(REFEREED RESEARCH)

ANALYZING PRODUCTION COST OF SMALL AND MEDIUM SIZED ENTERPRICES IN TERMS OF SEWING DEPARTMENT PRODUCTION CONDITIONS

KÜÇÜK VE ORTA ÖLÇEKLİ KONFEKSİYON İŞLETMELERİNDE ÜRETİM MALİYETLERİNİN DİKİM BÖLÜMÜ ÜRETİM ŞARTLARI AÇISINDAN ANALİZİ

Ebumüslüm EROL[1], Nazım PAŞAYEV[2]

[1]*Bingöl University, Department of Textile Technology, Bingöl, Turkey*
[2]*Erciyes University, Department of Textile Engineering, Kayseri, Turkey*

Received: 27.04.2013 Accepted: 09.10.2013

ABSTRACT

Under the current market conditions, it is compulsory for enterprises to use required resources at maximum productivity level during the production in order to survive and compete. The enterprise executives often have to make decisions to maximize their revenues or minimize their cost in the face of limited resources and accumulated demands. As a result of the programs without calculating the actual cost, the profit is less than the enterprises can get. In this case, reducing production cost issue gains more import day by day. Since the reducing production cost is a multidimensial problem, it is necessary to examine this issue from different aspects in garment industry. For this purpose, the production cost of enterprises with small production capacity which have a big and important role in Turkish garment sector have been investigated and also the main factors that are affecting the cost have been reviewed. In this study, a comparative analysis have been done through the data obtained from various enterprises, which produce same products in different zones, with similar production capacity and also the factors affecting cost as well as the effect rate of these factors are determined. The factors that affect the sewing department labor cost, which is ranked in the second place among the cost items after material and accessory cost, are analyzed and studied to reveal correlations between these factors and product unit cost.

Key Words: SME, Production cost, Production time, Labor productivity, Machinery productivity.

ÖZET

Günümüzün piyasa koşullarında işletmelerin ayakta kalabilmeleri ve rekabet edebilmeleri için üretim esnasında ihtiyaç olan kaynakları mümkün olan en yüksek verim düzeyinde kullanmaları bir zorunluluk haline gelmiştir. İşletme yöneticileri, çoğu zaman sınırlı kaynaklar ve biriken talepler karşısında gelirlerini maksimize edecek veya maliyetlerini minimize edecek yönde kararlar vermek durumunda kalmaktadırlar. Gerçek maliyetler hesaplanmadan yapılan programlar neticesinde, işletmeler elde edebileceğinden daha az kâr elde edeceklerdir. Bu şartlar içinde üretim maliyetlerinin düşürülmesi konusu her gün biraz daha önem kazanmaktadır. Hazır giyim üretiminde maliyetlerin düşürülmesi önemli bir sorun olduğu için farklı açılardan incelenmesi gerekmektedir. Bu amaçla Türk hazır giyim sektörünün çok önemli bir potansiyelini oluşturan küçük üretim kapasitesine sahip işletmelerin üretim maliyetleri analiz edilmiş, maliyete etki eden temel faktörler gözden geçirilmiştir. Farklı bölgelerde hizmet vererek aynı ürün üreten ve benzer üretim kapasitesine sahip farklı işletmelerden alınan verilerle karşılaştırmalı bir analiz yapılmış, maliyeti etkileyen unsurlar ve bu unsurların etki oranları tespit edilmiştir. Maliyet kalemleri içerisinde malzeme ve aksesuar maliyetlerinden sonra ikinci sırada yer alan dikim bölümü işçilik maliyetlerine etki eden faktörler incelenmiş, bu faktörlerle ürün birim maliyeti arasındaki bağlantıların ortaya çıkarılmasına çalışılmıştır.

Anahtar Kelimeler: KOBİ, Üretim maliyeti, İmalat süresi, İşgücü verimliliği, Makine verimliliği.

