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Determinants of an Investment Decision (A Case of Fertilizer Sector in Pakistan)

Dr. Muhammad Masiullah Jatoi*, Ms. Safia Khan**, Mr. Shoaib Hyder***

Abstract: - *Investment in reality is a capital sacrifice that includes risks means that every entrepreneur and stockholder wants a profitable return on their specific investment. A case study of three leading fertilizer firms of Pakistan is considered for outcomes, namely Engro Fertilizer, Fauji Fertilizer and Fatima Fertilizer. Four investment-based ratio relations have been intervened and analyzed statistically for their relation and implications to determine for investment decision with key consideration given to risk-factor, sector investigation and company individual rating with performance in fertilizer segment even though each one's share market is at high pressure by external shocks. Out of four relations three were quite significant, accepted and are found highly meaningful to investment decision, while one is insignificant and is rejected for intervention. Finally we propose investors with investment decision to prefer Fauji at 1st, Fatima at 2nd and Engro at 3rd as per investment risk is concerned.*

Key words: *Investment and Investment Decision, Entrepreneurs, Risk-factor.*

1.0 Introduction

Investment in simple is to spend or set aside capital for financial gain in future. For a person, it may include obtaining of financial resources like stocks, mutual funds, bonds and possession of durable goods like a car or housing. Economic perspective of investment is an increase in actual capital, increasing a nation's technical resources or human capital (Investment, 2006). Investment refers to purchase of an asset with hope that it will generate return or income or appreciate in coming time (Reilly & Brown). Multidimensional consideration of financial management has remained almost in appropriate decision making for better outcomes for its peers; knowing about what to invest, when to invest (McDonald & Siegel, 1982), how much to invest and where to invest is not a surprising question to ends of financing authorities and investors; whereby structural optimization of different investment opportunities in a sector is a social responsibility of an investor to provide sustainable state for his financial equity towards his nation (Terol, Parra, & Fernández, 2015).

* Professor, Department of Business Administration, Shah Abdul Latif University, Khairpur Mirs

** MS Scholar Department of Business Administration, Shah Abdul Latif University, Khairpur Mirs

*** MS Scholar Department of Business Administration, Shah Abdul Latif University, Khairpur Mirs

Investment process is critical (Osnabrugge, 2000) as proper screening of *good* opportunities, searching for *better* and finally investing in *best* option is ultimate goal therein to ensure maximization of return for managing working investment by an individual or firm in stock of an entity (Kaplan & Stromberg, 2001). It is accepted that screening for equity-decisions adds value to investment and contracting with intermediaries minimizes risk factor (Kaplan & Stromberg, 2001). Therefore decisions for investment are major concerns in financial situations of a corporation in every segment of an economy (Fu & Liu, 2015). Evaluating an investment decision involves various techniques, but in this article we would be working around the circle of firm's financial operations, with rate of risk (Terol, Parra, & Fernández, 2015) and return involved to measure up to what extent leading fertilizer firms have been quite successful in achieving sector's financial stock-related goals of wealth maximization.

It is originated that management is more conscious to provide value based outcomes for firm's success with a fact that investors construe for rational decision about investment (Myers & Majluf, 1984); where profitability is a utility function in financial perspectives of investment decision with manipulation of side-risk (Terol, Parra, & Fernández, 2015). Investment decisions are highly intrinsic (Myers & Majluf, 1984); its dimensions are changing from reward enhancement to utility enhancement that is risk reduction (Virlics, 2013). Simplistic and discrete structures are intervened to confirm estimation of numerical of firms in fertilizer segment; so that proper outcomes could be submitted to concerned parties for an investment decision. The study highlights complete case study of each firm with its overall portfolio performance (Terol, Parra, & Fernández, 2015). The issuance of common stock with a significant operational strategy (Myers & Majluf, 1984) and monetary policy are significant influential tool to corporate investment in a specific sector that helps to adjust fluctuating situation in different required times for leverage of sector resources (Fu & Liu, 2015). An agency function can also of course be an interest-option for funds utilization by investment source (Kaplan & Stromberg, 2001).

2.0 Theoretical Background For Investment Decision

Investment decisions are likely to be done on the basis of accessibility and affordability of opportunities and optimization of resources and their proportion of contribution to profitability of investment (Wanjun, Ting, Ning, Qiji, & Bin, 2013). Investment evaluation criteria depend heavily on characteristics of entrepreneurs, financial scenario and marketing perspectives of industry (Monika & Sharma, 2015). One research instructs that investment appraisals may be prepared for working decisions in which it must be defined by nature of investment that either it is financial or economic to best prescribe its commonalities of operations and differences of performance found in different firm's stock in capital market (Witt, Lill, & Nuuter, 2015). A conceptual view-point of investment decision is when a disposed product is taken as a raw material, processed as a modified one and offered to market as a new one, less in price and high in profit percentage requires careful concern (Kafuku, Saman, Yusof, Sharif, & Zakuan, 2015). The corporate behavior of financing can explain tendency to depend on internal-funds financing or may prefer debt for equity by external resources for investment decision (Myers & Majluf, 1984). Making structured contracts, pre-investment selection and after-investment monitoring and evaluation are highly interrelated to provide successful returns for investor (Kaplan & Stromberg, 2001)

confirming that investing funds in sustainable portfolio is a social responsibility of an investor (Terol, Parra, & Fernández, 2015).

