



OPEX PRACTICES PERCEPTIONS INVESTIGATION IN NORTHERN INDIA SMES : A HEURISTIC STUDY

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ABSTRACT

Operational Excellence (OPEX), is a philosophy or a set of practices which aim to continuously improve the overall performance of the different organizations such as manufacturing and service sectors. OPEX aims at process optimization by waste reduction and fostering a culture of continuous improvement in an organization. Indian SMEs have recognized the importance of OPEX in improving efficiency, reducing costs, and remaining competitive in the present day rapidly evolving market. India lags behind in the adoption of OPEX when compared with the global scenario. In the present work, the OPEX perceptions which are the factors related to the adoption of OPEX practices have been investigated. Literature Review has resulted in the factor selection and their validation was done using the percent point score method. The investigation has revealed that customization adoptions ranks first in the percent point score followed by OPEX practices awareness among employees and customer needs has ranked third in the OPEX perceptions of Northern India SMEs. A model on the perceptions has resulted from this study which can be guide for the SME Managers and Experts so as to leverage the Productivity and Profitability of the Manufacturing Industries.

Keywords : OPEX (Operational Excellence), SMEs (Small and medium enterprises), AI (Artificial Intelligence), automation, digitalization, PPS (percent point score method)

I. Introduction

Small and Medium Enterprises (SMEs) are the backbone of India's economy, contributing significantly to employment, innovation, and GDP. In North India, manufacturing SMEs play a crucial role in driving regional economic growth, fostering industrial development, and supporting large-scale industries. These enterprises are involved in diverse sectors such as textiles, automotive components, engineering goods, food processing, pharmaceuticals, and handicrafts. North India, with its strategic location, rich resources, and skilled workforce, provides a fertile ground for the growth of manufacturing SMEs. Leadership, employee engagement, and process optimization, organizations in the Sudanese aviation sector can improve their operational efficiency and competitiveness [1]. The adoption of Lean is hindered by challenges such as lack of expertise, resource constraints, and cultural resistance. By addressing these barriers through training, pilot projects, and government support, SMEs can unlock the full benefits of Lean practices and improve their competitiveness in the global market [34]. SMEs often face unique challenges such as limited resources, scalability issues, and competition from larger enterprises. Operational Excellence (OPEX) principles can help SMEs overcome these challenges, improve efficiency, and enhance competitiveness.

II. Literature

OPEX Practices : SMEs are increasingly becoming aware of the OPEX practices as is imminent with the present literature survey. Lean, Six Sigma and Kaizen are not new terms for the SME managers and the awareness level has grown considerably in the last decade. This is a sign of improved productivity, profitability and waste reduction. TQM implementation by SMEs can be instrumental in achieving operational and financial excellence [13]. By focusing on key factors such as leadership commitment, organizational culture, and employee engagement, SMEs can successfully integrate Lean principles into their HRM processes and achieve significant operational and employee-related benefits [40]. Open innovation refers to the practice of leveraging external ideas, technologies, and partnerships to drive innovation and business growth [28]. Leadership, financial management, market conditions, and government support, SMEs can enhance their

performance and achieve sustainable growth [49]. Leadership commitment, organizational culture, employee empowerment, and technology adoption by manufacturing enterprises can effectively implement OPEX practices and enhance their performance [9]. The factors that have important role in OPEX implementation in SMEs have been shortlisted after an extensive Literature Review

Table 1 : OPEX perceptions extracted from literature

S. No.	Factors relating OPEX practices	Importance of literature review	References
1.	Market Environment	Customization and Quality products at reasonable cost.	Abdelgadir & Mohammad [1]
2.	Government Policies and Support	Promotional activities for innovation and adherence to environmental regulations. Grant of subsidies and packages by the government.	Antony et. al [6]
3.	Supply Chain and Partnerships	Monitoring the suppliers for quality and efficiency.	Doghan & Razak, [2]
4.	Economic Environment	Macroeconomic conditions and globalization	Kurniasari et. al [18]
5.	Technological Advancements	Smart Technology adoption	Colli et. al [10]
6.	Leadership and Management	Top Management Commitment, Change Management and Strategic Vision	Abdelgadir and Mohammad, [1]
7.	Organizational Culture	Continuous improvement, employee participation and teamwork	Jardioui et. al [14]
8.	Employee Skills and Training	Regular training for employees, empowerment and knowledge sharing.	Saini & Singh [33]
9.	Process Management	Standardization of process, optimization of processes using Lean tools using Six Sigma, Kaizen etc. and performance metrics.	Saini & Singh [34] ;Cherrafi et. al [9]
10.	Technology and Innovation	Digital Transformation using AI, Robotics and IoT etc., Data Driven Decision Making and Innovation	Gupta et. al [12]
11.	Resource Allocation	Financial Resources, Human Resources and Infrastructure management.	Kurniasari et. al [18]