Corresponding Author: Ebumüslüm Erol, merol@bingol.edu.tr, Tel: +90 426 215 08 76

1. INTRODUCTION

Textile and garment sectors are important branch of industry in our country especially within last twenty years. Their successes in export make them one of the prominent sectors of the industry. Textile and garment sectors, which contribute to reduce unemployment and reach higher level of social welfare through generating new jobs, have the biggest foreign trade surplus compared to other sectors in Turkish industry.

According to Ministry of Labor and Social Security researches, medium sized enterprises, which employ 50-249 labors, generate the biggest employment in textile sector, but small sized enterprises in garment industry employs less than 50 labors (1). In our country, most of garment manufacturers take parts in Small and Medium Sized Enterprises category. Small enterprises are the economic enterprises, which usually have less capital spendings, but rather engaged in manpower activity, quick decision making opportunity, operating with low management cost and carrying out cheap production.

They have wide facilities such as adapting the changing conditions fast through their flexible structures, they are dynamic with their abilities and creative with their non-bureaucratic structures, also being able to catch demand blanking fast so that they can take advantage of opportunities in time. Today garment industry mainly produces frequently changing models with small quantity and it may put the big and corporate companies into trouble against small economic fluctuations. Therefore, small and medium sized enterprises (SMEs) have more advantages owing to their much creative and flexible structure as well as fast decision mechanism. In addition to this they have some very important problems.

Enough resources have been done in Turkey textile and garment industry regarding the small and medium sized enterprises problems. While some of the problems are solved in time, still there are lots of pending problems in industry. Of course the biggest problem is the cost issue among them. Although the cost issue markedly seems to be related with economic policies and market conditions globally. However it is also influenced by some internal organizational factors. Despite many resources have been done in the light of organizational factors regarding the cost problems of SMSe, the issue is not solved yet. Correlation between the cost and business organization level, production culture, quality policies, technical and technological level is not considered carefully. Whereas correct organization and planning helps to reduce cost specifically in some cases (2).

In textile industry, which search internal organizational factors, such as organization and planning, machinery and technology, quality control etc., we can summarize recently conducted studies of the effect on cost as follows.

In some parts of studies, the effect of production and planning on cost is examined. Kurumer (3) underlined the importance of organization and planning, thus has developed a model, which can be used in sewing department. This model handles acquirement and summability method of required basic times and how these data can be used in planning by simulating MTM (Method Time Measurement) standard data system.

Erdogan (4) has examined the production cost materials and underlines that in order to form cutting settlement planning, ideal fabric width determination is very important in terms of reducing fabric expenses so that he emphasized strong relation between fabric width used and per unit of product cost.

Unal, Erdogan and Pamuk (5) emphasized necessity of using new technologies in production process in order to stand against the big competition in the world garment industry. In their study, the suggestions of most suitable production methods are revealed by comparing economic side of classic sewing machines and sewing automats.

Kayaalp and Erdogan (6) and Ozeren and Ilhan (7), examined the subject of reducing failure in production process by using Statistical Process Control methods to improve product quality and minimizing costs.

In his study, Pasayev (2), targeted reducing fabric expenses and cloth waste which have very big share in garment production cost. He has analyzed factors that cause cloth waste during the garment production and revealed the highly enough effect of production planning on this matter among all these factors. Theoretically production planning factor effect on cloth waste is examined and it's proved by experimental studies that minimizing cloth waste in garment production is possible by providing a basis just during the production series calculation stage.

Guner et al. (8), have improved the garment organizations settlement plan through developing a software, thus they have finally gotten a result in raising productivity value.

Eryurek et al. (9,10), targeted raising productivity of production in their study by determining the optimal machine and operator quantity in production lines through using different line stabilization technics.

Yucer and Guner (11), have analyzed the factors effecting sewing time in their study and intented to manage and control sewing time through a formula they have obtained.

Yılmaz (12), intended to calculate the waste quantity and cost for cutting settlement plans in his master thesis in which he sampled garment enterprise operating with knit fabric.

