APRIL 2017

International Journal of Economics, Finance and Business Management Studies

VOLUME 3 ISSUE 1 ISBN: 978-1-911185-46-8 (Online) ISSN: 2397-6926 (Online)

CONTENTS

FLE Learning

APRIL 2017

International Journal of Economics, Finance and Business Management Studies

VOLUME 3 ISSUE 1 ISSN: 2397-6926 (Online)

CONTENTS

APRIL 2017

International Journal of Economics, Finance and Business Management Studies

VOLUME 3 ISSUE 1 ISSN: 2397-6926 (Online)

Format for citing papers
This journal may be cited as (2017) 3(1) *IJEFBM* 000

Author surname, initial(s), Title of paper (2017) International Journal of Economics, Finance and Business Management Studies pp.

Disclaimer
Whilst every effort has been made to ensure that the information contained in this publication is correct, neither the editors and contributors nor FLE Learning accept any responsibility for any errors or omissions, quality, accuracy and currency of the information, nor any consequences that may result. FLE Learning takes no responsibility for the accuracy of URLs of external websites given in this publication nor for the accuracy or relevance of their content. The opinions, advices and information contained in this publication do not necessarily reflect the views or policies of the FLE Learning.

IJEFBM © 2017 FLE Learning Ltd
ISSN: 2397-6926 (Online)
ISBN: 978-1-911185-46-8 (Online)
This E-journal is published by FLE Learning Ltd (trading as FLE Learning) in Livingston, United Kingdom.

Annual Subscription £150.00

E-copies of articles from International Journal of Economics, Finance and Business Management Studies can be obtained from FLE Learning.

Current Rates are : £50.00 per article

Subscription and all editorial correspondance
FLE Learning Ltd
T: 0044 131 463 7007
F: 0044 131 608 0239
E: submit@flelearning.co.uk
W: www.flelearning.co.uk

3-Z7-3000

A COMPETITIVE ENTREPRENEURIAL EXTENDED MODEL

DR. ORIAH AKIR[1], DR. TANG HOWE ENG[2] AND MR. SENIAN MALIE[3]

ABSTRACT

This study explores the elements of personality and/or behavioural traits that explain entrepreneurial competitiveness, and devises an extended model in addition to the existing body of knowledge relating to the field of entrepreneurship and entrepreneurs. A cross-sectional survey design was carried out to determine the best competitive entrepreneurial behaviourial model. The findings indicated that a proactive trait made the largest contribution in explaining a competitive entrepreneur ($\beta = 10.4$, $p = 0.420$). The next largest contributing factor was the capacity for innovation ($\beta = 6.02$, $p = 0.286$), followed by networking ($\beta = 3.09$, $p = 0.103$) and risk-taking ($\beta = 2.38$, $p = 0.098$). This study has the potential to provide insights for managers and decision-makers in allocating financial/capital assistance to new entrepreneurs or even existing ones, allowing them to assess their capability and the feasibility and future growth of their business ventures.

Key words: competitive entrepreneurial model, proactive, innovative, networking, risk-taking

INTRODUCTION

The majority of past research on entrepreneurial behaviour and entrepreneurship direction has replicated the models used in the United States of America (USA), European Union (EU) and Asia. There are ongoing debates and arguments over the best models for determining successful entrepreneurs, advanced by positivists, constructivists and behaviourists, with no explicit effort to bridge these conflicting schools of thought. Proponents and opponents alike vary in their commendations on the best ways to decide whether personality traits or behavioural orientations determine the success or failure of an entrepreneur. While there is a substantial body of literature dwelling on successful entrepreneurs, very little literature touches on competitive entrepreneurs.

The main frame of reference for this research arises from the economic theory of entrepreneurs, first introduced by Cantillon (1755) and Say (1803). Cantillon (1755) saw the entrepreneur as a risk-taker, while Say (1803) considered the entrepreneur as a planner. In the 1930s and 1960s, the concept of entrepreneur was expanded to cover the entrepreneur as an innovator, striving for achievement and taking initiative as a change agent transforming problems and opportunities into new products or services and converting a source into a resource (Schumpeter, 1934a and 1934b; McClelland, 1961; Drucker, 1964; Shapero, 1975).

The emphasis of the present Malaysian government policy is for universities to produce entrepreneurs and not only employees for other organisations, especially targeted at Bumiputera graduates to encourage more of them to participate in the business arena, in local operations as well as on the world stage. Quantity matters, but also the competitiveness of an entrepreneur is of central interest. Therefore, since there is no or little initiative in developing a competitive entrepreneurial behaviour model that fits the local environment, there is an urgent need for Malaysian social scientists and scholars to engage in this effort.

[1] Dr. Oriah Akir, Senior Lecturer, Universiti Teknologi Mara Sarawak.
[2] Dr. Tang Howe Eng, Senior Lecturer, Universiti Teknologi MARA, Sarawak, Malaysia
[3] Mr. Senian Malie, Senior Lecturer, Universiti Teknologi MARA Sarawak.

This paper focuses on two objectives: to determine the relationship between personality and behaviour traits and competitive entrepreneurs; and to develop a competitive entrepreneurial model on this basis. Please refer Figure 1 for the conceptual framework of this research.

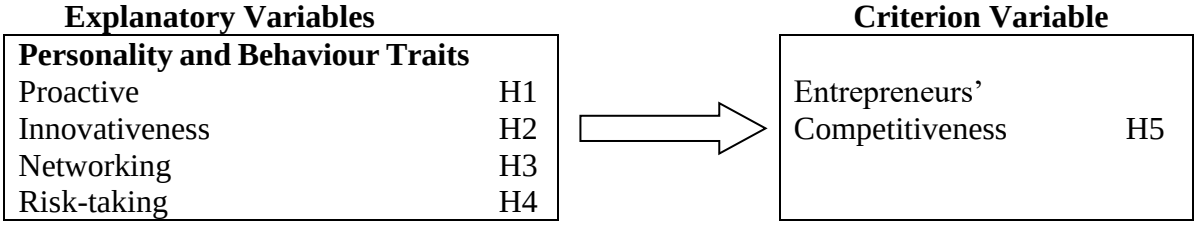


Figure 1:
The Conceptual Framework: An Extended Competitive Entrepreneurial Model

LITERATURE REVIEW

Entrepreneurship traditionally has been defined as "the creation of new enterprise" (Low and MacMillan, 1988). Pickle and Abrahamson (1990) describe "an entrpereneur as a person who organises and manages a business entity, assuming the risk for the sake of profit. The entrepreneur evaluates perceived opportunities and strives to make the decisions that will enable the firm to realise sustained growth." The recent definition of an entrepreneur extends the traditional definition: besides the creator of new wealth, an entrepreneur is also the creator of new jobs, the inventor of new products and services, and the revolutioniser of society and the economy (Cohoon, Wadhwa and Mitchell, 2010).

Several studies have identified and postulated that entrepreneurial behaviour or actions are influenced by psychological trait theories, behavioural orientation theorists and positivist concepts of a goal-oriented perspective (Boyd and Vozikis, 1994). However, the traits approach of entrepreneurship has been criticised by opponents, who argue that personality traits do not distinguish the entrepreneur from managers because most psychological traits are also prevalent in managers and common to other successful individuals or non-entrepreneurs (Virtanen, 1996; Nandram and Samsom, 2007). For example, factors such as the need for achievement, locus of control, a propensity for risk-taking and a tolerance for ambiguity have been identified and examined as possible traits associated with entrepreneurial behaviour. All these traits are related to McClelland's theory of the need for achievement (Brockhaus, 1982).

Studies also reveal that these traits are not good predictors for entrepreneurial success. The behavioural views connote that the behaviourial actions of an entrepreneur, such as their abilities, temperament and dynamic attributes, contribute to success (Nandram and Samson, 2007), and that social networks and environments play a role in contributing to the success and failure of entrepreneur and entrepreneurship alike (Gnyawali and Fogel, 2008). Most of these past works are concerned with the success of the entrepreneurs, but what factors and actions make up a competitive entrepreneur is not clearly defined. Therefore, it is vital to bridge this gap and research on this issue is necessary.

Based on past literature and arguments, it is evident that all personality and behavioural traits in one way or another have an impact on the success of an entrepreneur's business venture and are equally important in contributing to and influencing an entrepreneur's competitiveness. Even though this relationship is not directly implicated, it is the assumption of this research and hypothesis that personality and behavioural traits (proactive, innovative, networking and risk-taking) significantly explain the entrepreneurs' competitive behaviour (criterion variable).

RESEARCH METHODS

The two research questions to be dealt with are: Is there any significant relationship between different personality and behaviour traits and the competitiveness of entrepreneurs? What are the significant personality and behaviour traits that predict a competitive entrepreneur?

Cross-sectional research was performed to establish validity, stability and reliability among the sets of variables, using factorisation methods and internal consistency tests. The review of the literature was conducted to gather information on entrepreneurial behavioural theories, personality traits theories and social perspective. The information from various sources were fully analysed to gain an understanding of entrepreneurial behaviour concepts and entrepreneurship theories. A survey was conducted among the target group of entrepreneurs operating or basing their businesses in Sarawak, Sabah and Peninsular Malaysia. This group of individuals was selected due to their contribution to influencing and fostering the growth of the Malaysian economy over several decades. These entrepreneurs were taken from three types of industry: the micro-industry, small medium enterprises, and sendirian berhad/holding berhad. They consisted of multiple disciplines, such as hospitality and tourism, healthcare, service firms, retailing, transportation, furniture and fixtures, education, automobiles, and telecommunication, and were selected from each region (Sarawak, Sabah and Peninsular Malaysia). A survey is one of the vital ways to complement the objectives of this research. The analysis involved the process of adding and deleting predicting variables against the criterion variable to compare which of the models had the most predicting power in explaining the criterion variable. In the process of model building, p-value was used as a comparative measure of the alternative models. Hence, this research attempts to develop a model to extend the body of knowledge in the field of entrepreneurial behaviour and competitiveness.

FINDINGS

The questionnaire on the personality and behaviour traits of a competitive entrepreneur used five scales for measuring five constructs (proactive, innovative, networking, risk-taking, and competitiveness). The items were adapted from well-known entrepreneurship questionnaires and comprised of 23 items, with an additional five to measure competitiveness that were newly developed by the researchers. After data reduction was performed using exploratory factor analysis (EFA) and principal component (PCA) analysis, the 28 total items were reduced to 18, factorised into five components that yielded good scores and met the Kaiser criterion threshold, which was above 0.70 (Nunnally, 1978; Malhotra, 2004). The items were answered by 499 respondents. The Cronbach's Alpha result for the 18 items was 0.944 (refer to Table 1). The result of the reliability measure was high: $\alpha = 0.944$. All items contribute to the reliability of the questionnaire. These items were used to analyse the five constructs in the analysis of the personality and behaviour traits of a competitive entrepreneur. The item statistics for each of the 18 items are shown in Table 2.

Table 1: Reliability Analysis for Personality and Behaviour Traits Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha on Standardised Items	No. of Items
0.944	0.947	18

Table 2: Item Statistics for Eighteen Items

	Mean	Std. Deviation	N
Proactive 3	4.0822	0.90028	499
Proactive 4	4.0240	0.91145	499
Proactive 5	3.9679	0.99747	499
Innovative 11	3.6653	0.99709	499
Innovative 12	3.5491	0.95852	499
Innovative 13	3.6232	1.00518	499
Innovative 22	4.0020	1.03065	499
Innovative 23	3.8557	1.03707	499
Innovative 24	3.7575	0.97936	499
Networking 19	3.6693	1.16891	499
Networking 20	3.4349	1.24397	499
Networking 21	3.3868	1.32807	499
Risk-taking 26	3.8076	0.95641	499
Risk-taking 27	3.9118	0.95703	499
Risk-taking 28	3.7876	1.05424	499
Competitive 15	3.7014	1.05331	499
Competitive 16	4.0441	1.04231	499
Competitive 17	4.1042	1.05147	499

Correlation analysis was used to determine if there is any significant relationship between the personality and behaviour traits (proactive, innovative, networking, and risk-taking) of a competitive entrepreneur. Generally, the respondents agreed that the personality and behaviour traits of a competitive entrepreneur (Table 3) consisted of proactive trait (mean = 4.02), innovative trait (mean = 3.74), networking trait (mean = 3.50), and risk-taking trait (mean = 3.84).

Table 3: Descriptive Statistics for the Personality and Behaviour Traits of a Competitive Entrepreneur

	Mean	Std. Deviation	N
Proactive	4.0247	0.86277	499
Networking	3.4970	1.13999	499
Innovative	3.7422	0.81354	499
Risk-taking	3.8357	0.83256	499
Competitive	3.9499	0.94064	499

Correlational analysis yielded a significant relationship between the personality and behaviour traits and the competitive entrepreneur. Table 4 shows that all four traits were significantly associated with the competitive entrepreneur: the proactive trait was (r, 499) = 0.729, $p < 0.05$); the innovative trait was (r, 499) = 0.713, $p < 0.05$); the risk-taking trait was (r, 499) = 0.609, $p < 0.05$); and the networking trait (r, 499) = 0.468, $p < 0.05$).

The regression analysis indicated that higher levels of competitiveness were associated with positive personality and behaviour traits. The regression analysis had an overall significance at $p < 0.05$ with an adjusted R-Square of 0.615 (Table 5) and an F-value of 199.54 (Table 6). The multiple regression results suggest that the four constructs of personality and behaviour traits (proactive, innovative, networking, and risk-taking) provided a 62% positive incremental R^2 change (Table 5).

Table 4: Pearson Correlation Analysis for the Personality and Behaviour Traits of a Competitive Entrepreneur

		Proactive	Networking	Innovative	Risk-taking	Competitive
Proactive	Pearson	1	0.398**	0.727**	0.614**	0.729**
	Sig. (2-tailed)		0.000	0.000	0.000	0.000
	N	499	499	499	499	499
Networking	Pearson	0.398**	1	0.520**	0.501**	0.468**
	Sig. (2-tailed)	0.000		0.000	0.000	0.000
	N	499	499	499	499	499
Innovative	Pearson	0.727**	0.520**	1	0.704**	0.713**
	Sig. (2-tailed)	0.000	0.000		0.000	0.000
	N	499	499	499	499	499
Risk-taking	Pearson	0.614**	0.501**	0.704**	1	0.609**
	Sig. (2-tailed)	0.000	0.000	0.000		0.000
	N	499	499	499	499	499
Competitive	Pearson	0.729**	0.468**	0.713**	0.609**	1
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	
	N	499	499	499	499	499
**. Correlation is significant at the 0.01 level (2-tailed).						

Table 5: Model Summary of Regression Analysis

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	0.786[3]	0.618	0.615	0.58396	0.618	199.543	4	494	0.000

a. Predictors: (Constant), risk-taking, networking, proactive, innovative
b. Dependent Variable: Competitive

Table 6: ANOVA of Regression Analysis

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	272.180	4	68.045	199.543	0.000[b]
	Residual	168.456	494	0.341		
	Total	440.636	498			

a. Dependent Variable: Competitive
b. Predictors: (Constant), risk-taking, networking, proactive, innovative

A collinearity diagnostic test was further conducted to assess multi-collinearity. Collinearity may be indicated by a Variable Inflation Index (VIF) greater than 10. No indicators had a VIF value greater than 10; thus, the results suggested that the data did not violate the assumption of multi-collinearity in this research. Overall, proactive, networking, innovative and risk-taking traits are typically more responsive to competitiveness (Table 7).

Table 7: Coefficients Analysis

Model		Unstandardised Coefficients		Standardised Coefficients	T	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	0.149	0.140		1.067	0.287		
	Proactive	0.458	0.045	0.420	10.143	0.000	0.451	2.216
	Networking	0.085	0.028	0.103	3.090	0.002	0.694	1.442
	Innovative	0.330	0.055	0.286	6.021	0.000	0.344	2.908
	Risk-taking	0.111	0.046	0.098	2.384	0.018	0.458	2.181

a. Dependent Variable: Competitive

DISCUSSIONS

Entrepreneurial behaviour and strategic actions are complimentary when integrated and can achieve the greatest wealth (Sharma and Chrisman, 1999). While entrepreneurial behaviour and strategic actions linked to wealth creation are products of the firm's resources (Hitt et al., 2001a), Jury (1999) suggests that an entrepreneur must pay extra attention to proactive behaviour. Evaluating marketing opportunities and showing proactive behavioural skills reflect the characteristics of proactivity and having an entrepreneurial vision.

Proactive: Bateman and Crant (1993) argued that the proactive personality scale may have implications for vocational choice and entrepreneurship in particular. Such an assertion is intuitively appealing, given the definition of a proactive personality and previous research on its correlation with entrepreneurship. Proactivity may be crucial to an entrepreneurial orientation because it suggests innovative activity and risk-taking accompanied by a forward-looking perspective.

Arguments favouring a positive relationship between entrepreneurial proactivity, performance and competitiveness do exist (Bateman and Crant, 1993); but this relationship is manifested in terms of the performance of the firms (Blesa and Ripolles, 2009). It was revealed that most successful firms were headed by someone or entrepreneurs who were competent and competitive. For example, in family-oriented firms in particular, it was indicated that proactivity and innovation have a positive relationship and the extent of risk-taking was lesser than in a non-family-oriented business (Bateman and Crant, 1993; Naldi et al., 2007).

Innovative: Innovation is an important factor to characterise entrepreneurship (Miller and Friesen, 1982; Miller and Friesen, 1983; Karagozoglu and Brown, 1988; Covin and Slevin, 1989). Schumpeter (1934) pointed out that innovativeness stimulates economic development and is the engine of corporate growth and wealth creation. Innovation resulting from a new combination of production factors is critical to firms' wealth-creating efforts.

Innovation is also linked to the successful performance of firms in the industrial and service sectors, as well as to entire economies (Kluge, Meffert and Stein, 2000). Effective innovation creates new value for customers (Mizik and Jacobson, 2003) and is required to help firms survive gales of creative destruction, along with serving as a catalyst for those gales (Danneels, 2002). Entrepreneurial activity is closely related to the innovative, proactive and risk-taking actions of the entrepreneurs (Covin and Selvin, 1989; Moreno and Casillas, 2008). In fact, innovation contributes the most to predicting firm growth (Bruderi and Preisendorfer, 2000) and is very important in both family-oriented firms and non-family-oriented firms (Price, Stoica and Boncella, 2013).

Social Networking: Networking is often mentioned in a business scenario, because people feel the need to distinguish "networking" behaviour from ordinary business behaviour. Hence, entrepreneurs' networks are important for opportunity recognition (Hills, Lumpkin and Singh, 1997). Entrepreneurial "networking" is a special kind of relationship within personal networks. It is a network built on strong ties, relations that entrepreneurs can "count on" (Hitt et al., 2001b).

"Networking" involves expanding one's inner circle of trust (such as the set of people the entrepreneurs have a long relationship with, and even those individuals with whom the entrepreneurs have weak ties: Ardichvili, Cardozo and Ray, 2003). This trust relationship evolves slowly. The accumulation of such acts enables the parties to expand their relations and eventually engage in major transactions (Blau, 1964). Therefore, successful and competitive entrepreneurs are more likely to be found in positions that are connected to diverse information sources (Aldrich, Rosen and Woodward, 1987).

Networking is also about activity through which entrepreneurs obtain information about new entrepreneurial ideas (Soh, 2002). Social networks consist of chains of persons who provide a specific service or support to a person, who is also expected to provide similar support in return (Donnell et al., 2001). In networks, relationships provide emotional support for entrepreneurial risk-taking, and this can be fruitful in some situations (Hoang and Antoncic, 2003). In entrepreneurship, networks focus on social processes that influence social structures and make mobilisation easier (Greve, 1995).

The size of a social network refers to the number of individuals in the network, and its composition refers to the degree to which a network is made up of either family members or friends (Allen, 2000). An individual must gain access to wide variety of different sources of information to develop business tactics (Ucbasaran, Westhead and Wright, 2008). In entrepreneurship activities, social networking is considered as an important tool for business enhancement and competitiveness (Helm, Mauroner and Dowling, 2010). The argument is that network connections and structure facilitate the flow of information and create mutual trust and cooperation (Kwanghui and Brian, 2010). Individuals can start a business through networks in the markets and socialising with peers in social media and social organisations.

Risk-taking: Risk-taking has almost been accepted as being closely related to the entrepreneurship concept, or the entrepreneurs' willingness to engage in calculated business-related risk (Brockhaus, 1980; Okhomina, 2007). Uncertainties in business ventures have an important effect on entrepreneurs' risk-taking, which coincides alongside other personality characteristics such as proactivity and innovation. The increasing uncertainties in the business world, and the possibility of high risk which causes these uncertainties, can be turned into an opportunity by the entrepreneurs.

Entrepreneurship would be unnecessary without uncertainty (Wang and Hanna, 2006). What is necessary is to anticipate the risks arising from such uncertainties and knowing how to overcome them (Palmer, 1971; Martin 1984; Lee and Peterson, 2000; Price, 2004; Kamalanabhan et al., 2006; Li, 2006). McGrath and MacMillan (2000) view an entrepreneurial mindset as a way of thinking about business that focuses on and captures the benefits of uncertainty. Uncertainty is a perceptual phenomenon derived from an inability to assign probabilities to future events (Hoskisson and Busenitz, 2002).

Risk and ambiguity are part of organisational uncertainty (Priem, Love and Shaffer, 2002). Lunnan et al. (2006) identify two main elements of entrepreneurship: the ability to recognise business opportunities and the ability to take calculated risks (Zimmerer and Scarborough, 1998). Similarly, Dickson and Gigilierano (1986) pay attention to the relationship between entrepreneurs and risk-taking that is inherent in entrepreneurship. It is

necessary to associate this personality characteristic closely with the entrepreneur's competitiveness because entrepreneurs have the desire to start new a business and develop workable products and services (Stoner and Freeman, 1992; Ufuk and Ozgen, 2001).

Based on the arguments above and the findings of this research, it is evident that all these personality and behaviour traits (proactive, innovative, networking and risk-taking) have a significant impact on the success of an entrepreneurs' business venture and are equally important in contributing and influencing the competitiveness of entrepreneurs. The assumption of this study, which postulated that both personality and behaviour traits are positively responsive to an entrepreneur's competitiveness, is thus strongly supported and contributes significantly to the field of entrepreneurship and entrepreneurial behaviour.

CONCLUSIONS AND IMPLICATIONS

On the basis of beta value, proactive made the largest contribution in explaining a competitive entrepreneur ($\beta = 10.4$, $p = 0.000$). The next largest contributing factor was the capacity for innovation ($\beta = 6.02$, $p = 0.000$), followed by networking ($\beta = 3.09$, $p = 0.002$) and risk-taking ($\beta = 2.38$, $p = 0.018$). It could thus be concluded that (regardless of education, motivating factors, success factors, challenges and other related social factors) to be competitive in their business ventures an entrepreneur must possess all these personality and behaviour traits (proactive, innovative, networking and risk-taking) to ensure their competitive advantage and sustainability in the market place. This answers the following questions: "Is there any significant relationship between different personality and behaviour traits and the competitiveness of entrepreneurs?" and "What are the significant personality and behaviour traits that predict a competitive entrepreneur?"

Theoretically, this research contributes to the field of entrepreneurship and entrepreneurial behaviour through the development of an extended competitive entrepreneurial model. This research also develops new measurements for the competitiveness of an entrepreneur, reflected through personality and behaviour traits. The items used to measure competitiveness are new and developed by the researchers using exploratory factor analysis to validate what the items are intended to measure.

The implication of the findings of this research in terms of practice is that it has potential to provide an insight for managers and decision makers in allocating financial/capital assistance to new or existing entrepreneurs, helping them assess their capability and the feasibility and future growth of their business ventures. In the long run, this benefits the entrepreneurs and fosters the nation economy.

This research is fundamental in nature. Therefore, caution has to be exercised in interpreting the results, as the sample used was not representative of all entrepreneurs in Malaysia and the ASEAN region. The research results displayed the entrepreneurs' behaviour while carrying out business ventures mostly in the Sarawak region, and comprised of the majority (90%) of the respondents to the research survey. It is recommended that the direction for future research is necessary to investigate issues relating to the personality and behaviour traits of a competitive entrepreneur on a broader perspective, to replicate and validate the parsimony and robustness of the research model.

