementation but the training is not based on need assessment.
- ✓ Trainers not having sufficient KAIZEN skills and knowledge to support enterprises.
- ✓ KAIZEN training was lacking consistency.
- ✓ With regard to KAIZEN implementation support institutions had a regular schedule to implement KAIZEN in the enterprises, but have gaps on follow up system.
- ✓ Institutions are not playing its role for the success of KAIZEN implementation as expected in policy direction.

5.2 Finding on the benefits of KAIZEN implementation

✓ The other point focuses on benefits of KAIZEN to the enterprises and the majority of the respondents believed that enterprises have brought benefits from KAIZEN implementation includes better space utilization, Better safety, faster delivery time, improved product quality and increased customer satisfaction but there is the problem of sustainability on customer satisfaction due to continual practicability of KAIZEN. On the other hand the enterprises not benefited from the improvement employees motivation.

5.3 Findings in relation to Challenges of KAIZEN implementation

Stability in management commitment is emphasized as important element in effective implementation of changes in organizations (Kotter, 2007).

✓ In relation to management commitment as per respondent's response in the sampled enterprises believed on lack of management commitment which were represented by lack of management support, lack of on time feedback to employees in KAIZEN implementation, inconvenient working culture were the major challenges which hinders for successful implementations of KAIZEN in enterprises.

✓ With regard to challenges in relation to employee's attitudinal problems, as per respondent's response in the sampled enterprises believed employees are seen KAIZEN implementation as a short term project, lack of commitment, and resistance to accept change are the main challenges which hinders the success of KAIZEN implementation.

✓ The other challenges related to skilled human resources as per respondent's response in the sampled enterprises trainings were not well organized, and planned. Furthermore, there were employee turnover that have experience and trained KAIZEN which affects sustainability of the KAIZEN practices in the enterprises.

✓ Concerning to technological and capacity gaps as per respondent's response in the sampled enterprises there were inadequacy of modernized technologies which hinders for the success of KAIZEN implementation moreover small shop size and disorganized shop layout were not suitable for KAIZEN implementation.

VI. CONCLUSION

The assessment done on manufacturing micro and small enterprises in Addis Ababa city administration regarding practices and challenges of KAIZEN implementation and has come up with major findings discussed in previous sections. Based on these findings the following conclusions are drawn.

This study gives understanding on KAIZEN practices, effectiveness of institutions in supporting KAIZEN implementation, benefits of KAIZEN implementation challenges of KAIZEN implementation.

The practice of KAIZEN in the sampled manufacturing micro and small enterprises does not have adequate awareness about the concepts of KAIZEN like 5Ss and Waste elimination which are founding blocks of continuous improvement in the enterprises due to lack of adequate , consistent and practical training. The practice of 5Ss not encouraging in the enterprises at large and limited only to sorting and set in order activities only around the workplaces of enterprises this indicates that enterprises in the study area were not well cleaned, standardized and sustain the 5Ss practices in the workshops. Waste elimination is at not at good status in the enterprises over inventory, unnecessary motions and unnecessary transportation wastages were not eliminated. One of the vehicles for success of KAIZEN implementation tool quality control circles (change army) is organized in all sampled enterprises besides those teams have no specific and measurable goals; the members have no specified roles and have no regular meeting to solve the problems of the enterprises and KAIZEN implementation.

Although institutions KAIZEN implementation support in micro and small enterprises were not effective by results in lack of need base and consistency KAIZEN training, lack of trainers' sufficient KAIZEN knowledge and lack of proper follow up system. More over institutions are not playing its role for the success of KAIZEN implementation in manufacturing micro and small enterprise in Addis Ababa city administration as expected in policy direction.

The sampled enterprises have brought benefits from KAIZEN implementation includes better space utilization, Better safety reduced physical injuries of employees, faster delivery time, improved product quality and increased customer satisfaction but there is the problem of sustainability on customer satisfaction. Moreover over, the enterprises were not benefited from other KAIZEN implementation benefits due to lack of continual practicability of KAIZEN. Even though there is some benefits of KAIZEN in the enterprises, KAIZEN practices are not effectively implemented due to lack of management support, lack of on time feedback, inadequacy of facilities, inconvenient enterprises working culture, employees seen KAIZEN as short term activity, lack of desired commitment, resistance to accept change, lack of well organized, regular and planned training programs, high employee turnover, lack of modernized

technologies and lack of adequate shop size and organized shop layout.

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