Kartal (13), has examined the basic factors that effect production cost of women outerwearing his master thesis study. He made cost research based on 25 different product containing blouse, jacket, dress, skirt and trousers and tried to determine the ratio of two basic factors, fabric and workmanship, which effects each model cost.

The purpose of this study is to research the production cost of SMEs which represents a considerable part in Turkish garment sector, also reveal how organization's technic and technologic level, organizational structure and associated factors effect cost through a comparative analysis using data from different organizations operating in different zones with similar production capacity.

2. MATERIAL AND METHOD

In this study, ın the scope of performance, technical index and unit costs of five companies, which have micro production capacity and produce jeans from denims, are

analyzed. For this purpose, five companies, which are similar as products, from Bingöl, Malatya, Adana and Istanbul are chosen from SMEs. These companies are named as A, B, C, D and E without using the actual name of companies. There is no significant diversities among the chosen companies based on technology and machine park. For each of these companies, product costs are calculated on the basis of purchase order cost method and each cost item is analyzed comparatively

The indexes that determines the organization structure of companies and production areas are chosen and the effect of these factors on product cost is investigated in order to detect the source of diversities that emerges between production cost in companies, to decrease the production cost and to determine where the reserves are.

The costs are overviewed for each stages of production and the cost items at sewing section are seen in details in chosen companies. Technical and economical indexes, which determine the organization level of the sewing section in companies, are calculated and the correlation between product unit cost and these indexes is investigated, thus the results are interpreted.

A group of technical and economical indexes are used since an index that characterizes the organization level of companies' sewing section is not sufficient. These are as follows (14).

Work rhythm of Flux or Loop Time: It determines the work portion of a worker in each product unit as the time between two straight product outputs in production line. Work rhythm of flux τ, (s) is calculated as the ratio of work-shift time R_v and the shift-production capacity of flux M_v or the ratio of the production period of product unit T and the number of workers at production line *F*.

$$\tau = \frac{R_v}{M_v} \quad \text{or} \quad \tau = \frac{T}{F} \quad . \tag{1}$$

The number of workers at production line F (*worker*)*:* It is determined as the ratio of production period of product unit and the work rhythm of flux or the ratio of multiplication of production period of product unit and the shift-production capacity and the shift period.

$$F = \frac{T}{\tau} \quad \text{or} \quad F = \frac{TM_v}{R_v} \quad . \tag{2}$$

Labour Yield V (*number/worker*)*:* It is calculated as the ratio of the shift-production capacity and the substantial number of workers at production line.

$$V = \frac{M_v}{F} \quad . \tag{3}$$

Machine Yield (*number/machine*)*:* It is determined as the ratio of the number of shift-production M_v and the number of machine at production line *A*.

$$MV = \frac{M_v}{A} \quad . \tag{4}$$

Improve the Mechanical Coefficient K_{mek}*:* It is calculated as the ratio of the sum of improved the mechanical process (machine, special machine, press etc.) periods $\sum t_{mek}$ and the production period of product unit *T.*

$$K_{mek} = \frac{\sum t_{mek}}{T} \quad . \tag{5}$$

The Coefficient of the Utilization of Automatic and Electronic Machines K_{oe}*:* It is calculated as the ratio of the sum of automatic, semi-automatic and electronic process periods $\sum t_{oe}$ and the production period of product unit *T.*

$$K_{oe} = \frac{\sum t_{oe}}{T} \quad . \tag{6}$$

The Coefficient of the Utilization of Equipment K_e*:* It is determined as the ratio of the period of process special equipment used t_e and the production period of product unit *T.*

$$K_e = \frac{\sum t_e}{T} \quad . \tag{7}$$

In order to determine the production periods on seperate processes in companies, work and time etudes have been executed and the results have been committed statistically (14).

3. RESULTS AND DISCUSSION

Unit product costs of the chosen companies were calculated, and the portion of material, labour and other production expenditures within the costs were determined in terms of percentage (Table 1). As seen in table, the most important items in costs are material and labour. Within the labour cost, sewing section labour has naturally an important part since the sewing section has the most workers in confection companies. Thus, in terms of reducing costs, the most intensive reserves are related with labour after material, and it takes a part mostly in sewing section.