ACKNOWLEDGEMENTS

This research was made possible through a generous grant from Research and Industrial Linkage Division, Universiti Teknologi MARA Sarawak, Malaysia.

REFERENCES

Allen, W. (2000) Social networks and self-employment. *Journal of Socio-economics*, 29(5), 487-501.

Ardichvili, A., Cardozo, R. and Ray, S. (2003) A theory of entrepreneurial opportunity identification and development. *Journal of Business Venturing*, 18(1), 105-123.

Aldrich, H. Rosen, B. and Woodward, W. (1987) *The impact of social networks on business fundings and profit*. In N. Churchill (eds.). *Frontiers of Entrepreneurship Research*. Wellesley, MA: Babson College Center for Entrepreneurial Studies, 154-168.

Bateman, T. S. and Crant, J.M. (1993) The Proactive Component of Organizational Behavior. *Journal of Organizational Behavior*, 14(2), 103-118.

Blau, P. (1964) *Exchange and Power in Social Life*. New York: Wiley.

Blesa, A. and Ripolles, M. (2003) The role of market orientation in the relationship between entrepreneurial proactiveness and performance. *Journal of Entrepreneurship*, 12(1), 1-19.

Boyd, N.G. and Vozikis, G.S. (1994) The influence of self-efficacy on the development of entrepreneurial intentions and actions. [Online]. *Entrepreneurship: Theory and Practice*, 63-77. Available from: http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.477.4240andrep=rep1andtype=pdf [Accessed 23 August 2016].

Brockhaus, R.H. (1980) Risk taking propensity of entrepreneurs. *Academy of Management Journal*, 2(3), 509-520.

Brockhaus, R.H. (1982) The Psychology of the Entrepreneur. In: C.A. Kent, D. Sexton and K. Vesper (eds.). *Encyclopedia of Entrepreneurship*. London: Prentice Hall, 39-57.

Bruderi, J. and Preisendorfer, P. (2000) Fast growing businesses: empirical evidence from a German study. *International Journal of Sociology*, 30, 45-70.

Cantillon, R. (1755) *Essai sur la nature du commerce en general*. London: Gyles.

Cohoon, J.M., Wadhwa, V. and Mitchell, L. (2010) *The Anatomy of an Entrepreneur: Are* Successful Women Entrepreneurs Different from Men? [Online]. Kauffman, The Foundation of Entrepreneurship: 1-12. Available from: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1604653 [Accessed 23 August 2016].

Covin, J.G. and Slevin, D.P. (1989) Strategic management of small firms in hostile and benign environments. *Strategic Management Journal*, 10(1), 75-87.

Danneels, E. (2002) The dynamics of product innovation and firm competencies. *Strategic Management Journal*, 23(12), 1095–1121.

Dickson, P.R. and Gigilierano, J.J. (1986) Missing the boat and sinking the boat: a conceptual model of entrepreneurial risk. *Journal of Marketing*, 50(3), 58-70.

Donnell, A. et al. (2001) The network construct in entrepreneurship research: a review and critique. *Journal of Management Decision*, 39(9), 749-760.

Gnyawali, D.R. and Fogel, D.S. (2008) Environments for entrepreneurship development: key dimensions and research implications. *Entrepreneurship: Theory and Practice*, 18, 43-62.

Greve, A. (1995) Networks and entrepreneurship – an analysis of social relations, occupational background, and use of contacts during the establishment process. *Scandinavian Journal of Management*, 11(1), 1-24.

Helm, R., Mauroner, O. and Dowling, M. (2010) Innovation as mediator between entrepreneurial orientation and spin-off venture performance. *International Journal of Entrepreneurship and Small Business*, 4(11), 472-491.

Hills, G., Lumpkin, G.T. and Singh, R.P. (1997) *Opportunity recognition: perceptions and behaviors of entrepreneurs*. Wellesley, MA: Frontiers of Entrepreneurship Research, Babson College, 203-218.

Hitt, M.A. et al. (2001a) Direct and moderating effects of human capital on strategy and performance in professional service firms: a resource-based perspective. *Academy of Management Journal*, 44(1), 13-28.

Hitt, M.A. et al. (2001b) The institutional effects on strategic alliance partner selection in transition economies: China vs. Russia. *Organisation Science,* 15(2), 173-185.

Hoang, H. and Antoncic, B. (2003) Network-based research in entrepreneurship: a critical review. *Journal of Business Venturing,* 18(2), 165-187.

Hoskisson, R.E. and Busenitz, L.W. (2002) Market Uncertainty and Learning Distance in Corporate Entrepreneurship Entry Mode Choice. In: M.A. Hitt, R.D. Ireland, S.M. Camp and D.L. Sexton (eds.). *Strategic Entrepreneurship: Creating a New Integrated Mindset*. Oxford: Blackwell Publishers, 151-172.

Jury, J.J. (1999) Focus: Sweden-Venture capitalists flock to Swedish high-tech. *European Venture Capital Journal*, 1, 34-38.

Kamalanabhan, T.J., Sunder, D.L. and Manshor, A.T. (2006) Evaluation of entrepreneurial risk-taking using magnitude of loss scale. *The Journal of Entrepreneurship,* 15(1), 37-46.

Karagozoglu, N. and Brown, W.B. (1988) Adaptive responses by conservative and entrepreneurial firms. *Journal of Product Innovation Management,* 5(4), 269-281.

Kluge, J., Meffert, J. and Stein, L. (2000) The German road to innovation. *The McKinsey Quarterly*, 2, 99-105.

Kwanghui, L. and Brian, C. (2010) The effects of social networks and contractual characteristics on the relationship between venture capitalists and entrepreneurs. *Asia Pacific Journal of Management,* 29(3), 573-596.

Lee, S.M. and Peterson, J.S. (2000) Culture, entrepreneurial orientation, and global competitiveness. *Journal of World Business,* 35(4), 401-415.

Li, J. (2006) *Entrepreneurship and small business development in China*. Bradford: Emerald Group Publishing Limited.

Low, M.B. and MacMillan, I.C. (1988). Entrepreneurship: past research and future challenges. *Journal of Management*, 14(2), 139-161.

Lunnan, A., Nybakk, E. and Vennesland, B. (2006) Entrepreneurial attitudes and probability for start-ups an investigation of Norwegian non-industrial private forest owner. *Forest Policy and Economics,* 8, 683-690.

Malhotra, N.K. (2004) *Marketing research: an applied orientation.* 4thed., Upper Saddle, New Jersey: Prentice Hall.

Martin, S.S. (1984) Exploring the concept of enterprise. *Nursing Economics,* 2, 406-408.

McClelland, D.C. (1961) *The achieving society*. Princeton, NJ: Van Nostrand.

McGrath, R.G. and MacMillan, I. (2000) *The entrepreneurial mindset*. Boston: Harvard Business School Press.

Miller, D. and Friesen, P.H. (1982) Innovation in conservative and entrepreneurial firms: two models of strategic momentum. *Strategic Management Journal,* 3(1), 1-25.

Miller, D. (1983) The correlates of entrepreneurship in three types of firms. *Management Science,* 29(7), 770-791.

Mizik, N. and Jacobson, R. (2003) Trading off between value creation and value appropriation: the financial implications of shifts in strategic emphasis. *Journal of Marketing,* 67, 63-76.

Moreno, A.M. and Casillas, J.C. (2008) Entrepreneurial orientation and growth of SMEs: a causal model. *Entrepreneurship: Theory and Practice,* 32(3), 507-528.

Naldi, L. et al. (2007) Entrepreneurial orientation, risk taking, and performance in family firms. *Family Business Review,* 20(1), 33-47.

Nandram, S. and Samsom, K. (2007) *Entrepreneurial Behavior*. NRG Working Paper no. 07-04, Nyendore, Business Universiteit, Holland.

Nunnally, J. (1978) *Psychometric theory*. New York: McGraw-Hill.

Okhomina, D. (2007) Does level of education influence psychological traits? Evidence from used car entrepreneurs. *Journal of Management and Marketing Research*, 3(1), 1-14.

Palmer, M. (1971) The application of psychological testing to entrepreneurial potential. *California Management Review*, 13(3), 32-38.

Pickle, H.B. and Abrahamson, R.L. (1990) *Small Business Management*. New Jersey: John Wiley and Sons, Inc.

Price, R.W. (2004) *Roadmap to Entrepreneurial Success: Powerful Strategies for Building a High-Profit Business*. Saranac Lake, NY, USA: Amacom.

Price, D.P., Stoica, M. and Boncella, R.J. (2013) The relationship between innovation, knowledge, and performance in family and non-family firms: An analysis of SMEs. *Journal of Innovation and Entrepreneurship*, 2(14), 1-20.

Priem, R.L., Love, L.G. and Shaffer, M.A. (2002) Executives' perceptions of uncertainty scores: A numerical taxonomy and underlying dimensions. *Journal of Management*, 28(6), 725-746.

Say, J.B. (1830) *Cours complet d'economie politique*. Paris: Guillaume.

Schumpeter, J.A. (1934) *The theory of economic development*. Cambridge, MA: Harvard University Press.

Shapero, A. (1975) The displaced, uncomfortable entrepreneur. *Psychology Today*, 11(9), 83-133.

Sharma, P. and Chrisman, J. J. (1999) Toward a reconciliation of the definitional issues in the field of corporate entrepreneurship. *Entrepreneurship Theory and Practice*, 23(3), 11-27.

Soh, P.H. (2003) The role of networking alliances in information acquisition and its implications for new product performance. *Journal of Business Venturing*, 18(6), 727-744.

Stoner, J.A. and Freeman, R.E. (1992) *Management*. 5th ed., New Jersey: Prentice-Hall Inc.

Ucbasaran, D., Westhead, P. and Wright, M. (2008) Opportunity identification and pursuit: does an entrepreneur's human capital matter? S*mall Business Economics*, 30(2), 153-173.

Ufuk, H. and Ozgen, O. (2001) The profile of women entrepreneurs: A sample from Turkey. *International Journal of Consumer Studies*, 25(4), 299-308.

Virtanen, M. (1996) *Entrepreneurial Finance and Venture Capital Advantage*. Finland: Helsinki School of Economics Publications.

Wang, C. and Hanna, D.S. (2006) The risk tolerance and stock ownership of business-owning households. *Consumer Interests Annual*, 52, 257-270.

Zimmerer, W.T. and Scarborough, N.M. (1998) *Essential of entrepreneurship and small business management*. New Jersey: Prentice-Hall.

9-Z14-3035

FOREIGN PORTFOLIO INVESTMENT AND ECONOMY: THE NETWORK PERSPECTIVE

MR. MUHAMMAD MOHSIN HAKEEM[4] AND KEN-ICHI SUZUKI

ABSTRACT

The European Union and the Eurozone present an intriguing case of a strongly interconnected network with a high degree of dependence among nodes. This research focused on the investment network of the European Union and its major trading partners for a specific time period (2001–14). The changing investment patterns within the Eurozone suggest strong financial and trade links with central and large economies. This study is about the association between portfolio investments and economic indicators with respect to financial networks. The analysis used the strongly connected investment network of the Eurozone and its large trading partners. A strong correlation between increasing or decreasing investment patterns with economic indicators of particular economy was found. Interestingly, correlation patterns for network members other than Eurozone states were not as strong and depicted mild behavior. This also explains the significance of the levels of interconnectedness among nodes of one network with varying centrality measures. Investment network visualisation techniques helped to validate the results based on the network's statistical measures.

Keywords: European Union, Eurozone, Investment Network, Economic Indicators, Centrality Measures, Network Visualisation

INTRODUCTION

Portfolio investment is one of the major indicators of investor friendly and good performing equity markets of a single country. The rate of return is certainly the most prominent factor behind investment decisions, but ease of access, financial stability and lower levels of taxation play an evident role in the final decision of investment managers regarding liquidity flows. Being a part of an investment network, either weak or strong, can open up new possibilities to attract foreign investors by making markets more visible and investor friendly. Networks such as the European Union (EU) or the Eurozone are supposed to influence the investment flows for any particular nodes within, due to strong connectivity patterns and the possibility of small clusters. This study explores the details of the individualistic or local characteristics of every node within the investment network, mainly the connectivity patterns, closeness within the network or the possibility of large nodes in the neighbourhood. All these characteristics can influence the portfolio investment flows for any particular country. The objective of this study is to analyse the connectivity patterns with the network and the major economic indicators of any country to find possible connections or correlations in between: in other words, if economic stability or deterioration with respect to certain indicators can be associated with strong or weak connectivity patterns with the network, affecting the economic state of affairs.

Association or linkage does not have implications for causality. The strong linkage with a network and higher or improved economic indicators may or may not represent the underlying causes, but would reflect different possibilities. To understand these phenomena, we used the investment network of the European Union with a focus on individualistic characteristics of nodes. Based on criteria concerning closeness and connectivity, the nodes were divided into different tiers. At least one node from every tier was selected to build a correlation matrix based on network measures and relevant economic indicators to understand the relationship between network position, economic stability and attractiveness for investors.

[4] Mr. Muhammad Mohsin Hakeem, Doctoral Student, Tohoku University.

The network is based on the coordinated portfolio investment survey (CPIS) database compiled and regularly published by International Monetary Fund (IMF).

THE LITERATURE

The discussion on the relationship between portfolio investment and economy is not new; on the contrary, it is in a continuous process of development, enhancing understanding and the evaluation of different perspectives. Portfolio investment and associated concepts, such as its determinants, investor protection, efficiency of capital markets, flow determinants and patterns, exchange rate movements and information mobility, are too few to mention. Economic relations are also part of widely available literature. Rogoff (1999) focused on the considerable change from debt to equity financing within the economy; equity investment flows increase accordingly. Bekaert and Harvey (1998) confirm the direct impact of private equity investment on the macroeconomic performance of emerging markets. They also confirm the impact of portfolio investment on economic growth and stability of emerging economies (Bekaert and Harvey, 2000). Their later paper (Bekaert and Harvey, 2003) focuses on the impact of increased liquidity and better access to cheaper financing on the economic activity of the host country.

Researchers such as Levine and Zervos (1996) discuss investment's impact on liquidity and the implications for a better and broader market. Issues related to the improvement of foreign portfolio investments for any country, and its contribution towards a more efficient stock market and the elimination of financial constraints for domestic corporations, are discussed in detail by Laeven (2003) and Knill (2004). Besides the positive impact of portfolio investment, such as betterment of capital markets and capital access, there are studies focusing on short- or long-term adverse effects,. The multiplier effect for the growth of capital markets improves the liquidity situation for all investors; the capital flows are the depiction of enhanced economic growth and activity, and add value towards wealth creation and distribution. Efficient capital allocation is the ultimate aim, which can help the host economy grow multidimensional and dynamically. Rajan and Zingales (1998), Wurgler (2000) and Love (2003) contribute towards the better explanation of these issues. There are studies focusing on economic development of different countries due to foreign portfolio inflows, such as Agarwal (1997), focusing on Korea, Indonesia, India and Thailand, and Duasa and Kassim (2009), focusing on Malaysia. Both studies conclude on a positive note in terms of the relationship between portfolio investment and the economy.

Besides the wide spectrum of literature on portfolio investment flows and the resultant efficiency of markets and economic impact, there is scarcity of network perspective, especially on liquidity flows and resultant impacts. There are studies related to the network analysis of capital markets, for example the network analysis of the Chinese stock market by Huang, Zhuang and Yao (2009). The transformation process of investment network is discussed in Hakeem and Suzuki (2016a and 2016b). We have extended our analytical approach to evaluate the characteristics of individual nodes to establish the relationship between portfolio investment flows and economic indicators.

THEORETICAL BACKGROUND

The distinct characteristics of the nodes are explored by using multiple centrality and relevant measures at micro level. Closeness centrality, clustering coefficients, the in-degree and the out-degree are examined for every single node to categorise them accordingly. By using these and other measures, we divide the existing nodes into three classes or tiers. The steps of the analytical process are as follows:

1. Analysis of individual characteristics of nodes by using centrality and relevant measures;
2. Application of classification criteria based on resultant measures;
3. Classification of 26 nodes into three different tiers based on their individual positions within the network;
4. Selection of at least one node from each tier for correlation analysis;

5. Selection of the macroeconomic indicators for designated countries;
6. Correlation matrices based on network analytics and macroeconomic indicators for designated countries; and
7. Identification of correlation patterns and differences according to the nodes and tier classifications.

Centrality Measures

The following centrality measures are used for the investment network to understand the individual characteristics of the nodes. We will briefly introduce a few measures; a detailed description of centrality measures and their implications for network analysis is available in Hakeem and Suzuki (2015).

Degree Centrality

The simplest and earliest centrality measure in a network is the degree of a node and the number of edges connected to it. In directed networks, nodes have both an in-degree and an out-degree, and both may be effective if used in the appropriate circumstances. Although degree centrality is a simple centrality measure, it can be very insightful. In a financial network, for instance, the financial institution or a node connected to all other nodes can have much more influence on other nodes, as well as on the resilience of whole network. The standardised degree centrality of a node is its degree divided by the maximum possible degree.

$$c_i^d = \frac{d}{n-1} \tag{1}$$

The aggregate degree centrality for the whole network is:

$$C^d = \frac{\sum_{i=1}^{n} |c_i^d - c_i^d * |}{(n-2)(n-1)} \tag{2}$$

where *degree centrality* "C^d" is calculated by using the maximum value, while *n* represents the number of nodes within that particular network. The higher the number of nodes, the higher the degree centrality. The degree centralisation of any regular node is 0, while star has degree centralisation of 1.

For a node, the number of edges within it is known as in-degree and the number of edges originating from it is known as out-degree. A node with no in-degrees, only out-degrees, is known as "source", and a node with all in-degrees but no out-degrees is called "sink". A balanced directed graph has an equal number of in- and out-degrees.

Closeness Centrality

This centrality measure is totally different, as it measures the mean distance from one node to other nodes. It is the concept of a geodesic path, the shortest path between two nodes. Closeness centrality has small values for nodes that are separated from others by only a short geodesic distance on average. Such nodes might have better access to information at other nodes, or more direct influence on other nodes. In a financial network, for example, a financial institution with a lower mean distance from others might have better access to liquidity and important financial information. Closeness centrality is a very natural measure of centrality and is often used in different types of network studies. Closeness is based on the length of the average shortest path between a vertex and all vertices in the graph:

$$C_i^c = \frac{n-1}{\sum_{j \neq i}^{n-1} \delta_{ij}} \tag{3}$$

where δ_{ij} represents the geodesic path between i and j. Aggregate centrality for the whole network can be defined as follows.

$$C^c = \frac{\sum_{i=1}^{n} |C_i^c - C_i^c * |}{(n-2)(n-1)(2n-3)} \tag{4}$$

If $C_i^c *$ is the maximum closeness centrality a node can attain, then the aggregate closeness centrality is the variation in the closeness centrality of all nodes divided by the maximum possible closeness centrality for a particular network.
In contrast, Normalised Closeness Centrality is:

$$C_i^{c\prime} = C_i^c/(n-1) \tag{5}$$

where δ_{ij} is the distance between node *i* and *j*, while *n* refers to the number of nodes within the network.

Clustering Coefficient

The clustering coefficient is the degree by which nodes tend to make groups or clusters. The clustering of nodes having a similar connectivity pattern or other characteristics is evident in network analysis. There are two ways to measure the clustering of nodes in particular networks:

1. Global Clustering Coefficient; and
2. Local Clustering Coefficient

The first type, "Global Clustering Coefficient", is based on a trio of nodes. The trio is a combination of three nodes connected to each other. The clustering coefficient measures the density of triangles in the network:

$$C^{Cl} = \frac{1}{n}\frac{[(k^2)-(k)]^2}{k^3} \tag{6}$$

In a random network of connections between nodes and edges, k^2 and k has fixed or finite values and the quantity becomes as small as $n \rightarrow \infty$, so the clustering coefficient can be small as the size of the network grows. The reality can be very different depending on network type and size. The aggregate clustering coefficient can be calculated by taking the mean of the local clustering coefficient of each node:

$$C^{Cl} = \frac{1}{n}\sum_{i=1}^{n} C_i^{cl} \tag{7}$$

Whereas the local clustering coefficient of a node can be defined as follows:

$$C_i^{cl} = \frac{e_{jk}}{k_i(k_i-1)} \tag{8}$$

where e_{jk} is the path from i to j, and k_i are the number of neighbours of a node. We can also represent it in the following way:

$$C_i^{cl} = \frac{n_i}{k_i(k_i-1)} = \frac{\sum_{jk} e_{ij}e_{jk}e_{ki}}{k_i(k_i-1)} \tag{9}$$

The Correlation

Any statistical relationship between two random variables can be termed a dependence or linkage in a network context. Correlation involves dependence or linkage between two variables, although, in a statistical context, it is the level of linear relationship between two variables. A simple example of a correlation can be the relationship between the supply and price of crude oil on the international market. As supply increases, the price goes down accordingly.

We used "Pearson's product moment correlation coefficient" to explain the linkage between network indices and economic indicators. By considering the basic difference between correlation and causation, we developed matrices to analyse the linkage for different countries during varying time periods.

For a series of n measurements of X and Y, known as x_i *and* y_i for $i = 1, 2, \ldots \ldots .. n$, the sample correlation coefficient can be used to estimate correlation r_{xy} between both variables. It can be written as:

$$r_{xy} = \frac{\sum_{i=1}^{n}(x_i - \bar{x})\,(y_i - \bar{y})}{ns_x s_y} = \frac{\sum_{i=1}^{n}(x_i - \bar{x})\,(y_i - \bar{y})}{\sqrt{\sum_{i=1}^{n}(x_i - \bar{x})^2 \sum_{i=1}^{n}\,(y_i - \bar{y})^2}} \qquad (10)$$

Where $\bar{x}$ and $\bar{y}$ are the sample means and s_x and s_y are the sample standard deviations of X and Y. We can also express it as follows:

$$r_{xy} = \frac{\sum x_i y_i - n\bar{x}\bar{y}}{ns_x s_y} = \frac{n\sum x_i y_i - \sum x_i \sum y_i}{\sqrt{n\sum x_i^2 - (\sum x_i)^2}\sqrt{n\sum y_i^2 - (\sum y_i)^2}} \qquad (11)$$

The correlation coefficient can be +1 to represent a perfectly positive correlation relationship, or -1 to show a perfectly negative correlation between two variables. The range of resultant matrix is $-1 \leq r \leq +1$, which can explain the strength, level and type of relationship.

EXPLORING THE NETWORK

The Investment Network

In our analysis of investment network, we used data from the Coordinated Portfolio Investment Survey (CPIS) compiled and published regularly by the IMF. The same data set is widely used in literature for network or non-network analysis related to global portfolio investment patterns. The CPIS data consists of the aggregate amount received by a single country or invested in one country by foreign individuals, corporations and investment agencies or other vehicles in equity markets. We used data from 2001 to 2014, a total of 14 years. There are 26 countries or nodes within this network. Out of these 26 countries, 24 are European Union (EU) members, while the remaining two, US and Japan, are major partners of the EU in investment and trade. There are 28 EU member states; our sample includes all major and prominent nodes according to economic output and capital market statistics. The countries excluded due to data constraints are Latvia, Lithuania and Slovakia as Eurozone member states, and Croatia as an EU member.

The timespan selected is interesting, as we have seen huge ups and downs within this decade and can easily call it a decade of change. There was the Global Financial Crisis (GFC), impacting housing, equity and debt markets directly, which began around late 2007. Europe also faced a daunting, tough debt crisis after the GFC. The debt crisis compressed weak European economies and had a severe impact on bilateral relations within the European Union. The resulting austerity measures impacted millions of households in affected countries by increasing direct and indirect taxes, reducing employment opportunities and hampering growth and development.

Selection Criteria and Nodes

By considering the centrality measures and observing the flow patterns, we categorised all nodes into three different tiers.

