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**ASSESSING THE INFLUENCE OF THE “AWARENESS
OF MODERN PPC TECHNIQUES” ON THE
“USEFULNESS OF PLANNING” IN SMES**

Ganga Gopalan Anisha Mohan, Biju Augustine P

3rd Semester M.Tech in IEM, Department of Mechanical Engineering, RIT Kottayam, Kerala, India

3rd Semester M.Tech in IEM, Department of Mechanical Engineering, RIT Kottayam, Kerala, India

Associate Professor, Department of Mechanical Engineering RIT Kottayam, Kerala, India

ABSTRACT: The awareness and practice of modern Production Planning and Control (PPC) techniques is very less reported from **Small Medium Enterprises (SMEs)** in comparison with large firms. This paper investigates, whether there is any improvement in the use of planning in accordance with the improvement in the awareness of modern PPC tools in the SME context. A model is developed and is empirically tested. There is positive and significant linkage between the two. Factors limiting the low level awareness of modern PPC tools and its implications on the effectiveness of planning are discussed. Suggestion for improving the usage of planning is given in the end.

Key Words: Production Planning and Control (PPC), SMEs, PPC Tools, Planning

1. INTRODUCTION

Even though SMEs operate with less resources and managerial expertise, they are appreciated for the flexibility in operations and more reactive response to market changes [1]. Use of right PPC method is a key success factor of the firm. There is lack of use of modern PPC techniques in SMEs [2]. SME key person's qualities such as skill, education and experience influence firm performance because of the high level of autonomy hold by them [3].

2. ORGANIZATION OF THE ARTICLES IN THIS PAPER

The next section describes the basic features of SMEs, firm performance and planning. The research framework and methodology are described then. Results are discussed thereafter. Paper ends with the suggestion for improving the use of planning.

3. CHARACTERISTICS OF SMES, USE OF PLANNING AND MODERN PPC TOOLS

Studies conducted among Indian SMEs reveals the following facts [2]:

- The performance of Indian SMEs largely depends on the enthusiasm, competency, resources and commitment of a single key person (owner/manager/entrepreneur).
- Application of Information Systems and Technology in the area of planning is not up to the mark.
- Key persons of Indian SMEs believe as being informal and with less structured processes help them minimize cost and provide flexibility in operations.
- SME key persons stick to informal methods in operations and remain where they are.
- Team work and employee involvement in the business is not much entertained.
- Membership in professional bodies and standardization procedures are very less.

According to Karami [4], a strategic plan offers competitive advantage to the firm. Karami, 2006 [4] observed that age, experience and education of the key person influence the choice of planning decisions. SMEs prefer informal procedures and lesser amount of written documentation [5]. Peel and Bridge, 1998 [6] observed that SME profitability and goal accomplishment are positively related to the planning detail and formal budgeting techniques. Use of planning in SMEs is poor because of negligence by owners and reliance on the rule of thumb [7].

4. RESEARCH FRAMEWORK, METHODOLOGY AND DESIGN OF THE SURVEY INSTRUMENT

Linkage between the awareness of modern PPC tools and use of planning are analyzed by means of an empirical study conducted among the selected SMEs. A self reported questionnaire schedule is administered among the firms. A structural equation model is used to interpret the relationship. The framework is shown in figure 1.

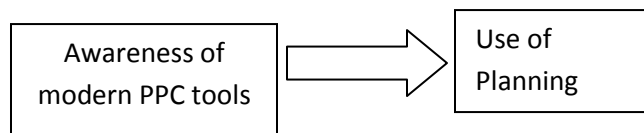


Figure 1. Model linking the awareness of PPC with the use of planning

Theory of Planned Behaviour (TPB) is used to justify the causal link between perceptions and adoption of technical and managerial practices such as e-commerce, perception and adoption of IT and IS in business [8]. Theory of Reasoned Action [9] and Technology Acceptance Model [10] are similar arguments on which perceived ease of use of a concept and perceived usefulness are linked. The relationship is stated in the following manner:

Perceptions ———> Intentions ———> Actual Behaviour

In this study the firm’s exposure and attitude towards the worth of modern PPC techniques is linked to the perceived usefulness of Planning.

