Technical Guide On

“Variety Control”

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1.1 Introduction to SMEDA

The Small and Medium Enterprises Development Authority (SMEDA) was established in October 1998 with an objective to provide fresh impetus to the economy through development of Small and Medium Enterprises (SMEs).

With a mission "to assist in Employment Generation and Value Addition to the national income, through development of SME sectors, by helping increase the number, scale and competitiveness of SMEs", SMEDA has carried out 'sectoral research' to identify Policy, Access to Finance, Business Development Services, strategic initiatives and institutional collaboration & networking initiatives.

Preparation and dissemination of prefeasibility studies in key areas of investment has been a successful hallmark of SME facilitation by SMEDA.

Concurrent to the prefeasibility studies, a broad spectrum of Business Development Services is also offered to the SMEs by SMEDA. These services include identification of experts and consultants and delivery of need-based capacity building programs of different types in addition to business guidance through help desk services.

For more information on services offered by SMEDA, please contact our website: www.smeda.org

1.2 Industry Support Program

In order to enhance competitiveness of SMEs and achieve operational excellence, SMEDA established an Industry Support Cell (ISC) for provision of foreign technical support and knowledge transfer in collaboration with International Development Organizations. SMEDA's Industry Support Program (ISP) initially launched with Japan International Cooperation Agency (JICA) and actively engaged in reducing energy inefficiencies and improving production and quality of products with the support of Japanese Experts. Later on, similar activities with other international partner organizations like German Corporation for International Cooperation (GIZ), Training and Development Centers of the Bavarian Employers' Association (bfz), Germany, and United Nations Industrial Development Organization (UNIDO) were also successfully implemented.

2. Introduction

Manufacturer sees increased variety of products or machines as an increase in planning and scheduling complexity. More frequent changeovers from one variety to another increase the proportion of non-productive time that results to low productivity.

However, a large variety of products provides the manufacturer a chance to get more customers and facilitate in increase sales. But large variety is linked with issues of large inventory, shortage of storage, stock control and capital tied up. Therefore, if the products are managed properly, then the industry is at ease.

It is said that productivity is improved with the minimum variety of product, however, the management cannot ignore the voice of sales department to add more products to increase the sales. In this scenario, management must opt a manufacturing strategy that can create balance between the variety of products and productivity. Group technology and flexible manufacturing becomes popular where large variety and customized product is required by sales department.

3. Where Variety Control Can Apply?

Variety control in various areas can assist management to improve the efficiencies and enhance the productivity.

Following are the key areas where management must focus to control the variety:

i- Variety Control of Products
ii- Variety Control of Machines
iii- Variety Control of Materials
iv- Variety Control of Operations

3.1 Variety Control of Products

Products variety is controlled considering the economic criteria with the objective to maximize the profits. Economic criteria may involve income generated from the specific products and its contribution.

To explain it further let's take an example[1]:

Twelve items are to be analysed to investigate which items to be stopped.

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[1] This example is taken from the "Operations Management for Productivity & Cost Reduction" By Prof. M.H.Zuberi – Former Dean Faculty of Mechanical Engineering , UET Lahore.

Following data provides the incomes and contribution for the last year.

Item	Sales (Rs,000)	Contribution (Rs,000)
A	2,488	655
B	3,325	545
C	2,742	672
D	2,105	380
E	618	118
F	1,433	405
G	309	20
H	422	60
J	185	36
K	284	65
L	722	178
M	113	6
	14,710,000	**3,140,000**

Re-arranged the data by income:

Rank	Item	Sales (Rs ,000)	Percentage
1	B	3,325	22.61
2	C	2,742	18.64
3	A	2,488	16.91
4	D	2,105	14.31
5	F	1,433	9.74
6	L	722	4.91
7	E	618	4.20
8	H	422	2.87
9	G	309	2.10
10	K	248	1.68
11	J	185	1.26
12	M	113	0.77
		14,710	**100**

Ranked the products by contribution:

Rank	Item	Contribution (Rs,000)	Percentage
1	C	672	21.40
2	A	655	20.86
3	B	545	17.36
4	F	405	12.90
5	D	380	12.10
6	L	178	5.67
7	E	118	3.67
8	K	65	2.07
9	H	60	1.91
10	J	36	1.15
11	G	20	0.63
12	M	6	0.19
		3,140	**100**

At first glance, it appears that the item having less income must be discarded. But item K having 1.68% of total income has a contribution of 2.07 % and if this is the new item and has not yet achieve the maturity, then we can say that there is enough chance of significant contribution in future.

