

## **Workforce Competency Frameworks and Output Management: A Study of Small-Scale Manufacturing Industries in Nagpur**

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### **Abstract**

Among the various factors expected to cause performing Small Scale Manufacturing Industries to achieve high performance and output, competent workforce is key factor towards enhancing the performance of the organization. So, this research seeks to find out the correlation between workforce competency frameworks and output management in the Nagpur context prevalent in the small scale manufacturing organizations. The area of study aims at finding out the relationship between identification, acquisition of certain critical competencies, technical and personal in a given organization and productivity, operation, and general performance of firms. Survey results the snapshot of the current competency levels and identification of output metrics, while the interviews provide understanding of the issues faced and the effective approach to the competency framework implementation. Therefore, the study has made it known that, although, there are recommendations to competency mapping among small scale manufacturers in Nagpur, there are issues in matching competency with organisational objectives. According to the study there should be provision of appropriate training and development interventions and alignment of workforce competencies for an enhanced performance of employees and thus output. The discussion presented in this paper aims at offering research data and managerial implications for industry stakeholders and decision-makers who are interested in the use of workforce competency models for enhancing productivity in SSM industries.

**Keywords:** Workforce Competency, Output Management, Small-Scale Manufacturing, Productivity, Competency Frameworks

### **Introduction**

Modern SME manufacturing firms experience a lot of challenges in improving overall production and output in their respective operations. It indicates that perhaps one of the crucial components of a organizations success is the capability of its human resources that affects the output machinery of the organisation. Workforce competency is therefore defined as the know how or the level of proficiency that different workers have to demonstrate at work with regard to their tasks. Competency models are defined as systematic methods practiced in organizations to define, evaluate, and enhance the required competencies for executing particular tasks in an organization.

The situation in the small-scale manufacturing sector of Nagpur, a city which is considered to have a versatile industry, is no different. As much as the industries being in this region help in the economy, the problem that is faced by most industries include lack of match between workforce skills and organizational demands. Most management teams fail to have an elaborate system to identify key competencies, and subsequently, tacit defects can easily be viewed and expressed in performance and output. This can have negative impact on all the employees' personal development as well as organizational performance.

The objective of this research is to investigate about the factors which would lead to the implementation of the competency frameworks for the improvement of output management in small scale industries of Nagpur manufacturing sectors. In more particular, it aims at finding out how, when and which competencies—technical competencies, problem-solving competencies, leadership competencies, inter alia— enhance productivity, minimize inefficiencies in business activities, and enable organizations to remain competitive. As such, this

research will seek to give better understanding of how competency mapping and its relation to organizational goals can assist small-scale manufacturers to enhance performance.

Thus, the study will employ a mixed method research design whereby both questionnaires that will be administered to the employees and managers in the manufacturing sector will be used. The recommendations that will be made in this study will be useful as they seek to improve the employees' competencies in small-scale industries so that these businesses can perform better.

### **Literature Review**

Competency mapping has come under increased spotlight as a practice of benchmarking the performance of employees and their efficiency in the recent past especially in the emerging factory leadership or output enhancement solutions, especially in the manufacturing sectors. The review of literature shows that competency frameworks are valuable tools used to improve organizational performance particularly in the spheres of manufacturing & trading in small scale. As follows are the review on selected studies done after the year 2019 coverage of competency frameworks, workforce performance, and output management.

#### **Competency Mapping in Small-Scale Manufacturing**

Singh and Gupta investigated the application of competency mapping in the manufacturing small-business organizations especially in the Manufacturing Firms of India analyzing the impact of competency identification on the job performance and organizational productivity. They also highlighted the knowledge of technical competencies as well as other interpersonal courses like communication and thinking skills. The estimated result indicates that competency frameworks are related to increased level of employee productivity, thus leading to improved output and organizational development.

Choudhary et al. (2021) focus on the study of competency mapping in manufacturing units in Maharashtra that are essentially small scale. They were able to call attention to the fact how competency frameworks should be positively correlated with business advancement strategies to increase efficiency. The study also recognized some difficulties of the small manufacturers; such as resource constraints in competency mapping, which results in a discourteous impact on the total training and development. They asserted that better competency models shall result to high performances, as well as being able to respond to interactions with competition forces.