In all researched companies, investigations related to production technology and equipment park were committed and diversities were revealed through the implemented technologic processes. Although the produced trousers models were similar, production periods of products have been appeared as different. These differences are the result of production methods, equipments and qualifying levels of the workers. Since production period ranges with production capacity, naturally, the workers at sewing production line range as well. As the index of chosen companies' sewing section; the amount production, the number of workers and production unit period costs were determined and various technical and economical indexes were calculated (Table 2). The results obtained from calculations determine organization level of the production.

While analyzing the Table 2, it is observed that the production capacities of the companies are different and this difference is reflected in the number of workers at production line. In all companies, shift period was assumed as 9 hours and the calculation was committed by considering this assumption. According to Table 2, it is observed that unit production period of products range significantly for the sewing section of the companies. Although produced clothes models were the same, the differences of production periods in companies fluctuate by the technology and the equipment. Inevitably, the qualifying degree of the workers is effective as well. However, this effect should not be so important.

In order to emerge the sources of differences at production period, special investigation on 19 significant operations was committed. The data acquired by utilization of work and time etudes was transferred to Table 3. As seen in table, rear placket pleat process was committed by the iron and rear placket sewing process is committed by the straight sewing machine or double-needle machine at A, C, D and E companies. The time spent for these both processes are 38s, 47s, 39s, 51. 6s, respectively. However, company B that spent just 7s for this process used double-needle automatic machine. B and C companies have completed the rear joint attaching and press-on processes by using 2 seperate machine and worker in period of 36s and 54s. A, D and E companies have completed the same process by using denim machine by the period of 19.8s, 18s ve 27.7s which are much more shorter.

The technical and technological level of production affects the production quality and the cost. To see that, in A, B, C, D and E companies; 950, 1100, 350, 515, and 650 pieces of trousers respectively have been subjected to quality control. According to the statistical results generated from data acquired after controlling the operation, a set of 7 operations that have the most bugs was determined (Table 4).

Table 1. The cost values at sewing department of the companies

UNIT COST ITEMS OF THE PRODUCT	Company-A		Company-B		Company-C		Company-D		Company-E	
	TL	%	TL	%	TL	%	TL	%	TL	%
Material Cost	8,40	0,444	9,88	0,561	11,89	0,549	10,01	0,597	10,92	0,651
Accessories Cost	3,06	0,162	2,33	0,132	3,19	0,147	1,84	0,110	1,35	0,080
Cutting Labour Cost	0,38	0,020	0,27	0,015	0,25	0,012	0,22	0,013	0,26	0,015
Sewing Labour Cost	2,78	0,147	2,03	0,115	2,06	0,095	1,85	0,110	1,70	0,101
Washing Labour Cost	1,03	0,054	0,95	0,054	2,00	0,092	0,50	0,030	0,85	0,051
Finished (ironing-package) Labour Cost	1,92	0,102	1,36	0,077	1,08	0,050	0,97	0,058	0,96	0,057
Advertisement Marketing Cost	0,23	0,012	0,09	0,005	0,04	0,002	0,04	0,002	0,02	0,001
Amortization Cost	0,22	0,012	0,13	0,007	0,04	0,002	0,01	0,001	0,01	0,001
Freight Cost	0,11	0,006	0,09	0,005	0,15	0,007	0,16	0,010	0,10	0,006
Fixing Unit Cost	0,09	0,005	0,05	0,003	0,14	0,006	0,03	0,002	0,04	0,002
Energy Cost	0,22	0,012	0,06	0,003	0,08	0,004	0,11	0,007	0,10	0,006
Staff Food and Service Cost	0,38	0,020	0,30	0,017	0,21	0,010	0,16	0,010	0,20	0,012
Transportation Cost	0,06	0,003	0,03	0,002	0,45	0,021	0,04	0,002	0,21	0,013
Renting and Building Cost	0,02	0,001	0,04	0,002	0,06	0,003	0,00	0,001	0,06	0,004
TOTAL COST	**18,91**		**17,60**		**21,64**		**15,93**		**16,79**	