5. ATTENTION GIVEN TO MODERN PPC TECHNIQUES

Extent of use of modern PPC techniques in production, HR and budgeting were measured using a five point scale. Frequency of use of modern techniques in the area of Finance, Marketing, HR, Materials and planning was collected. Figure 2 shows the mean scores. All indicators recorded Cronbach’s alpha above .7 [11]. Reliability is shown in table 1.

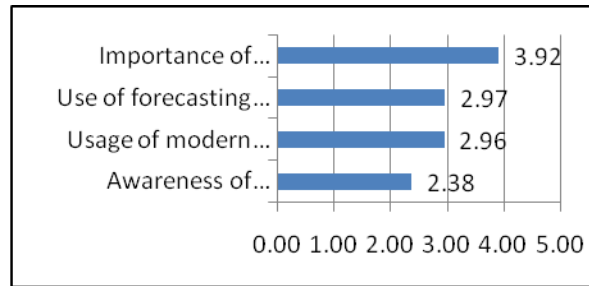


Figure 2. Average scores for the practice of modern techniques

Table 1. Reliability measures for the practice of modern PPC techniques.

Item	Item-Total Correlation	Cronbach's Alpha
Awareness of modern techniques	.821	.760
Usage of modern techniques	.779	.797
Extent of use of modern techniques in different fields	.799	.776
Importance of Forecasting, Planning and Control	.531	.891

t- test for testing the difference among the use of PPC techniques (planning) in various fields indicated significant difference from the standard value of 3 (shown in table 2). Singh et al. [7] used the national standard bench mark scores as 3. Above the score of 3 is considered as good. It is inferred that the use of modern PPC practices are below the national standards.

Table 2. t- test Results of the Use of PPC

Test value 3	t	df	Sig. (2-tailed)
Awareness of modern techniques	-11.501	381	.000
Usage of modern techniques	-.669	381	.504
Use of forecasting in different fields	-.563	381	.574
Importance of Forecasting, Planning and Control	34.154	381	.000

6. ATTITUDE TOWARDS MODERN PPC TECHNIQUES AND PERCEIVED USE OF PLANNING

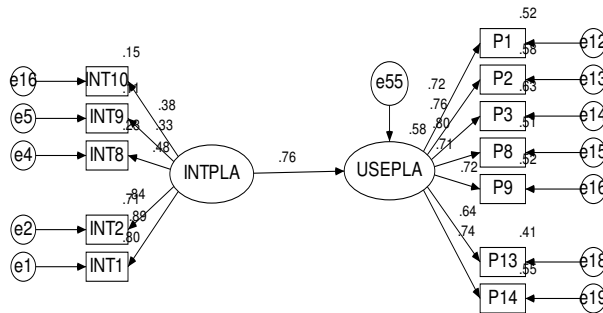


Figure 3. Standardized loadings of TRA model linking awareness of PPC with use of planning

Note: Latent variable INTPLA ---- Intention for using modern planning techniques. USEPLA ----Use of Planning. P1, P2, P3, P8, P9, P13 and P14 ----Indicators of planning Figure 3 shows the Structural Equation Model (SEM) for testing the linkage between intentions for using modern PPC techniques and planning methods followed by the firm. SEM model was found valid with significant chi-square value, acceptable incremental fit indices and RMSEA values (a chi-square value of 181.5 significant at .001level, Comparative Fit Index (CFI), Normed Fit Index (NFI) and Tucker Lewis Index (TLI) above .9 and Root Mean Square Error Association (RMSEA) value of .08). SEM model confirmed the positive relation between the use of planning and awareness of modern PPC techniques (correlation of .76).

7. EXTENT OF USE OF PLANNING IN SMES

Use of planning was measured with the following indicators: 1) Use of formalization in planning, 2) Inventory management, 3) Goal accomplishment, 4) Use of operational planning instruments, 5) Satisfaction on planning methods and 6) Accuracy of planning. Mean scores of use of planning are shown in figure 4.