- Tier 1 - Strong level of connectivity
- Tier 2 - Intermediate level of connectivity
- Tier 3 - Low level of connectivity

Table 1: Average Closeness Centrality and Classification (Source: Own Calculations) CC: Closeness Centrality, n= number of nodes

Classification Based on Average Closeness Centrality		
Tier 1	Tier 2	Tier 3
$CC \leq 1.05$	$CC \leq 1.20$	$CC \geq 1.21$
n = 13	*n = 9*	*n = 4*
Austria Luxembourg United States Germany Italy France Netherlands Belgium Ireland Denmark Sweden Cyprus Japan	United Kingdom Estonia Czech Republic Greece Slovak Republic Hungary Finland Spain Portugal	Poland Bulgaria Malta Romania

Table 1 explains the classification of all nodes with respect to average closeness centrality. There are 13 nodes in the first tier, which represent the strongly connected nodes of the investment network. The inclusion of these nodes within the first tier is confirmed by in- and out-degree measures. There are no surprise inclusions within this tier, as connectivity and flow of all relevant countries is high enough. Tier 2 represents mid-level connectivity of included nodes with the rest of the network. There is a surprise inclusion within this group: the United Kingdom. London is the capital of the UK and the hub of the international bond market. LIBOR is used worldwide for settlements of debt and relevant contracts. Although the UK is just above the criteria, and can with a small relaxation join Tier 1 countries, our early data indicates the lower level of in- and out-degree measures for the UK at a certain time period. As an attractive investment destination, it might not be able to invest in other foreign markets. The rest of the Tier 2 countries follow their intermediate connectivity levels within the network. Tier 3 includes the least central nodes with less connectivity and flow with other partners. These countries tend to have a higher clustering coefficient as they are not fully connected with the whole network. We believe this group is balanced and accurate according to degree, clustering and centrality measures.

We will select four countries for further analysis to establish our theory about connectivity and economy. The following countries are selected from all tiers:

1. Germany (Tier 1)
2. France (Tier 1)
3. Greece (Tier 2)
4. Romania (Tier 3)

The countries are selected according to their connectivity levels as are represented in Table 1.

Figure 1: Investment Network for the year 2001(a) and 2014(b)
(Source: Coordinated Portfolio Investment Survey, International Monetary Fund 2015)

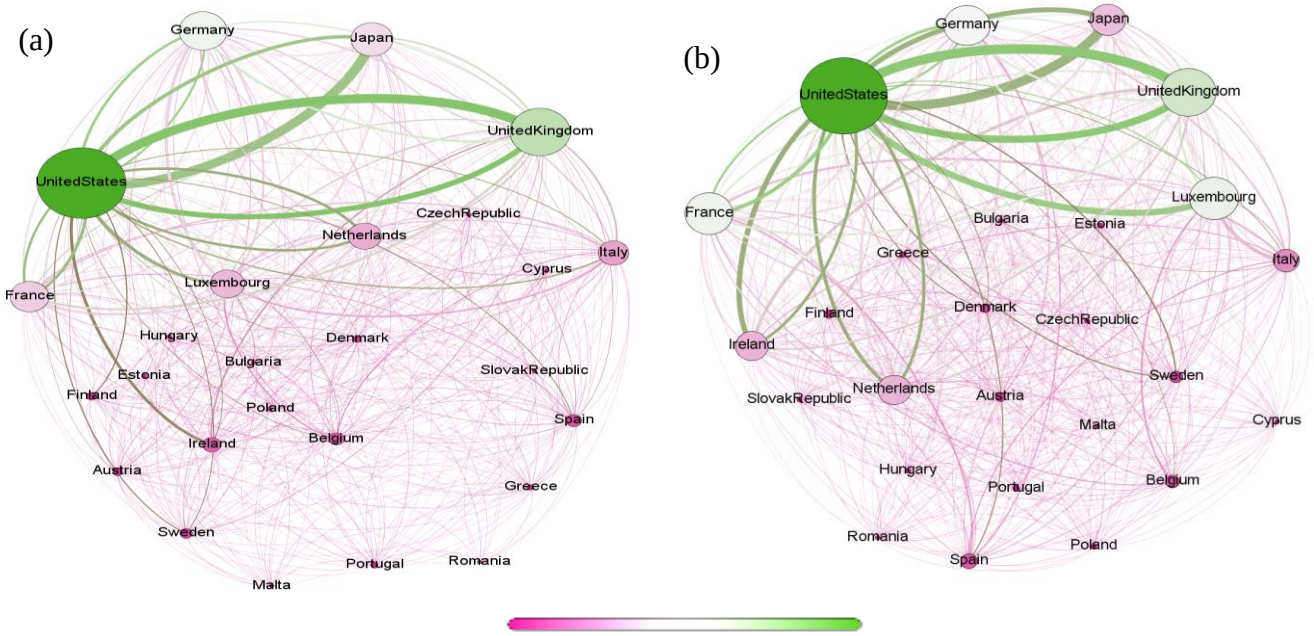


Figure 2: Correlation Matrices of France (a), Germany (b), Greece (c) and Romania (d)

N1 to N11 represent network indices, while E1 to E8 represent economic indicators. Colour Patterns: Red represents a negative correlation; Green represents a positive correlation; and Yellow represents data points below threshold value

	E1	*E2*	*E3*	*E4*	*E5*	*E6*	*E7*	*E8*
N1	0.593	0.539	0.594	(0.533)	0.521	0.373	0.457	(0.566)
N2	0.884	0.830	0.886	(0.794)	0.783	0.418	0.683	(0.814)
N3	0.907	0.844	0.909	(0.815)	0.801	0.468	0.700	(0.844)
N4	0.936	0.943	0.926	(0.930)	0.913	0.624	0.849	(0.873)
N5	0.895	0.952	0.875	(0.959)	0.946	0.746	0.912	(0.861)
N6	0.946	0.904	0.944	(0.873)	0.853	0.488	0.762	(0.857)
N7	(0.870)	(0.843)	(0.866)	0.813	(0.798)	(0.501)	(0.701)	0.847
N8	(0.884)	(0.830)	(0.886)	0.794	(0.783)	(0.418)	(0.683)	0.814
N9	(0.785)	(0.766)	(0.784)	0.739	(0.737)	(0.376)	(0.672)	0.713
N10	0.940	0.910	0.937	(0.891)	0.884	0.549	0.806	(0.874)
N11	0.936	0.943	0.926	(0.930)	0.913	0.624	0.849	(0.873)

(a)

	E1	E2	E3	E4	E5	E6	E7	E8
N1	0.836	0.665	0.827	(0.815)	0.798	0.694	0.660	0.872
N2	0.763	0.571	0.751	(0.722)	0.571	0.573	0.565	0.712
N3	0.850	0.658	0.839	(0.818)	0.734	0.676	0.653	0.845
N4	0.929	0.854	0.927	(0.938)	0.853	0.883	0.832	0.958
N5	0.902	0.768	0.895	(0.887)	0.833	0.801	0.747	0.930
N6	0.932	0.898	0.932	(0.957)	0.852	0.923	0.874	0.961
N7	(0.763)	(0.571)	(0.751)	0.722	(0.571)	(0.573)	(0.565)	(0.712)
N8	(0.763)	(0.571)	(0.751)	0.722	(0.571)	(0.573)	(0.565)	(0.712)
N9	(0.824)	(0.790)	(0.831)	0.847	(0.797)	(0.856)	(0.826)	(0.839)
N10	0.932	0.825	0.930	(0.937)	0.838	0.856	0.833	0.947
N11	0.929	0.854	0.927	(0.938)	0.853	0.883	0.832	0.958

(b)

	E1	E2	E3	E4	E5	E6	E7	E8
N1	0.840	0.736	0.842	(0.289)	0.640	(0.105)	0.628	(0.512)
N2	(0.242)	(0.121)	(0.234)	(0.145)	(0.003)	0.176	(0.141)	0.590
N3	0.741	0.677	0.745	(0.325)	0.620	(0.048)	0.566	(0.317)
N4	0.852	0.435	0.852	0.151	0.254	0.131	0.246	(0.727)
N5	0.679	0.083	0.677	0.556	(0.142)	0.193	(0.105)	(0.824)
N6	0.536	0.802	0.540	(0.778)	0.850	(0.096)	0.757	0.033
N7	(0.153)	(0.310)	(0.154)	0.277	(0.323)	0.284	(0.425)	0.141
N8	0.242	0.121	0.234	0.145	0.003	(0.176)	0.141	(0.590)
N9	(0.031)	(0.539)	(0.034)	0.819	(0.681)	0.003	(0.664)	(0.374)
N10	0.658	0.884	0.663	(0.762)	0.917	(0.069)	0.859	(0.099)
N11	0.852	0.435	0.852	0.151	0.254	0.131	0.246	(0.727)

(c)

	E1	E2	E3	E4	E5	E6	E7	E8
N1	0.615	0.616	0.606	0.037	0.663	0.598	0.411	(0.340)
N2	0.914	0.956	0.923	(0.231)	0.942	0.804	0.799	(0.186)
N3	0.919	0.951	0.922	(0.159)	0.958	0.830	0.755	(0.269)
N4	0.736	0.853	0.755	(0.534)	0.876	0.659	0.909	0.120
N5	0.697	0.821	0.716	(0.557)	0.846	0.617	0.901	0.164
N6	0.894	0.954	0.903	(0.338)	0.959	0.837	0.855	(0.162)
N7	0.456	0.481	0.451	0.173	0.521	0.309	0.275	(0.263)
N8	(0.914)	(0.956)	(0.923)	0.231	(0.942)	(0.804)	(0.799)	0.186
N9	0.741	0.622	0.730	0.125	0.611	0.776	0.375	(0.507)
N10	(0.210)	(0.234)	(0.207)	(0.188)	(0.256)	0.046	(0.073)	0.073
N11	0.736	0.853	0.755	(0.534)	0.876	0.659	0.909	0.120

(d)

CORRELATION BETWEEN NETWORK AND ECONOMIC INDICATORS

Economic Indicators

The economic indicators used for analysis were obtained from the International Monetary Fund (IMF). The database of International Financial Statistics (IFS) was used to obtain the relevant measures. The IFS is one of the fund's main databases and has been available since 1948. We used a similar timespan as we did for our network data, from 2001–2014. Total numbers of economic indicators obtained and used in the analysis were in the double digits; a rough estimate stands around 30. At the final stage, eight economic indicators were selected. To elaborate our idea of a correlation between the investment network and the economy, we used the following economic indicators (Table 2).

Table 2: Economic Indicators used for Analysis (Source: IFS 2015, IMF)

S. No.	Economic Indicators	Code Assigned
1	Gross domestic product, current prices	E1
2	Gross domestic product, deflator	E2
3	Gross domestic product per capita, current prices	E3
4	Gross domestic product based on purchasing-power-parity (PPP) share of world total	E4
5	Inflation, average consumer prices	E5
6	General government revenue	E6
7	General government gross debt	E7
8	Current account balance	E8

Network Indicators

The network indicators used for analysis were obtained from the CPIS (Coordinated Portfolio Investment Network) investment network. The CPIS database is compiled and regularly published by the IMF. The network indicators or indices are the outcome of our calculations, unlike the economic indicators, which are available through the database. The methodology

and calculation mechanism is briefly explained here; for a detailed theoretical background please refer to Hakeem and Suzuki (2015).

Table 3: Network Indicators used for Analysis (Source: CPIS 2015, IMF)

S. No.	Network Indicator	Code Assigned
1	In-Degree	N1
2	Out-Degree	N2
3	Degree	N3
4	Weighted Degree	N4
5	Weighted In-Degree	N5
6	Weighted Out-Degree	N6
7	Eccentricity	N7
8	Closeness Centrality	N8
9	Betweenness Centrality	N9
10	Clustering Coefficient	N10
11	Strength	N11

Correlation Matrices of Selected Countries

The correlation matrices are presented in Figure 2(a)–(d) for France, Germany, Greece and Romania. These matrices are based on 14 years of data of economic indicators and network indices. These matrices give us insights regarding the relationship or linkages between portfolio investment and the economic conditions of certain countries. The results can be generalised for other countries in the same "tier".

Tier 1 Countries

Tier 1 is representative of countries having strong connectivity and flow linkages with networks. The group is composed of 13 countries, of which 11 belong to the EU, besides Japan and the US. The correlation matrix for France and Germany is not identical, like their overlapped network indices; but there are more similarities than differences. First, we look at Figure 2a, which represent France's matrix. There is indeed a correlation pattern and relationship between networks, indices and macroeconomic indicators.

There is a strong correlation between Gross Domestic Product (GDP), Purchasing Power Parity (PPP) with In-Out degree and weighted degree measures. The higher the connectivity level, the higher the impact on economic growth patterns. There is a strong negative correlation between a network's centrality measures, such as closeness, betweenness and eccentricity with GDP and PPP. This negative correlation depicts the positive impact due to technical reasons; the centrality measures move to the reverse side, or statistically decrease if the level of centrality improves. The more central nodes would have lower values compared to the less central nodes. The correlation matrix takes this on the opposite side. If GDP is increasing and the statistics of closeness are decreasing, it is perfectly negatively correlated. The implications of this strong negative correlation are positive, so the relationship between closeness, betweenness and eccentricity is strong and understandable. There are two other strong relations between network indices: inflation and current account balance. It is interesting to know that the strongly connected nodes have less inflation and better trade relations with trading partners. Cumulatively, for France, there are strong relations between its investment network and economic indicators. The relationship is not causal; there can be other underlying reasons besides the one under consideration in this study.

For Germany, the relationship is of similar nature. The increase in centrality measures has strong connections with economic growth, inflation, current account balance and

government debt. The current account balance of Germany is improving with the passage of time; so is its centrality. That makes it positively correlated compared to France, which has a negative correlation with this particular variable. Tier 1 countries have important positions within networks; with strong centrality indices, we can find correlation patterns with their economic indicators. These correlations are not causal; rather, they show the existence of a relationship. The general conclusion should include this trend. The more central a country is, there more relationships or correlations it can have. This can also have implications for countries with less connectivity, to help improve their network position and capture more economic benefits.

Tier 2 Countries

Tier 2 countries are modestly linked with the investment network. Greece is selected as representative of this group. The country has modest linkages with the investment network. It showed improvements regarding connectivity patterns initially and had a good position for a while, before again feeling the heat of the Eurozone debt crisis.

The correlation matrix representing the possible ties between Greece's economy and its network position is shown in Figure 2c. The correlation patterns are there, but if we compare it with Tier 1 countries, then the level of correlation is much lower and scattered. We might not be able to draw any conclusions about any strong relationship between economic indicators and network indices. Being a standalone country and group representative of Tier 2, we can find certain patterns for certain periods of time at least. The connection of In-out degree and weighted degree with GDP and PPP is one of the most prominent. There is also an indication of a link between inflation and general government debt with a clustering coefficient. Tier 2 countries have a higher possibility of joining any cluster, compared to Tier 1 countries; so, the explanation regarding the increase in the clustering coefficient due to the Eurozone debt crisis might have exposed Greece to crisis, which could have been handled with better management of inflation and government debts.

The conclusion on Greece can be generalised for Tier 2 countries due to economic similarities and prevailing circumstances. These nodes do not have strong connectivity patterns, so experience variations in their position within network. The links or correlation between network indices of Tier 2 countries and economic indicators are not high enough due to limited connectivity and exposure.

Tier 3 Countries

Tier 3 countries are weakly linked with the investment network and do not possess a strong position within it. Romania is representative of this small group, which may feel alienated compared to Tier 1 and Tier 2 countries. Romania is an interesting case of connectivity. It had an extremely low level of connectivity initially, and improved at a later stage. Recently, it reached the same degree of connectivity as Greece, so we are able to analyse the changes in connectivity and its consequences.

Figure 2d represents the Romanian correlation matrix. It seems to have a modest degree of correlation between economic indicators and network indices. If compared with Tier 1, then the patterns are not that significant; but for Tier 2 they are not that weak either. It seems Romania may have a better relationship between its economic indicators and networks indices due to an improvement in connectivity. Though its patterns may not exceed the level Greece already has, the case of better connectivity and improved linkages must be taken into consideration. Besides general relationships, it is interesting to understand the association between clustering coefficients and economic indicators. Unlike Greece, Romania represents a negative link there, suggesting that it might be connecting more aggressively and removing the clustering barriers.

The basic relationship between GDP, PPP and centrality indices shows sign of positive correlation. There is a connection in between. The conclusion for Tier 3 can be generalised for

Tier 3 and Tier 2 countries as well. Improvements in connectivity and network position can increase or enhance the correlation patterns. The countries must strive to connect with all nodes to fully capitalise the opportunities for market efficiency and improvements on the economic front.

CONCLUSION

The investment network is not a complete graph, and the connectivity pattern of different nodes varies accordingly. Some nodes have a central position with higher connectivity levels compared to other nodes. The countries can be divided into different groups or tiers based on the resulting centrality and analytical measures. The classification of countries into different groups explains the differences in connectivity patterns for nodes. We divided the nodes into three tiers based on their closeness and/or centrality. The connectivity is not uniformly distributed among all nodes, as assumed in different earlier studies. Tier 1 countries have an important position within the network; with strong centrality indices, we can find correlation patterns with their economic indicators. These correlations are not causal, but show the existence of a relationship. The general conclusion should include this trend: the more central a country is, the more relationships or correlations there are to be found. This can also have implications for countries with less connectivity to improve their network position and capture more economic benefits. The conclusion regarding representative countries of tier 2 can be generalised for the whole group due to economic similarities and prevailing circumstances. These nodes do not have a strong connectivity pattern, and so experience variations in their position within the network. The links or correlation between network indices of Tier 2 countries and economic indicators is not high enough, due to limited connectivity and exposure. The basic relationship between GDP, Purchasing Power Parity (PPP) and centrality indices shows signs of positive correlation. There is a connection between them. The conclusion for Tier 3 can be generalised for Tier 3 countries. Improvements in connectivity and network position can increase or enhance the correlation patterns. The countries must strive to connect with all nodes to fully capitalise the opportunities for market efficiency and improvements on the economic front. The European Union is the case for other investment networks and individual countries to establish strong linkages to increase connectivity patterns. More connected nodes have a strong positive correlation between investment and economy.

REFERENCE

Agarwal, R.N. (1997) Foreign portfolio investment in some developing countries: A study of determinants and macroeconomic impact. *Indian Economic Review*, 32(2), 217-229.

Bekaert, G. and Harvey, C.R. (1998) Capital flows and the behavior of emerging market equity returns. In: S. Edwards (ed.). *Capital Flows and the Emerging Economies: Theory, Evidence, and Controversies.* Chicago, University of Chicago Press, 159-194.

Bekaert, G. and Harvey, C.R. (2000) Foreign speculators and emerging equity markets. *The Journal of Finance*, 55(2), 565-613.

Bekaert, G. and Harvey, C.R. (2003) Emerging markets finance. *Journal of Empirical Finance*, 10(1), 3-55.

Duasa, J. and Kassim, S.H. (2009) Foreign portfolio investment and economic growth in Malaysia. *The Pakistan Development Review*, 48(2), 109-123.

Hakeem, M.M. and Suzuki, K-I. (2015) Centrality Measures for Trade and Investment Networks. *Australian Academy of Accounting and Finance Review*, 1(2), 1-16.

Hakeem, M.M. and Suzuki, K-I. (2016a) Fragility and contagion within European Union's banking system: the network prospective. *Internal Journal of Monetary Economics and Finance*, 9(2), 115-131.

Hakeem, M.M. and Suzuki, K-I. (2016b) Transformation within Eurozone's Investment Networks. In: *NetSci 2016 International School and Conference on Network Science*, Seoul, South Korea, May 30–June 03, 2016.

Huang, W. Q., Zhuang, X. T. and Yao, S. (2009) A network analysis of the Chinese stock market. *Physica A: Statistical Mechanics and its Applications*, 388(14), 2956-2964.

International Monetary Fund (2015) *European Union country level tables*. [Online]. Coordinated Portfolio Investment Survey Online database. Available from: http://data.imf.org/?sk=B981B4E3-4E58-467E-9B90-9DE0C3367363 [Accessed 24 August 2016]

Knill, A. (2004) *Can Foreign Portfolio Investment Bridge the Small Firm Financing Gap Around the World?* Policy Research Working Papers, WPS3796, Washington, D.C.: World Bank.

Laeven, L. (2003) Does financial liberalization reduce financing constraints? *Financial Management*, 32(1), 5-34.

Levine, R. and Zervos, S. (1996) Stock market development and long-run growth. *The World Bank Economic Review*, 10(2), 323-339.

Love, I. (2003) Financial development and financing constraints: International evidence from the structural investment model. *Review of Financial studies*, 16(3), 765-791.

Rajan, R. G. and Zingales, L. (1998) Financial Dependence and Growth. *The American Economic Review*, 88(3), 559-586.

Rogoff, K. (1999) International institutions for reducing global financial instability. *The Journal of Economic Perspectives*, 13(4), 21-42.

Wurgler, J. (2000) Financial markets and the allocation of capital. *Journal of Financial Economics*, 58(1), 187-214

.

13-Z20-4113

DIMINISHING UNCERTAINTY IN AGROCHEMICALS WITH FINANCIAL DERIVATIVES

PROF. OSCAR BRIONES[1] AND GABRIELA TORRES

ABSTRACT

The main purpose of financial derivatives is to diminish the risks related to the commercialisation of financial assets that may have certain levels of price instability. Companies entering the financial derivatives market might choose a financial position and type of contract that best suits their needs. This study merely evaluates forward contracts as a tool to hedge severe price fluctuations in agrochemicals, due to its increasing importance in today's economy. To do so, historical volatility is measured through the Generalised Auto Regressive Conditional Heteroscedasticity of three commonly commercialised agrochemical products. The data exhibits high levels of price variation on these products and proves the feasibility of introducing agrochemical products in financial derivatives markets to trade them as commodities. Additionally, to determine the forward prices of these products, a modified Kaldor's valuation formula is implemented. The analysis reveals a favourable stance for the holder of the commodity position; this provides financial stability for agricultural producers.

Keywords: agrochemical products, financial derivatives, forward contracts, spot price, price volatility.

INTRODUCTION

Trading in international markets is characterised by uncertainty. More specifically, the international trade of commodities such as gold, oil, agricultural products often presents high levels of price volatility. According to Doporto and Michelena (2011), factors that might have an influence on the price of commodities include inflation, exchange rates, interest rates, speculation and the volatility of other financial assets. Abrupt changes in these factors can cause unexpected difficulties in the supply and demand of commodities, generally increasing uncertainty and price fluctuation.

According to Rossi (2013) the volatility in commodity prices has a huge impact on business decisions and outcomes, which in some cases might affect the development of small and open countries, causing macroeconomic instability. Therefore, due to the impact of price fluctuations in commodities, it is necessary that importers and exporters look for mechanisms to hedge those inherent risks. Quetsch (2014) explains *hedging* as the action of taking offsetting positions in the market to manage risks. This helps to lower the vulnerability faced by economic agents when sudden price variations occur. It also grants hedgers the necessary supply of inputs. Such risk management efforts are also important for portfolio management (Chang and McAleer, 2015). Hedging exertions are also applicable in the case of agrochemical products, as price volatility has an enormous impact on its commercialisation.

Lapan et al. (1998) proposed prediction models for future markets, and found it favourable to venture into those markets as an alternative to counteract the risk that unpredictable price changes imply. Graham and Rogers (2002) concur with the latter as they estimate that minimising the risks undertaken by companies might lead them to increase business value. Concordantly, Bartram, Brown and Fehle (2009) state that effectively using these financial tools is critical in limiting the severity of economic downturns in developing economies. The preceding stimulates the central inquiry of this research: how to mitigate price volatility on a key agronomic raw material affecting agricultural producers?

[1] Prof. Oscar Briones, Researcher and Lecturer, Universidad de Especialidades Espiritu Santo.

The case of agrochemicals products is not isolated. These agri-inputs, which are widely traded in the global market, have also shown extremely high and low prices, which might justify its use in the commodity derivatives market. The following paper analyses historical data to evaluate price volatility and the possibility of using forward contracts in the commercialisation of agrochemical products across the globe. The literature review covers basic concepts, including the current and historical situation of agrochemical industry worldwide. We analysed volatility and forward price valuation, whereas the methodology encompasses valuation models applied to the current situation of the agrochemical industry.