III. Research Gap

Exhaustive Literature review has revealed that the OPEX is a buzzword in the manufacturing SMEs around the world. OPEX adoption can bring vital improvements in the manufacturing sector and can improve the overall performance statistics of the SMEs thereby boosting the economy. OPEX

practices adoption has not been investigated in SMEs of developing nations which has necessitated a need for the detailed study of the perceptions relating the manufacturing industries.

Objectives:

1. Investigation of the factors regarding the perceptions of OPEX in the Northern India SMEs.
2. Prioritize the factors regarding the perceptions of Lean practices.

Originality of the Present Study : The present study reveals the truth about the OPEX awareness in the manufacturing SMEs of Northern India as this study pertains to the developing economy India.

IV. Methodology

Small and Medium scale industries were the target stakeholders for the present research work. The flow chart of the present research work is shown in fig. 1. The objective of this research work is to identify the key factors which influence the implementation of OPEX in the manufacturing SMEs of Northern India. To carry out this study questions were framed by keeping in mind the key factors. A Likert scale of four points was chosen and finally the questions were designed and finalized [19]. The finalized questionnaire was shared with the industry experts and subject experts. The changes were incorporated and the research instrument was finalized to carry out the research work. A stratified random sample based on the age, gender, sample, experience and position of four hundred participants were approached for the survey, and 128 responses were received. The respondents had nearly an experience of 5 -30 years and were holding senior positions in their work place [21].