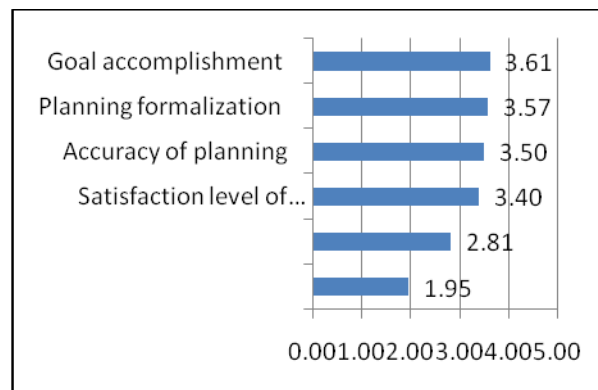


Figure 4. Mean scores of use of planning

Goal accomplishment, planning formalization, accuracy of planning and satisfaction recorded above bench mark scores, while inventory management and use of planning instruments scored below bench mark level. Use of planning instruments is very poor.

Factors influencing the planning process in SMEs are shown in figures 5, 6, 7 and 8. The planning formalization is adequate but inventory management is poor. Also the use of planning instruments is very poor.

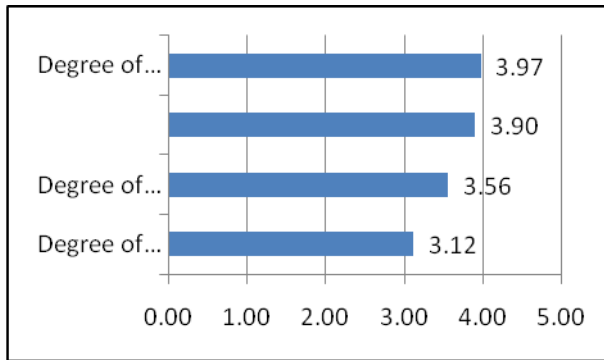


Figure 5. Planning formalization in different fields

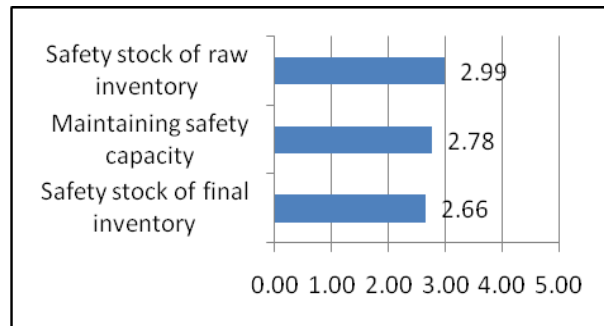


Figure 6. Inventory management

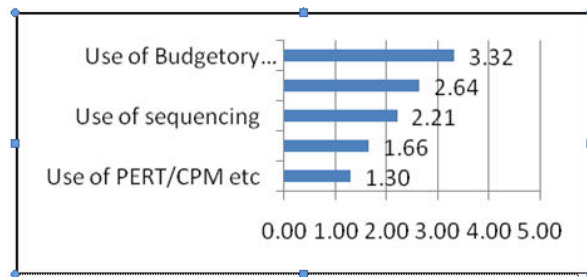


Figure 7. Mean score of use of Planning instruments

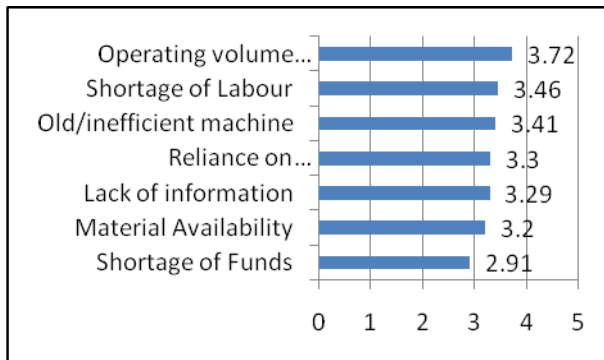


Figure 8. Factors influencing the planning effectiveness in SMEs

From figures 9a to 9d, it is observed that material availability, capacity restrictions, and inefficient machines influenced the effectiveness of planning process in SMEs.