LITERATURE REVIEW

Agrochemical industry background

Agrochemicals consumption has increased worldwide and become highly necessary in the production of crops, mainly because of their role ensuring good harvests by protecting crops against diseases, weeds and pests. The effective use of agrochemicals has successfully solved various problems, with an impact on the developments of many countries (Kisamo and Mndeme, 2002).

In agricultural production, farmers have to incur several production costs such as the purchase of raw materials (seeds), labour, ground preparation and overheads. From all these costs, agrochemicals have the greatest impact on the financial plan of agricultural entrepreneurs. Table 1 shows agricultural costs expressed as percentages.

Production cost	%
Seed	0.20%
Ground preparation	0.24%
Workforce	23.29%
Agrochemicals	48.04%
Indirect materials	28.23%
TOTAL	**100.00%**

Table 1. Agricultural costs in percentages.

The agrochemical industry, according to Moros *et al.* (2006), represents one of the world's major industries, since more than 50% of the world's population is highly dependent on agriculture for its livelihood. Its growth is mainly subject to the increase in the global population, which increases food demand. Concurrently, agrochemical demand increases since they contribute to the improvement of crops' production by providing macro and micronutrients, protection for plant diseases, soil nutrient restoration, and more. Currently, Asia Pacific dominates the market of agrochemicals globally, and is expected to remain dominant. This is due to the exponential increase in demand for food crops from key countries like India and China. Furthermore, there countries have a competitive advantage on labor and overheads, decreasing conversion costs. As of 2014, some of the most important participants in this market were BASF, Bayer, Monsanto, Syngenta, Valent Biosciences, Adama and FMC.

This industry, as stated by Joly and Lemarié (2002), is a maturing one, and thus it faces several major problems such as increasing internal competition, high environmental standards and decreasing returns in research and development. Acording to Beckmann (2014), another main problem is the relevant price fluctuation of agricultural products. Since both industries are related, uncertainty in the agricultural arena and its derivates (which are also commodities)[2] directly affects the supply and demand of agrochemicals, causing its prices to be volatile.

[2] It refers to agricultural products

Amine, Paraquat and Glyphosate are three of the main agrochemical products traded globally due to their relevance in crop production. These will consequently be analysed in the present study. Weinong (2014) explains the specific case of price fluctuations of glyphosate in 2008 and 2013 as a result of insufficient supply and rigorous environmental regulations. Genetically modified crops also contributed to the increase in the demand of glyphosate. Soybean and corn planting acreage increased in the United States, Ukraine and South America, leading to a shortage of agrochemicals steerings upwards the price. Yet glyphosate still accounts for more than 20% of the total export value of pesticides, and has kept growing fast. According to Dharni and Singh (2011), for agri-input buyers, price is the most important factor for decision making. One of the main reasons that could directly affect this behaviour is that the agrochemicals have probably entered the commodity phase.

Commodities are marketable items that aim to satisfy needs and wants. A condition that defines commodities is that their price, regardless of the providers, is generally the same; thus when prices fluctuate, it affects markets as a whole. Price fluctuations, however, are a normal and necessary element in competitive markets. When these fluctuations can, however, no longer be measured up front and become increasingly uncertain, the efficiency of price systems start to crumble. This explains why, as stated by Combes (2002), persistent volatility in commodities represent increasing vulnerability in economies.

Volatility valuation models

Although standard deviation has been widely used to determine how prices have fluctuated in the past, this approach presents shortcomings when used to determine future price instability. For example, it assumes ceteris paribus on a myriad of exogenous variables affecting the price of a commodity. It also ignores all the observations before and after the date that researchers arbitrarily select to gather their analysis, tending to under or overestimate volatility.

To evaluate products whose price varies over a period, time series analysis becomes critical. Engle (1982) proposed a model of autoregressive conditional heteroscedasticity, **ARCH**, in which variance is dependent on the square of past of innovations. The GARCH model (generalised autoregressive conditional heteroscedasticity) proposed by Bollerslev (1986) indicates that variance not only depends on the square of past innovations, but also on conditional variances of previous terms. Karolyi (1995) adds that these models incorporate time deviation in the volatility of daily and monthly price changes and returns. Nelson (1991) modified the model, developing EGARCH (exponential autoregressive conditional heteroscedasticity), in which the model for conditional variance does not behave symmetrically with positive and negative innovations, but is asymmetric to the peaks and falls of the asset price. Some researchers support and give different approaches to the theory; however, the models are mostly used for financial assets, namely stocks, commodities, currencies and others. These models require daily closing prices to enhance accuracy.

Problem formulation

Agrochemicals, as other commodities, also face a major drawback when they are being commercialised in international markets: volatility. The price volatility (Yang, Balyeat and Leatham, 2005) of raw materials thus becomes a hazard for producers due to price fluctuation affecting net income. When prices of commodities are volatile, therefore, it becomes necessary to find alternatives that reduce the related risks. In the specific case of the agrochemicals industry, volatility has become a feature present over the years. Agents of this market might therefore seek for alternatives to guarantee stability on supply prices, such as the inception of agrochecimals as a financial derivative.

There are several characteristics that a product (specifically a commodity) has to comply with to enter the derivatives market. For instance, commodities have to be traded in competitive markets, with a great number of buyers, sellers and operators. It also has to be suficiently homogeneous and, overall, it has to present price volatility (Figures 1, 2 and 3).

Agrochemicals not only meet all those characteristics, but they could be traded in a derivative market, since they are long term products. These products last up to two years when being stored under appropriate conditions.

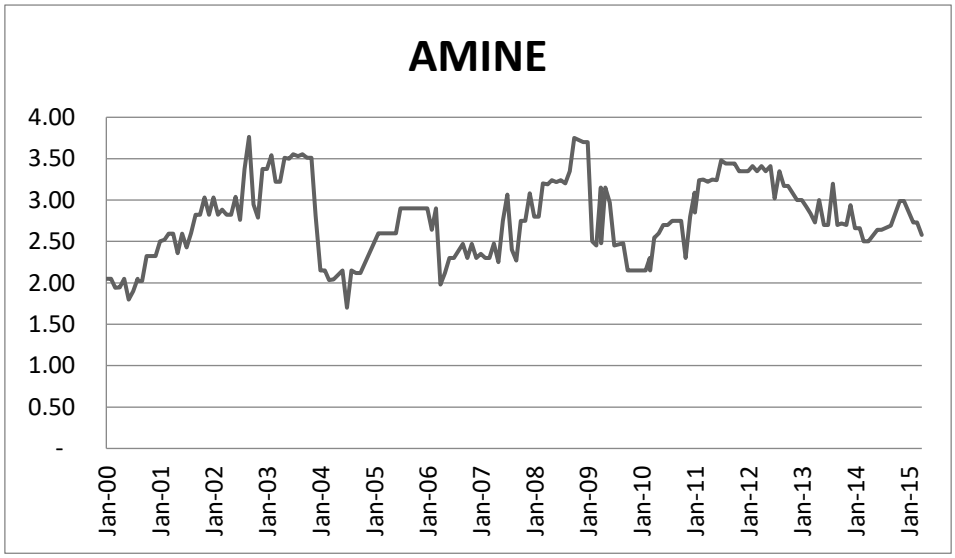


Figure 1. Line graph of the market prices of amine from January 2000 to April 2015.

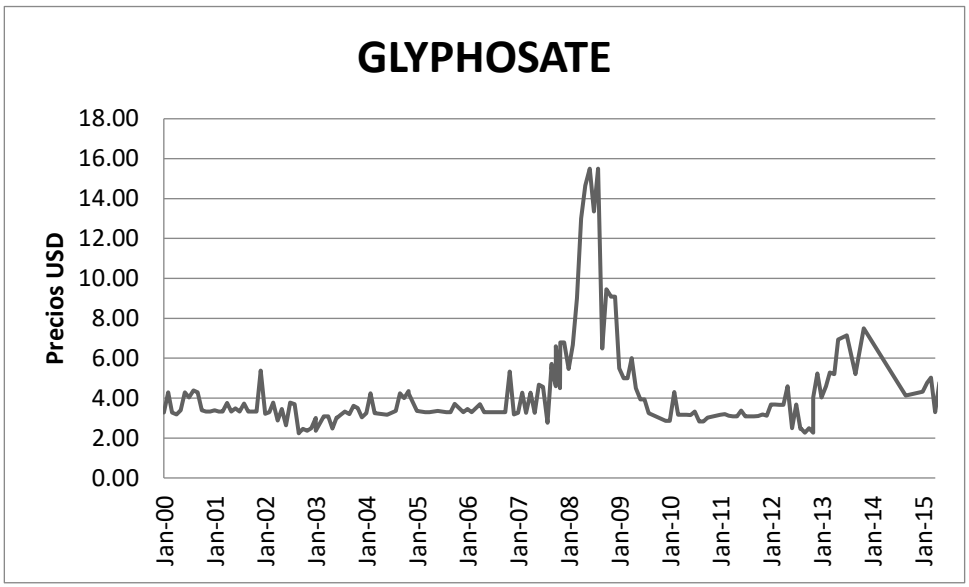


Figure 2. Line graph of the market prices of glyphosate from January 2000 to April 2015.

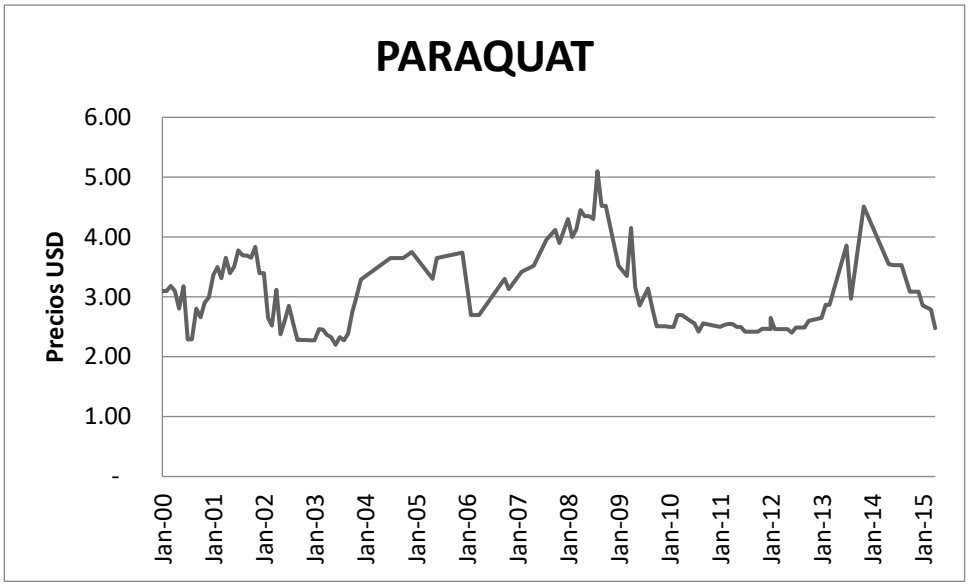


Figure 3. Line graph of the market prices of paraquat from January 2000 to January 2015.

Appendix 1 reveals the historical prices of amine, glyphosate and paraquat over the past fifteen years. Throughout this period of time turmoil in the form of price volatility can be observed (Figures 1, 2 and 3).

Due to agrochemical volatility, it would be feasible for agricultural agents have the need to use financial tools that allow the determination of a prospective price in the previously mentioned supplies. Agricultural business productivity fluctuates due to a myriad of exogenous factors such as weather, crop productivity, and plagues, among others. A highly standardised future contract does not adjust to the industry requirements due to the lack of proper quantity forecasts. Additionally, according to Kroszner (2000), future contracts also require the mediation of a clearinghouse for risk and control management, taking the role of coinsurance between the members during crisis. The current financial infrastructure does not adequately provide the facility of a clearinghouse for the proposed product. Furthermore, the investigation proposes a simple method to mitigate the uncertainty caused by price volatility. Issuing a forward contract could thus solve the agricultural entrepreneurs' conundrum. We extrapolate and integrate Parsons' (1989) perspective into our product. He states that one of the main advantages of this derivative instrument is that it allows companies to cover future cash flows, while avoiding uncertainty in the market.

Forward contracts: An overview

Forward contracts are agreements between two parties to buy or sell specific quantities of a particular asset at a certain time in the future, and at a price that is settled in advance. Economic agents would thus not be concerned about price fluctuations. The assets involved in forward contracts, known as underlying assets, can either be financial instruments, currencies or commodities. The amounts in the contract are delivered at the expiration or maturity date at the prices that were agreed up front (Haugh, 2010). Forward contracts are effective tools for hedging risks, allowing buyers and sellers to decrease risks by establishing a predetermined quantity and price prior to the actual exchange of goods and services (Dau-Schmidt, 2012). It is actually a *hedger-hedger* contract, since both parties are seeking to hedge a particular exposure related to their businesses.

Masson (2011) explains that the parties of these contracts are generally producers, consumers, brokers or institutional investors. The party that wants to purchase the underlying asset holds a long position, whereas the party that would like to sell the commodity has a short position. For the party who believes that prices of raw materials will experience an upward spiral, it will be convenient to adopt a long position, and profit will be accomplished when the price of the underlying asset rises in the market. Conversely, the economic agent who thinks that prices will plummet will find it feasible to have a short position, and its gains will occur when the market price of the asset falls. In January 2008, the price of glyphosate tripled, from $5.47 per litter to $15.50 in August of the same year. This represents a variation of 183.43%. For the buyer of the agrochemical raw material, it could have been convenient to assume a short position, while for its counterpart, a long position could have been economically appropriate. Figures 4 and 5 epitomise Masson's statement.

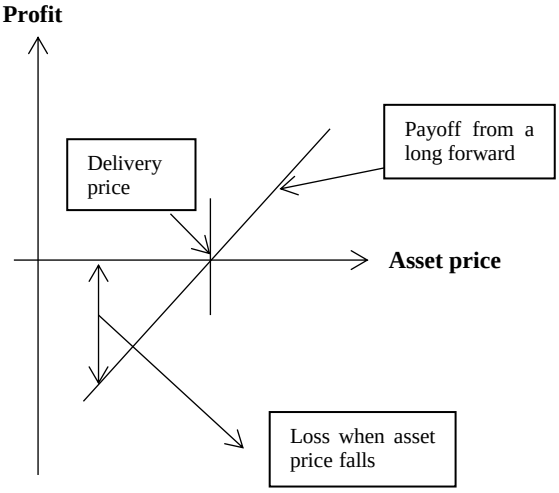


Figure 4. Long position

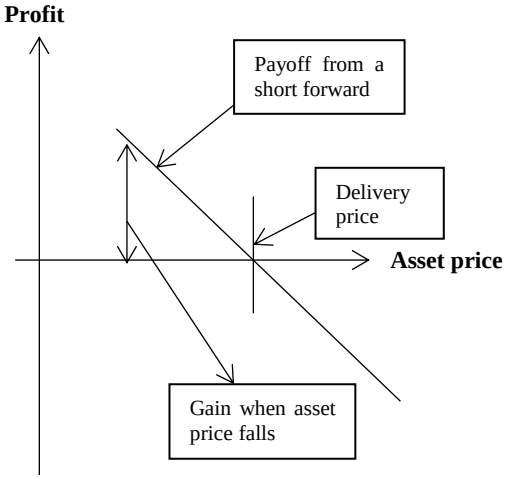


Figure 5. Short position

These instruments are legally binding contracts with repercussions if broken, which reassures the parties involved that the conditions settled will be met by the expiration date (as opposed to verbal agreements). Nevertheless, an important shortcoming is the struggle to find counterparties that agree to the specification of the contracts. Forward contracts are *zero-sum games,* where the gains of one party are the losses of its counterparty.

According to Fernandez et al. (2015), two situations might arise in the forward contracts market, depending on the evolution of the price of the commodity: *contango*, which refers to the situation where the price of the commodity for future delivery is higher than the spot price, or *backwardation*, when the price of the commodity for future delivery is lower than the spot price. The latter is not a normal market situation and it suggests shortcomings in the supply of the commodity.

Forward contracts: Price valuation theories

Kaldor (1939) explains the *theory of storage* as the fundamental supply and demand conditions that determine the spread between spot and forward prices. Commodity prospective forward and spot prices will be set according to storage costs, inventory levels and convenience yield. The latter, as Brennan (1991) explains, is the overall benefit that producers perceive by holding the spot commodity as opposed to holding it as a forward contract. The supporting studies carried by Working (1948), Tesler (1958), Williams (1986), and Deaton and Laroque (1992) have contributed to Kaldor's theory, analysing the empirical evidence of inventory behaviour (Hillard and Reis, 1998). Fama and French (1987) concluded that most of the implications in the theory of storage were correct, and explained that two main reasons support the existence

of convenience yield. First, agents who hold the physical commodity might benefit from being able to meet unexpected demand. Second, the commodity supply could be used as an input in the production process at any time. Perales (2010) corroborates the previous author, mentioning that spot and futures price volatility are influenced by supply and demand fundamentals.

Before Kaldor's theory gained much support, Brennan and Schwartz (1985) proposed a model to assess forward prices using a geometric Brownian motion (GBM), assuming that the whole uncertainty when evaluating commodities was dependent on one sole factor: the spot price. As such, the authors represented the futures price as a function of the spot price and the time to maturity, maintaining a constant convenience yield. Later, it became evident that more factors were needed to valuate a commodity properly, leading Gibson and Schwartz (1990) to present a two-factor model. This model assumed that both the spot price as well as the spot convenience yield followed a stochastic process. Afterwards, Hillard and Reis (1998) proposed a three-factor model, which included the stochastic convenience yield, interest rates, and jumps in the spot price. The study concluded that the difference between this model and the two-factor model depended mainly in the correlation of spot price and interest rates, and the correlation of convenience yield and interest rates. This valuation does not, however, significantly affect forward and future prices as much as it affects the price of options.

Yan (2001) presented a model that examines the commodity return based on the prices of oil and gold. The main deficiency of this study was that it did not cover volatility. Afterwards, Yan (2002) presented a different model that encompasses stochastic convenience yields, interest rates and volatility. This multi-factor model shows that all these factors play important roles on the pricing of forwards.

METHODOLOGY

Appendix 1 shows the historical daily closing prices of amine, glyphosate and paraquat from 2012 to 2015 in US dollars. The price variation was estimated using the logarithm change on equation 1. These figures were collected from FOB market prices in dollars per litre of each product.

$$P\Delta = \ln\left(\frac{q2}{q1}\right) \qquad (1)$$

Where:
PΔ is price variation
q2 is the most recent period, and
q1 is the preceding period.

Volatility valuation

According to Lee et al. (2015), variance and the standard deviation valuation can explain commodity volatility because both include differences of the values from the mean. However, the authors conclude that, since variance is calculated by squaring the units of the standard deviation, the former might cause misperceptions in interpreting the data. To obtain an in-depth analysis of the volatility of this commodity, therefore, this research study used GARCH (Bollerslev, 1986; Karolyi, 1995). This allows capturing data variation, addressing the fact that the conditional variance depends not only on *p* squares from the innovations, but also on the *q* past values from the variance; thus the model GARCH (p,q)[3] is described in equation 2.

$$\sigma_t^2 = \alpha_0 + \sum_{i=1}^{p} \alpha_i \, v_{t-i}^2 + \sum_{i=1}^{q} \beta_i \;\; \sigma_{t-i}^2 \qquad (2)$$

[3] In finance, it is usually estimated GARCH (1,1).

Where:
α_0 is the long run variance
V^2 is the returns squared
σ^2 is the variance
α is the weight of returns
β is the weight of variance
p is innovations, and
q is the variance past values.

Besides volatility, the investigation also estimates the price of the forwards contracts to be negotiated. This is discussed in the next section.

Forward price valuation

The theory of commodity price valuation introduced by Kaldor (1939) considers a no-arbitrage argument, as depicted in equation 3:

$$f^T(t) = S(t)\,[1 + (r(t,T) + c(t,T) - y\,(t,T))\,(T-t)] \qquad (3)$$

Where:
$f^T(t)$ is the forward price of the commodity
$S(t)$ is the spot price
$r(t,T)$ is the annual interest rate
$c(t,T)$ is the cost of storage calculated annually, and
$y\,(t,T))$ is the marginal convenience yield.

Since the object of this study is to hedge, it is presumed that the underlying asset does not render income. Therefore, Kaldor's formula was adapted to fit the parameters of our research as depicted in equation 4.

$$f_0 = (S_0 + u)e^{(r-c)T} \qquad (4)$$

Where:
f_0 is the forward price of the commodity at time 0
S_0 is the spot price of the commodity at time 0
r is the interest rate
u is the fixed cost of storage
c is the convenience yield
T is the time in days that the contract will last, and
e is the base of the natural logarithm, which is ≈ 2.71828.

Data analysis of costs per litre of amine, glyphosate and paraquat of FOB closing prices from Asian markets are used as the spot price (S_0) respectively. LIBOR rate was used as (r) and the cost of storage (u) was determined on real prices. (T) contract matures in 90 days. (c) Since the asset is carried in inventory, this provides the possibility to profit from (hedge) momentary shortages. This becomes a convenience yield in the life of the asset, providing a benefit to the holder of the asset but not to the holder of the forward.

RESULTS

Product	μ	Max	Min
Paraquat	0,06%	68,76%	-52,41%
Amine	0,01%	58,90%	-56,44%
Glyphosate	0,05%	141,37%	-24,12%

Table 2. Descriptive statistics for amine, glyphosate and paraquat.

Volatility valuation

The research considers 250 observations per product for all calculations. Table 2 depicts daily data for the three products researched. It shows maximum and minimum variations along with the average. Commodity daily price variation fluctuated vividly as amine, paraquat and glyphosate changed, reaching a maximum variation of 58.90%, 68.76% and 141.37%, respectively. Figures of price fluctuation on a yearly basis reveals staggering statistics for the same products: 387%, 567%, 1386%, respectively. To assimilate properly the phenomena of price variability, the study measures volatility implementing GARCH from equation (2). Its results are highlighted in Table 3.

Product	Ω	α	β	μ	σ^2 day	σ^2 year
Paraquat	0,01	0,39	0,41	0,06%	1,55%	386,82%
Amine	0,01	0,10	0,36	0,01%	2,27%	566,88%
Glyphosate	0,03	0,00	0,35	0,05%	5,54%	1385,60%

Table 3. Volatility calculated using GARCH

The data used to calculate the preceding metric was calculated from the logarithmic price variation using equation 1. Parameters Ω, α and β on Table 3 were determined using an econometrical Excel-based add-in (Annen, 2005), with μ as the average. The volatility of paraquat, amine and glyphosate are astounding, as revealed by GARCH σ^2 on Table 3: daily 1.55%, 2.27% and 5.54% and yearly 386.82%, 566.88% and 1385.60% respectively.

A financial assessment of the prospective losses due to price volatility requires further quantification. The study employs parametric Value at Risk (VaR) (Jorion, 1996) to estimate the maximum expected loss over a year under market conditions. This research utilises 95% confidence, therefore α =5%. VaR is broadly defined in equation 5

$$VaR = Z_\alpha * \sigma \qquad (5)$$

Where:
Z is the number of σ, and
σ is the volatility.

This research adapts this notion in a pragmatic manner in equation 6:

$$VaR = V_0 - V_c \qquad (6)$$

Where:
V_0 is the initial value, and
V_c is the cut-off value.

We assume that V_0 is $1000. V_c[4] uses the average of the variations and σ from the square root of GARCH (σ^2). According to VaR, *ceteris paribus* Paraquat losses per $1000 are $204, Amine $248, Glyphosate $387. This significantly augments the uncertainty for customers as it makes it more difficult to determine the prospective price to be disbursed.

Forward price valuation

Collected data is implemented in equation 4, providing an assessment of prospective forward prices for amine, glyphosate and paraquat. These are depicted in Appendix 2. We considered a LIBOR rate of 1.24% (APR), a convenience yield of 0.55% (APR), and a maturity of 90 days. Additionally, this appendix describes quantity, product cost and per litre per item prices of products.

