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INFLUENCE OF USE OF CONTROLLING, IT USAGE, LEARNING AND TRAINING ON SME PERFORMANCE**Firoz N, Divyanjaly C K, Biju Augustine P**3rd Semester M.Tech in IEM, Department of Mechanical Engineering, RIT Kottayam, Kerala, India3rd Semester M.Tech in IEM, Department of Mechanical Engineering, RIT Kottayam, Kerala, India

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ABSTRACT

This article explores the interaction between SME performance and firm specific variables including control methods, effect of training, learning and IT usage. Data has been collected by means of a questionnaire survey administered among the selected SMEs. Analysis shows that the perceived use of controlling, IT usage and learning orientation influences SME performance and take a role in classifying firms between the above performing and below performing groups. Limited resources and autocratic decision making by the key persons attribute the less efficient control by SMEs. Updating the knowledge resources and use of modern tools of loading and scheduling are suggested to improve the SME performance. Use of IT and IS are to be encouraged to improve the controlling function.

KEYWORDS: SMEs, Production Control, Information technology, SWOT analysis**NOMENCLATURE:**

SME Small and Medium Enterprises

IT Information Technology

IS Information Systems

PPC Production Planning and Control

1. INTRODUCTION

In the small firms, most of the activities are concentrated on a few persons, who are equipped with more general abilities and the less of operations management domain skills. The effectiveness of such firms is reported as poor [1]. A quick and accurate feedback information processing in the shop floor level is absent in most of the SMEs. Low level usage of Information Technology (IT) and Information Systems (IS) resulted in less accurate and more inefficient practices. Inadequate training imparted with the SME personnel resulted in ill-informed decisions and deviation from the plans set [2]. Research in the

area of modernising the PPC usage in SMEs can contribute much to improve SME performance. Most of the research literature in the advancement of PPC is reported from large firms. But the importance of modern PPC in SMEs and the related benefits derived from improved SME performance to the economy are being realizing by the business world [3].

2. OBJECTIVE OF THIS STUDY AND ORGANIZATION OF ARTICLES IN THIS PAPER

This paper reports the exploratory findings that link the use of control methods, IT, learning and training with SME performance. A frame work to improve Production Control, IT, Standardization, Learning and Training has been formed after reviewing the SWOT analysis conducted in the SME context. The framework shows the way in which the SMEs can work within their constraints and pressures to use their PPC effectively and thereby improve the production performance.

A questionnaire survey tool was developed to rate the awareness of modern PPC techniques, IT usage, learning, training facilities and SME performance.

Data has been collected by directly approaching the selected SME key personnel. Analysis was carried out using appropriate statistical tools. Linkages between the variables are explained and weaker areas are identified for improvements. Paper ends with the conclusions for improving the use of control in SME.

3. FINDINGS OF THE SWOT ANALYSIS CONDUCTED AMONG THE SMEs

Major opportunities for SMEs included the supportive measures by the government and opportunity to grow and to reap benefits from the supply chain partnership opportunities with large firms [4]. Chance to get outside exposure and IT benefits are also observed as the major opportunities [5]. The offer to join as an ancillary firm is an opportunity to a competent SME, at the same time a threat for a non-competent SME because of the rapid rate of internationalization and further growth opportunities. Major weaknesses/ threats faced by the SMEs included extreme competition in the global market, scarcity of the resources, power shortage and shortage of manpower. Need to modernize with increased learning, standardization and IT are the environment pressures and challenges to Indian SMEs [6].

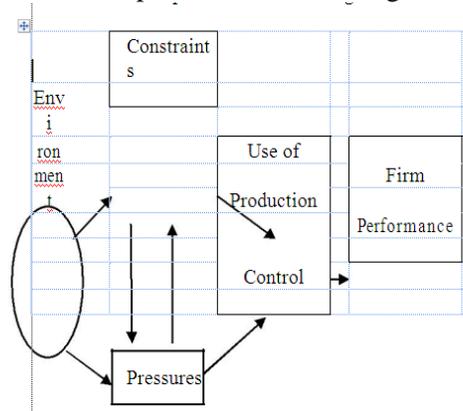


FIGURE 1. MODEL LINKING PPC USAGE AND SME PERFORMANCE

Singh et al. [7] studied the SMEs of Northern India and proposed a model to link environmental characteristics, constraints and pressures to the manufacturing strategy and firm performance. Based on the study mentioned above [7], a framework linking production control and firm performance in the SMEs of Kerala has been developed (Figure 1).