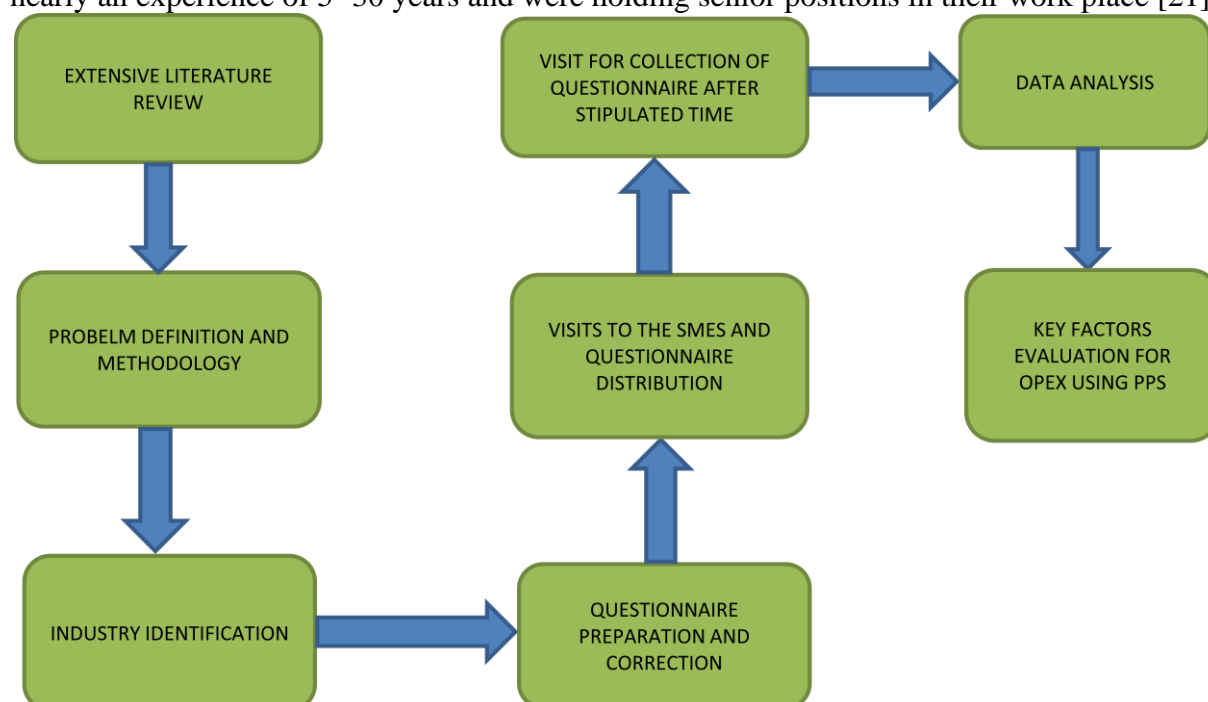


Figure 1 : Research Work Methodology

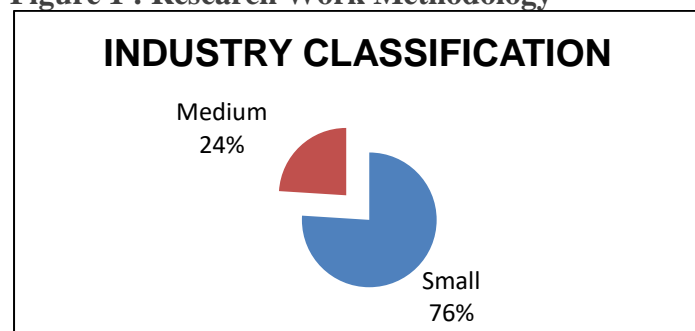


Figure 2 : SME Contribution in the Present Work

V. Results and Discussions

The small sector manufacturing industries have contributed largely in comparison to the medium industries as is evident from the pie chart in figure 2. The reliability of the key factors was done using the Cronbach alpha analysis as shown below in Table 2. A higher Cronbach Alpha indicates high reliability of the data so more statistical tests can be carried out on this data [34]. In addition to this the data was tested further by the method of percent point score method.

Table 2 : Cronbach Alpha of OPEX perceptions

S. No.	Operational Excellence Perceptions	Cronbach α
1	Surveys are conducted by the firm to ascertain the needs of the customer.	0.93
2	Firm can optimize the product as per customer needs in small time.	
3	Products of High Quality at Low Cost as per Customer Requirement.	
4	Employees at all levels are aware of the Financial Health of the Company.	
5	Employees are aware of the Lean Tools and OPEX practices.	
6	Employees adopt multitasking.	
7	Workshops and Trainings are routinely arranged for the employees.	
8	Organization strives for continuous improvement and minimizes errors.	
9	Organization has implemented digitalization, automation and AI Augmentation.	
10	R & D wing is present in the organization.	
11	Critical success factors have been identified by the organization.	
12	Barriers in the implementation of OPEX practices have been critically examined.	

5.1 Percent Point Score Method

The evaluation of the data in the present research is done using the percent point score statistical analysis evaluation method [34]. Likert scale varies from 1 to 4 according to the scale chosen for the present study. The PPS evaluation has revealed that customization ranks at first place and if the manufacturing companies can customize the products in a short time then the profitability can be very high. Employees skills and knowledge of The employees keenness and awareness of OPEX practices has gained second rank. If the employees have knowledge of OPEX practices then the SME sector growth will multiply due to the reduced waste and increased production. Survey of customer needs i.e. factor no. 1 ranks at the third place and this indicates that the manufacturing industry needs to focus on the requirements of the customer and its not wrong to say that customer is king in these

time of competition. Organization also perceives factors such as multitasking of employees, high quality products at low cost and organization's financial health awareness at all levels of the employees.

Table 3 : Evaluation of the OPEX factors through Percent point score method

S. No.	Questions/Issues	No. of Companies scoring				Total No. of responses (N)	Total points scored (TPS)**	Precent Points Score (PPS)	Rank
		A	B	C	D				
		1	2	3	4				
1	Surveys are conducted by the firm to ascertain the needs of the customer.	3	11	29	85	128	452	88.28	3
2	Firm can optimize the product as per customer needs in small time.	4	7	27	90	128	459	89.65	1
3	Products of High Quality at Low Cost as per Customer Requirement.	4	5	45	74	128	445	86.91	5
4	Employees at all levels are aware of the Financial Health of the Company.	2	10	43	73	128	443	86.52	6
5	Employees are aware of the Lean Tools and OPEX practices.	1	7	40	80	128	455	88.87	2
6	Employees adopt multitasking.	2	10	35	81	128	451	88.09	4
7	Workshops and Trainings are routinely arranged for the employees.	4	17	65	42	128	401	78.32	11
8	Organization strives for continuous improvement and minimizes errors.	3	15	66	44	128	407	79.49	9
9	Organization has implemented digitalization, automation and AI Augmentation.	8	29	61	30	128	369	72.07	12
10	R & D wing is present in the organization.	3	11	76	38	128	405	79.10	10
11	Critical success factors have been	4	11	67	46	128	411	80.27	8

	identified by the organization.								
12	Barriers in the implementation of OPEX practices have been critically examined.	6	11	48	63	128	424	82.81	7
Note (Total point score) $TPS^* = A*1+B*2+C*3+D*4$ $PPS^{**} = TPS/n*4$ (Where n=no. Of firms)									

VI. Conclusion

The present study has unfolded the key factors termed as perceptions for the adoption of OPEX in Northern India SMEs. The factors chosen from the existent literature and validated using PPS. The factors which hold the key for excellence of SMEs of North India have been reasonably identified and can serve as a guide for the SME managers. Automation, AI and Digitalization are some of the factors which have not been perceived by the SMEs. Customized products, continuous improvement policy and quality improvement factors have led the SMEs to adopt the OPEX practices. The findings are consistent with other research studies around the globe [20, 34]. The study is highly significant in revealing the OPEX perceptions of SMEs significantly for developing economies like India.

