Costs function influences on the Performance of Yemen Pharmaceutical Companies

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***Abstract*:** this study aims to investigate the role of cost function on the performance of Yemen pharmaceutical companies. The cross-sectional method is used by this study. For measuring the impact of cost function construct on improving the performance, structural questionnaire is used and distributed to 226 employees within the industry. The result shows a significant and positive impact of marginal cost on improving the performance of the Yemen pharmaceutical companies, for the variable cost and total cost the finding revealed negative and significant impact.

Keywords – variable cost, total cost, marginal cost, performance, Pharmaceutical industry, Yemen.

INTRODUCTION

Company directives see a change in the traceability of operations and can estimate where opportunities for improvement appear. Information has become the main pillar of the growth of the global economy and the main asset of our society. The function of the computer with the power of communication has become a second industrial revolution. Today it is appreciated that the unification and not the separation is the key element (Hwang, 2014). The credit to computer networks, which support the companies to approach both customers and suppliers without measuring borders. Likewise, it is a real challenge for companies to collect, store, classify, process, communicate and use the information available, which directly impacts the management of organizations and decision making (Hong, Siau, & Kim, 2016). Yemen Pharmaceutical companies have lack of productivity and thus it accumulated revenue-loss up to USD $26.3 million in the year 2017 (Alyahawi, Alkaf, & Alzaghrori, 2018). This deficiency is due to absence of prominent Management Information System in the company. ERP solutions are widely used in all industrial companies to improve productivity, whereas in Yemen Pharmaceutical industry ERP software is still a new concept. This research attempts to study on facts of implementing ERP and its implications.

PHARMACEUTICAL INDUSTRY IN YEMEN

The pharmaceutical industry started in Yemen since 1982. Today, some local pharmaceutical companies have become leaders in the local and regional levels in the Arabian Peninsula and the Gulf. Their industry enjoys high quality and according to international standards and specifications, with local expertise commensurate with the need of the community for specific types of medicines. However, despite the fact that this industry is developed and subject to the constant supervision of many stakeholders, some believe it is a poor industry, creating a crisis of confidence for many local pharmaceutical products (Alshakka, Al-Abd, & Alkubati, 2019).

Although the pharmaceutical industry is modern in Yemen, it is an important part of modern and national industries. Therefore, there is an increase in the number of pharmaceutical factories, pharmacies and pharmacies, which are constantly seeking to develop marketing mechanisms to obtain a large market share in order to be successful in the market. Hence, the subject of pharmaceutical manufacturing is an important part of the relationship between national industries on the one hand and marketing on the other. Through marketing, the organization can distribute its products and increase market share and sales and thus increase the rate of profitability (Al-Worafi, 2016).

The pharmaceutical industries in Yemen have confirmed the ability to compete and challenge the obstacles of competition and self-affirmation before the world famous companies and brands, and the pharmaceutical companies occupy a large and important market in the pharmaceutical market in Yemen and are now looking to expand their foreign markets. Important steps achieved by pharmaceutical companies in Yemen In recent years and has become an economic burden on the level of the Yemeni economy by providing a lot of the needs of the Yemeni market, which was previously imported from abroad, and overcome many of the obstacles and problems that were saturated by the drug market in Yemen (Moharram, Al-Mahbashi, Al-Maqtari, & Al-Doaiss, 2019).
In light of the increasing needs of the Yemeni market and society for pharmaceuticals and the rapid pace of importing various pharmaceutical items from abroad, there is still an urgent need to strive for achieving Pharmaceutical security, which is an urgent necessity for any society and in the midst of competition to meet the needs of the community of medicine. The pharmaceutical industry in Yemen emerged as an emerging sector, Strong and thoughtful competition of imported industries, and in a decade and established beside the Yemeni Pharmaceutical Company seven national factories have now produced thousands of pharmaceutical items and quality is recognized by international organizations, and there is a determination on the development and expansion of this sector to achieve security and loyalty despite many difficulties and problems that hinder the sector (Shankar, 2016).