Moreover, the large players are having a competitive edge of having access to extensive funds and small-size firms face a restriction to credit limit for enhancement of operations and product portfolio (Mendes, Serrasqueiro, & Nunes, 2014). The focus on options of venture capital investment provides a good measure for outcomes in a sense that decision making for investment criteria involves a five step follow-up model; *initiating from deal origination, screening, evaluation, structure and post investment activity* (Monika & Sharma, 2015). Empirics also proves that focusing on how much an economic activity is innovative that triggers investment dimensions and leads to economic development (Plotnikova, Korneva, & Ustuizhanina, 2015). To know about investment determinants of old and new participating firms in industry, we must empirically highlight and prove the variables flow for growth and return in sales, free cash flows, size of firm, macroeconomic situations and growth level (Mendes, Serrasqueiro, & Nunes, 2014).

Investment-value depend best on determination of investment management of specific firm in an industry, whereby industry might be in recession but the company at individual may not and is having edge of reaping profits (Li, Yang, & Xiao, 2014). In understanding key issues related to investment decision in different companies in distress situation with some empirical results and validations suggests that investment behavior of firms having fewer investment options present larger tendency to under-invest that is high risk (Gutiérrez, Azofra, & Olmo, 2014). The most contributing risk derivatives affirms that investment decisions are subjective (one sided) in nature but factors affecting decision are highly objective (multi-sided) as there exists an intense portfolio of environmental forces (Virlics, 2013). If investment strategy adaptation involves efficiency, human acceptance, scientific and technological security, infrastructural and institutional consideration then it will surely contribute to successful creation of economic activity and will trigger the good social system for the inhabitants (Plotnikova, Korneva, & Ustuizhanina, 2015).

Investment related assumptions must also be supported by empirical evaluation of investment variables (Myers & Majluf, 1984). The variables of investment may be industrial capital, human capital, institutional potential, economic risks, financial potential, environmental risks, and retrospective investment motion and investment inflows (Kharlamova, 2014). Further, return rate percentage, return on investment, net present value, period of investment payback are the good determinants to useful investment set of values (Kafuku, Saman, Yusof, Sharif, & Zakuan, 2015). It is also found that investment is determined by performance of firm, time efficiency of return, investment size and locality, product and industry analysis (Monika & Sharma, 2015). It is endorsed that determining additional directions to be considered when making an investment decision is a key instrument for its success validation (Witt, Lill, & Nuuter, 2015); like changing dimensions of time, growing needs of seeking information, higher processing time for return would severely affect investment decisions that are completely enrolled to quality and quantity of return or gain on investment and level of risk factor involved (Kafuku, Saman, Yusof, Sharif, & Zakuan, 2015).

The concerns of investment security is resultant to economic security, which preserves capital fly from economic system (Kharlamova, 2014); thereby corroborating that investment assessment involve value-based measurement parameters like cost v/s benefit analysis, discounted cash flows sequence (Fu & Liu, 2015), calculation of input and output

factors, risk and uncertainty figures and time being involved in operational cycle (Witt, Lill, & Nuuter, 2015). An enrichment to assure behavioral text of corporate investment can help management to optimize overall policies and strategies at macro level to assist increased performance (Fu & Liu, 2015). Industry-policy also can determine structural earnings, dividend or mergers of company for strength of profits (Li, Yang, & Xiao, 2014) as they prove this by an example of real scientific judgments of Chinese stock analysts and consulting firms, who makes good-best possible decisions for their cliental system.

The value of investment opportunities homogenous in nature for industry with a complete portfolio of investment may be formed to capture customer utility at large (Wanjun, Ting, Ning, Qiji, & Bin, 2013); as investment decisions are based on demand push-ups (Wanjun, Ting, Ning, Qiji, & Bin, 2013). By international facets it is highly suggested that worldwide recognized principles, as made by IMF and World Bank else must be followed in making right investment decision; while keeping in view the importance of past profitability index, future results and payback time period for the investment (Virlics, 2013); where international research verifies that monetary channel rather than credit version of investment has major irregularity in investment setting (Fu & Liu, 2015). Firms having greater investment options poses greater propensity to over-invest that is low risk. It at all depends on how capital investors are willing to accept and turn weaknesses into opportunities and opportunities into extreme wealth maximization (Gutiérrez, Azofra, & Olmo, 2014).

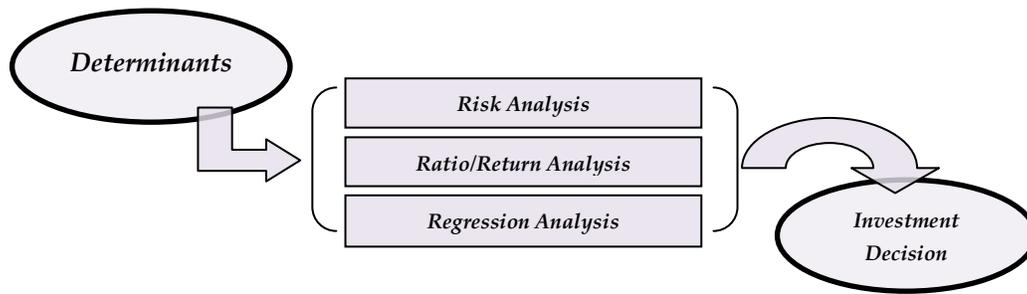
3.0 Research Hypothesis

- a). The determinants of investment must properly be examined before investment decision.**
- b). The determinants of investment are significantly contributing to investment decision.**

4.0 Manuscript Contribution

The article is a privilege addition to knowledge books of investment entities that is to hands of creditors, investors and managers for determining value-based operations involving risk and return of sector, keeping in view market holdings of major players. It is a thematic step to institute key performing determinants by building financial relations; whereby we indulge multiple research methods to construct a valid rationalization of proving to better improve efficiency of investor decision in stock of high performing firms of fertilizer sector in overall declining situation of country. Empirical results, sector investigation, case study of each firm, their credit rating, SWOT analysis for investment decision deposit the study at its best in literature contribution to its stakes. Integration of developed relations helps in prediction of variables (Table-05). Sector study implies to policy stakes to not to restrict strategic supply of gas resources to this sector in order to satisfy growing needs of agriculture. Case study assists organizational management to know about leading player of industry and get their state improved in context of better managing the same. Worldwide citation puts it an end to generate a list of factors for best investment decisions. SWOT analysis at last is a key predictor towards future operational vision.