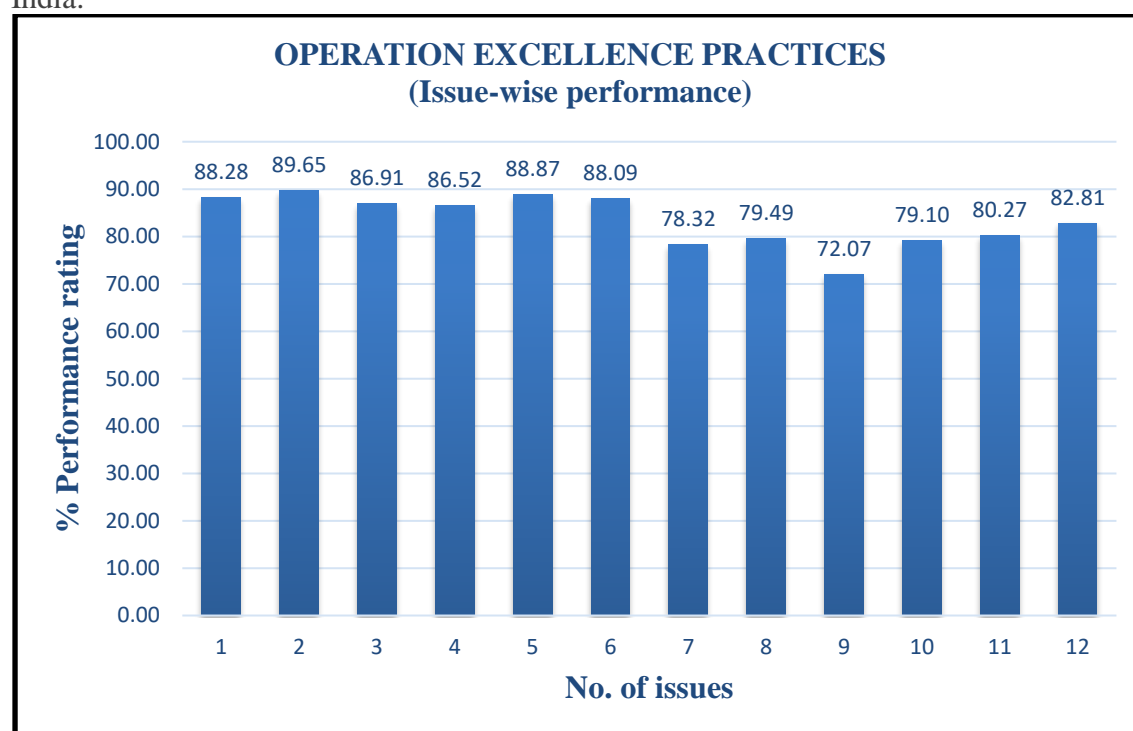


Figure 3 : Graphical Representation of OPEX factors

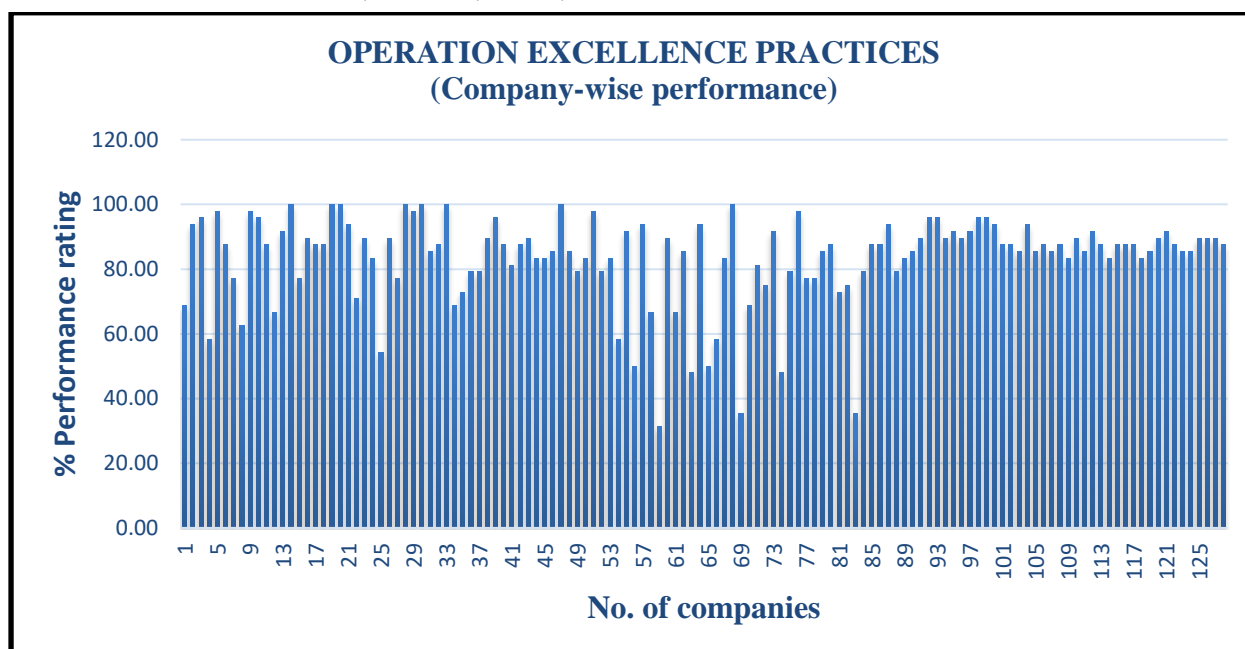


Figure 4 : OPEX perception company wise bar chart

VII. Scope for Further Work

The present research work was successful in digging out the factors which can lead to the adoption of OPEX practices in the SMEs with certain limitations. The perceptions of the SMEs about OPEX have been visibly