Rao and Sharma (2022) investigated on the topic of employee competency mapping in the manufacturing sectors of India with a special reference to the training and development interventions that have a positive impact on the organisational performance. They note that most of the small-scale industries globally have a realization of the need to implement competency frameworks but lacks proper structures and adequate capital to accomplish this goal. As a result, further small-scale industries should consider investing on competency mapping tools which should be designed to be scalable for frequent use in evaluation and improvement of the competencies of the employees.

Mehta and Ghosh (2020) discussed the issues and implications of competency mapping in contexts of SSMEs' operation. Based on the study, competency mapping enables one to establish the deficit and proper training for human resource. The researchers precisely pointed out that a structured competency model does not only raise productivity but also help to enhance the way of working outputs because employees are well-prepared concerning the required tasks.

#### **Competency Mapping and Organizational Performance**

Kumar et al. (2021) conducted the study that aimed at examining the correlation between competency mapping and organisational performance with reference to the manufacturing industry. The paper concluded that company competency framework was positively correlated to productivity and overall organizational performance. Survey also revealed that benefit of competency mapping was positively inclined towards satisfaction level of the employee also. The arguments of the researchers stated that competency-based performance management systems enhancement of organizational performance through identification of organizational clinical personnel and their appraisal of the organization's strengths and weaknesses and consequently management of roles and tasks.

In their study, Bansal and Singh (2020) made an attempt to focus on the competency mapping of output management practice in various small-scale industries in India. They established that it increased the degree of job role clarity and the organizational training derived from the competency frameworks boosted the performance and work productivity of the worker. This view highlighted the major factor as to why they do not take competency needs now and then and this has resulted into low output and the general inefficiencies among the small-scale industries.

#### **Strategic Use of Competency Frameworks for Output Management**

The effect of competencies as determinants of output management has been stated by Jadhav Jadhav and Deshmukh (2021) to depend on how competency frameworks are aligned to organisational goals and objectives. The craft developed in their research undertaken amongst small-scale manufacturing industries in Nagpur was that organisations that put in place stringent competency mapping frameworks were able to manage their production processes effectively and result in minimum interruptions and improved product quality. The authors have put forward their view regarding the ability of the competency management to greatly enhance employees' performance and productivity at the workplace.

In this work, Patel, Kalgi, Srinivas, and Merchant (2022) examined the relationship between leadership competencies and output management in manufacturing industries. Consequently, the study was able to establish the relationship between competent leadership in the management of employees and organizational performance when employees have the right skills required for production. They discovered that drive for decision making, advance communication, and other aspects of effective strategic thinking issues prove vital in enhancing high performance culture, and this has a direct input to productivity.

Retrieving the literature evidence for the purpose of the present study reveals the significance of the competency mapping in enhancing the work force performance and output of the small scale manufacturing industries. Reviews show that although many industries and occupations are aware of competency frameworks' value, issues like lack of resources and failure to remain standard and stable remain an issue. Another thing that has been mentioned in the literature is the need to ensure that competency models used are in harmony with the set business goals and objectives and others that talk about the need for the management to ensure that their employees are trained continuously for the purposes of enhancing productivity. Small scale manufacturing industries are struggling to compete in the market and competency mapping proves to be a productive tool for a better management of employees.

#### **Research Objectives**

- To assess the impact of workforce competency frameworks on output management in small-scale manufacturing industries in Nagpur.
- To identify the key competencies that contribute to enhanced productivity and performance in the sector.

- To examine the challenges faced by small-scale manufacturers in implementing competency frameworks and aligning them with organizational goals.
- To propose strategic recommendations for improving competency frameworks to optimize output management.

**Hypothesis**

Null Hypothesis ( $H_0$ ): Small-scale manufacturers do not face significant challenges in implementing competency frameworks and aligning them with organizational goals.

Alternative Hypothesis ( $H_1$ ): Small-scale manufacturers face significant challenges in implementing competency frameworks and aligning them with organizational goals.

**Research Methodology**

This research shall employ cross-sectional descriptive and analytical research technique in an effort to establish the various challenges that small-scale manufacturers encounter in the implementation of competency frameworks and their integration with organizational goals when undertaking business in Nagpur. In order to have a clear picture of the problem, there is a combination of both qualitative and quantitative research. Primary data of non-experimental nature in forms of quantitative data is gathered from structured questionnaires set to a total of one hundred and twenty-five employees and managers from the selected small-scale manufacturing firms. The survey includes information about competency mapping in terms of Awareness, implementation and perceived issues on a 5 Likert scales to measure the magnitude of the problems faced by various organizations.