5.0 Proposed Research Model



6.0 Research Design

Secondary data-collection method is utilized by examining annual reports of three leading players (Engro, Fauji and Fatima) in fertilizer sector of Pakistan; rest ahead several publications are taken into account, for citing related work of other authors to ensure study outcomes. A case study sampling method is used to examine industry leading firms for an investment decision. Further endorsement towards this study is given by making detailed sector investigation, classifying company credit ratings by official authority in economy, focusing on rapid performing last three years operations-circle of three companies, even though their share market is at high pressures. Finally interpreting numeric of decision related variables by statistical software PASW-18 with utilization of linear regression in order to affirm inter-relationship between four relations formed in this study, completely tied to investment setting and decision to provide investors with decision making information.

7.0 Sector Investigation

7.1 KSE Records

The dominance of the three firms (Engro, Fauji & Fatima) can be observed as per their contribution of volume (figure in millions) in fertilizers stock of KSE-100 and the same can later be found in study for their production capacity and contribution to economic needs.

Market Summary										
REG	FUT	CSF	SIFC	NDM	SQR	OTC	IPO	BNB	ODL	MTS
FERTILIZER										
Data as on May 29, 2015 17:51:45										
* LDCP represents Last Day Close Price										
FERTILIZER										
SYMBOL	LDCP	OPEN	HIGH	LOW	CURRENT	CHANGE	CHART	VOLUME		
Arif Habib Corp	37.18	37.48	38.14	37.11	37.93	+ 0.75		788,000		
Dawood Hercules	105.00	105.00	105.00	103.00	103.93	- 1.07		10,500		
Engro Fert.	84.14	84.10	84.70	83.75	83.89	- 0.25		2,782,000		
Engro Corp XD	279.81	280.90	283.75	277.94	278.53	- 1.28		3,276,500		
Fatima Fert.	36.31	36.39	37.50	36.39	37.31	+ 1.00		3,436,000		
Fauji Fert Bin	47.73	47.71	47.85	47.65	47.75	+ 0.02		451,000		
Fauji Fert.XD	140.46	140.20	140.60	139.50	140.47	+ 0.01		1,704,700		
All										

Karachi Stock Exchange – Data Portal

7.2 PACRA Ratings

Pakistan fertilizers industry has a capacity to produce 6.9 million metric ton of urea with 0.7 million metric ton of DAP (Diammonium Phosphate) and 2.2 million metric ton of other fertilizers. There are bulk figures in demand curves of industry for urea consumption, where dominancy of few players has remained a key factor of market shifting towards producer's goals at all. Local capacity (despite of recent additions by Engro fertilizers for Asia's second largest fertilizer plant) trend of DAP has been failed to meet ongoing demands of agricultural houses still and utilization of low capacity has ultimately brought a pause in gas supply to participating firms producing the fertilizers (PACRA, 2015).

All Ratings															
Corporate		Financial Institution		Debt Instrument		Asset Management		Grading		Withdrawal		Defaults		Rating Scales	
Fertilizer															
No.	Entity	Industry	Rating Type	Dissemination Date	LT Rating	ST Rating	Action	Outlook	Press Release	Report	History				
1	Agritech Limited	Fertilizer	Entity	29-Sep-10	D		Downgrade		view	view	History				
2	DH Fertilizers Limited	Fertilizer	Entity	10-Jun-14	A-	A2	Maintain	Stable	view	view	History				
3	Engro Fertilizers Limited	Fertilizer	Entity	08-Jan-15	A+	A1	Upgrade	Stable	view	view	History				
4	Fatima Fertilizer Company Limited	Fertilizer	Entity	27-Nov-14	AA-	A1+	Upgrade	Stable	view	view	History				

The Pakistan Credit Rating Agency Limited – Rating Resources

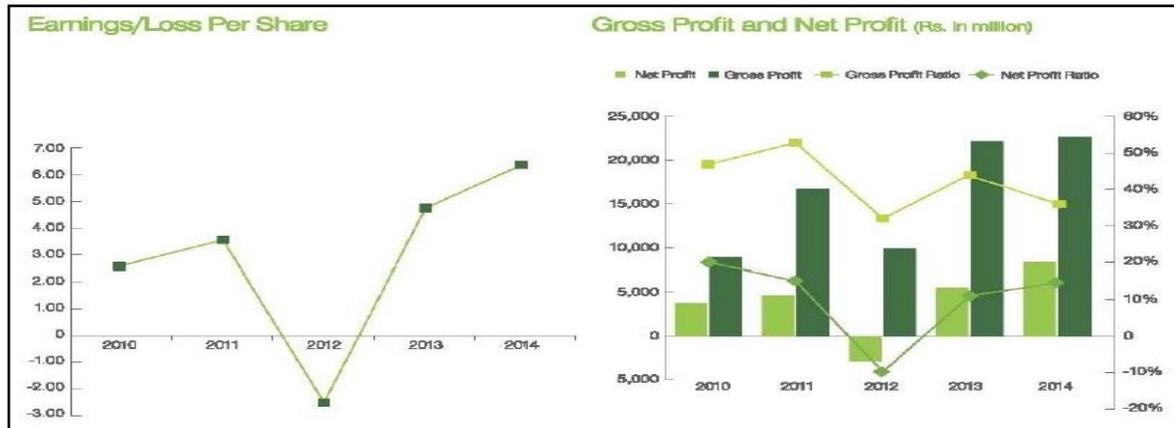
Engro holds a good PACRA rating AA- (long term) and A1+ (short term), maintaining its portfolio with keen positive behavior in market. The same rating is assigned to **Fatima Fertilizer** with comments of upgrading its portfolio that predicts stable behavior in fertilizer market (PACRA, 2015). **Fauji fertilizer company (FFC)** credit quality for its group companies as per figures of financial assets was assessed lower by reference to determination of external credit rating; therefore internal ratings for credit circle can be determined based on their past information to go default in meeting debts prescribed as AA- in long term) and A1+ in short term (Forging Ahead - FFC, 2014).