DISCUSSION

Considering that agrochemical supply prices are an exogenous, non-controllable primordial input, whose price volatility affects the profitability of agricultural producers in both short and long term, they might benefit greatly from a financial derivative that allows them to be protected from sharp price fluctuations.

The spot and forward prices exhibited in Appendix 2 show the plausible profits or losses according to the financial position held: long/short. For instance, an agent holding a long position (an agricultural producer) in the forward contract of amine experiences gains, since the forward price per litre was settled on 1 April 2013 as $5.25, and whereas the actual spot price in July was $5.40. If the forward price was $5.30, this would represent savings worth $3,944. Similarly, the holder of the forward of glyphosate, engaging in a long position, yields a profit since the spot price on 7 January 2016 was $4.80, the forward price in January was $4.86 and the spot price on 8 April 2013 was $5; this entails savings of $8,771.75. Finally, holding a long position in the case of paraquat results in a loss ($7,087.43) for the holder of a long position, as the forward price was $7.05 and the actual spot price on 10 April 2016 was $6.90.

Engaging in this proposed hedgeing process allows agricultural producers to mitigate the uncertainty of market prices. Since the natural up- and down-swings in the spot market price creates uncertainty, a competitive advantage is derived for agents involved in this derivative instrument, resulting in savings (profits). All in all the market prices from Appendix 2 reveal a favourable position for the holder of the long position (the agricultural producer), since the forward price represents a solid advantage, making supplies acquisition cheaper than the actual purchase at spot prices. Furthermore, the cost of one of the most influential supplies and a primordial component of the prime cost becomes certain.

By guaranteeing a fixed cost in advance, producers may plan properly ahead of time, allowing them to have a clear view of costs, financial resource requirements and profitability. There are, however, ethical implications for the issuer of the derivative, as this agent may choose to 1. add a premium to the LIBOR rate to narrow down the difference between spot and forward prices, or 2. horde and restrain the supply of the raw material to deliberately increase the price. To control these plausible anomalies objectively, it is highly recommended that agricultural and commercial governmental authorities monitor both spot and forward prices to guarantee transparency.

CONCLUSION AND RECOMMENDATIONS

This paper aimed to prove the existing volatility in prices of agrochemical products and the viability of introducing those inputs into financial derivative markets. After the evaluation of the models to determine both premises, two conclusions arise. First, agrochemical products have been highly volatile over the years, and have a tendency to continue fluctuating in the future. Companies in the industry have experienced important downfalls due to this

[4] Is determined using, NORMINV

uncertainty. Regarding the valuation of price volatility, it is advisable to expand the sample using daily data to other products to increase accuracy. Second, forward price valuation shows that, depending on the financial position chosen, agents have the posibility of obtaining economic benefits from the use of such contracts. Thus, it is feasible to use forward contracts as a hedging tool to diminish price uncertainty in agrochemicals. Therefore, due to its importance, in the future stock exchanges might offer these contracts to probable investors engaged in agrochemical activities and looking forward to plan ahead using a prestablished price.

REFERENCES

Annen, K. (2005) Garch parameter estimation. [Online]. Available from: http://www.web-reg.de/. [Accessed 20 August 2016].

Bartram, S. M., Brown, G. W. and Fehle, A. F. (2009) International evidence on financial derivatives usage. *Financial Management*, 38(1), 185-206.

Beckmann, J. and Czudaj, R. (2014) Volatility transmission in agricultural futures markets. *Economic Modelling*, 36, 541-546.

Bollerslev, T. (1986) Generalized autoregressive conditional heteroscedasticity. *Journal of Econometrics*, 31, 307-327.

Brennan, M. (1991) The price of convenience and the valuation of commodity contingent claims. In D. Lund and B. Oksendal (eds.). *Stochastic Models and Options Value*. UK: Emerald Group Publishing, 33-72.

Brennan, M. J. and Schwartz, E. S. (1985) Evaluating natural resource investment. *Journal of Business*, 58(2), 135-157.

Chang, C.-L. and McAleer, M. (2015) Econometric analysis of financial derivatives: An overview. *Journal of Econometrics*, 187(2), 403-407.

Combes, J.-L. and Guillaumont, P. (2002) Commodity price volatility, vulnerability and development. *Development Policy Review*, 20(1), 25-39.

Dau-Schmidt, N. C. (2012) Forward contracts: Prohibitions on risk and speculation under Islamic law. *Indiana Journal of Global Legal Studies*, 19(2), 533-553.

Dharni, K. and Singh, K. (2011) Buying behavior of agri input customers of organized rural retail outlets. *The IUP Journal of Management Research*, 10(4), 14-30.

Doporto, I. and Michelena, G. (2011) La volatilidad de los precios de los commodities: El caso de los productos agricolas. *Revista del CEI*, 35-53.

Ederington, L. H. and Guan, W. (2006) Measuring historical volatility. *Journal of Applied Finance*, 16(1), 5-14.

Engle, R. (1982) Autoregressive conditional heteroscedasticity with estimates of the variance of UK inflation. *Econometrica*, 50(4), 987-1008.

Fama, E. and French, K. (1987) Commodity futures prices: Some evidence on forecast power, premiums, and the theory of storage. *Journal of Business*, 60(1), 55-73.

Fernandez, J. L., Pou, M. and Vázquez, C. (2015) A drift-free simulation method for pricing commodity derivatives. *Applied Stochastic Models in Business and Industry*, 31(4), 536-550.

Gibson, R., and Schwartz, E. (1990) Stochastic convenience yield and the pricing of oil contingent claims. *Journal Of Finance*, 45(3), 959-976.

Haugh, M. (2010) Forwards, swaps and futures. [Online]. *Financial Engineering: Discrete-Time Models*. Available from: http://www.columbia.edu/~mh2078/for_swap_fut_FE1.pdf [Accessed 23 August 2016].

Hillard, J. and Reis, J. (1998) Valuation of commodity futures and options under stochastic convenience yields, interest rates, and jump diffusions in the spot. *Journal of Financial and Quantitative Analysis*, 33(1), 61-86.

Joly, P.-B. and Lemarié, S. (2002) The technological trajectories of the agrochemical industry: Change and continuity. *Science and Public Policy*, 29(4), 259-266.

Jorion, P. (1996) Risk2: Measuring the risk in value at risk. *Financial Analysts Journal*, 52(6), 47-56.

Karolyi, G. A. (1995) A multivariate GARCH model of international transmissions of stock returns and volatility: The case of the United States and Canada. *Journal of Business and Economic Statistics*, 13(1), 11-25.

Kisamo, D., and Mndeme, R. (2002) The impact of agrochemicals in production and protection. *African Newsletter on Occupational Health and Safety*, 12, 17-20.

Kroszner, R. (2000) Lessons from financial crises: The role of clearinghouses. *Journal of Financial Services Research*, 18(2), 157-171.

Lapan, H., Moschini, G. and Hanson, S.D. (1991) Production, hedging, and speculative decisions with options and futures markets. *American Journal of Agricultural Economics*, 73(1), 66-74.

Lee, D. K., In, J. and Lee, S. (2015) Standard deviation and standard error of the mean. *Statistical Round*, 68(3), 220-223.

Linares, D. (2005) Gestiopolis. [Online]. Available from: www.gestiopolis.com/mercado-de-futuros [Accessed 1 July 2016].

Masson, D. (2011) Derivatives and exotics. *Journal of Corporate Treasury Management*, 4(2), 174-192.

Moros, J. et al. (2006) Comparison of two vibrational procedures for the direct determination of mancozeb in agrochemicals. *Talanta*, 72(1), 72-79.

Nelson, D. (1991) Conditional heteroscedasticity in asset returns: A new approach. *Econometrica*, 59(2), 347-370.

Parsons, J. E. (1989) Estimating the strategic value of long-term forward purchase contracts using auction models. *Journal Of Finance*, 44(4), 981-1010.

Perales, G. B. (2010) The theory of storage and price dynamics of agricultural commodity futures: The case of corn and wheat . *Ensayos*, 29(1), 1-22.

Quetsch, M. R. (2014) Corporations and hedging: Distinguishing forwards from swaps under the Commodity Exchange Act post-Dodd Frank. *The Journal of Corporation Law*, 30, 895-913.

Rossi, G. (2013) La volatilidad en mercados financieros y de commodities. Un repaso de sus causas y la evidencia reciente. *Invenio*, 59-74.

Weinong, Z. (2014) Glyphosate looks promising despite drastic fluctuations in 2013. *China Chemical Reporter*, 25(3/4), 21-22.

Yan, X. (2002) Valuation of commodity derivatives in a new multi factor model. *Review of Derivatives Research*, 5, 251-271

Yang, J., Balyeat, R. B. and Leatham, D. J. (2005) Futures trading activity and commodity cash price volatility. *Journal of Business Finance and Accounting*, 32(1/2), 297-323.

Appendix 1

Glyphosate		Amine		Paraquat	
Date	**Price**	**Date**	**Price**	**Date**	**Price**
07/01/2013	4,80	04/01/2013	5,25	07/02/2012	6,50
09/01/2013	5,50	07/01/2013	4,70	21/03/2012	6,85
10/01/2013	5,20	07/01/2013	4,90	12/04/2012	6,50
21/01/2013	4,00	08/01/2013	5,13	20/04/2012	7,52
28/01/2013	3,80	10/01/2013	5,40	18/05/2012	7,52
29/01/2013	4,50	17/01/2013	5,00	07/06/2012	6,70
30/01/2013	3,75	18/01/2013	5,30	21/06/2012	7,52
06/02/2013	5,50	18/01/2013	5,60	12/07/2012	6,70
07/02/2013	4,80	21/01/2013	5,66	19/07/2012	7,53
08/02/2013	4,50	25/01/2013	4,00	08/08/2012	6,70
11/02/2013	4,00	28/01/2013	4,91	22/08/2012	7,53
12/02/2013	6,00	29/01/2013	4,93	10/10/2012	6,85
19/02/2013	5,00	30/01/2013	4,00	28/12/2012	7,53
20/02/2013	4,50	31/01/2013	5,25	02/01/2013	7,00
21/02/2013	4,50	04/02/2013	5,25	04/01/2013	7,93
25/02/2013	3,75	05/02/2013	5,13	10/01/2013	7,20
26/02/2013	4,50	08/02/2013	5,00	14/01/2013	6,80
28/02/2013	5,46	11/02/2013	4,50	15/01/2013	7,00
01/03/2013	5,80	18/02/2013	5,49	17/01/2013	7,70
11/03/2013	5,00	19/02/2013	5,45	21/01/2013	5,00
15/03/2013	5,90	21/02/2013	5,00	23/01/2013	6,70
18/03/2013	4,25	25/02/2013	4,92	28/01/2013	5,50
19/03/2013	5,50	26/02/2013	4,97	04/02/2013	6,50
25/03/2013	4,75	27/02/2013	4,00	08/02/2013	6,50
26/03/2013	4,50	28/02/2013	5,25	12/02/2013	7,10
27/03/2013	5,00	01/03/2013	6,00	13/02/2013	7,00
28/03/2013	5,46	05/03/2013	5,13	15/02/2013	6,85
02/04/2013	4,50	07/03/2013	5,00	21/02/2013	6,90
08/04/2013	5,00	08/03/2013	4,80	22/02/2013	7,00
15/04/2013	4,25	14/03/2013	5,25	25/02/2013	6,85
16/04/2013	5,90	15/03/2013	6,40	26/02/2013	6,86
17/04/2013	5,50	18/03/2013	5,17	28/02/2013	7,93
18/04/2013	4,20	21/03/2013	5,60	06/03/2013	7,93
22/04/2013	5,00	22/03/2013	5,00	11/03/2013	6,90
23/04/2013	4,00	26/03/2013	4,93	14/03/2013	6,50
25/04/2013	5,46	28/03/2013	4,98	15/03/2013	4,50
26/04/2013	3,80	29/03/2013	5,25	18/03/2013	7,40
29/04/2013	6,00	03/04/2013	4,50	19/03/2013	7,00
02/05/2013	6,10	04/04/2013	5,40	20/03/2013	7,10
06/05/2013	5,20	05/04/2013	7,20	21/03/2013	6,85
09/05/2013	4,75	08/04/2013	5,25	22/03/2013	6,85
17/05/2013	4,50	10/04/2013	4,88	25/03/2013	6,85
20/05/2013	4,75	12/04/2013	5,00	28/03/2013	7,00
23/05/2013	5,00	16/04/2013	6,40	10/04/2013	6,90

27/05/2013	4,90	18/04/2013	5,13	12/04/2013	6,25
28/05/2013	5,50	19/04/2013	4,75	15/04/2013	7,50
29/05/2013	4,50	22/04/2013	5,80	16/04/2013	7,80
30/05/2013	5,46	23/04/2013	4,93	17/04/2013	7,00
03/06/2013	4,80	24/04/2013	5,30	18/04/2013	6,90
05/06/2013	5,00	26/04/2013	5,28	22/04/2013	6,85
17/06/2013	5,00	29/04/2013	4,75	23/04/2013	6,85
20/06/2013	6,05	02/05/2013	5,60	26/04/2013	7,93
24/06/2013	5,00	06/05/2013	5,25	30/04/2013	6,80
25/06/2013	4,90	07/05/2013	8,03	01/05/2013	7,40
26/06/2013	4,75	08/05/2013	6,00	08/05/2013	6,90
27/06/2013	5,46	17/05/2013	5,51	09/05/2013	7,00
28/06/2013	6,00	22/05/2013	5,20	17/05/2013	5,00
01/07/2013	6,00	23/05/2013	5,00	20/05/2013	7,10
03/07/2013	4,50	27/05/2013	4,45	21/05/2013	8,50
05/07/2013	4,90	29/05/2013	4,87	22/05/2013	7,00
12/07/2013	4,75	30/05/2013	5,15	23/05/2013	6,85
15/07/2013	6,50	05/06/2013	5,60	27/05/2013	7,00
19/07/2013	5,90	06/06/2013	5,50	28/05/2013	7,93
22/07/2013	5,00	11/06/2013	7,72	30/05/2013	7,70
25/07/2013	5,50	17/06/2013	5,61	05/06/2013	7,00
26/07/2013	5,00	18/06/2013	6,75	11/06/2013	7,00
29/07/2013	6,00	19/06/2013	5,75	12/06/2013	7,00
31/07/2013	4,75	21/06/2013	5,25	14/06/2013	7,20
01/08/2013	5,00	24/06/2013	4,50	19/06/2013	7,93
05/08/2013	6,00	25/06/2013	4,83	20/06/2013	7,25
08/08/2013	5,20	26/06/2013	4,43	24/06/2013	7,00
15/08/2013	5,00	28/06/2013	4,75	25/06/2013	7,00
16/08/2013	4,95	04/07/2013	5,75	27/06/2013	6,85
19/08/2013	5,00	11/07/2013	5,51	28/06/2013	7,93
21/08/2013	6,00	15/07/2013	6,50	03/07/2013	7,00
22/08/2013	5,50	16/07/2013	6,38	04/07/2013	7,50
26/08/2013	5,00	17/07/2013	5,20	05/07/2013	7,20
27/08/2013	4,90	18/07/2013	6,50	09/07/2013	7,20
28/08/2013	5,00	19/07/2013	5,00	15/07/2013	7,25
29/08/2013	6,50	22/07/2013	5,25	16/07/2013	7,00
04/09/2013	5,50	25/07/2013	4,40	22/07/2013	6,50
10/09/2013	5,20	26/07/2013	4,75	23/07/2013	7,20
12/09/2013	5,25	30/07/2013	4,25	25/07/2013	7,93
17/09/2013	4,95	31/07/2013	5,12	30/07/2013	6,00
18/09/2013	6,30	01/08/2013	5,00	01/08/2013	6,75
20/09/2013	5,50	05/08/2013	4,75	05/08/2013	7,00
23/09/2013	4,75	06/08/2013	5,75	14/08/2013	7,20
25/09/2013	6,00	07/08/2013	7,00	16/08/2013	4,50
27/09/2013	4,90	09/08/2013	6,00	21/08/2013	7,20
30/09/2013	4,85	14/08/2013	5,24	22/08/2013	7,93
02/10/2013	5,00	15/08/2013	5,00	23/08/2013	8,95

03/10/2013	4,80	16/08/2013	5,18	27/08/2013	7,60
04/10/2013	5,00	20/08/2013	6,26	28/08/2013	5,50
08/10/2013	6,00	21/08/2013	5,50	29/08/2013	7,93
09/10/2013	5,90	22/08/2013	5,25	03/09/2013	7,00
10/10/2013	6,00	23/08/2013	4,50	11/09/2013	7,60
11/10/2013	5,00	26/08/2013	4,50	12/09/2013	6,00
14/10/2013	5,20	27/08/2013	4,45	17/09/2013	7,60
15/10/2013	6,50	28/08/2013	4,95	19/09/2013	6,00
17/10/2013	5,00	29/08/2013	4,97	24/09/2013	7,60
22/10/2013	4,75	02/09/2013	4,50	25/09/2013	7,00
23/10/2013	5,50	03/09/2013	5,50	26/09/2013	7,90
24/10/2013	6,50	04/09/2013	6,00	02/10/2013	7,10
25/10/2013	5,50	09/09/2013	5,25	08/10/2013	6,60
30/10/2013	6,50	10/09/2013	5,00	09/10/2013	7,60
31/10/2013	4,45	11/09/2013	5,00	11/10/2013	4,50
01/11/2013	4,80	12/09/2013	4,50	15/10/2013	8,95
04/11/2013	5,00	13/09/2013	8,11	17/10/2013	7,50
05/11/2013	6,00	17/09/2013	5,49	18/10/2013	7,60
08/11/2013	4,50	18/09/2013	5,69	22/10/2013	6,25
11/11/2013	5,50	19/09/2013	4,50	23/10/2013	7,90
12/11/2013	5,20	20/09/2013	5,42	24/10/2013	7,60
13/11/2013	6,50	25/09/2013	5,00	30/10/2013	8,00
14/11/2013	6,00	26/09/2013	6,12	31/10/2013	7,60
15/11/2013	7,00	30/09/2013	4,63	01/11/2013	7,60
18/11/2013	7,00	02/10/2013	5,38	05/11/2013	7,00
19/11/2013	5,25	03/10/2013	5,00	07/11/2013	7,60
20/11/2013	4,90	07/10/2013	5,40	13/11/2013	8,95
21/11/2013	6,50	08/10/2013	5,50	14/11/2013	7,60
22/11/2013	6,00	09/10/2013	6,25	15/11/2013	6,50
25/11/2013	7,50	10/10/2013	5,25	18/11/2013	6,75
29/11/2013	6,00	11/10/2013	4,50	21/11/2013	7,90
04/12/2013	5,00	14/10/2013	5,24	26/11/2013	8,00
10/12/2013	5,70	15/10/2013	5,80	28/11/2013	7,60
11/12/2013	5,30	16/10/2013	5,32	03/12/2013	7,60
16/12/2013	4,90	17/10/2013	4,50	04/12/2013	7,50
17/12/2013	6,00	18/10/2013	5,50	12/12/2013	7,00
19/12/2013	5,50	23/10/2013	5,32	13/12/2013	7,70
22/12/2013	6,10	24/10/2013	5,25	16/12/2013	6,35
23/12/2013	4,75	28/10/2013	5,90	17/12/2013	8,95
25/12/2013	6,00	29/10/2013	4,00	18/12/2013	6,75
27/12/2013	6,00	01/11/2013	5,40	20/12/2013	7,60
29/12/2013	6,00	05/11/2013	5,00	23/12/2013	6,25
06/01/2014	4,50	06/11/2013	5,44	24/12/2013	8,00
07/01/2014	18,50	07/11/2013	5,85	26/12/2013	7,90
09/01/2014	4,75	08/11/2013	5,25	02/01/2014	5,80
13/01/2014	6,00	12/11/2013	5,00	03/01/2014	5,80
14/01/2014	7,00	13/11/2013	5,88	07/01/2014	8,80

18/01/2014	6,75	15/11/2013	5,25	08/01/2014	7,50
21/01/2014	5,80	18/11/2013	5,21	10/01/2014	8,80
23/01/2014	4,50	19/11/2013	4,75	15/01/2014	7,60
24/01/2014	7,50	20/11/2013	4,81	16/01/2014	8,95
31/01/2014	5,00	21/11/2013	5,25	17/01/2014	7,60
04/02/2014	4,45	22/11/2013	5,50	20/01/2014	7,60
08/02/2014	5,00	25/11/2013	5,90	21/01/2014	7,60
10/02/2014	6,80	02/12/2013	5,00	22/01/2014	7,60
12/02/2014	5,00	05/12/2013	5,29	23/01/2014	8,80
17/02/2014	6,30	11/12/2013	5,51	24/01/2014	7,40
20/02/2014	4,50	12/12/2013	5,25	27/01/2014	7,21
25/02/2014	18,50	16/12/2013	4,99	28/01/2014	6,80
27/02/2014	5,00	17/12/2013	5,00	29/01/2014	7,00
28/02/2014	5,00	19/12/2013	5,48	30/01/2014	5,80
05/03/2014	5,50	20/12/2013	5,50	31/01/2014	7,00
06/03/2014	7,00	27/12/2013	5,50	03/02/2014	8,00
07/03/2014	4,50	31/12/2013	5,33	04/02/2014	5,80
12/03/2014	6,00	06/01/2014	4,50	05/02/2014	7,50
17/03/2014	4,85	07/01/2014	5,90	07/02/2014	8,00
18/03/2014	5,00	08/01/2014	5,00	08/02/2014	6,50
19/03/2014	6,30	09/01/2014	5,25	10/02/2014	7,60
20/03/2014	5,80	10/01/2014	5,25	12/02/2014	5,50
27/03/2014	5,50	16/01/2014	4,90	13/02/2014	7,60
29/03/2014	7,50	17/01/2014	5,25	14/02/2014	6,70
30/03/2014	6,00	20/01/2014	5,08	17/02/2014	7,60
02/04/2014	5,85	21/01/2014	5,75	18/02/2014	5,80
03/04/2014	6,50	23/01/2014	5,00	19/02/2014	8,80
04/04/2014	5,25	24/01/2014	5,50	21/02/2014	7,60
09/04/2014	6,00	27/01/2014	5,33	24/02/2014	7,40
10/04/2014	6,50	28/01/2014	5,85	25/02/2014	5,80
12/04/2014	5,70	29/01/2014	5,50	26/02/2014	7,21
14/04/2014	6,30	31/01/2014	5,03	27/02/2014	8,00
15/04/2014	5,20	05/02/2014	5,13	28/02/2014	8,00
16/04/2014	6,30	07/02/2014	5,25	04/03/2014	7,60
17/04/2014	6,50	08/02/2014	5,08	05/03/2014	7,60
18/04/2014	5,75	11/02/2014	5,40	06/03/2014	8,00
24/04/2014	5,50	12/02/2014	5,50	07/03/2014	7,50
28/04/2014	6,50	14/02/2014	4,92	11/03/2014	8,00
29/04/2014	6,00	18/02/2014	5,95	12/03/2014	7,60
30/04/2014	4,45	21/02/2014	5,30	13/03/2014	7,50
01/05/2014	5,25	24/02/2014	5,25	14/03/2014	7,60
02/05/2014	6,50	26/02/2014	4,80	17/03/2014	7,60
04/05/2014	5,80	27/02/2014	4,56	18/03/2014	7,60
05/05/2014	5,50	28/02/2014	5,68	19/03/2014	8,80
06/05/2014	5,00	17/03/2014	4,78	20/03/2014	8,52
07/05/2014	6,00	18/03/2014	5,00	21/03/2014	8,80
09/05/2014	5,75	19/03/2014	6,00	26/03/2014	7,50