Table 2. Technical and economical values at sewing department of the companies

Index	Equation Number	A	B	C	D	E
Shift Production Amount, M_v (amount)		1370	1625	1100	1425	1200
Shift Period, R_v, (hour)		9	9	9	9	9
Workers at production line, *F* (worker)	(2)	55	49	51	45	43
Work Rhythm, (s)	(1)	21,7	18,3	27	20,8	24,8
Time on Product Unit, T (s)		1301	986	1488	1030	1171
Labour efficiency on production, *İV* (amount/worker)	(3)	24,9	33,2	21,6	31,7	27,9
Equipments at production line(amount)		50	41	51	44	48
Machine efficiency at production, *MV* (amount/machine)	(4)	27,4	39,6	21,56	32,38	25
Coefficient of equipment utilization, K_{don}	(7)	0,92	0,99	0,90	0,91	0,78
Coefficient of production mechanization, K_{mek}	(5)	0,71	0,81	0,83	0,79	0,74

Tablo 3. Assesment of machine technology

		COMPANY A		COMPANY B		COMPANY C		COMPANY D		COMPANY E	
		Equipment	St.time (Sn)	Equipment	St.time (Sn)	Equipment	St.time (Sn)	Equipment	St.time (Sn)	Equipment	St.time (Sn)
1	Back placket to hem	I	28,0	DS Otm.	7,0	I	17,0	I	16,0	I	32,7
2	Back placket stitching	DS	10,0			SM	30,0	SM	23,0	DS	18,9
3	Two pieces back attached	CSM	19,8	5O	19,0	SM	27,0	CSM	18,0	CSM	27,7
4	Two pieces back top stitching			DS	17,0	DS	27,0				
5	Hip pocket attached	DS	55,0	SM	51,0	DS	50,0	DS	51,0	DS	45,0
6	Back two pieces will attach	CSM	19,3	5O	19,0	3O	23,0	CSM	20,0	CSM	18,9
7	Back two pieces will top stitching					DS	23,0				
8	Small placket to hem	I	9,0	SM	5,0	I	9,0			I	8,0
9	Small placket stitching	SM	18,0			SM	12,0	SM	9,0	SM	14,4
10	Stitch front piece and back piece	5O	33,0	5O	33,0	SM	54,0	SM	44,0	5O	30,0
11	Fansy seem drawing	H	11,0	H	10,0					H	11,4
12	Fansy seem stitching	SM	17,5	SM	17,7	DS	19,0	DS	16,0	SM	18,0
13	Bound buckram to belt	I	36,0	FM	12,0	I	30,0	I	20,0	I	36,0
14	Waistband attaching	SM	22,0	SM	22,0	SA	33,0	SA	27,0	SM	20,0
15	Waistband top stitching	SM	25,0	SM	20,0					SM	25,7
16	Prepare beltloop	SM	10,0	BM	8,0	DS	11,0	DS	7,0	SM	8,8
17	Stitch beltloop	SM	48,0	SA	17,0	SM	41,0	SM	35,0	BM	16,7
18	Attaching between the trousers legs	5O	33,0	CSM	33,0	3O	42,0	CSM	42,0	5O	30,0
19	Top stitching between the trousers legs	SM	30,0			DS	50,0			SM	27,7
	TOTAL		**424,6**	–	**290,7**	–	**498,0**	–	**328,0**	–	**389,9**

I – Iron, DS – Double needle sewing machine, SM – Sewing machine, H – Handicraftsman, 5O – 5 Thread overlocking machine, 3O – 3 Thread overlocking machine, CSM- Two needle arm chain stitch machine, SA - Seat belt automatic machine, BM - Belt loop machine, FM - Fusing Machine.