8.0 Case Study

8.1 ENGRO Fertilizer

Engro Corporation, a Pakistani public MNC, Karachi based, with its subsidiaries involved in production of fertilizers, foods, chemicals, energy and petrochemicals; with workforce strength of 2093 employees (December, 2009), having PKR 100 billion of revenue and PKR 27 billion of total equity. Engro has been enjoying diversified portfolio of products in its fertilizer sector and stands in the leaders of industry. The first national branded fertilizer production house is striving to change the tunes of farming from conventional methodologies to contemporary farming techniques for enhancing outcomes; contributing

its services since a good timeline, with a diversified portfolio of resources in educating overall fertilizer sector of the country (Engro Financial Report, 2014).

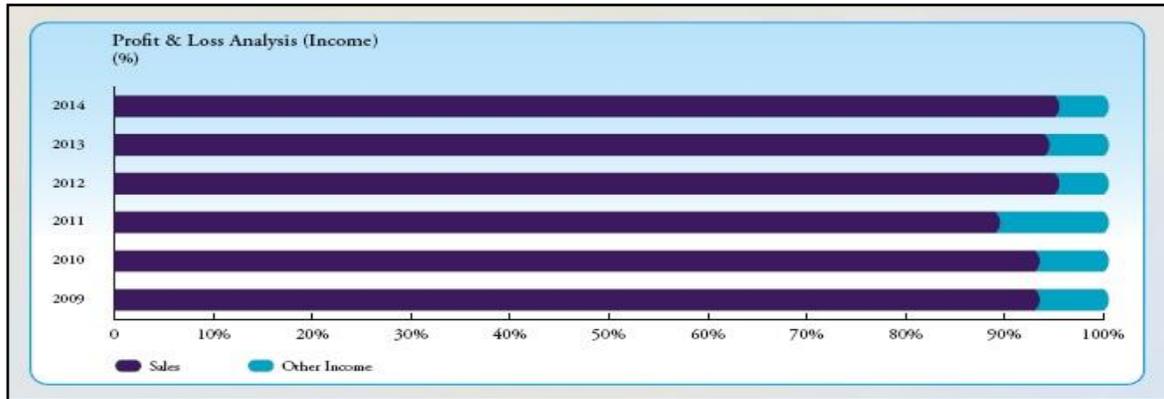


(Engro Financial Report, 2014) – Annual Report

No doubt a pioneer firm in fertilizer sector is Engro having a mark of significance for its brand quality and price excellence as compared to imported Urea and DAP. Its new *Enven* plant is highly cost efficient, providing the corporation a forging factor of progression in industry for its profitability maximization of its shareholders in return; the corporation model heavily relies on this business (Engro banks on fertilizer strength, 2013). Back to two years, Engro was threatened to serious problem of lower gas supply by government side, which in turn severely affected its production capacity to be lower down in distribution houses. But, with keen focus on the issue by Engro management, it was resolved with an IPO offering to show the government that Engro has a strong base in generating funds to find an alternate of gas supplier to them from private side; later the problem was solved but yet not properly addressed by government side, but Engro is managing its widespread resources in utilizing the same (Engro Fertilizer IPO — exquisite timing, 2013).

8.2 Fauji Foundation Company

Fauji Fertilizer Company (FFC) being one of another major player in fertilizer sector of Pakistan, has been contributing its services since 36 years, with production capacity of 6600 million tons per day, involving an employee figure of 5500 individuals with its headquarters in Rawalpindi, Pakistan. Share capital at initial level of company was amounted to 813.9 million rupees but now share capital stands higher than Rs. 8.48 billion. In addition, FFC has more than Rs. 8.3 billion as long term investments comprised of stakes in subsidiaries of FFCEL, FFBL, and FCCL (Fauji Fertilizer Company Limited, 2015). FFC as per its results revelation in January 2015, profitability figure of PKR 18,552 million was cited and *Earning per share* was marked with figure of PKR 14.58, losing by 8% against results of last year as profitability accounts for PKR 20,135 million and EPS held at PKR 15.83 (Raza, 2015).