12/05/2014	7,60	20/03/2014	5,50	28/03/2014	7,21
13/05/2014	6,25	24/03/2014	4,50	29/03/2014	8,00
14/05/2014	4,30	25/03/2014	5,70	31/03/2014	7,60
15/05/2014	6,30	26/03/2014	5,19	02/04/2014	8,55
19/05/2014	5,00	27/03/2014	6,63	03/04/2014	8,00
20/05/2014	4,50	28/03/2014	5,19	04/04/2014	7,60
21/05/2014	5,25	29/03/2014	6,50	08/04/2014	8,80
22/05/2014	5,50	30/03/2014	6,40	09/04/2014	7,60
23/05/2014	5,75	31/03/2014	6,00	10/04/2014	8,00
27/05/2014	5,25	02/04/2014	5,00	12/04/2014	8,50
29/05/2014	7,40	03/04/2014	7,50	14/04/2014	7,60
30/05/2014	5,75	04/04/2014	4,67	15/04/2014	7,70
02/06/2014	6,50	08/04/2014	4,50	16/04/2014	8,80
03/06/2014	6,00	09/04/2014	7,20	17/04/2014	8,00
05/06/2014	5,00	10/04/2014	5,90	18/04/2014	8,50
09/06/2014	7,00	11/04/2014	5,64	21/04/2014	7,60
10/06/2014	5,50	12/04/2014	4,60	22/04/2014	7,60
11/06/2014	6,00	14/04/2014	5,88	23/04/2014	7,50
13/06/2014	5,75	15/04/2014	5,00	25/04/2014	7,21
16/06/2014	4,00	16/04/2014	4,92	28/04/2014	7,60
18/06/2014	6,00	18/04/2014	6,00	29/04/2014	7,60
20/06/2014	5,75	23/04/2014	5,06	30/04/2014	7,80
23/06/2014	7,00	24/04/2014	4,78	02/05/2014	8,00
27/06/2014	5,75	25/04/2014	5,40	04/05/2014	8,50
30/06/2014	6,50	28/04/2014	7,91	05/05/2014	8,80
01/07/2014	5,50	03/05/2014	4,50	06/05/2014	7,60
02/07/2014	5,50	05/05/2014	5,75	07/05/2014	7,60
03/07/2014	6,00	06/05/2014	5,40	08/05/2014	7,60
04/07/2014	5,00	09/05/2014	5,33	09/05/2014	8,50
07/07/2014	7,00	13/05/2014	5,25	12/05/2014	8,50
08/07/2014	5,25	14/05/2014	4,75	13/05/2014	7,25
10/07/2014	6,50	15/05/2014	7,20	14/05/2014	7,60
11/07/2014	5,75	21/05/2014	5,88	15/05/2014	8,00
14/07/2014	4,50	22/05/2014	5,00	16/05/2014	8,80
16/07/2014	5,25	23/05/2014	5,83	19/05/2014	7,60
17/07/2014	5,00	26/05/2014	5,00	20/05/2014	7,60
21/07/2014	4,75	27/05/2014	5,88	21/05/2014	8,00
24/07/2014	6,50	28/05/2014	5,25	23/05/2014	8,50
28/07/2014	4,75	29/05/2014	5,40	24/05/2014	7,50
29/07/2014	6,50	02/06/2014	5,50	26/05/2014	7,21
30/07/2014	5,00	03/06/2014	5,00	27/05/2014	7,60
01/08/2014	6,30	04/06/2014	4,97	28/05/2014	7,50
05/08/2014	5,25	06/06/2014	5,80	29/05/2014	8,80
06/08/2014	7,00	09/06/2014	5,50	30/05/2014	8,50
07/08/2014	5,30	10/06/2014	5,67	31/05/2014	9,80
08/08/2014	6,50	11/06/2014	4,88	02/06/2014	8,00
12/08/2014	6,00	12/06/2014	5,80	03/06/2014	8,00

13/08/2014	5,25	16/06/2014	5,25	04/06/2014	7,60
14/08/2014	5,50	17/06/2014	5,60	05/06/2014	7,60
15/08/2014	6,50	18/06/2014	5,50	06/06/2014	8,80
16/08/2014	6,50	19/06/2014	8,05	09/06/2014	8,00
17/08/2014	6,50	20/06/2014	4,75	10/06/2014	8,00
18/08/2014	7,00	23/06/2014	5,50	11/06/2014	7,60
19/08/2014	6,00	24/06/2014	5,44	13/06/2014	8,50
21/08/2014	6,50	25/06/2014	5,38	16/06/2014	8,00
25/08/2014	4,50	27/06/2014	5,36	17/06/2014	7,90
29/08/2014	5,50	30/06/2014	5,50	18/06/2014	7,60
01/09/2014	7,00	02/07/2014	5,40	19/06/2014	8,80
03/09/2014	6,00	03/07/2014	5,00	20/06/2014	8,50
04/09/2014	5,00	04/07/2014	5,68	23/06/2014	8,00
05/09/2014	4,90	07/07/2014	5,25	24/06/2014	7,21
08/09/2014	5,00	08/07/2014	6,00	25/06/2014	7,50
09/09/2014	5,50	10/07/2014	5,87	27/06/2014	8,50
11/09/2014	5,50	11/07/2014	6,16	30/06/2014	8,00
15/09/2014	7,00	13/07/2014	5,63	02/07/2014	7,60
16/09/2014	5,50	14/07/2014	5,38	03/07/2014	7,50
19/09/2014	7,00	15/07/2014	5,63	04/07/2014	8,50
22/09/2014	6,50	16/07/2014	5,75	07/07/2014	8,00
23/09/2014	5,25	17/07/2014	5,13	09/07/2014	8,00
24/09/2014	5,50	18/07/2014	6,41	10/07/2014	8,80
25/09/2014	7,00	21/07/2014	5,00	11/07/2014	8,50
29/09/2014	4,60	22/07/2014	5,63	14/07/2014	8,00
01/10/2014	6,31	23/07/2014	4,75	15/07/2014	8,00
02/10/2014	6,00	25/07/2014	6,30	16/07/2014	8,00
03/10/2014	7,00	28/07/2014	5,25	18/07/2014	8,00
07/10/2014	7,55	29/07/2014	5,41	20/07/2014	8,00
08/10/2014	6,38	30/07/2014	5,00	21/07/2014	7,88
09/10/2014	6,50	31/07/2014	5,43	22/07/2014	8,00
10/10/2014	5,50	01/08/2014	6,00	24/07/2014	7,80
14/10/2014	5,50	04/08/2014	5,90	25/07/2014	8,00
15/10/2014	7,00	05/08/2014	5,00	28/07/2014	7,88
16/10/2014	6,31	06/08/2014	5,50	29/07/2014	9,00
17/10/2014	4,80	07/08/2014	5,70	30/07/2014	9,00
20/10/2014	7,00	08/08/2014	5,75	01/08/2014	8,50
21/10/2014	7,00	11/08/2014	5,38	04/08/2014	8,00
22/10/2014	6,50	12/08/2014	5,40	05/08/2014	8,00
23/10/2014	5,00	14/08/2014	5,50	06/08/2014	8,00
27/10/2014	7,00	15/08/2014	5,56	07/08/2014	9,50
28/10/2014	4,60	16/08/2014	5,40	08/08/2014	8,00
29/10/2014	5,50	17/08/2014	5,40	11/08/2014	8,80
30/10/2014	6,31	18/08/2014	5,50	12/08/2014	8,00
31/10/2014	4,75	19/08/2014	5,08	13/08/2014	8,00
03/11/2014	7,00	21/08/2014	5,34	15/08/2014	8,00
04/11/2014	6,57	22/08/2014	5,40	18/08/2014	8,00

05/11/2014	5,50	25/08/2014	5,58	19/08/2014	8,00
06/11/2014	6,38	26/08/2014	5,35	20/08/2014	7,21
07/11/2014	5,45	27/08/2014	5,00	21/08/2014	7,80
10/11/2014	7,00	28/08/2014	7,00	22/08/2014	7,50
11/11/2014	5,00	29/08/2014	6,25	25/08/2014	8,50
13/11/2014	7,00	01/09/2014	5,72	26/08/2014	7,50
17/11/2014	5,00	02/09/2014	6,25	27/08/2014	7,21
18/11/2014	4,60	04/09/2014	5,68	28/08/2014	7,50
19/11/2014	5,50	05/09/2014	14,23	29/08/2014	7,60
20/11/2014	6,00	08/09/2014	5,36	31/08/2014	8,00
21/11/2014	6,50	09/09/2014	5,88	01/09/2014	8,50
24/11/2014	7,00	10/09/2014	5,00	02/09/2014	8,00
25/11/2014	4,30	12/09/2014	5,16	03/09/2014	8,00
27/11/2014	5,00	15/09/2014	5,54	04/09/2014	9,00
28/11/2014	5,50	16/09/2014	5,00	05/09/2014	7,50
01/12/2014	5,90	18/09/2014	5,00	06/09/2014	8,00
02/12/2014	5,90	19/09/2014	5,54	08/09/2014	8,50
03/12/2014	5,45	22/09/2014	5,45	09/09/2014	7,88
04/12/2014	6,38	24/09/2014	5,28	10/09/2014	8,00
05/12/2014	6,31	25/09/2014	5,00	11/09/2014	8,00
08/12/2014	5,00	26/09/2014	5,66	12/09/2014	8,80
09/12/2014	7,00	29/09/2014	5,64	15/09/2014	8,50
10/12/2014	5,00	30/09/2014	5,50	16/09/2014	7,60
11/12/2014	5,00	02/10/2014	5,34	17/09/2014	8,50
12/12/2014	6,31	03/10/2014	5,00	18/09/2014	8,00
15/12/2014	6,38	06/10/2014	5,66	19/09/2014	7,88
16/12/2014	5,50	07/10/2014	5,25	20/09/2014	8,00
17/12/2014	7,00	08/10/2014	5,25	22/09/2014	8,50
18/12/2014	5,50	09/10/2014	4,88	23/09/2014	8,30
19/12/2014	5,00	10/10/2014	5,00	24/09/2014	8,80
20/12/2014	6,31	13/10/2014	5,72	25/09/2014	8,00
24/12/2014	6,00	14/10/2014	5,08	26/09/2014	8,00
26/12/2014	6,31	15/10/2014	5,00	29/09/2014	8,50
29/12/2014	5,00	16/10/2014	5,64	30/09/2014	8,00
30/12/2014	5,00	17/10/2014	5,45	01/10/2014	7,88
02/01/2015	5,00	20/10/2014	5,58	02/10/2014	8,00
05/01/2015	7,00	21/10/2014	5,00	03/10/2014	8,00
06/01/2015	4,25	22/10/2014	6,00	06/10/2014	8,80
08/01/2015	5,00	23/10/2014	4,80	07/10/2014	8,00
09/01/2015	5,00	24/10/2014	5,08	08/10/2014	7,88
12/01/2015	5,50	27/10/2014	5,48	09/10/2014	8,00
13/01/2015	6,40	28/10/2014	5,20	13/10/2014	8,50
16/01/2015	6,31	30/10/2014	5,40	14/10/2014	8,00
17/01/2015	4,50	31/10/2014	5,00	15/10/2014	8,00
21/01/2015	4,50	03/11/2014	5,50	16/10/2014	7,88
22/01/2015	6,80	04/11/2014	5,88	17/10/2014	8,00
23/01/2015	5,00	05/11/2014	5,00	20/10/2014	8,50

26/01/2015	6,80	06/11/2014	5,54	21/10/2014	7,60
27/01/2015	4,50	07/11/2014	5,00	22/10/2014	9,00
28/01/2015	5,00	10/11/2014	5,50	23/10/2014	8,00
29/01/2015	6,00	11/11/2014	5,33	24/10/2014	8,80
02/02/2015	7,00	13/11/2014	5,00	27/10/2014	8,50
03/02/2015	5,90	14/11/2014	5,25	28/10/2014	9,00
04/02/2015	4,20	17/11/2014	5,10	29/10/2014	8,00
06/02/2015	6,10	18/11/2014	5,78	30/10/2014	7,88
08/02/2015	7,20	19/11/2014	5,40	31/10/2014	7,60
09/02/2015	4,50	20/11/2014	5,30	01/11/2014	8,00
11/02/2015	6,00	21/11/2014	5,25	03/11/2014	8,50
12/02/2015	5,00	24/11/2014	5,19	04/11/2014	8,00
13/02/2015	6,40	25/11/2014	5,00	06/11/2014	8,00
16/02/2015	7,00	26/11/2014	5,00	07/11/2014	8,00
17/02/2015	5,90	28/11/2014	5,13	10/11/2014	8,50
19/02/2015	6,00	01/12/2014	5,79	11/11/2014	9,00
20/02/2015	6,80	02/12/2014	6,00	12/11/2014	8,00
21/02/2015	5,60	03/12/2014	5,58	13/11/2014	7,50
23/02/2015	4,50	04/12/2014	5,08	14/11/2014	7,88
24/02/2015	7,50	05/12/2014	5,00	17/11/2014	6,00
25/02/2015	5,00	08/12/2014	5,72	18/11/2014	5,80
26/02/2015	6,80	09/12/2014	5,00	19/11/2014	8,00
28/02/2015	5,60	10/12/2014	5,00	20/11/2014	8,00
02/03/2015	7,50	11/12/2014	5,69	21/11/2014	7,88
03/03/2015	5,90	12/12/2014	5,00	24/11/2014	8,50
05/03/2015	5,50	15/12/2014	5,88	25/11/2014	6,00
06/03/2015	5,60	16/12/2014	5,00	26/11/2014	8,80
09/03/2015	5,00	18/12/2014	5,40	27/11/2014	6,00
11/03/2015	5,00	19/12/2014	4,50	28/11/2014	8,00
12/03/2015	6,80	20/12/2014	5,00	01/12/2014	7,80
13/03/2015	5,60	22/12/2014	5,83	02/12/2014	7,80
16/03/2015	7,50	23/12/2014	5,45	03/12/2014	8,00
17/03/2015	5,90	24/12/2014	5,17	04/12/2014	8,00
19/03/2015	5,00	26/12/2014	5,13	05/12/2014	7,88
20/03/2015	5,00	29/12/2014	5,58	06/12/2014	8,00
25/03/2015	4,00	30/12/2014	5,40	08/12/2014	9,00
27/03/2015	5,00	31/12/2014	7,50	10/12/2014	8,80
30/03/2015	4,50	02/01/2015	5,00	11/12/2014	6,00
01/04/2015	5,00	05/01/2015	5,88	12/12/2014	7,88
05/04/2015	6,00	07/01/2015	5,00	13/12/2014	8,00
06/04/2015	5,00	08/01/2015	5,20	15/12/2014	8,00
07/04/2015	5,00	09/01/2015	5,00	16/12/2014	8,00
08/04/2015	5,00	12/01/2015	5,41	17/12/2014	8,00
14/04/2015	4,50	14/01/2015	5,00	18/12/2014	8,00
16/04/2015	6,00	15/01/2015	5,88	19/12/2014	8,00
22/04/2015	5,00	16/01/2015	5,08	20/12/2014	7,88
25/04/2015	5,50	19/01/2015	5,13	22/12/2014	7,50

27/04/2015	5,00	20/01/2015	4,50	23/12/2014	8,80
28/04/2015	5,90	21/01/2015	4,50	24/12/2014	8,00
29/04/2015	5,00	23/01/2015	5,55	26/12/2014	7,88
01/05/2015	5,65	27/01/2015	5,20	29/12/2014	6,00
04/05/2015	5,00	28/01/2015	5,00	30/12/2014	7,25
05/05/2015	5,00	29/01/2015	5,25	31/12/2014	7,50
06/05/2015	5,00	30/01/2015	6,25	02/01/2015	8,00
11/05/2015	7,50	31/01/2015	5,00	05/01/2015	8,50
13/05/2015	5,00	02/02/2015	5,25	06/01/2015	8,00
18/05/2015	7,50	03/02/2015	4,70	07/01/2015	8,00
19/05/2015	5,97	04/02/2015	5,38	08/01/2015	8,00
20/05/2015	5,00	06/02/2015	5,13	09/01/2015	6,00
26/05/2015	4,80	11/02/2015	4,50	10/01/2015	8,00
27/05/2015	6,00	12/02/2015	4,77	12/01/2015	8,00
01/06/2015	7,50	13/02/2015	5,00	13/01/2015	5,80
02/06/2015	5,50	18/02/2015	5,70	14/01/2015	8,00
03/06/2015	5,00	21/02/2015	4,87	15/01/2015	6,90
08/06/2015	5,00	23/02/2015	4,83	16/01/2015	7,88
09/06/2015	6,00	25/02/2015	5,83	17/01/2015	7,50
12/06/2015	5,00	27/02/2015	5,00	19/01/2015	7,80
15/06/2015	4,80	28/02/2015	5,00	20/01/2015	7,50
17/06/2015	7,50	01/03/2015	6,72	21/01/2015	8,00
18/06/2015	5,00	02/03/2015	5,50	22/01/2015	7,88
22/06/2015	7,50	03/03/2015	5,83	23/01/2015	8,00
23/06/2015	4,80	06/03/2015	4,75	26/01/2015	5,80
29/06/2015	7,50	12/03/2015	5,23	27/01/2015	8,00
06/07/2015	5,45	13/03/2015	5,00	28/01/2015	8,00
07/07/2015	5,90	19/03/2015	5,00	29/01/2015	8,00
08/07/2015	4,80	20/03/2015	5,00	30/01/2015	6,00
10/07/2015	6,00	23/03/2015	5,32	02/02/2015	8,00
11/07/2015	5,00	26/03/2015	5,50	03/02/2015	7,80
13/07/2015	7,50	27/03/2015	5,13	04/02/2015	8,00
15/07/2015	7,00	30/03/2015	5,83	05/02/2015	8,00
16/07/2015	5,50	31/03/2015	5,25	06/02/2015	8,00
20/07/2015	7,50	03/04/2015	5,00	09/02/2015	5,80
21/07/2015	4,50	06/04/2015	5,25	10/02/2015	8,00
22/07/2015	5,50	09/04/2015	5,41	11/02/2015	8,00
24/07/2015	5,00	10/04/2015	5,20	12/02/2015	6,00
28/07/2015	5,00	13/04/2015	5,68	13/02/2015	8,00
30/07/2015	5,00	16/04/2015	5,00	16/02/2015	8,00
03/08/2015	5,00	17/04/2015	5,34	17/02/2015	7,80
04/08/2015	4,20	22/04/2015	5,55	18/02/2015	8,00
05/08/2015	5,50	24/04/2015	5,16	19/02/2015	8,00
07/08/2015	5,80	25/04/2015	5,00	20/02/2015	8,00
10/08/2015	5,90	27/04/2015	5,41	21/02/2015	7,70
11/08/2015	3,95	28/04/2015	5,15	23/02/2015	8,00
12/08/2015	4,50	29/04/2015	5,61	24/02/2015	8,50

17/08/2015	5,50	30/04/2015	4,50	25/02/2015	8,00
19/08/2015	5,00	01/05/2015	5,00	26/02/2015	7,80
20/08/2015	5,00	06/05/2015	5,83	27/02/2015	7,80
24/08/2015	5,50	07/05/2015	5,25	28/02/2015	7,70
25/08/2015	5,60	08/05/2015	5,01	01/03/2015	8,00
26/08/2015	6,00	12/05/2015	4,40	02/03/2015	8,00
27/08/2015	5,00	13/05/2015	5,00	03/03/2015	7,80
31/08/2015	5,50	14/05/2015	4,75	05/03/2015	7,25
01/09/2015	4,50	15/05/2015	5,00	06/03/2015	8,00
03/09/2015	5,80	18/05/2015	5,50	09/03/2015	8,00
		19/05/2015	6,00	10/03/2015	8,00
		20/05/2015	5,60	11/03/2015	9,00
		25/05/2015	5,16	12/03/2015	8,00
		26/05/2015	4,90	13/03/2015	7,70
		27/05/2015	5,78	16/03/2015	8,00
		29/05/2015	5,00	17/03/2015	8,00
		03/06/2015	5,17	18/03/2015	8,00
		04/06/2015	5,36	19/03/2015	8,00
		08/06/2015	5,00	20/03/2015	9,00
		09/06/2015	5,80	23/03/2015	5,80
		10/06/2015	5,55	24/03/2015	6,90
		11/06/2015	4,88	25/03/2015	7,50
		15/06/2015	5,00	26/03/2015	6,00
		16/06/2015	5,08	27/03/2015	9,00
		18/06/2015	4,50	28/03/2015	8,00
		19/06/2015	4,40	29/03/2015	8,00
		22/06/2015	5,00	30/03/2015	5,80
		24/06/2015	5,38	31/03/2015	6,90
		25/06/2015	5,26	01/04/2015	8,00
		29/06/2015	5,00	02/04/2015	7,80
		30/06/2015	5,00	06/04/2015	8,00
		03/07/2015	5,33	07/04/2015	8,00
		06/07/2015	5,25	08/04/2015	6,00
		07/07/2015	5,00	09/04/2015	7,80
		08/07/2015	5,00	10/04/2015	5,00
		11/07/2015	5,00	13/04/2015	8,00
		14/07/2015	5,16	14/04/2015	5,80
		16/07/2015	5,50	15/04/2015	8,00
		22/07/2015	5,70	16/04/2015	8,00
		29/07/2015	4,50	17/04/2015	7,80
		31/07/2015	5,20	20/04/2015	8,00
		03/08/2015	5,50	21/04/2015	8,00
		12/08/2015	4,75	22/04/2015	8,50
		18/08/2015	5,20	23/04/2015	6,00
		19/08/2015	5,50	24/04/2015	7,70
		20/08/2015	5,50	27/04/2015	6,00
		21/08/2015	5,50	28/04/2015	7,50

25/08/2015	5,67	29/04/2015	8,00
26/08/2015	5,00	30/04/2015	8,00
04/09/2015	5,04	01/05/2015	8,00
		04/05/2015	8,00
		05/05/2015	7,80
		06/05/2015	9,17
		07/05/2015	7,80
		08/05/2015	8,00
		11/05/2015	8,00
		12/05/2015	5,80
		13/05/2015	8,00
		14/05/2015	6,00
		15/05/2015	8,00
		18/05/2015	8,00
		20/05/2015	7,50
		21/05/2015	8,00
		22/05/2015	8,00
		25/05/2015	6,00
		26/05/2015	5,80
		27/05/2015	8,00
		28/05/2015	8,00
		29/05/2015	8,50
		01/06/2015	8,00
		02/06/2015	8,00
		03/06/2015	8,00
		04/06/2015	8,00
		05/06/2015	8,00
		08/06/2015	8,00
		10/06/2015	8,00
		11/06/2015	8,00
		12/06/2015	8,00
		15/06/2015	5,80
		17/06/2015	8,50
		18/06/2015	6,00
		19/06/2015	8,00
		22/06/2015	8,00
		23/06/2015	5,80
		24/06/2015	8,00
		25/06/2015	8,00
		26/06/2015	7,70
		28/06/2015	8,00
		29/06/2015	8,00
		30/06/2015	8,00
		03/07/2015	8,00
		06/07/2015	8,00
		07/07/2015	7,50
		08/07/2015	5,80

09/07/2015	8,00
10/07/2015	8,00
11/07/2015	8,00
12/07/2015	8,00
13/07/2015	8,00
15/07/2015	8,00
17/07/2015	6,00
20/07/2015	8,00
21/07/2015	6,80
22/07/2015	8,00
23/07/2015	6,00
24/07/2015	8,00
27/07/2015	7,50
28/07/2015	9,17
29/07/2015	8,25
30/07/2015	6,00
31/07/2015	7,45
03/08/2015	8,00
04/08/2015	7,80
05/08/2015	8,00
06/08/2015	6,90
07/08/2015	8,00
10/08/2015	7,50
11/08/2015	8,00
13/08/2015	8,00
14/08/2015	6,00
17/08/2015	8,00
18/08/2015	6,80
19/08/2015	8,00
20/08/2015	6,00
21/08/2015	8,00
24/08/2015	8,00
25/08/2015	8,50
26/08/2015	8,00
27/08/2015	8,00
28/08/2015	6,00
31/08/2015	8,00
01/09/2015	6,50
02/09/2015	8,00
03/09/2015	8,00
04/09/2015	7,45