explored while the perceptions of employees on the OPEX practices can be a scope for future work. The analysis of the data in the present work can be done by applying other statistical methods so that the present results can be compared and yield significant conclusions.

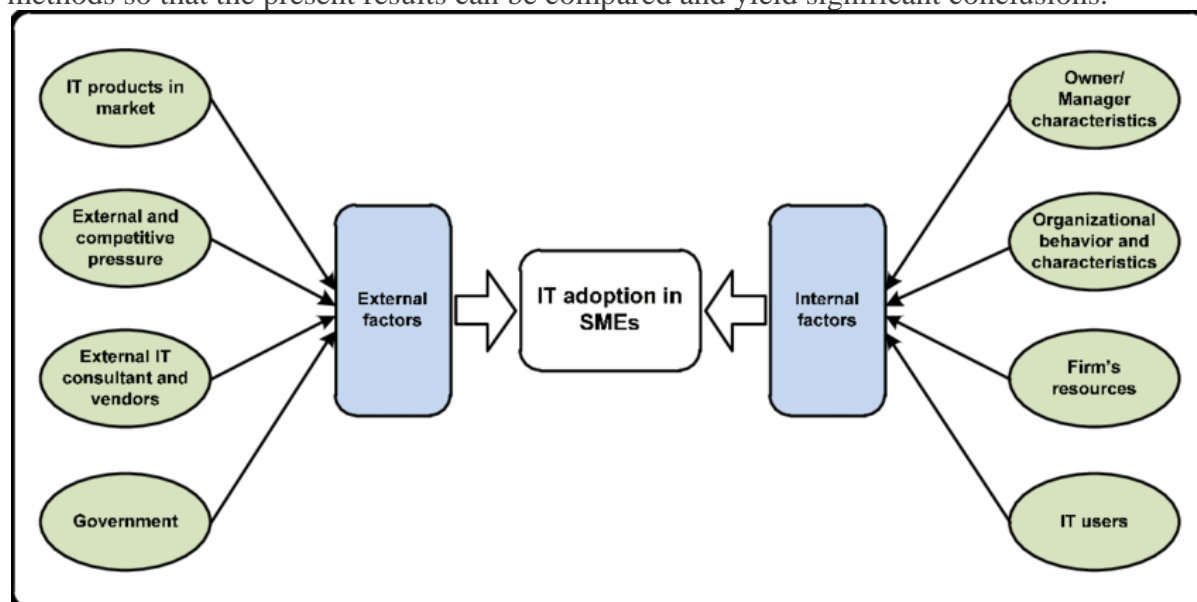


Figure 5 : Depiction of OPEX perceptions in Graphical Form

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