4. DESCRIPTION OF THE RESEARCH METHODOLOGY

After having discussion with experts and based on extensive literature review, a diagnostic questionnaire schedule was prepared. The SMEs in the membership list of the Small and Medium Enterprise Association of Kerala State has been selected as the sampling frame. A convenience cum cluster sampling was adopted because of the lack of feasibility of e-mailed or telephonic survey. The questionnaire was administered among the selected SMEs to reveal the demographics, firm performance, awareness of modern PPC methods, current use of production control, IT usage and extent of learning and training. After editing and screening, 382 responses were used for the analysis.

Standard indicators for measuring the variables were selected from published research [8] and are properly validated [8], [9], [10]. Most of the questions are of five point Likert scale type and few open ended questions are also used. Awareness of modern PPC tools is linked with the use of control and the nature of linkage is explained. Similarly, the link between use of control and firm performance has been studied. Similar studies have been conducted by linking the use of control with IT usage, learning and training. Factors influencing the use of control in SMEs are explored, their influence is studied in detail and alternatives for improving the situation are proposed.

5. ANALYSIS OF THE DATA

5.1 Attention given to Modern PPC Techniques

Extent of use of modern PPC techniques in production, HR and budgeting has been measured using a five point scale. Table 1 shows the mean scores.

TABLE 1.AWARENESS OF MODERN PPC TECHNIQUES

| Sample Size N=382 | Mean | Std. Deviation |
|--|------|----------------|
| Awareness of modern PPC techniques | 2.38 | 1.05 |
| Usage of modern techniques of PPC | 2.96 | 1.22 |
| Use of modern PPC in Marketing, Production, Finance and HR | 2.97 | 0.91 |
| Importance gives to Forecasting, Planning and Control | 3.92 | 0.53 |

5.2 Extent of Use of Control Measures

Following indicators were used to measure the extent of use of control in the SMEs [11]. Average

scores of each field are shown in Table 2.

- a) Use of scheduling,
- b) Use of sequencing,
- c) Critical ratio,
- d) Schedule violations
- e) Gap between forecast and actual figures,
- f) Gap between forecast and planned
- g) Gap between planned and produced

The scores of the items, except for the “use of scheduling” are found satisfactory (average scores are more than the benchmark value of 3, based on the research work of Singh et al. [7]). T – test results except for the item - scheduling differ from standard value (to the higher or acceptable side).

TABLE 2. USE OF CONTROL MEASURES IN SMEs

| Sample Size N=382 | Mean | Std. Deviation |
|-----------------------------------|------|----------------|
| Usage of Scheduling | 2.90 | 1.126 |
| Critical Ratio | 3.58 | .647 |
| Violation of Production Schedules | 3.40 | .588 |
| Gap between Forecast and Demanded | 3.08 | .536 |
| Gap between Forecast and Planned | 3.14 | .494 |
| Gap between Planned and Produced | 3.40 | .570 |

Figure 2 shows the factors influencing the effectiveness of control measures in SMEs. Availability of power, managing order uncertainty, out dated machinery and availability of labour were ranked as the important factors influencing control.

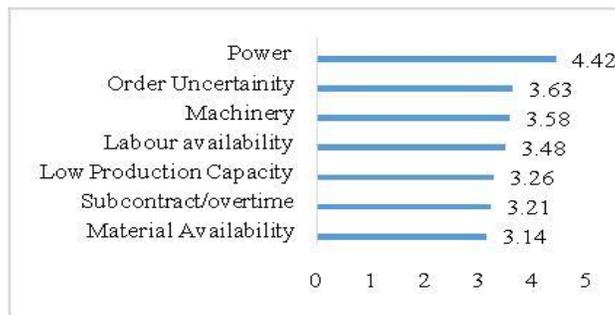


FIGURE 2 FACTORS INFLUENCING THE EFFECTIVENESS OF CONTROL MEASURES IN SMEs

5.3 IT Usage

To measure the usage of IT in SME, questions for revealing the extent of use of computers, computer proficiency and number of computers used in the firm were asked. Average item scores are shown in Figure 3. All the items recorded low scores (compared to the standard score of 3). Scores less than the bench mark figures indicates that the SMEs are lagging in the area of e –literacy and computer usage.