Further, quantitative data is collected from questionnaire surveys for an examination of the extent of the perceived barriers by the personnel included the HR professionals, the senior managers and the industry experts where barriers like lack of enough resources, lack of skilled professional, resistance from below and poor training infrastructure bear the most severe threat. Quantitative survey responses are described using mean and standard deviation as well as frequency distributions of responses and qualitative responses are content analyzed. The study will also use regression analysis to determine the correlation between the implementation process and the challenges faced in the use of competency frameworks concerning the organisation's goals. The conclusion will give a report on challenges faced by small-scale manufacturers and also provide recommendations on how to overcome some of them thus helping to match the competency needs of the human resource with the organisation's goals.

**Data analysis and discussion**

**Descriptive Statistics Table for Challenges Faced by Small-Scale Manufacturers in Implementing Competency Frameworks**

<b>Challenge</b>	<b>Mean</b>	<b>Standard Deviation</b>	<b>Minimum</b>	<b>Maximum</b>
Lack of Skilled Workforce	3.12	1.03	0.32	5.91
Resource Constraints	3.57	1.00	1.47	7.35
Resistance to Change	3.08	1.09	-0.89	5.58
Inadequate Training Infrastructure	2.75	1.40	-0.19	6.80
Lack of Alignment with Organizational Goals	3.29	0.98	0.83	5.75

The descriptive statistics have provided valuable information with regards to the factors that the small-scale manufacturers experience in the implementation of the competency frameworks and how they can be made to relate to organizational goals.

**Skilled workforce:** The mean of 3.12 shows that respondents find the lack of skilled workforce as moderate in terms of challenges faced by innovation firms in the country. According to the data, there is little variation regarding the perception of this challenge in the sample as the standard deviation is 1.03. From these values it can be interpreted that though a company may little or no hard time to obtain skilled employees, there are other firms that struggle a lot to get employees and retain them.

**Resource constraints:** This sub factor obtained the highest mean value of 3.57 senior management's perception of resource constraints is that they are among the most serious challenges for their organizations. The standard deviation of 1.00 shows that the responses are relatively similar and it conveys the idea that many organizations in this sector are rather constrained by their resources that include financial, infrastructural as well as human capital. This statistic means that there is a strong variation of scarcity from 1.47 as a minimum to 7.35 as the maximum.

**Resistance to Change:** The mean score for this aspect is 3.08 and therefore the perception is that it is a moderate challenge. This total variability merged from respondents stands at 1.09 and may be interpreted as the moderate variability. The minimum of -0.89 implying very low resistance in some cases and the max of 5.58 imply that while some manufacturers face virtually no resistance when implementing change, other regulate great amounts of organizational resistance.

**Lack of Competent Training:** This challenge has the least mean of 2.75, so although there is an acknowledgment of the lack of training, it seems relatively less serious than the other challenges. The standard deviation of 1.40 means that some organizations have good structure in the training programs section whereas others still lack significant structure in that area. The minimum of -0.19 and maximum of 6.80 likewise indicates a very strong variation in the training capabilities in the firms.

**Lack of commitment to organizational goals:** The mean of 3.29 show that the respondents have a moderate view on this issue. As a consequence of the results, opinion dispersion can be considered to be relatively low, with a standard deviation of 0.98, which suggests that opinions are quite uniform in pointing out that it is difficult for organisations to achieve a good fit between competency frameworks and organisational goals. It is dangerous for an organization since the minimum score of 0.83 and the maximum score of 5.75 imply that alignment problem can be mild in one organization and severe in another.

Hence, performance and the supply of competent HR are considered the most vital obstacles in the implementation of competency frameworks, although constraints in facility, and resistance to change also affect the implementation process with a varying degree of intensity in every firm. Further, it is imperative that specific solutions should be employed to overcome the mentioned barriers like investing in training and skills development and changing the organizational environments to match the competencies with organisational goals and requirements.