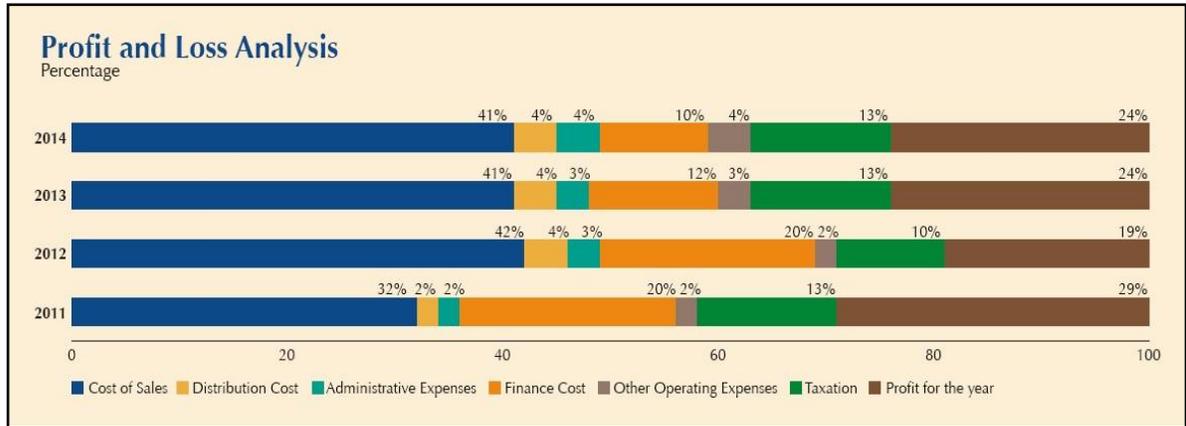


(Forging Ahead - FFC, 2014) – Annual Report

It is witness to Pakistan's economy, based on economic progress in 2014 with GDP sequence fostering to 4.1% compared with 3.7% in 2013, the highest figures being achieved during last 6 years. Growth line was completely backed by manufacturing and services sectors of the economy. Agriculture holds a key status and is considered as a source of living for rural inhabitants, additionally providing raw materials to industrial firms; it also embarks a significant contribution for export earnings of our nation. The sector accounts for 21% of GDP and absorbs around 44% of country's work force (Forging Ahead - FFC, 2014) Study revealed that among all in Pakistan, FFC is well-known market leader. FFC is focusing on strengthening skills of its workforce and that's why company has best professionals in different departments. It is efficiently utilizing gas as compared to other with acknowledged contracts by government as well in relation to loss of gas. It is considered as highest tax payer that is main contribution to enhancing economic growth. It also focuses on diversification; by initiating wind energy in Pakistan, invested in Al-Hamd food for preserving fresh food and renamed it as FFF (Fauji Fresh & Freeze), in its banking portfolio it is accredit as largest shareholder of Askari bank that is also a positive footstep towards growth (Recorder, 2015).

8.3 Fatima Fertilizers Company Limited

Fatima Fertilizer Company Ltd, a venture firm formed by two key business houses (Fatima and Arif Habib Group) in Pakistan was incorporated on 24 December, 2003. The company is an integration of art production facility with production capacity in million tons of Nitric Acid, Ammonia, Urea, Nitro Phosphate (NP), Calcium Ammonium Nitrate (CAN) and Nitrogen Phosphorous Potassium (NPK) at city of Sadiqabad, Rahim Yar Khan (Fatima Group of Companies, 2015). It is the biggest CAN and NP fertilizer producer in Pakistan. Because of efficient performance Fatima is showing growth in urea production. Its main focus has remained as "farmer's community education" and this campaign helped company to boost its sales volume.



(Fertilizers, 2014) – Annual Report

In spite of increasing fertilizer’s prices, FF enjoys advantageous position as compare to its peers because of its inherent advantages. Company got lion’s share in 2014 from urea whereas continuous low cost pressure and low gas curtailment was also there but its gross margin remains higher against its competitors. Past few years has shown stable performance for FF and this tries to assist company to pay its debts smoothly. Continuing threats hinder FF to surpass the demand to its operations but by its good performance demand remained stable for it (Recorder, 2014). A deep commitment of improving lives and standards of farmers have been marked in *Fatima’s* business model that ultimately plays a substantial role via increasing its productivity curves in agriculture sector of nation for its grand contribution (Fertilizers, 2014).

9.1 Risk Analysis

Risk is an uncertainty that a spending will earn its anticipated return rate (Reilly & Brown). Risk is different everywhere as per business geographical location; but investor at every stage tries to minimize risk-level in investment process to generate good return (Osnabrugge, 2000). Investment decisions are highly tied to investment risk (Virlics, 2013) and assessment of investment is also mandatory in an economic system, where information resource is fundamental to financing a decision for risk being involved (Kharlamova, 2014). Citing same we engage this section explaining risk factors analyzed for leading fertilizer firms of industry. The risk has been categorized into two factors as follows:

9.1.1 Qualitative Factors

The overall industry focuses on safety at work as its top priority, feeling its corporate social responsibility by avoiding risk of being publically failed industry. Values of *Health, Safety and Environment* (HSE) function of industry have ensured top line processes and systems for good compliance; total *recordable incident rate* and *safe working hours* has been major contributing instruments in measuring overall performance of division in economic industry. The ISO certifications provide answers to those minds that are quality oriented; while *process safety management* (PSM) has been a key concern to stockholders and stakes of

industry for its risk measurement. Thus, it can be concluded in a simple risk equation function as:

Qualitative Risk Factors = f (corporate risk, safety risk, quality risk & geographic risk).