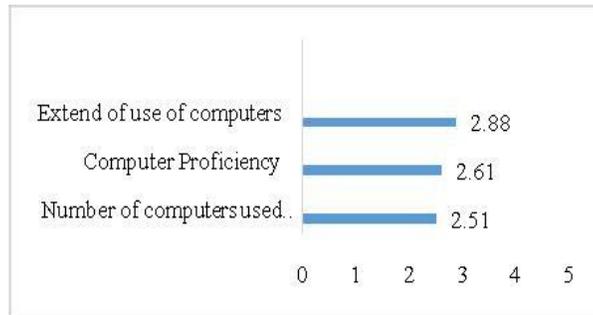


FIGURE 3 AVERAGE SCORE OF IT USAGE

5.4 Learning and Training by the Firm

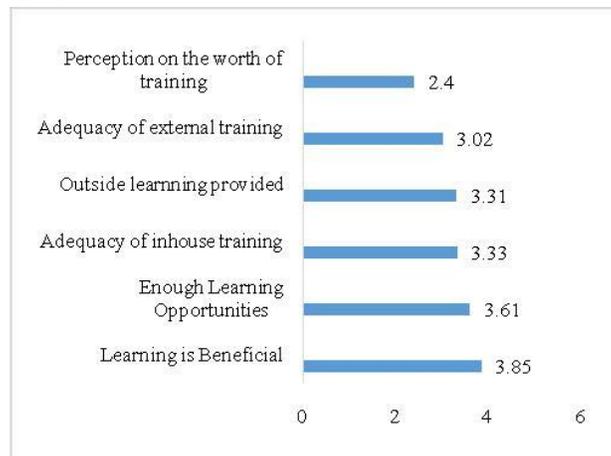


FIGURE 4. AVERAGE SCORE OF LEARNING AND TRAINING ORIENTATION

The general perception on learning orientation and training needs were revealed by means of six questions [12]. Except for the item “general perception on the worth of training”, all other items recorded above the bench mark scores. The low scores (shown in Figure 4) of the worth of training shows the limitation of SMEs to utilize the benefits of training facilities.

5.5 Firm Performance

Following indicators were used for measuring firm performance: Sales performance, Growth plan by the firm, Target achievement, Profit levels met by the firm and Delivery promptness [13]. Mean scores are shown in Figure 5.

Average firm performance scores are more than the benchmark score of 3, which is indicative of satisfactory level of performance by the majority of firms included in the study.

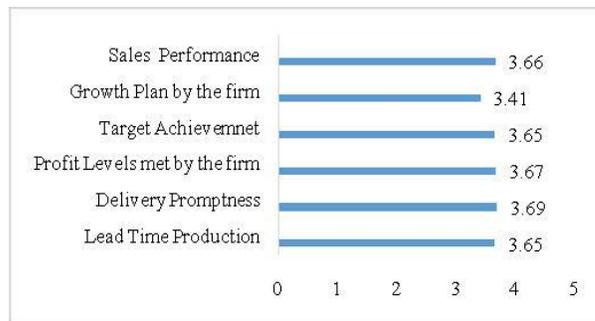


FIGURE 5 AVERAGE SCORE OF FIRM PERFORMANCE

5.6 Linking Firm Performance and Use of

Control

A structural equation model (SEM) has been developed to test the linkage between the use of control and firm performance. The construct “Use of Control” included six items and the construct “firmper” included Chifour-squareitms=54.3after(53df)conducting the tests of validity and reliability. Face validity of the $p = .42$ constructs are established from previous research works. Unidimensionality of the constructs were ensured from the high factor loading scores and inter item correlation. Satisfactory values of discriminant validity were established by comparing the variance– extracted estimates for each factor with the squared values of inter construct correlations.