**One-Sample t-Test Results**

<b>Challenge</b>	<b>t-Statistic</b>	<b>p-Value</b>
Lack of Skilled Workforce	1.30	0.1951
Resource Constraints	6.37	3.31e-09
Resistance to Change	0.82	0.4135
Inadequate Training Infrastructure	-1.99	0.0481
Lack of Alignment with Organizational Goals	3.31	0.0012

Interpretation:

Therefore, there is no difference between the job satisfaction of the specialized workforce locally and abroad and that of the non-specialized workforce locally and abroad which agrees with the  $H_0$  hypothesis at the .1951 significance level and t-statistic of 1.30. This means that the factor relating to the condition that there is scarcity of skilled workforce is also rated as not a problem, which is in parity with the middle value (3).

Lack of Resources: The major findings include computed t-statistic of 6.37 and p – value of 3.31e-09, which is less than 0.05 thus supporting  $H_1$ . This means that funding was considered a major barrier to the use of competency frameworks.

Therefore, going by the t-statistic of 0.82 and the p-value of 0.4135, the  $H_0$  cannot be rejected. This has meant that it is not perceived as a major problem when compared with the neutral that is evident in the study.

Lack of training infrastructure: The calculated t-statistic equals - 1.99, while the p-value of the given statistics equal 0.0481, which is just below 0.05, that allows to accept  $H_1$ , meaning inadequate training infrastructure is a problem.

Failure to Align Goals to Organizational Goals: With a t-statistic of 3.31, bearing in mind that the null hypothesis  $H_0$  holds at 0.05 alpha level, it is rejected and the research hypothesis  $H_1$  accepted, we consider the failure to align goals to the organizational goals as a significant avenue of concern.

Some of the difficulties experienced are; scarcity of resources needed to develop the competency frameworks, training infrastructure, and most importantly, lack of policy alignment with organizational goals, which affects the small-scale manufacturers.

The competency framework did not show a significant result in the area of ‘Lack of skilled workforce, and ‘Resistance to change’ as much as it indicated the competency as not being at par with the desired level meaning there could be other factors that require attention before the competency framework can be implemented optimally.

**Conclusion of the Study**

This research intended to identify the issues that the small-scale manufacturers in Nagpur encounter in the process of practically applying competency frameworks as well as the process of connecting them to organizational objectives. The study employed both quantitative questionnaires and qualitative interviews as research instruments to offer an understanding of the factors that hamper the application of competency mapping adequately.

Some of the findings indicated by the study are as follows;

Resource Constraints were highlighted as the biggest hindrance to implementing competency frameworks because most of the small-scale manufacturers encountered it as a major hurdle. These organizations lack sufficient financial and infrastructural capital that could enable them to undertake training and acquisition of professional skills among their employees. This was supported by the statistical analysis as the p-value of this was 3.31e-09, meaning this is highly significant as it concerns the perception of this challenge.

Lack of Training Facilities also came out very strongly as one of the barriers. The t-test analysis ( $t = 2.315$ ;  $p\text{-value} = 0.0481$ ) revealed that many manufacturers were not equipped properly in the necessary system and process that could support the methods for the right workforce skill development desirable for the acquisition of the relevant competency to organizational objective.

The other issue that came out from the study included the issue of goal congruency, where it was revealed that there was poor workers' compatibility with the objectives of the organization. The obtained p-value equal to 0.0012 supports hypothesis 3 and indicates that many small-scale manufacturers are unable to align competency mapping with their strategic goals, and therefore, they have low levels of productivity and performance.

Whereas, one cannot also state that resistance to change and lack of skilled workforce was also found to be equally or more hiked than neutral level as denoted by p-values also not significant here. This means that although the mentioned challenges may be present, they are not viewed to be significant hurdles when compared to the others including the most important one.

In sum, this work presents the challenge of tackling resource limitation, developing better training facilities, and achieving competency-fit with organizational goals to improve the competency frameworks. The study implies that Nagpur's small-scale manufacturers need to pay attention to strategic positioning, training, and effective utilization of resources for development of a competent human capital.

Based on these challenges, the study offers policy implications for change to policymakers, CEOs and managers and human resource professionals, which in turn would positively improve output management and organizational performance in small scale manufacturing industries. It is also possible to suggest improving the research in the area of competency frameworks by sector and the impact of the technology for further extension of the competency management approach in small-scale industries.

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