9.1.2 Quantitative Analysis

Risk Analysis (Standard Deviation & Variance)					
	<i>Minimum</i>	<i>Maximum</i>	<i>Mean</i>	<i>Std. Deviation</i>	<i>Variance</i>
<i>Profit (After Tax) - Bn</i>	-2935000	20860000	1.04E+07	7.88E+06	6.21E+13
<i>Return on Capital</i>	9.13	70.38	33.2489	26.3242	692.963
<i>Earnings Per Share</i>	-2.59	16.4	7.31	6.62214	43.853
<i>Return on Equity</i>	-17.05	80.96	37.7789	32.75457	1072.862
Sample: Engro Fertilizers; FFC; Fatima Fertilizers; (3 years data analysis)					

The industry has tremendous performance dimensions, whereby standard deviation and variance (a relative measure to risk) for some investment ratios shows quite random effect on rate of return (mean) of each ratio (*Table-01*); showing a positive relation insists that there exists a significant relation in between taking risk and maximizing return as per economic conditions and number of firms present in industry, while ROE and CD shows high variance. FFC and Fatima are in profit since 2012 but Engro bears a loss in 2012 and 2013; highly suppressed of the conditions it all turned back to astonishing results in 2014 for Engro Fertilizers. Thus, it can be concluded in a simple risk equation function as:

Quantitative Risk Factors = f (financial risk, credit risk, earning risk & investment risk).

9.2 Developing Investment-Based Ratio Relations

The study has determined four ratios that are highly found significant for their result's consideration in investment decisions in different studies. The relations with basic brief definition of each variable are depicted in *Table-02*. Developed four relations persist in whole analysis, with combined numeric of three leading firms contributed in industry with regression to better comprehend in support of formulation of hypotheses.

Table-02

Ratio Relations Developed			
No.	Independent Variable	v/s	Dependent Variable
1	Earnings per share (EPS)	v/s	Share Price (SP)
* <i>Earnings per share</i> : It is a gain per share, obtained when net-income is divided by number of shares outstanding and serves as profitability of company.			
* <i>Share Price</i> : It is a market worth (price) of a share of a company.			
2	Return on Capital (ROC)	v/s	Market Capitalization (MC)
** <i>Return on Capital</i> : It is pay-back on capital employed, obtained when after-tax working income is divided by book value of equity and debt capital less cash or equivalents. It is used as a ratio in financing and estimation.			
* <i>Market Capitalization</i> : It is entire value of stock that is outstanding, calculated by multiplying per share market-price and number of shares-outstanding.			
3	Return on Equity (ROE)	v/s	Cash Dividend (CD)
* <i>Return on Equity</i> : It is ratio of net income of a firm to equity of an owner			
*** <i>Cash Dividend</i> : It is money directly paid to shareholders periodically, if available			
4	Profit After – Tax (PAT)	v/s	Revenue/Sales (R/S)
* <i>Profit After - Tax</i> : It is obtained by deducting financing expenses and taxes from operating profit.			
* <i>Revenue/Sales</i> : It is the sum of goods or services that are sold for the cost paid by clients.			
Sources: *(Drake & Fabozzi, 2010); ** (Poterba, 1998); *** (Complete Guide To Corporate Finance, 2016);			

Operations Circle of Industry for 2012 - 2014

Table-03

Comparative Highlights of Fertilizer Sector (2012 - 2014)									
Determinants	ENGRO Fertilizer			FFC			Fatima Fertilizer		
	2012	2013	2014	2012	2013	2014	2012	2013	2014
Revenue/Sales (Million)	30627	50128.94	61425	74322.61	74480.61	81240	29518.62	33495.89	36169.19
Profit After-Tax (Million)	(2935)	5497.10	8207.96	20860.12	20134.55	18170.76	6111.12	8022.18	9257.8
Production Capacity (Metric Ton)	1819	1819	1819	2403	2403	2403	1181	1181	1181
Earnings Per Share (Rs.)	(2.59)	4.50	6.23	16.40	15.83	14.28	2.91	3.82	4.41
Cash Dividend (%)	Nil [^]	Nil [^]	30	155.00	153.50	136.50	20.00	25.00	27.50
Share Price (Rs.)	49.41 [”]	47.21 [”]	86.96 [”]	148.35	110.80	116.22	24.59	25.25	30.76
Return on Capital (%)	9.13	22.04	22.81	70.38	68.41	64.50	10.38	14.48	17.11
Return on Equity (%)	(17.05) [*]	26.90	27.57	80.96	80.05	70.79	21.11	24.49	25.19
Market Capitalization (Million)	N/A [”]	64 ^{**}	103 ^{**}	188736.51	140963.97	148992	51639	53025	64596

Sources: Company Annual Report(s) – 2014 & KSE Company Report(s) - 2014

* refers to Loss; ** refers to Billion; [^] refers to source EFL Final Prospectus 2013(P#66); [”] refers to source (SCS-KSE Karachi Stock Exchange Brokerage, 2015)

The operations circle of industry shows an adornment growing relation to yearly timeline of its business. A good judgment can be made for differentiation and comparison of three leading firms in sector for their investment-based ratios, so that an investment decision can be made for the stock investment in this sector in a specific company or as a whole (Table-03)

10.0 Results

The results through statistical software have been shown in *Table-04* and *Table-05* for better illustration of model fitness, relations and significance in between independent and dependent variables (determinants) selected for investment decision.