Table 4. The common errors in production line and their effect on the production duration

COMPANIES		A			B			C			D			E		
The Total Number of Quality Control		950			1100			350			515			650		
Order Number	Name of the Operation	Number of Error	Error Ratio (%)	Effect on the Sewing Time (% min)	Number of Error	Error Ratio (%)	Effect on the Sewing Time (% min)	Number of Error	Error Ratio (%)	Effect on the Sewing Time (% min)	Number of Error	Error Ratio (%)	Effect on the Sewing Time (% min)	Number of Error	Error Ratio (%)	Effect on the Sewing Time (% min)
1	Side Collision	10	1,10		11	1,00		13	3,70		6	2,50		5	0,80	
2	Belt Installation	5	0,50		9	0,80		18	5,10		7	3,50		8	1,20	
3	A Preliminary Study of Partlet	12	1,30		12	1,10		15	4,30		5	2,90		9	1,40	
4	Collision of the Crotch	8	0,80		8	0,70		8	2,30		9	1,60		8	1,20	
5	Zip-Button	15	1,60		13	1,20		6	1,70		3	1,20		4	0,60	
6	The Rear Seal Installation	9	0,90		7	0,60		11	3,10		4	2,10		5	0,80	
7	J decorative stitching	6	0,60		10	0,90		4	1,10		2	0,80		7	1,10	
	Total	65	6,80	1,60	70	6,40	1,05	75	21,4	5,31	36	14,6	2,35	46	7,10	1,35

In company B trousers production line, an average rate of 6.40% faulty products are manufactured and the process spending on repairing these products increases sewing time at an average rate of 1.05%. This rate was constituted in company A as 6.80%, in company E as 7.10%, in company D as 14.60%, and in company C as 21.40%. The error rates differs from each other for each company. The main reason of differences are the differences in the machine and technology used for sewing, lack of skilled labor and entity that performs production related to organizational structure (table 5). When the data are examined, company B has more technological machine infrastructure than the other companies, therefore produces better quality production, with its less manufacturing time and low volume of machine it has the largest production capacity, both owned by the labor and machine efficiency appears to be more productive. The hardware utilization and mechanization of production coefficients are also high enough for this company.

Although company B, has less qualified labour than company D, which is located in Istanbul, it has produced less faulty products because of the large number of automatic and electronic machine used, therefore it has less impact on the duration of the production. In company C, trousers sewing band consists of mostly mechanical and semi-automatic machines. The enterprises manufacturing in Bingöl, which has less developed industry, manufactures with non-qualified labour. When the table is analyzed, it is seen that it has an error rate of 21.40% which is very high. The required maintenance and repair for the existence of an element in most parts of products manufactured causes the loss of production time, an increase of about 5.31% to sewing time and increased losses, therefore leads to an increase in costs. Thus, the establishment of the production line and production line balancing is the main production factor affecting the cost of production because it is calculated according to the duration of the production. This indicator depends on the technical and technological level of production when the product model remains constant. Technological processes in the production line with high technical and technological level are being implemented in a shorter time as well as due to the use of automatic and electronic machines. There is no significant increase in the total processing time caused by the poor quality production because of a certain amount of processing quality not being depended on the operator. In such case, it should be possible to assess the cost with time spending in sewing section. Our researches reveal that it is really possible. In figure 1, the changing charts on companies as the per unit of total production costs and per unit of sewing time is given.

As shown in the figure 1, there is an imminence between the per unit of sewing time and per unit of total production cost. Calculations reveal that the close relationship between these two indicators expressing with 0.885 correlation coefficient. Assessing the cost of production per unit of product movement time of sewing, it is possible to calculate the unit cost approximately. For example, unit cost of the product (UCP, TL) for denim jeans can be calculated according to per unit of sewing time (T, m) with 0.90 confidence probability as follows:

$$UCP = 0.0096T + 6.71$$

In sewing department, the close relationship between the labour productivity and per unit of cost is seen. Graphs reflecting this relationship are given in Figure 2. These indicators have an inverse relationship expressed by correlation coefficient as -0.837. As seen in graph curves, in some companies the cost is not the lowest even if it has high efficiency. For instance, B and E companies. The reason is that in company B, paying a great attention to quality by using more advanced equipment and technology makes the cost to be high. It would not be correct to interpret this situation as the quality production increases the costs. Because investments in equipment and technology are the return of the form of quality, sales and prestige, it will be reflected to the cost in long run.