Appendix 2

Paraquat

02/01/2013	04/01/2013	10/01/2013	14/01/2013	15/01/2013	17/01/2013	21/01/2013	23/01/2013	28/01/2013	04/02/2013
Price / liter	**Price / liter**	**Price / liter**	**Price / liter**	**Price / liter**	**Price / liter**	**Price / liter**	**Price / liter**	**Price / liter**	**Price / liter**
7,00	7,93	7,20	6,80	7,00	7,70	5,00	6,70	5,50	6,50
Spot Price	**Spot Price**	**Spot Price**	**Spot Price**	**Spot Price**	**Spot Price**	**Spot Price**	**Spot Price**	**Spot Price**	**Spot Price**
$ 324.100,00	$ 367.159,00	$ 333.360,00	$ 314.840,00	$ 324.100,00	$ 356.510,00	$ 231.500,00	$ 310.210,00	$ 254.650,00	$ 300.950,00

Price / liter	**Price / liter**	**Price / liter**	**Price / liter**	**Price / liter**	**Price / liter**	**Price / liter**	**Price / liter**	**Price / liter**	**Price / liter**
$ 7,05	$ 7,98	$ 7,25	$ 6,85	$ 7,05	$ 7,75	$ 5,05	$ 6,75	$ 5,55	$ 6,55
Forward Price	**Forward Price**	**Forward Price**	**Forward Price**	**Forward Price**	**Forward Price**	**Forward Price**	**Forward Price**	**Forward Price**	**Forward Price**
$ 326.557,43	$ 369.690,77	$ 335.833,41	$ 317.281,44	$ 326.557,43	$ 359.023,38	$ 233.797,55	$ 312.643,45	$ 256.987,52	$ 303.367,46

10/04/2013	12/04/2013	15/04/2013	16/04/2013	17/04/2013	18/04/2013	22/04/2013	23/04/2013	30/04/2013	08/05/2013
Price / liter	**Price / liter**	**Price / liter**	**Price / liter**	**Price / liter**	**Price / liter**	**Price / liter**	**Price / liter**	**Price / liter**	**Price / liter**
6,90	$ 6,25	$ 7,50	$ 7,80	$ 7,00	$ 6,90	$ 6,85	$ 6,85	$ 6,80	$ 6,90
Spot Price	**Spot Price**	**Spot Price**	**Spot Price**	**Spot Price**	**Spot Price**	**Spot Price**	**Spot Price**	**Spot Price**	**Spot Price**
$ 319.470,00	$ 289.375,00	$ 347.250,00	$ 361.140,00	$ 324.100,00	$ 319.470,00	$ 317.155,00	$ 317.155,00	$ 314.840,00	$ 319.470,00
Gain/Loss	**Gain/Loss**	**Gain/Loss**	**Gain/Loss**	**Gain/Loss**	**Gain/Loss**	**Gain/Loss**	**Gain/Loss**	**Gain/Loss**	**Gain/Loss**
$ (7.087,43)	$ (80.315,77)	$ 11.416,59	$ 43.858,56	$ (2.457,43)	$ (39.553,38)	$ 83.357,45	$ 4.511,55	$ 57.852,48	$ 16.102,54

Amine

04/01/2013	07/01/2013	07/01/2013	08/01/2013	10/01/2013	17/01/2013	18/01/2013	18/01/2013	21/01/2013	25/01/2013
Price / liter	**Price / liter**	**Price / liter**	**Price / liter**	**Price / liter**	**Price / liter**	**Price / liter**	**Price / liter**	**Price / liter**	**Price / liter**
$ 5,25	$ 4,70	$ 4,90	$ 5,13	$ 5,40	$ 5,00	$ 5,30	$ 5,60	$ 5,66	$ 4,00
Spot Price	**Spot Price**	**Spot Price**	**Spot Price**	**Spot Price**	**Spot Price**	**Spot Price**	**Spot Price**	**Spot Price**	**Spot Price**
$ 212.446,50	$ 190.190,20	$ 198.283,40	$ 207.388,25	$ 218.516,40	$ 202.330,00	$ 214.469,80	$ 226.609,60	$ 229.037,56	$ 161.864,00

Price / liter	**Price / liter**	**Price / liter**	**Price / liter**	**Price / liter**	**Price / liter**	**Price / liter**	**Price / liter**	**Price / liter**	**Price / liter**
$ 5,30	$ 4,75	$ 4,95	$ 5,18	$ 5,45	$ 5,05	$ 5,35	$ 5,65	$ 5,71	$ 4,05
Forward Price	**Forward Price**	**Forward Price**	**Forward Price**	**Forward Price**	**Forward Price**	**Forward Price**	**Forward Price**	**Forward Price**	**Forward Price**
$ 214.572,34	$ 192.277,61	$ 200.384,79	$ 209.505,36	$ 220.652,72	$ 204.438,37	$ 216.599,13	$ 228.759,89	$ 231.192,04	$ 163.902,51

04/04/2013	08/04/2013	10/04/2013	12/04/2013	16/04/2013	18/04/2013	19/04/2013	22/04/2013	23/04/2013	26/04/2013
Price / liter	**Price / liter**	**Price / liter**	**Price / liter**	**Price / liter**	**Price / liter**	**Price / liter**	**Price / liter**	**Price / liter**	**Price / liter**
$ 5,40	$ 5,25	$ 4,88	$ 5,00	$ 6,40	$ 5,13	$ 4,75	$ 5,80	$ 4,93	$ 5,28
Spot Price	**Spot Price**	**Spot Price**	**Spot Price**	**Spot Price**	**Spot Price**	**Spot Price**	**Spot Price**	**Spot Price**	**Spot Price**
$ 218.516,40	$ 212.446,50	$ 197.271,75	$ 202.330,00	$ 258.982,40	$ 207.388,25	$ 192.213,50	$ 234.702,80	$ 199.295,05	$ 213.458,15
Gain/Loss	**Gain/Loss**	**Gain/Loss**	**Gain/Loss**	**Gain/Loss**	**Gain/Loss**	**Gain/Loss**	**Gain/Loss**	**Gain/Loss**	**Gain/Loss**
$ 3.944,06	$ 20.168,89	$ (3.113,04)	$ (7.175,36)	$ 38.329,68	$ 2.949,88	$ (24.385,63)	$ 5.942,91	$ (31.896,99)	$ 49.555,64

35-Z25-4092

DETERMINANTS OF SALESPERSON PERFORMANCE IN SELLING NEW PRODUCTS

AYESHA MANZOOR[1] AND DR. KIRAN MANZOOR[2]

ABSTRACT

Salesperson performance is essential to commercialise and sell a new product in the market. It is significant to investigate determinants that affect salesperson performance while selling new products. Theories of reasoned action and perceived behavioural control were examined, which in turn shed light on different factors including attitude, self-efficacy, subjective norms, product and customer knowledge. Using the quantitative approach and survey method, the study attempted to obtain a clear insight of the determinants of salesperson performance vis-à-vis new product selling. Purposive sampling was used to select a sample which comprised of salespeople in a business-to-consumer market. The results indicated significant positive relationships between salesperson performance and positive attitude, high self-efficacy and knowledge about products and customers. Moreover, a highly positive correlation was found between the subjective norms and salesperson performance. This research proposed recommendation that managers focus on increasing salesperson knowledge about new products and customers, while boosting self-efficacy and positive attitudes towards selling a new product.

Keywords: Theory of Planned Behaviour, Theory of Perceived Behavioural Control, Salesperson Performance, New Product, Market Sale.

INTRODUCTION

The changing trends in the market demand the launch of new products for the growth and sustainability of a business. Releasing new products is necessary to exist in the market because the customers want to buy the latest and most innovative products (Shan, Gordon and Kogut, 1994; Sivadas and Dwyer, 2000). Different studies elucidated the drivers of the success behind new products (Abed, Ghazaleh and Haghighi, 2009). Even if the launch of a new product is uncertain, effective strategies can minimise the risk of announcing a product in the market. The marketing strategies consist of using company resources for needs assessment to assess customer demands, conduct marketing research and develop innovative products (Montoya-Weiss, 1994). Meanwhile, it should not be neglected that a salesperson's role is very important for the success of a new product. Consequently, companies need to concentrate on this element while making strategies for a new product's inauguration. Academic researchers have disregarded the role of the salesperson in a new product launch. Nevertheless, a few studies have shown that the salesperson role is a fundamental driver to the progress of a new product (Johlke, 2006; Lee, Murphy and Neale, 2009). Although the salesperson's role in a new product's commercialisation is relevant but still the phenomena have not gain attention in marketing research.

The research focuses on determinants of salesperson performance, including qualification, experiences, self-efficacy, product knowledge and interpersonal skills for dealing with customers, stakeholders and marketers. Previous literature has revealed that helpful behaviours of salespeople can improve their performance, which is valuable for an organisation

1 Ayesha Manzoor, Assistant Professor, MS Psychology and PhD Marketing, Jönköping International Business School, Jönköping University, Sweden. Email: Ayesha.manzoor@ju.se
2 Kiran Manzoor, Lecturer, MS Marketing and PhD Marketing, Balochistan University of IT, Engineering and Management Science Quetta, Pakistan. Email: kiran.manzoor@buitms.edu.pk

(Baldauf et al., 2001). The salesperson's skills can play a very significant role in the success of new product in the market. Because of today's competitive marketing, sales organisations are challenged to have a marketing strategy that is more effective than that of its competitors in the market (Matsuo and Kusumi, 2002). Therefore, one of the primary goals need to be to increase the performance of their sales staff so that the company's sales can strengthen. According to Kuster and Canales (2011), sales representatives are one of the main tool for the company's survival because of their role in liaising between the company and customers. Similarly, the seller has an important role in the formation of long-term buyer-seller relationships. Because of the salesperson's importance in marketing, their role becomes a considerably important to research (Baldauf et al., 2001; Paparoidamis and Guenzi, 2009). It is expected that some additional research is needed to understand the new product-related performance of a salesperson in the market.

Human behaviour change can be explained by the theories of reasoned action (Fishbein and Ajzen, 1975) and of perceived behavioural control (PBC). Ajzen (1991) developed model based on the concepts of attitude, subjective norm and PBC. Attitude is the way you feel and act towards the social situation. Attitude varies with experience and information exchanges about social interaction. This study focuses on the attitude of the salesperson, their interest in, desire for and enjoyment of the expected sale of new product. Subjective norms develop from the social pressure that determines the sales activities of a salesperson. Subjective norms are the behavioural expectations of others for certain tasks expressed in a certain way (Fishbein and Ajzen, 1975). Subjective norms are defined to consider other opinions in selling new products, like marketing strategies, managers behaviour can influence the salesperson performance.

Self-efficacy is associated with PBC (Ajzen, 1991), who defined it as "the human perception of their ability to produce the desired results of their actions". It could be further elaborated as having the opportunities and confidence to complete tasks. Self-efficacy has an impact on the behaviour to implement the operational effort (Bandura, 1997; Orpen, 1999). The self-efficacy of a salesperson is to be able to apply their skills and capabilities to the promotion of a new product. "Individuals who have positive self-efficacy beliefs focus their attention and motivation on the tasks goal level of performance and persist in the face of difficulties" (Bandura, 1997). In addition, it is asserted that self-efficacy affects individual performance either directly or indirectly.

Sales knowledge and skills, with some other factors (social, economic and psychological), can impact on the success of a new product. A research was conducted, low commitment of a salesperson and found reasons including complexity of the products, lack of product knowledge and lack of adequate training of salesperson for selling a product (Anderson and Narus, 1990; Atuahene-Gima, 2000). Consequently, a salesperson's effective product knowledge could help them improve their sales and outcome performance. Salesperson product knowledge enables them to survive competitively and to grow (Collinson, 2003). Furthermore, management control of a salesperson's job could affect their efforts. Business strategies must clearly define the goals of the seller and allow them to achieve these goals at their best level. It can be argued that the salesperson will be more committed to a new product with proper guidance and support of the management Accordingly, the salesperson's knowledge about the new product and customer segment can boost his performance. For a new product in the market, a salesperson can find out and gain effective marketing techniques and new skills. At this point, the salesperson needs to learn and apply professional techniques. In this regard, salesperson knowledge about the product i.e. what is being sold, and the salesperson's knowledge about the customer to whom they sell, will help them to perform better (Hultink, Atuahene-Gima and Lebbink, 2000). Ajzen (1991) explained that subjective norms are perceived organisational, managerial, and social pressures to sell a new product. In this study, sales managers, marketing

managers, product managers, fellow salespeople and top management are considered to form normative pressures on a salesperson. To meet the expectations of managers will create a "must do" situation for a salesperson. Attitude is an intrinsic motivation to perform a task for self-satisfaction, whereas subjective norms are the extrinsic motivation to perform certain tasks for a reward and to satisfy others (Amabile et al., 1994).

LITERATURE REVIEW

New product development is an uncertain effort (Bstieler and Gross, 2003; Durmusoglu, 2013). One executive's study claimed that "the new products in the market" are one of the most significant activities for an organisation (Henard and Szymanski, 2001). Ozer (2005) mentioned new product development as a critical activity for the survival of companies. New product development is a strategic priority for all the organisation (Henard and Szymanski, 2001; Fu, 2009; Durmusoglu, 2013). The salesperson's role in the process of new product development is to accumulate the information from the market and interact with customers (Bell, Menguc and Widing, 2010).To best serve the customer, organisations allocate the sales force and salesperson to engage in day-to-day interaction with customers (Judson et al., 2006). Empirical evidence supports that in the development of a new product, salesperson participation can improve the process. Franke and Park (2006) argue that the field expertise and knowledge of a salesperson can benefit the company by improving the identification, development and introduction of new products. Due to technology advancement, the process of new product development carries different challenge including involving the sales force (Hultink, Atuahene-Gima and Lebbink, 2000). Salesperson involvement in the process of new product development could provide companies with useful information about customers, and thus their selling efforts will increase sales.

Ingram, Laforge and Leigh (2002) were concerned with the need for salesperson participation in the process of developing new products, but were unable to conclude whether it was achieved most of time or not. Similarly, the salesperson's performance in selling a new product has largely been ignored. Johlke (2006) demonstrated that salesperson's activities are undertaking customer research, updating customer's information, and introducing new products but does not directly link to the development process of a new product. In the process of new product development, vendor participation has been studied by Deeter-Schmelz, Goebel and Kennedy (2008). They concluded that the company did not know how to enthusiastically engage their sales force in the process of product development and selling. Frequently the new product comes from the ideas of the salesperson. An empirical assessment of the role of salesperson in the development process of a new product has been conducted (Judson et al., 2006). Research revealed there was direct and indirect input into the new product development process from the salesperson. Providing suitable incentives really increased their efforts for new product idea generation. Although many studies have acknowledged the value of the sales force in the process of developing a product, there has been less formal research conducted on the particular role of the salesperson and the extent to which organisations can rely on this potential resource. Bon and Merunka (1998) described that the salespersons competitive intelligence and efforts depend on their attitude towards performing certain activities in the market.

Kwaku (1998) examined the efforts outcome on salesperson performance and satisfaction in selling new product while investigating Australian firms. The conclusion showed that managers can presume a direct relationship between salesperson satisfaction and their performance. On the introduction of new product into the market, the manager must ensure that the selected salesperson is educated, trained and familiar with product. In one study, the effect of self-efficacy was investigated in relation to the workload and pay satisfaction of a salesperson. Social cognitive theory was applied to identify the mediating role of workload (Mulki, Felicia and Jaramillo, 2008). Success in launching a product remains uncertain until

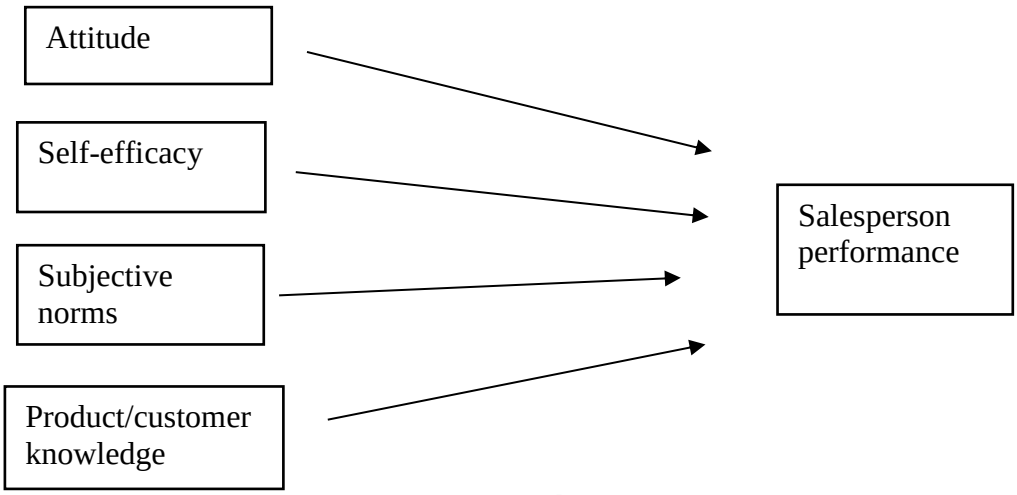
product-related information is communicated to the customers by the salesperson. This may have a substantial effect on customer perception of the product and create potential buyers that eventually lead to product success. Salesperson commitment is one of the most important factor for the success of a product (Lee, Murphy and Neale, 2009). Baldauf, Cravens and David (2002) demonstrated that the salesperson's effective performance comprises of adaptive sales, sales support and planning, and technical expertise. Salesperson effectiveness skills consist of planning, the ability to adapt a sale and to take advantage of technical expertise and to make a customer-orientated sale. The sales force practices these various aspects in the insurance sector of Thailand. The study claimed that sales force efficiency is an important strategic tool for businesses to create competitive advantage and increase overall performance (Abed, Ghazaleh and Haghighi, 2009).

Fu et al. (2010) examined the progress of sales while focusing on sellers' attitudes, subjective norms, and self-efficacy perception in the development of new product performance. Their study examined the subjective norms mediating effects on the model. Studies analysed new products coming to market and expanding product line. The result showed that product performance increased by building self-confidence and positive attitudes in selling intentions. Subjective norms are less effective in sales structure. The relationship between salesperson skills and performance with the job commitment was studied by Basir, Ahmad and Kitchen (2010) in the telecom Malaysian industry. Only the interpersonal skills were found to be consistent with performance, while organisational commitment does not create any effect. A study has been conducted to investigate the effects of salesperson experience, age, and goal setting on the performance of a new product. In this study, age was found to have a negative effect on the growth line of new products, but the experience of the seller had a positive relation (Frank and Park, 2006).

This study is consistent in manner with previous studies (Ajzen 1991; Fishbein and Ajzen 1975), but ensures that salesperson performance have to be measured in the sales environment of a new product. Consumers shopping for new products for the very first time desire to encounter a knowledgeable salesperson because they are unfamiliar with the product. Customers therefore require that salesperson to provide complete information, and cannot avoid interaction with that salesperson. It is thus not surprising that salesperson knowledge about a product is rated as one variable of this study. Subsequently, a salesperson's knowledge about new product is significant. It becomes necessary for a salesperson to be updated and demonstrate awareness about new products to improve their performance. The study examines the TPB benefits in the framework of new product selling and connect to improve salesperson positive attitude, self-efficacy and knowledge that have not been studied before instead of being focused on evaluating salesperson performance from the customer perspective. The hypotheses are formed based on the literature discussed previously. Assumptions about salesperson performance are developed from TPB, attitudes, subjective norms, and perceived behavioural control.

RESEARCH MODEL

Figure 1: Conceptual development of the relationships between variables



Source: Researchers

METHODOLOGY

The paradigm created was a descriptive study and survey method to understand the salesperson performance through self-evaluation. Quantitative data was collected through questionnaires. The study sample involved field salespeople of a business-to-consumer market with different sales territories in Pakistan. They were chosen through convenience and a snowball-sampling technique. Survey questionnaires were collected from 300 respondents. To collect data five different multi-item scales were used including Subjective Norms and Attitude Scale (Fu et al., 2010), General Scale for Self-Efficacy (Schwarzer and Jerusalem, 1995), Product knowledge and customer knowledge Scale (Smith and Park, 1992) and Salesperson Performance Scale (Behrman and Perreault, 1982).

RESULTS

In a sample of 300, males consisted of 80 % (242) while females consisted of 20 % (58). The ages of the respondents ranged from 21 to 40, with most of them (55%) belonging to the age group 26–30. Of the sample's education level, 61% (183) had a Masters degree, 35% (106) were graduates, and 3% (11) had high school education. Of the sales experience of respondents, 87.9% had 1 to 5 years of experience, 10.2% had 6 to 10 years, but only 1.7% had more than 10 years of experience in the field of sales.

Table 1: Reliability analysis

Constructs	Cronbach's Alpha	No of items
1. Attitude	.92	6
2. Self-efficacy	.89	5
3. PC knowledge	.77	9
4. Subjective norms	.84	12
5. Salesperson performance	.90	5

A total of 32 items were used to measure the main construct of the study. A seven points Likert scale used 1 for strongly disagree to 7 for strongly agree. The categories were attitude (6 items), self-efficacy (5 items), PC knowledge (9 items), subjective norms (12 items) and

salesperson performance (5 items). Attitude 0.92 and salesperson performance 0.90 have the highest reliability, while self-efficacy had 0.89 and subjective norms 0.84 reliability. Product and customer knowledge scale had a lower reliability (0.77).

Table 2: Descriptive and correlation analysis

Construct	M	SD	1	2	3	4	5
1. Attitude	5.31	.88	1	.366*	.566*	.394*	.454*
2. Self-efficacy	5.08	1.02		1	.579*	.626*	.552*
3. PC knowledge	5.30	.84			1	.630*	.629*
4. Subjective norms	5.32	.89				1	.712*
5. SP performance	5.46	1.29					1

The results revealed the means and standard deviation of the construct as: attitude 5.31 (.88), self-efficacy 5.08 (1.02), PC knowledge 5.30 (.84), subjective norms 5.32 (.89) and SP performance 5.46(1.29). It is indicated that SP performance has the highest mean, while self-efficacy has the lowest. The table shows that a positively significant relationship exists in selling a new product between attitude and SP performance ($r= .45$, $p<.05$). The table also indicates that self-efficacy is positively associated with the SP performance in selling a new product. ($r=.55$, $p<.05$). There exists a statistically significant positive correlation in between PC knowledge and the SP performance in the sale of new product. ($r=.62$, $p<.05$). Moreover, a highly positive correlation found between the subjective norms and SP performance. ($r=.71$, $p<.05$).

Table 3: Regression analysis of attitude on a salesperson's performance

Standardised β	t-test	P value	R^2	F	P value
.45	8.78	.000*	.206	77.2	.000*

From the regression results, it is observed that the dependent variable (salesperson performance) is indicated 21% variation by the predictor (attitude). Attitude turned out to be the significant predictor of salesperson performance: $\beta = .45$, $t= 8.78$, $p<.05$.

Table 4: Regression Analysis of Self-efficacy on Salesperson Performance

Standardised β	t-test	P value	R^2	F	P value
.55	11.4	.000*	.305	130.4	.000*

The result explains the regression between self-efficacy and salesperson performance. The 31% variation in dependent variables resulted because of the predictor. Self-efficacy significantly predicts the salesperson performance, i.e.: $\beta =.55$, $t=11.4$, $p<.05$.

Table 5: Regression analysis of subjective norms on a salesperson's performance

Standardised β	t-test	P value	R^2	F	P value

.71	17.4	.000*	.505	305.8	.000*

The regression analysis between the subjective norms and salesperson performance is summarised, and indicates a 51 % variation in the dependent variable because of the predictor variable. β= .71, t=17.4 and p <.05 explained the significant result.

Table 6: Regression analysis of PC knowledge on a salesperson's performance

Standardised β	t-test	P value	R^2	F	P value
.63	13.9	.000*	.39	194.5	.000*

The regression analysis between the salesperson's performance and their knowledge about the product and customer segment indicated a 39 % variation in the dependent variable because of the predictor variable. β= .63, t=13.9 and p <.05 explained the significant result.