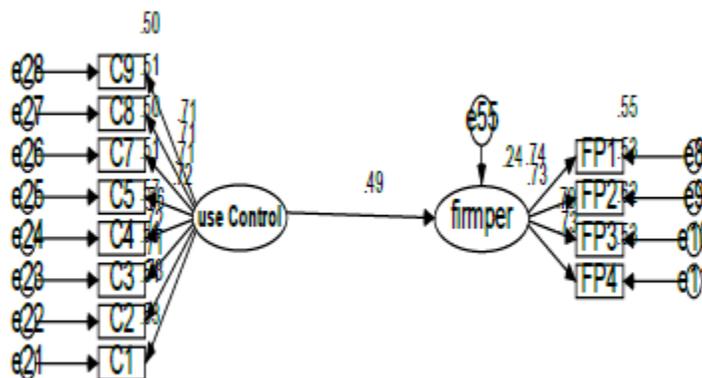


FIGURE 6 STRUCTURAL MODEL LINKING USE OF CONTROLLING AND FIR PERFORMANCE

Relation between firm performance and use of control is confirmed by the SEM model. A medium level of relationship (.49) is found from the value of the standardized regression coefficient. Overall model fit was tested using the three measures, namely Chi – Square (χ^2) Goodness of Fit (GOF) index, Absolute Fit Index – Root Mean Square Error of Approximation (RMSEA) and Incremental Fit Index – Comparative Fit Index (CFI). An acceptable χ^2 value of 54.3 significant at $p = .42$ is obtained. RMSEA value of .11 and CFI value of .986 indicate that the model fits very well. The SEM output is shown in Figure 6.

5.4 Mediating Role of Learning

Mediating role of Learning is tested using a SEM model. The reliability and validity of the SEM model has been ensured by standard tests, as mentioned in section 5.6. The effect of mediation of Learning is illustrated in Figure 7. The model is validated with a chi-square value of 137.2 significant at $p = .001$. RMSEA value obtained is .085 and NFI value is .981. Thus the model fit is found acceptable.

From the values of correlation between IT Usage, Use of planning and Firm Performance, it is concluded that the Learning Orientation is of very much importance. $\chi^2 = 137.2$ (88 df) improve the firm

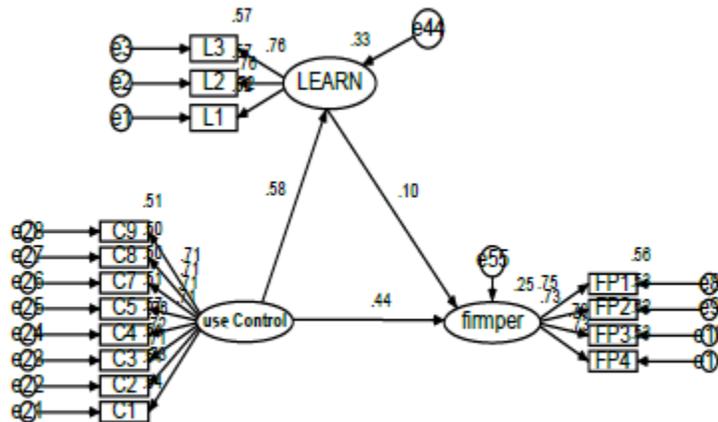


FIGURE 7 DIRECT AND INDIRECT EFFECTS DUE TO THE MEDIATION OF LEARNING

6. CONCLUSION AND IMPLICATIONS OF THE STUDY

Important findings from the study are summarized as follows:

- Lack of infrastructural resources like power, machinery and capacity influence the use of controlling.
- Learning orientation, IT usage and e –literacy are of lower levels but they are very important to the firm.
- Attitudes on the worth of learning, innovation and training are of low level.
- SMEs have satisfactory level of competencies to manage in the local level, but need updating the practice of modern techniques to compete in the global level.

From the study of use of controlling in SMEs and other variables, it can be concluded that the process of imparting education and training to the key person and the supporting staff are recommended. Importance of learning, training and better usage of IT to improve the PPC usage and the firm performance is to be highlighted. The study indicates very limited level use of controlling tools by the SMEs. Awareness of the proper usage of the PPC tools should be given to the people concerned.

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