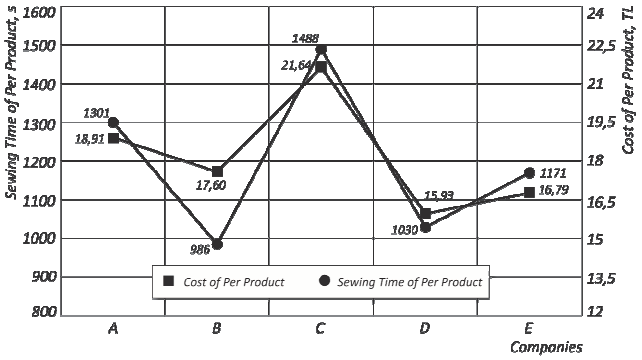

Figure 1. Change graphs of per unit of total production cost and per unit of sewing time.

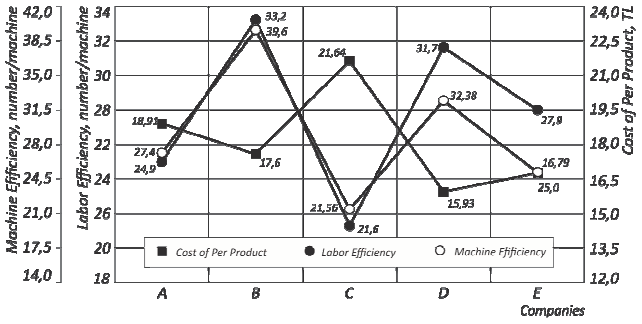

Figure 2. Change graphs of per unit of total production cost and fertility of labour and machine

Labour productivity is an important factor because of rebounding as labor and it can be determined by sewing unit time as seen above formulas. However, the efficiency of the machine, which does not have direct connection to the labour, affects the unit cost of the product less (Figure 2). There is a medium level relationship between machine efficiency and the per unit of cost expressed -0.56 correlation coefficient.

Table 5. Assessing the trousers line machine band of the companies

COMPANIES	Total Number of Mechanic Machine		Total Number of Electronic and Automatic Machine		Total Number of Automat		Total Number of Semi Automatic Machine		Total Number of Hardware in the Band
	Number	Ratio, %	Number	Ratio, %	Number	Ratio, %	Number	Ratio, %	Number
COMP. A	3	6	38	76	0	0	9	18	50
COMP. B	0	0	35	85	4	10	2	5	41
COMP. C	21	41	17	33	0	0	13	25	51
COMP. D	9	20	29	66	0	0	6	15	44
COMP. E	13	27	26	54	1	2	8	17	48

The parameters that have less connection to the labour have less effect on the cost as a factor. For example, there is a weak relationship between mechanization of product line coefficient and unit cost of product expressed as -0.31. The coefficient of hardware utilization affects the unit cost of production much less. There is a correlation between these indicators expressed as -0.16 (Figure 3).

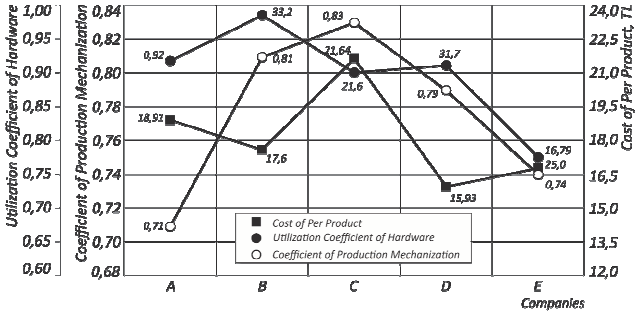

Figure 3. Change graphs per unit of total production cost and utilization coefficient of hardware

In fact, it should not be thought that the mechanization of the production correlation affects only the cost of the products. The mechanization of production at maximum level is more humane production that people's physical labour of production is minimized. This high indicator shows that a high production culture is dominant in production. The mechanization of an important part of technological processes means that the workers get tired less and the production is done at a higher quality. Therefore, the mechanization coefficient has not only quantitative but also qualitative sides and it can be difficult to assess them in some cases as monetary terms.