Statistical Analysis for Ratio Relations				
<i>Analysis</i>	Earnings per Share v/s Share Price	Return on Capital v/s Market Capitalization	Return on Equity v/s Cash Dividend	Profit After-Tax v/s Revenue/Sales
<i>R Square</i>	0.751	0.096	0.877	0.710
<i>Adjusted R Square</i>	0.715*	-0.055***	(0.860)**	(0.669)*
<i>Covariance</i>	1.702	3.484E23	0.073	0.292
<i>Beta Coefficients</i>	0.866	-0.310	0.937	0.843
<i>t-value</i>	4.592**	-0.799***	7.069*	4.140**
** p<=0.001; * p<=0.005; *** p>0.005;				

10.1 Earnings per Share v/s Share Price

The Adjusted R Square shows that how much data is fit for defined relation; while the rest is considered as error term. The relation between two variables is analyzed and value of adjusted R Square is about 0.715 or 71.5% (*Table-04*) that indicates strength of relation for independent variable (EPS) to dependent variable (SP); whereas 28.5% is error term which shows that just EPS is not overall determinant of SP in investment market. It shows that this relation is significant at $p < 0.001$ and meaningful to its formation in investment perspectives. *Table-05* indicates the correlation values for these two variables towards others, with a highest of significance towards all except MC. Covariance in *Table-04* shows dependency of two variables; the dependent variable (SP) is positive and suggests that two variables covariates (moves with similar difference and space as per their value increase and decrease) in investment market. The beta value suggests for existence of direct relationship in between two that is 0.866 or 86.6% to show a consistent contribution of EPS in formation of new value determination for SP in equity investment house.

10.2 Return on Capital v/s Market Capitalization

The relation reveals value of adjusted R Square for about -0.055 or -5.5% (*Table-04*) that indicates weakness of relation for independent variable (ROC) to dependent variable (MC); whereas 105% is held for error term, which shows mostly the ROC is not a determinant of MC in investment market. It is not significant as $p > 0.005$ providing meaning in a sense that relation between two is insignificant and not meaningful for investment perspectives. *Table-05* indicates correlation for two variables towards others that is positive and highly significant except MC towards all. Covariance in *Table-04* shows the relation is positive and suggests two variables covariate with higher values of calculation and is completely insignificant to form a proper meaning to standards of statistical values, as per their value increase and decrease in investment market. Beta value in *Table-04* suggests for existence of

indirect relationship in between MC and ROC that is -0.310 or -31% referring a reverse contribution of ROC in increasing MC.

10.3 Return on Equity v/s Cash Dividend

The value of adjusted R Square is about 0.860 or 86% (*Table-04*) that indicates strength of relation for independent variable (ROE) to dependent variable (CD); whereas only 12% is error term which shows that ROE with some other market factors are combined determinants of CD in investment market. The overall relation is significant at $p < 0.005$ means relation between two is meaningful to its formation in investment perspectives.

Table-05 indicates correlation for two towards others that is positive with highest of significance level except MC. Covariance level in *Table-04* shows dependency of two variables is positive and suggests that two covariates with similar difference and space as per their value increase and decrease in investment market. Beta value in *Table-04* suggests existence of direct relationship in between CD and ROE that is 0.937 or 93.7%, refers to contribution of ROE in creating more value determination for CD in equity investment house.

<i>Correlations for Determinants</i>								
<i>Determinants</i>	<i>Earnings Per Share</i>	<i>Share Price</i>	<i>Return on Capital</i>	<i>Market Capitalization</i>	<i>Return on Equity</i>	<i>Cash Dividend</i>	<i>Profit (After Tax)</i>	<i>Revenue /Sales</i>
<i>Earnings Per Share</i>	1.00	0.87*	0.97*	-0.30***	0.99*	0.96*	0.98*	0.91*
<i>Share Price</i>	-----	-----	0.92*	-0.03***	0.81*	0.88*	0.79*	0.93*
<i>Return on Capital</i>	-----	-----	-----	-0.31***	0.94*	0.98*	0.92*	0.93*
<i>Market Capitalization</i>	-----	-----	-----	-----	-0.38***	-0.44***	-0.44***	0.06***
<i>Return on Equity</i>	-----	-----	-----	-----	-----	0.94*	0.99*	0.87*
<i>Dividend</i>	-----	-----	-----	-----	-----	-----	0.94*	0.86*
<i>Profit (After Tax)</i>	-----	-----	-----	-----	-----	-----	-----	0.84*
<i>Revenue/Sales</i>	-----	-----	-----	-----	-----	-----	-----	1.00

* $p < 0.001$; ** $p < 0.005$; *** $p > 0.005$;

10.4 Profit After-Tax v/s Revenue/Sales

The value of adjusted R Square for this relation is 0.669 or 66.9% (*Table-04*) that indicates strength of relation for independent variable PAT to dependent variable R/S; whereas 33.1% is error term which shows that just PAT is not overall determinant of R/S in investment market. It is also significant at $p < 0.005$ and is quite meaningful to its formation in investment perspectives.

Table-05 indicates correlation between two that is positive with highest of significance level except towards MC. Covariance in *Table-04* shows dependency of two variables is positive and suggests that variables covariates (moves with similar difference and space as per their value increase and decrease) in investment market. Beta value holds for existence of direct relationship in between R/S and PAT that is 0.843 or 84.3% that refers to contribution of PAT in increasing more R/S in investment.

11.0 Discussion

Investment decisions require application of empirical models to predict practicality of determinants of an investment as nature of these decisions is highly concerned to present analysis and future interpretation. The literature has revealed a list of factors that should be deemed in forming the decision like *economic factors influencing industry, company market operations with performance trends* and at all *sector policy*. Rest ahead at individual level *consumption* and *saving* decisions are highly important. We find that optimal options for investment available under uncertain conditions of Pakistan involve basic application of *prescriptive decision theory* that is strict study of making decisions via statistical measurement and *game theory* in economics for investment decision; whereby a flawless information is required to enforce an investment decision to make a smart move that brings best in payoff for calculated odds of decision put-up. It is just like utilizing a strategy to make an extensive study of the literature for investment variables and go for the decision that minimizes upset (Dauben, 2006).