LITRATURE REVIEW

The variable costs will be the costs that are adapted to the extent they are significant or the management produced by the business. Variable costs are also the sum of terminal costs on all established units. They can also be considered as model costs. Stable costs and variable costs represent two parts of the total cost. Direct costs, however, are costs that can be without much expansion to be related with the cost of a specific object. However, not all variable costs are the direct costs. For example, variable costs for overhead costs are variable costs, which are indirect costs, not direct costs. Variable costs are now called unit-level costs when they change with the amount of units created (Cho, Smith, & Mago, 2014).

Direct labor and overhead costs are often called costs of change, while direct materials and direct labor are regularly referred to as initial costs. In the presentation, it is important to know how the costs are separated and settled. This qualification is necessary in estimating the income resulting from the different changes in unit transactions, and in this way the monetary impact of the proposed advertising efforts. In a study of about 200 leading promoters, 60 percent responded that they found "variable and stable costs" to be very valuable (Nguyen, Reiter, & Rigo, 2014). The level of variable costs is affected by many elements, such as stable costs, commitment period, vulnerability and discount rate. A diagnostic recipe for variable cost has been identified as a component of these elements. It can be used to study how the unique components affect the variable cost and the overall return in speculation.

The total cost of establishing a certain level of yield is the cost of the large number of information variables used. Typically, financial analysts use models with two data sources: Capital, K; and Labor, and L. Capital are believed to be static information, which means that the scale of the user's capital does not shift with the level of creation. The cost of rent per unit of capital is the index. As such, the total fixed costs meet KR. Work is changing information, which means that the measurement of user action fluctuates with the level of return. In fact, in the short term, the best way to convert returns is by varying the measurement of changing information. L work is referred to each unit cost, or wage rate, w is intended, so the total variable cost is Lw (Viswanathan et al., 2014).
In the financial aspects, the marginal cost is the settlement of the cost of an open door that appears when the amount delivered is increased by one unit, i.e. the cost of establishing one more decent unit. Marginal cost at each level of creation includes the cost of any additional data sources required to deliver the next unit. At every level of generation, day and age perceived as marginal costs all include costs that vary with the level of creation, while the different costs are seen that do not fluctuate with the creation of a constant. For example, the marginal cost of constructing a vehicle will largely include the labor costs and spare parts for the vehicle rather than the fixed costs of the industrial facility just achieved. However, the marginal investigation is isolated in short and long-

term cases, so that all costs (with fixed costs calculated), over time, become clearly marginal (Alalm, Tawfik, & Ookawara, 2015).

Marginal cost is not the cost of delivery of the "next" or "last" unit. As Selberg and Sween note, the cost of the last unit is the same as the cost of the basic unit and each unit. In the short term, the expansion of generation requires the use of a larger amount of changing information - which is routinely believed to work. The addition of more work to fixed capital reduces the marginal result of labor due to lower marginal revenues. This decline in efficiency is not limited to the extra work expected to create a marginal unit - profitability per unit of work dwindles. In this way, the costs of establishing a marginal unit of yield have two parts: the cost associated with the marginal unit delivery and the expansion of the normal costs of all units delivered due to "damage" in the whole useful process. The basic part is for each unit or regular cost. The second is the slight increase in costs due to the Marginal Revenue Reduction Act, which builds the costs of all units sold (Roschangar, Sheldon, & Senanayake, 2015).

The production function is among the essential notions of multi-factor productivity theory, and such theory supposes companies have a production procedure defined by a function, and such function connects output signals to the capital and labor input variables (Baghli, Cahn, & Villetelle, 2006). To put it differently, production calls for the transformation of input signals into an output signal, and also the connection between input signals and output signals that are such, which will provide maximum productivity, is called production function (Chaudhry, 2009). Moreover, technology would be depicted by such function as a production function that is constant, and particularly link output signals of capital technical advancement and labor input variants. Researchers, therefore, estimate firm-level production functions to address the inquiry of whether computer information systems bring about productivity growth. Scientists have proposed a methodology based the notion of production function to evaluate the effect of IT on company productivity; such approach is the “total productivity variable” or TPV. Total factor productivity can be estimated using increase accounting equations, and such signify the speed of technical advancement not signified in the variants of production (Del Giudice & Straub, 2011). Erken, Donselaar, and Thurik (2016) indicated that such system for TPV would signify multiple variants, including “initiation of production procedures, progress in work, organizations, or managerial techniques, economies of scale, and developments in the qualitative amount of capital or the expertise as well as education of the labor force.” Brynjolfsson and Hitt (2014) clarified that TPV takes the overall kind of the labor productivity function, and enlarges such equation on the denominator from work hours to comprise all costs of business including technology (IT), capital equipment, substances, energy, and services.