For clear picture, develop a table with combined ranking:

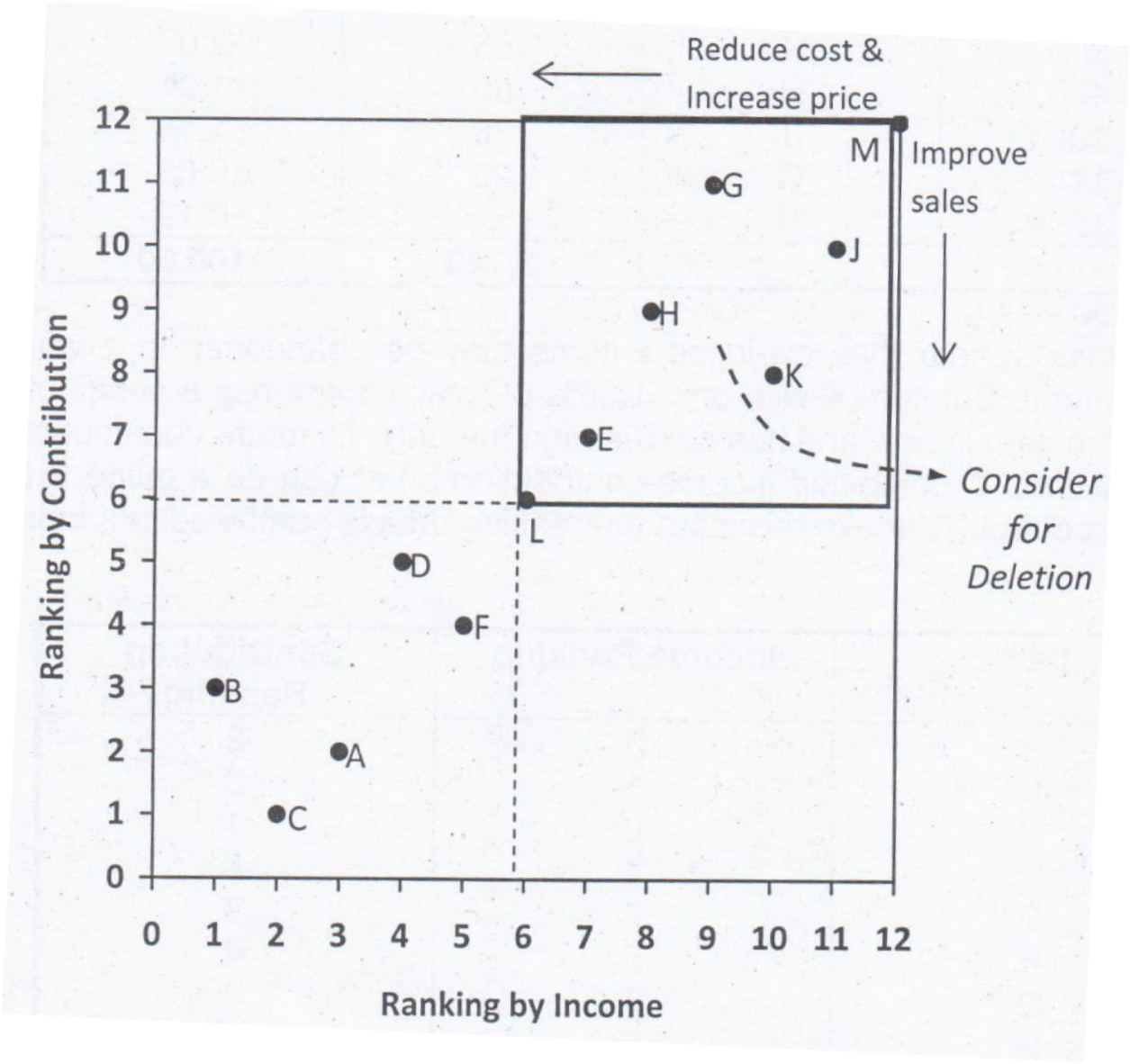
Item	Income Ranking	Contribution Ranking
A	3	2
B	1	3
C	2	1
D	4	5
E	7	7
F	5	4
G	9	11
H	8	9
J	11	10
K	10	8
L	6	6
M	12	12

From the above table, items E, G, H, K, J and M needs to be analysed in detail.

Items G & H perform better in generating income but have relatively less contribution in income. Item M ranks last in both.

Assume if selling price cannot be increased due to tough competition, then focus must be given on cost reduction. If cost reduction is not viable, then items G & M are likely to be stopped.

Since items K & M have more proportion of contribution than their share in income. Further analysis is required to explore the possibility of increase of sales of these items before taking any decision to suspend them.



3.2 Variety Control of Machines

Manufacturing unit having a large variety of equipment for the same function or operation may face difficulty in maintenance and spare part inventories. For instance, stitching units having stitching machines of different brands or models may experience low equipment utilization and productivity because of longer downtime or service time in case of equipment failure. If machines of one model is used, then maintenance staff have the better understanding about the machine and take less time to make it fix hence equipment utilization improves.

3.3 Variety Control of Materials

Control of material variation is very crucial as slight change in material composition like metal adversely affects the end product quality. This type of variation leads to the high rejection rate and rework.

If organisation is facing problem in large raw material inventories and have space shortage, then identify those products which can be manufactured from the same material by slight modification in design without disturbing the functional performance of the product and ask the deign section for the modifications.

3.4 Variety Control of Operations

In production plant, reduce the number of operations means set up time and tooling cost is reduced and increased productivity. For instance, an auto parts manufacturers can put an effort to reduced the operations like drilling with the consultation of automobile makers (OEMs) without effecting the product functionality. This may lead to reduced number or type of drills that will lead to improve the productivity.

4. Benefits

- Improved inventory management and production control
- Reduced holding cost of inventory
- Enhanced productivity and equipment utilization
- Reduced equipment down time and maintenance cost