As fertilizer is a natural or artificial substance used to supplement soil to promote plant growth in agriculture. The companies are trying to capture farmers who use their product, this is quite an un-educated market and we have seen, do doubt each of the firm is at its best in educating their target customers for selling and occupied a tremendous market share in national market. Seasonal and cyclical flow in fertilizer sector is somehow irrational in Pakistan but its performance for each one is best. Majority rule is in hands of FFC. Grouped investment can also be a better option to investors to split risk factor. Certainly investment decisions frequently involve extensive figures of money and most of them are complex to reverse and even can influence investor's personal strength of spending tolerance. Four corresponding relations formed in this study are highly meaningful in providing best relationship with their significance level that can even predict future growth of payoff for invested amount for investor.

We have found that most of investors look around the ratios and profitability figures in sector and opt out statistical significance of variables but it is quite unpredictable. For instance, we find that observing market capitalization of a company at its individual or jointly in a segment is meaningful for investment decisions but note in Pakistan it is statistically not significant in fertilizer sector. Therefore we must refer to expected rate-of-return that a company is enjoying must be exceeding investor's cost of capital. Combing all such as individual case study of three leading firms, sector overall performance, statistical results for relations and their significance, both of the hypotheses formed in this study holds true in Pakistan. The investors must properly examine investment determinants with their statistical significance (*Table-05*) before making an investment decision. No doubt, determinants of investment are significantly contributing to investment decision. We also endorse discussion section with SWOT analysis for better illustrating investment decision at last of study.

11.1 Sector Strength

The improving situation of Gas supply has improved production, distribution and sales line of fertilizer industry for DAP and Urea supply to market. It is almost after a half decade of losing the entire market gain from this sector is going to be transformed into profits this year, hope so (Fertilizer sales looking up, 2015). Fertilizer sector has been given the priority over other sectors for supply of gas by government side, as said by officials; as it is basic instrument of building nation's backbone that is agriculture. Same was being directed to provincial attendants and private firm's representations to ensure distribution of fertilizer in each province on the basis of their needs; government would completely support productivity continuation process and would provide gas-priority to this sector (Ghumman, 2014).

Restriction in Gas supply has threatened the sector at large since last 5 years and that is what has pushed producers and government to come on one platform to discuss and come up with the solution of that. Both of parties have made a commitment to fulfill economic needs of nation by contributing significant efforts, capital and productivity lines in fertilizer sector to boost agriculture performance of country (Recorder, 2014).

11.2 Sector Weakness

A production loss of 2.7 million ton has been marked against overall available production capacity of 6.9 million ton; suffering this loss government imported a significant quantity of urea investing a marginal cost to satisfy the conditions. Future contracts have also been made in order to fulfill the needs of agriculture based economy, showing a weakness of sector at now and this may not prevail in future subject to commitment fulfillment by both.

11.3 Sector Opportunities

Facts and figures about productivity parameters, gaps for different timelines and different periods highlight why shortcomings were on way to achieve planned results. A statement is also made to save around 120 billion rupees if uninterrupted gas supply is given to this sector for production purposes in forthcoming years. The learning can be obtained by viewing the growth curves of Indian economy for policy definition and may be implemented in our economy (Arifeen, 2013). It holds that demand is about 5.8 million tons against supply of 6.9 million tons, which suggests that 1 million ton (if uninterrupted gas supply is there) can be exported to earn significant figures of US dollars (Imaduddin, 2012).

11.4 Sector Threats

Less government concerns to this sector has pushed farmers to pay lesser attention and interest in this sector for investment purpose. Negligence in economic policy each year, making barter contracts against electricity with other countries would severely bring the trend of food shortage in our domestic economy. The fact is that successful sectors must not be prioritized over back-stayed sectors, so as to avoid inequality of resource allocation to discrete divisions; but government has yet not understood this, they just try to encourage

prosperous sector not back-ones; and at last they begin to privatize for performance. A crucial attention is required to focus on basic needs fulfilling firms (Hamid, 2013).

12.0 Conclusion for Investment Decision and Perceptions

It has been found in case study that the sector is set to bounce back for this year; the clouds of uncertainties would be walking around; but the hope of new ray suggests for long-term investment planning and implementation. The worst seems in quite improvement for Engro fertilizers in future, as its Enven plant and base plant has put into highest efforts of gaining continuous supply of gas and that is now bind to Government and Mari gas to supply as per terms and conditions settled. The loss in 2012 and slow earnings in 2013 were in the consequences of Enven plant ran for just 45 days in 2012 and that prevails for two years in profitability effect for Engro (Hyder & Jaffer, 2015). It is all thanked to Mari Gas continuous supply that puts FFC at top most of industry norms, results and figures; While Fatima Fertilizer has also a comparative competitive advantage to this; as they both have made all contracts with Mari Gas and do not buy gas from government firms. Same sustainable advantage is also now accessed by Engro for its good contribution value in market. The applicative contribution of study holds true for both hypotheses.

We derive an investment decision priority as follows for investors to buy FFC shares at 1st, Engro at 2nd, Fatima Fertilizer at 3rd; as per acceptance of risk factor. The good is that overall joint industry investment can also be a favorable option to investors.

13.0 Limitations

The study is limited by time as per specific completion of coursework and sample selection size (three leading firms involved in fertilizer sector) as per data access issues and concerns.

14.0 Future Directions

The future study can be expanded by widening scope of research as per investment of time factor, more literature searching, changed empirical supporting and considering factors of economic issues for policy making, increasing number of firms in sample size, using different statistical techniques for specific results and taking multinational experts advice.

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