Process by which companies ensure that the workforce works to achieve organizational goals, and includes practices by which the manager defines the goals and tasks of the employee, and continuously assesses their behavior (Grace et al., 2016), develops their skills and abilities; involves the measurement and improvement of the work force, a performance approach reflects the intention of managers to consider the factors that influence the performance of the employee. "Performance evaluation is a formal system of review and evaluation of how an individual or a group executes tasks", evaluation is important for the success of the company, to improve the deficiencies of the collaborators in order to make a feedback to obtain excellent results. "Performance evaluation is a systematic assessment of how a person works in a position and its development potential", as indicated by Grace et al. (2016) in the previous paragraph, with the evaluation we can discover the weaknesses and strengths of the collaborators in order to find solutions for improvement for employees, the work performance of human resources will have much to do with the behavior of workers and the results obtained, as well as motivation. The particular interest is not in the work performance in general, but specifically, in the performance in a position, that is to say in the behavior of the person who occupies it.

METHODOLOGY

This research relays on hypotheses testing technique so the quantitative methodology is the best methodology can be used for this type of research. Using the quantitative methodology allows the researcher to analyze the data and figure out whether they achieve the research objectives or not. For the purpose of testing the impact of production costs those variable, fixed, and marginal costs on the performance of pharmaceutical companies in Yemen, the questions instrument is used and distributed to a sample of managers at the top and middle levels. For the questionnaire instrument, the variable cost measurements are adapted from the study of , the total cost

measurements are adapted from the study of, the total cost measurements are adapted from the study of, the enterprises resources planning impact measurements are adapted from the study of (Wang, Lin, Jiang, & Klein, 2007) for the question 6 to 10 and from the study of (Park, Suh, & Yang, 2007) from question 1 to 5, the performance measurements are adapted from the study of Agbejule (2011). The population of the study is represented by the total registered staff by the ministry of health in Yemen that equal to 500 staff work at the top and middle level, as well as operation's supervisors at the operation level. The sample of this study has determined based on Krejcie and Morgan (1970) table, which is 226.

FINDINGS

Table 1 provides the respondents' profile, most of the respondents are male as (n=165) and female (n=61), for the educational levels, most of the respondents bear bachelor degree as (n=129), diploma (n=56), master (n=28), and PhD (n=13). The respondents age is classified into five categories as from 17-25 years (n=28), from 26-30 years (n=53), from 31-35 years (n=71), from 36-40 years (n=45), and above 40 years (n=29).

TABLE 1: Respondents profile

	Frequency	%		Frequency	%
Gender			**Education level**		
Male	165	73%	Bachelor	129	57%
Female	61	27%	Diploma	56	25%
			Master	28	12%
			PhD	13	6%
Age					
17-25 yrs	28	12%	31- 35 yrs	71	31%
26-30 yrs	53	23%	36- 40 yrs	45	20%
			> 40 years	29	13%

Table 2 shows the result of the internal consistency, which measures by cronbah alpha, for the items under marginal cost factor (0.746), total cost (0.805), variable cost (0.779) and for items under performance factor (0.832), as all the internal consistency values higher than 0.7, it refers to accepted level of internal consistency (Kline, 2005).

TABLE 2: Reliability test

Constructs	Cronbach's alpha (> 0.7)
MC	0.746
PF	0.832
TC	0.805
VC	0.779

Key: VC; variable cost, TC;Total cost, MC;Marginal cost, PF; performance

Based on Table 3, it is shown that the minimum value for all variables was 1, while the maximum value was 5. In the same regard, the mean scores for the variables (variable cost, total cost, marginal cost, value, and project development) were 3.36, 4.19, 3.47, and 4.35 respectively. This means that all the respondents are on average agree on the statements and items used in the questionnaire. Besides that, all the respondents confirm the role of

variable cost, total cost, and marginal cost value on the performance. Furthermore, the standard deviations for the subscale variables are 0.722, 0.719, 0.611, and 0.578 respectively