4. CONCLUSION

The indicators of enterprises with a small capacity production have been analyzed and it has been implicated that the most important item is labour after material among the cost items. In this context it was discovered that the department of sewing has more labour. According to this, it is concluded that there has been the larger part of resources in sewing department in the direction of reducing the cost of labour. To manage costs, it should be known that which labour items affect the cost by how much.

Researches made with these frameworks revealed that labour costs in sewing department were affected the most by the duration of sewing and efficiency of production. This is because these indicators are accepted as a parameter affecting the amount of per unit of labour and labour wages, creating the cost of labour, are determined according to these parameters. Since the conditions of production organization do not determine the labour costs directly, they have less effect on the costs. These conditions are more effective in production culture and quality it may take more time to reflect the cost.

REFERENCES

1. Textile, Ready-made Clothing, Section of Skin and Skin Products Report (2012/1). TR Ministry of Industry and Technology, Ankara.
2. Pasayev, N., 2010, "Investigation the Effects of Production Planning on Fabric Expenditures in Apparel Production", *Tekstil ve Konfeksiyon* 20(3), pp: 262-270.
3. Kurumer, G., 1991, "Research a System Providing Practical Use of Time Etude and Etude Values in Slaughterhouses", *Tekstil ve Konfeksiyon* No:2, pp: 158-163.
4. Erdogan, M.C., 1991, "Determination of the Ideal Width of Fabric in Production of Workers Clothing", *Tekstil ve Konfeksiyon* No:6, pp: 593-599.
5. Unal, Z.B., Ondogan, Z., Pamuk, O., 2004, "Product Design and Management in Apparel Section", pp: 717-720.
6. Kayaalp, I.D., Erdogan, M.C., 2009, "Reducing the Stitching Errors Using Statistical Process Control Methods in Apparel Operation", *Tekstil ve Konfeksiyon* 19(2), pp: 169-174.
7. Ozeren, F., Ilhan, I., 2011, "An Application of Statistical Process Control for Stitching Errors in Suit Production", *Textile and Apparel*. (21)4, pp: 397-404.
8. Guner, M., Unal, C., Arıkan, C., 2010, "Layout Planning with Proximity Procedure and Work Sampling Method in Apparel", *Tekstil ve Konfeksiyon* 20(2), pp: 172-177.
9. Eryuruk, S.H., Kalaoglu, F., Baskak, M., 2011, "Balancing Assembly Line with Statistical Method in Apperal Production", *Tekstil ve Konfeksiyon* 21(1), pp: 65-71.
10. Eryuruk, S.H., 2012, "Clothing Assembly Line Design Using Simulation and Heuristic Line Balancing Techniques", *Tekstil ve Konfeksiyon* 20(4), pp: 360-368.
11. Yucel, O. and Guner, M., 2008, "Analysis of the Factors Affecting the Duration of Sewing Clothes'', *Tekstil ve Konfeksiyon* 18(1), pp:41-48.
12. Yılmaz, N. "A Study on Deficiency and Costs in a Knit Garments Operation", Istanbul Technical University, Institute of Science, Master's Thesis, Istanbul, 203p.
13. Kartal, A., 2006, "The Factors Affecting the Cost of Product in Ladies' Outwear Production", Istanbul Technical University, Institute of Science, Master's Thesis, Istanbul, 183p.
14. Pasayev, N., 2003, "Project Designing of Apparel Enterprises (In Azerbaijan Turkish)", Baku, 200p.