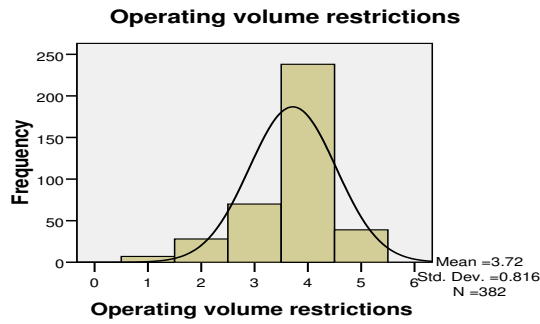


Figure 9 a. Distribution of operating volume restrictions

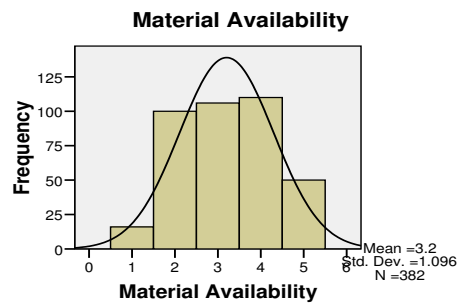


Figure 9 b. Distribution of material availability

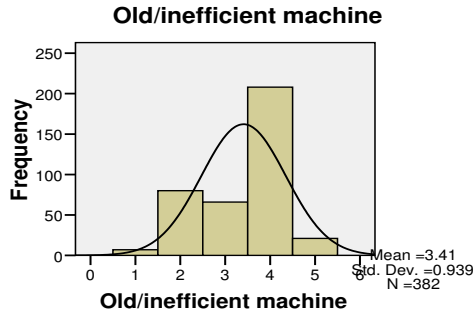


Figure 9 c. Distribution of machine condition

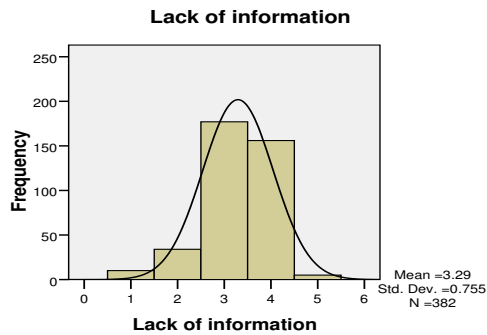


Figure 9 d. Distribution of lack of information

8. CASE STUDY OF FIRM A

The firm A is a Government owned mid-sized firm involved in the manufacture of rubberized bed and mat. The annual production amounts to about 80000 mattresses. This is an ISO certified firm with 92 workers. Key person is having 25 years of experience.

In order to verify the results of empirical findings, the key person of the firm A was approached directly and the statistics regarding the forecast, the planned and produced figures for the last two years was collected and the gap was analyzed. Also the demographics of the firm and the key person was correlated with the firm performance and the use of forecasting, planning and controlling based on the general questionnaire survey conducted among the other firms.

Problems faced by the firm are identified as follows: 1) Less formalization in planning, 2) Cost estimations are usually not respected, 3) Low level of resource utilization, 4) Fluctuating lead times, 5) Production planning ignores the bottleneck facility.

To improve the planning of firm A, following measures are recommended: 1) Update the computerized Enterprise Resource Planning system and effectively control the Work In Process Inventory, 2) Try to standardize the products and reduce its variety, 3) Integrate the production planning with the realistic capacity planning, inventory control and scheduling system. Utilize the service of a knowledge repository.

9. IMPLICATIONS OF THE STUDY AND CONCLUSION

Important findings from the study are summarized as follows:

- Awareness of modern PPC tools is positively correlated with the use of planning.
- Awareness and use of modern PPC techniques in SMEs is not up to the mark.
- Lack of management initiative, no need felt, lack of knowledge and lack of exposure limits the firms from using modern PPC techniques.
- Use of planning instruments and inventory management are very low.

This study revealed some crucial implications to the SME and academia. SMEs should develop specific competencies, especially in the planning formalization, improving IT infrastructure and usage of modern planning tools. They must avail the service from consultants for improving the areas such as automation, inventory management, formalizing the procedures and information sharing.

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