TABLE 3: Descriptive Statistics

	Minimum	Maximum	Mean	Std. Deviation
VC	1.00	5.00	3.3640	.72272
TC	1.00	5.00	4.1960	.71914
MC	1.00	5.00	3.4700	.61060
PF	1.00	5.00	4.3467	.57817

Key: VC; variable cost, TC;Total cost, MC;Marginal cost, PF; performance

For the purpose of investigating the relationship between cost function and performance, table 4 confirms the result of significant and negative relationship between variable cost, total cost and performance at the pharmaceutical industry in Yemen where (r=-0.103, p=0.000) and (r=-0.250, p=0.000), while for the relationship between marginal cost and performance, a positive and significant relationship is found at (r=0.009, p=0.000)

TABLE 4: Correlations

		VC	TC	MC
PF	Pearson Correlation	-.103**	-.250**	.009**
	Sig. (2-tailed)	.000	.000	.000

**. Correlation is significant at the 0.01 level (2-tailed).

Key: VC; variable cost, TC;Total cost, MC;Marginal cost, PF; performance

Table 5 provides the result of the linear sample regression; the adjusted R^2 value 0.62, which refers to the explanation of the impact of cost function in predicting performance. Also, the result confirms a significant and negative impact of variable cost and total cost on the improving performance at the pharmaceutical industry in Yemen where (β=-0.026, t=-18.401, p=0.000) and (β=-0.068, t=-11.210, p=0.000) respectively, meanwhile the marginal cost revealed a significant and positive impact on the performance at (β=0.002, t=37.284, p=0.000).

TABLE 5: Regression test

Model		Standardized Coefficients Beta	t	Sig.
1	(Constant)		10.032	.000
	VC	-.026	-18.401	.000
	TC	-.068	-11.210	.000
	MC	.002	37.284	.000
	Adjusted R^2	0.62		
	F	44.154		

Dependent variable: PF; performance

Key: VC; variable cost, TC;Total cost, MC;Marginal cost

DISCUSSION

The total cost of an organization to create one unit is more than one element. The marginal cost fluctuates according to the number of incremental or lower units that the organization wishes to establish. Expanding the scope of construction may increase or decrease the marginal cost, on the understanding that the marginal cost includes all costs, such as work, materials and base cost. For example, if a toolmaker builds the amount of tools

he produces, he may need to buy more materials, but labor costs and factory support continue as before, and the completion of a more remarkable number of tools is underway. This may reduce the marginal cost. Then again, if the product buys more workers and collects another production line, it may build marginal cost. The additional cost is otherwise called (Owens et al., 2015).

Marginal cost illustrates the cost of delivering another unit of yield as changes in the generation volume. As the size of the configuration changes the delivery cost of each additional unit of yield changes. Marginal cost measures that change. It is also called differential cost or additional cost. The marginal cost diagram is a U case as the size of the generation constructs the cost per unit decomposes. This is called economies of scale. At the point when the combination of creation size and unit cost achieves a U base in the graph, the generating process has achieved an ideal size. This point speaks to the production level of the most efficient and cost-effective generation (Schnipper et al., 2015).

Past the purpose of the ideal generation level, expanding the size of creating makes the marginal cost rise. Each unit of generation turns out to be more expensive than the last. This is called unequal size. The last generation process has gone the most efficient and cost effective level of creativity and the generation is developing increasingly expensive. Past the ideal point in the U base in the graph, expanding the size of creating makes each unit more expensive. Supervisors use marginal cost investigations to determine the ideal level of generation in the construction procedure (Eş, Vieira, & Amaral, 2015).

CONCLUSION

The researcher has come up with several objectives to be achieved by the end of this research. These objectives are to identify the impact of variable cost, total cost, and marginal cost on improving pharmaceutical companies' performance in the Pharmaceutical industry in Yemen. as well as to investigate which type of cost that has the highest impact on the pharmaceutical companies' performance in the Pharmaceutical industry in Yemen. Also, this research aimed to identify the impact of variable cost, total cost, and marginal cost on the enterprises resources planning implementation in the Pharmaceutical industry in Yemen. The managerial implications for this research are simply that, the production cost affects the enterprises' marginal cost planning and the performance improvement positively. On the other hand, the enterprises' marginal cost planning also affects productivity and performance positively through controlling the cost function.

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