DISCUSSION

Carrying a new product in the market becomes a vital function of an organisation to survive and compete in the rapidly growing area of business. Salespeople play an integral part, not only in the development of new product but also in selling it. This, therefore, encourages the researcher to further describe the knowledge and valuable insight gained regarding a salesperson's performance in selling a new product. This study examined the effect of a salesperson's attitude, self-efficacy, subjective norms and PC knowledge on the sale of a new product. It scrutinised new-to-market manufactured goods and also a line addition that contains survey data from FMCGs industrial salespeople. So far, little or no work has been undertaken on salesperson performance in selling new product phenomenon. It hypothesised that a salesperson's psychological variables are a significant predictor of a new product sale. It greatly boosts the progress rates of new product sales, including new-to-market products and line additions.

The hypotheses were based on the literature discussed previously. Assumptions about the salesperson's performance developed from TPB, attitudes, subjective norms, and perceived behavioural control. Firstly, define the phenomena of salesperson performance in sale of a new product. Salespeople have good attitudes if they evaluate new product-related features (Ajzen, 1991). In particular, evaluating a salesperson's attitude can be achieved by examining their affective, behavioural and cognitive components. Then, self-efficacy is considered in PBC as the perceived complexity or simplicity of performing the behaviour (Ajzen, 1991). Our results are consistent with previous studies, self-efficacy is the strongest predictor of performance with other PBC measures (Celuch, Goodwin and Taylor, 2007). The next variable determined whether the salesperson is knowledgeable. The salesperson should not pressure the customers to buy, but must have knowledge about the product and segment to whom they expect to sell it. These are very important factors in influencing their performance in selling a new product in the market. Lastly, the role of subjective norms is significant and influence individual behaviour.

The current study revealed that self-efficacy and the attitude of salespersons towards sale are stronger and preferable than a normative approach to enhance sales support for new products. In conclusion, the study highlighted important factors for managers about how to motivate salespersons to sell products. It also examined the relative influence of attitudes, self-efficacy, PC knowledge and the subjective norms of salespersons. There is a need to identify the problems and allocate resources accordingly. A salesperson can focus on customer emotions which may be a powerful motivational force related to their performance (Boles et

al., 2000). Managers are suggested to focus on increasing the salesperson's interest in a new product. Building a salesperson's new product performance through enhanced attitudes and self-efficacy would help to increase sales volume.

There exists a gap between the sales literature and a salesperson's performance in practice. Thus, there is a need to understand the effect of different factors on salesperson performance. So far, in this area some research has indicated determinants of the behaviour of the seller and their personal characteristics, but no odds ratio of subjective norms with performance (Dong, 2010). In addition, the relationship between the performance of the salesperson with the sale of new products has not been adequately considered by the researcher, whose focus remains on the development of new products. Considering sales strategy is an important area for the success of new products, this study has examined literature on sales management and the contribution of salesperson performance, especially when selling new products to the market. An organisation cannot achieve their goals to reach customer commitment without focusing on the key role of the salesperson, because in the end salesperson motivate a customer to buy a new product.

CONCLUSION

Although salespeople have skills which need to be improved and require proper guidance and training to perform better in their field. Therefore, a performance self-evaluation will probably help them identify their weaknesses and develop the knowledge to improve their overall capacity. A salesperson self-assessment will allow them to look at what does not work in terms of sales and helps them to determine what they can do differently and more effectively. Based on previous research, a conceptual model was developed as a framework of study. The model suggests that salesperson attitude, self-efficacy, product or consumer knowledge determine their sales performance, which in turn may be influenced by subjective norms. Management marketing strategies influence salesperson motivation, commitment and performance. This study identified some factors for salespeople to increase their performance improvement. It also focused on the determinants that can motivate a salesperson. The study will provide managers with a valuable insight on developing and maintaining a highly satisfied and committed sales force. This research fulfils a need to understand the interrelationship among salesperson performance, their attitude, self-efficacy and product/consumer knowledge. It examines the impact of salesperson attitude and self-efficacy in their performance.

In addition, it is a revision of the theory of planned behaviour that has been previously applied by some studies (Ajzen, 1991). The main objective of this research has been to understand the determinants that can increase salesperson contribution in selling a new product. This study has therefore added to marketing literature by showing how sales information improves the performance of a new product. An effort is made to determine the factors affecting salesperson performance in selling a new product based on their self-evaluation. All this is done to improve the overall performance of a salesperson and help marketers in developing their marketing strategies for new products.

REFERENCES

Abed, G. M. and Haghighi, M. (2009) The Effect of Selling Strategies on Sales Performance. *Business Strategy Series*, 10(5), 266-282.

Ajzen, I. (1991) The Theory of Planned Behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179-211.

Amabile, T. M. et al. (1994) The Work Preference Inventory: Assessing Intrinsic and Extrinsic Motivational Orientations. *Journal of Personality and Social Psychology*, 66(5), 950-967.

Anderson, C. J. and Narus, J. A. (1990) A Model of Distributor Firm and Manufacturer Firm Working Relationships. *Journal of Marketing* , 54(1), 42-58.

Atuahene-Gima, K. (2000) A contingency analysis of the impact of salesperson's effort on satisfaction and performance in selling new products. *European Journal of Marketing*, 32(10), 904-921.

Baldauf, A. et al. (2001) Examining Business Strategy, Sales Management, and Salesperson Antecedents of Sales Organization Effectiveness. *Journal of Personal Selling and Sales Management*, 21(2), 109-122.

Bandura, A. (1997) *Self-efficacy: The exercise of control*. New York: W. H. Freeman.

Basir, M.S., Ahmad, S.Z. and Kitchen, P.J. (2010) The Relationship between Sales Skills and Salesperson Performance, and the Impact of Organizational Commitment as a Moderator: An Empirical Study in a Malaysian Telecommunications Company. *International Journal of Economics and Management* , 3(1), 181-211.

Behrman, D.N. and Perreault, W.D. (1982) Measuring the performance of industrial salesperson. *Journal of Business Research*, 10(3), 335-370.

Bell, S. J., Menguc, B. and Widing, R. E. (2010) Salesperson learning organizational learning, and retail store performance. *Journal of the Academy of Marketing Science*, 38(2), 187-201.

Boles, J. et al. (2000) Relationship Selling Behaviors: Antecedents and Relationship with Performance. *Journal of Business and Industrial Marketing*, 15(2), 141-153.

Bon, J. L., and Merunka, D. (1998) Measuring the Competitive Intelligence Attitude of Salespeople: Development and Replication of the C.I.A. Salesperson Scale. [Online]. Institute for the Study of Business Markets, The Pennsylvania State University, Report 16-1998. Available from: http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.198.7987&rep=rep1&type=pdf [Accessed 31 March 2017].

Bstieler, L. and Gross, C.W. (2003) Measuring the effect of environmental uncertainty on process activities, project team characteristics, and new product success. *Journal of Business and Industrial Marketing*, 18(2), 146-161.

Celuch, K., Goodwin, S. and Taylor, S.A. (2007) Understanding Small Scale Industrial User Internet Purchase and Information Management Intentions: A Test of Two Attitude Models. *Industrial Marketing Management*, 36(1), 109-120.

Collinson, S. C. (2003) Restructuring to Build Knowledge-Integration Capabilities for Innovation. In: D. Gibson et al. (eds.). *Systems and Policies for the Global Learning Economy.* Westport, CT: Praeger,

Deeter-Schmelz, D., Goebel, D. and Kennedy, K. (2008) What are the Characteristics of an Effective Sales Manager? An Exploratory Study Comparing Salesperson and Sales Managers Perspectives. *Journal of Personal Selling and Sales Management*, 28(1), 7–20.

Dong, H. (2010) *The impact of salesperson information overloaded on relationship selling behavior and sales performance.* Master of Business, Auckland University of Technology, School of Business, China.

Durmusoglu, S.S. (2013) Merits of Task Advice during New Product Development: Network centrality Antecedents and New Product Outcomes of Knowledge Richness and Knowledge Quality. *Journal of Product Innovation Management*, 30(3),487–499.

Fishbein, M. and Ajzen, I. (1975) Belief, Attitude, Intention and Behavior: An introduction to theory and research. *Psychological Bulletin*, 84(5), 8–918.

Franke, G.R and Park, J.E (2006) Salesperson Adaptive Selling Behavior and Customer Orientation: A Meta-Analysis. *Journal of Marketing Research*, 43(4), 693–702.

Fu, F. Q. (2009) Effects of Salesperson Experience, Age, and Goal Setting on New Product Performance Trajectory: A Growth Curve Modeling Approach. *Journal of Marketing Theory and Practice*, 17(1), 7-20.

Fu, F.Q. et al. (2010) Motivating Salespeople to Sell New Products: The Relative Influence of Attitudes, Subjective Norms, and Self-Efficacy. *Journal of Marketing*, 74(6), 61–76.

Henard, D.H and Szymanski, D.M. (2001) Why Some New Products Are More Successful Than Others? *Journal of Marketing Research*, 38(3), 362-375.

Hultink, E. J, Atuahene-Gima, K. and Lebbink, I. (2000) Determinants of new product selling performance: an empirical examination in The Netherlands. *European Journal of Innovation Management*, 3(1), 27-34.

Ingram, T., LaForge, R. and Leigh, T. (2002) Selling in the New Millennium. *Industrial Marketing Management*, 31(7), 559-567.

Johlke, M. C. (2006) Sales Presentation Skills and Salesperson Job Performance. *Journal of Business and Industrial Marketing*, 21(5), 311-319.

Judson, K. et al. (2006) The New Product Development Process: Let the Voice of the Salesperson Be Heard. *Journal of Product and Brand Management*, 15(3),194–202.

Atuahene-Gim, K. (1998) A Contingency Analysis of the Impact of Salesperson's Effort on Satisfaction and Performance in Selling New Products. *European Journal of Marketing*, 32(9), 904-921.

Kuster, I. and Canales, P. (2011) Compensation and Control Sales Policies and Sales Performance: The Field Sales Manager's Points of View. *Journal of Business and Industrial Marketing*, 26(4), 273-285.

Lee, R., Murphy, J. and Neale, L. (2009) The Interactions of Consumption Characteristics on Social Norms. *Journal of Consumer Marketing*, 26(4), 277-285.

Matsuo, M. and Kusumi, T. (2002). Salesperson's Procedural Knowledge, Experience and Performance: An Empirical Study in Japan. *European Journal of Marketing*, 36(7), 840-854.

Montaya-Weiss, C. (1994) Determinants of New Product Performance: a Review and Meta-Analysis. *Journal of Product Innovation Management* , 11(5), 397-417.

Mulki, J. P., Felicia, G. L. and Jaramillo, F. (2008) The Effect of Self-Efficacy on Salesperson Work Overload and Pay Satisfaction. *Journal of Personal Selling and Sales Management*, 28(3), 37-51.

Orpen, C. (1999) The Impact of Self-Efficacy on the Effectiveness of Employee Training. *Journal of Workplace Learning*, 11(4), 119-122.

Ozer, M. (2005) Factors Which Influence Decision Making in New Product Evaluation. *European Journal of Operational Research*, 163(3), 784-801.

Paparoidamis, N. and Guenzi, P. (2009) An Empirical Investigation into the Impact of Relationship Selling and LMX on Salespeople's Behaviors and Sales Effectiveness. *European Journal of Marketing*, 43(7), 1053-1075.

Schwarzer, R. and Jerusalem, M. (1995) Generalized Self-Efficacy Scale Measures. In: J. Weinman, S. Wright and M. Johnston (eds.). *A user's portfolio Causal and control beliefs*. Windsor, UK: NFER: NELSON, 35–37.

Sekaran, U. (2003) *Research method for business: A skill building approach.* 4th ed., New York: John Wiley and Sons.

Shan, W., Gordon, W. and Kogut, B. (1994) Interfirm Cooperation and Startup Innovation in the Biotechnology Industry. *Strategic Management Journal*, 15(5), 387–394.

Sividas, E. and Dwyer, R. F. (2000) An Examination Organizational Factors Influencing New Product Success Internal and Alliance-Based Processes. *Journal of Marketing*, 64(1), 31–49.

Smith, D.C. and Park, C.W. (1992) The Effects of Brand Extensions on Market Share and Advertising Efficiency. *Journal of Marketing Research*, 29(3), 296–313.

31-Z28-4124

HUMAN CAPITAL AND ORGANISATIONAL PERFORMANCE: THE MEDIATING ROLE OF LEADERSHIP

DR. JOANNA SAMUL[1]

ABSTRACT

Organisational performance depends largely on the level of human capital, which, when used properly, can contribute to the creation of enterprise value. However, literature studies indicate that there are gaps in the relationship between human resources practices and the success of the organisation. Therefore, there has recently been increased research interest in measuring human capital. The research in this field, conducted for many years in different countries, does not give a clear answer to the question of the impact human resource practices have on the success of the organisation. Most previous studies indicate the indirect impact of human capital on business performance. The aim of this paper is to construct a conceptual framework from the relevant literature to identify the relationship between human capital and organisational performance, using leadership as a mediating factor. The conceptual framework was practically verified through case studies in two companies.

Key words: human capital, leadership competency, organisational performance

INTRODUCTION

The success of a business depends on its organisational performance, such as business model effectiveness, efficiency, and outcomes (Boyatzis and Ratti, 2009; Ryan et al., 2009). These variables depend on employees, who are a key part of the organisation and work towards achieving the organisation's goals. The success of organisation thus depends on its ability to manage its human capital effectively.

However, the literary studies indicate that there are gaps between the practices of human resources management and the organisation's outcome. The studies in this field, conducted over many years in various countries, do not offer a definite answer as to the impact human resource practices can have on the success of an organisation. The majority of these studies demonstrate the indirect influence of human capital on a company's results (Cabrita et al., 2007; Jardon and Martos, 2009; Guest, 2011; Paauwe, 2009). The authors Wall and Wood (2005) conducted a critical analysis of 25 of the most quoted articles from prestigious magazines and found that the connection between a human resources management system and an organisation's outcomes is based on ill-designed studies and methodological limitations, and that the conclusions drawn from them are too optimistic. There is a more distinct correlation between particular practices, for example payment systems and business outcomes, or the usage of more progressive methods of human resources management and staff fluctuation (Wall and Wood, 2005; Moynihan and Allen, 2005).

The variables discussed in this paper include human capital management and leadership competencies, as well as their impact on organisational performance. The aim of this paper is to construct a conceptual framework from the relevant literature to identify the relationship between human capital management and organisational performance, using leadership as a mediating factor.

This paper is organised as follows. In the first section, we review the literature on human capital and leadership, and analyse their link with organisational performance. The conceptual framework is formulated based on this review. The next section describes the research method

[1] Dr. Joanna Samul, Assistant Professor, Bialystok University of Technology.

and result. Finally, the conclusion summarises our contribution, and points to directions for future research.

LITERATURE REVIEW

Human capital management

The aim of human capital management (HCM) is to create the value of the enterprise and to use various kinds of measures to prove that better personal strategies and processes allow companies to obtain better results (Baron and Armstrong, 2008, p. 35). However, for the proper management of this capital it is necessary not only to govern it effectively, but also to measure it. A human capital management system is traditionally considered to be effective when it allows to increase the efficiency of the organisation measured in terms of economic indicators and to develop its adaptability vital for the survival and development of the organisation (Lewicka, 2010, p. 36). The use of suitable, precisely targeted instruments help to shape the approach towards the management of employees, who are treated as a strategic asset for building enterprise value. We can therefore observe an increased interest in research on measuring human capital (Curado, Henriques and Bontis, 2011; Demartini and Paoloni, 2011), the impact of which on the results of the organisation is not fully recognised either in theoretical or empirical terms (Lin at al., 2012). Assessment of the actions undertaken regarding HCM is not easy and poses many methodological and practical difficulties, because both quantitative and qualitative measures are used. It should be emphasised that certain complications arise in the measurement as a result of the definition of this term itself. Firstly, the concept is heterogeneous and includes many elements: skills, knowledge, competence, experience and motivation, which are also difficult to measure. People are variable, diverse and far from the accounting concepts of assets (Mayo, 2001, p. 41). In this context, the matter of how to define the management and measurement of the human capital acquires special importance. The choice and the type of practices that can be used to affect employees is strategic, because politics, practices and human resources management process influence behaviour, attitudes and employees' outcomes (Noe et al., 2000, p. 4). The work of every single employee might potentially create an added value for the enterprise. However, this kind of profit does not emerge by accident; it is the result of conscious actions that should maximise this value. The success of the company strongly relies on whether it can set the hidden value of the people free (O'Reilly and Pfeffer, 2006, p. 31).

There are various approaches to human capital measurement in the literature. One of the most commonly applied suggests using diverse methods of measuring human capital. It assumes that the development of those practices will help companies and investors understand the factors which increase the results of the organisation (Elias and Scarbrough, 2004, p. 22). This approach also undertakes the idea of opening the so-called "blackbox" (Sanders et al., 2014, p. 489), which indicates the relationship between the specific practices of human resource management and the obtained results of the company. The main idea behind this approach is that all actions in the field of HCM reinforce each other and increase the knowledge and skills of employees and their satisfaction, motivation and commitment (Becker and Huselid, 1998; Hutchinson, Purcell and Kinnie, 2000). This in turn contributes to the improvement of organisational performance. This approach leads to the perception of human capital measurement not only in terms of the effectiveness of certain practices, but also as a process of creating the value of the organisation.

Leadership competency

Research in the field of leadership has a long history in literature, because leadership issues are vital for organisational success (Kumar and Kaptan, 2007) and constitute an important predictor of the performance of an organisation (Bass et al., 2003). Leaders have an impact on their organisation by setting clear goals and performance expectations (Bass et al., 2003), and

by motivating their employees to reach these goals. Effective leadership consist of two attributes: personal and professional leadership. Personal leadership includes expertise, trust, caring, sharing, and ethics (Mastrangelo, Eddy and Lorenzet, 2004). Professional leadership is a set of behaviours in which leaders engage to ensure organisational success (Mastrangelo, Eddy and Lorenzet, 2014). Effective leadership leads to sustaining profitability, productivity, and a competitive advantage (Lussier and Achua, 2007). Thus, the competency of a leader is best measured by the performance of the organisation (Pradhan and Pradhan, 2015). The most important competences of a leader (knowledge, skills, abilities and attitudes) are presented in Table 1.

Table 1. Leader competency

Leadership competency	Authors
Mentoring and coaching, leading and motivating, problem-solving and decision-making, communicating and listening, and influencing and negotiating	Tomal and Jones, 2015
Values, knowledge, intellectual drive, ethics, charisma, creativity, self-confidence, courage	Almatrooshi, Singh and Farouk, 2016
Effectiveness, flexibility	Soebbing, Wicker and Weimar, 2015
Open-minded, cultural interests, sensitive, resilient, resourceful, optimistic and energetic, honest, stable personal life, value-added technical or business skills	McCall and Hollenbeck, 2002
Strategic perspective, customer focus and understanding, ability to spot trends and connect the dots, engaged and committed teams, willingness to take risks, deep knowledge and expertise	Zenger, 2014

Source: Author's compilation.

The ability and competence of leaders as perceived by organisation members is a key element in viewing leaders positively (Kouzes and Posner, 1993), and an important characteristic of effective leaders (Yukl, 2001). Leaders can change and transform employees by increasing motivation, building commitment, and encouraging them to achieve organisational goals (Yulk, 2010). Mcnair et al. (2011) claim that leadership is the art of motivating groups of people to achieve a common goal. Leaders focus on the organisation and inspire employees to a higher level of performance (Yulk, 2010; Wang et al., 2011; Mastrangelo, Eddy and Lorenzet, 2014; Ssekakubo, Lwanga and Ndiwalana, 2014). Employee performance influences the effectiveness of the whole organisation. There is a relationship between team effectiveness (such as member behaviour, team attitudes, team productivity and organisational performance: Samul, 2016) and the performance of an organisation. Thus, a leader's skill constitutes a large part of the performance of any organisation (Almatrooshi, Singh and Farouk, 2016).

Conceptual framework

An interesting approach to researching the relationship between human capital practices and organisational performance is measuring it with the usage of a mediating factor. The theoretical and practical model of the relation is then obtained (Figure 1). Its strength comes from simplifying those relationships and focusing on the most important elements of HCM. In this case, the mediating factor is leadership competency.

Figure 1. Conceptual framework

Source: own compilation.

METHOD AND MEASURES

The research consisted of two steps. The first involved a survey conducted among 41 medium and large construction enterprises, which accounted for 87% of the total study population of Podlaskie Voivodeship. The surveyed companies were allocated into one of three groups based on their achieved financial position. Group A included companies characterised by high financial results; Group B included companies with average results; and Group C included companies with the lowest results. Two companies were selected to conduct a case study, one from Group A and one from Group C. Applying this criterion of division of companies into groups, made it possible to verify the assumptions of the conceptual framework, to notice the differences between the results and to interpret them. The surveyed enterprises agreed to the study on condition that their anonymity was preserved. Therefore, they are conventionally named Company A (from Group A) and Company C (from Group C).

These enterprises were later characterised and analysed for selected indicators, which were then used to assess and verify the established model. The selection of indicators in particular areas was limited to a dozen or so, and to a greater extent was a consequence of the real possibilities of access to the data rather than their potentially possible list. The following three subsections describes how the variables of the conceptual framework were assessed.

Human capital

The assessment of human capital was made using indicators concerning the condition of the human capital and obtaining it, training, a sense of independence, satisfaction, and working conditions (such as the work atmosphere and salary). All managers of the organisation were considered to be leaders. Some of these indicators were possible to obtain by analysing the data available in the company during the period when the studies were conducted, whereas the rest required carrying out surveys among the leaders. For example, in the study of the level of job satisfaction, a 5-step scale measuring the level of change over several years was used, allowing the observation of possible trends in the examined indicators.

Leadership competency

The assessment of the competence of the leaders was made by measuring the most important features on a 5-point scale, where 5 meant very good, and 1 meant very weak. On this basis, the competence of the leader of the studied enterprise was compared to the ideal profile. The ideal profile of competence of a construction company leader was determined by the average importance of this competence for all construction companies which were surveyed (n = 41). Of the 41 companies, 16 were evaluated, and 9 (which scored at least 3) were selected for further analysis.

Organisational performance

In assessing organisational performance, the market share and the company's financial situation was analysed. Participation in the relevant market was calculated as the company's ratio of sales compared with the sales of its three biggest competitors. This analysis shows the correlation of certain financial values that are important from the point of view of their mutual relations. The choice of indicators possible to calculate on the basis of the financial data of the

company is very wide. Therefore, a limited set of the most efficient indicators enabling the characterisation of the various aspects of the enterprise was used. The indicators of the profitability of human capital and its added value were also used. Each of these indicators shows the selected aspect of the company's financial condition, but the measures must be considered together. In the assessment of the individual meters, certain assumptions conditioning the correct conclusions were used:

- Indicators and meters were standardised in all enterprises, because the literature offers different formulas for calculating specific indicators; and
- Conclusions were drawn for a group of indicators over three years, because only then can some trends indicating an improvement, stability or deterioration of the situation in the company be noticed.

RESULTS

Both the surveyed companies belong to the construction industry. The history of Company A goes back to 1951. The company underwent various transformations, changing its name, legal form and owners. In its current form, as a result of privatisation, Company A began its activity in 1993. The beginnings of the new company were quite difficult, as it was associated with the bankruptcy of the previous company, which resulted in customers' lack of trust and great caution on the part of contractors. Currently, Company A is one of the best construction companies in Podlaskie Voivodship. It employs about 190 workers. It is a developer and general contractor of construction of housing and public buildings. For this work, the company receives numerous diplomas and prizes, including Leader of Polish Business, the Certificate of Fair Play Business, the Golden Certificate of a Reliable Company, the Employer of Podlaskie, and Best Building of the Year. It has implemented and certified Integrated Quality and Environmental Management in accordance with the norms of ISO 9001: 9008 and ISO 14000: 2004. The mission of Company A is described in three words: quality, reliability and professionalism.

The beginnings of Company C date back to the early 1990s, which were the prelude to a completely new period in the history of Poland characterised by the emergence of private companies and competition. The registered capital of Company C contained more enthusiasm than actual financial resources, which transformed a small company into a rapidly growing medium-sized company. The company currently employs approximately 120 employees. It has an established market position and trust among customers, as evidenced by the certificate of "Trustworthy Company" and numerous references confirming the quality, robustness and reliability of the company. The company is a developer and a general contractor, specialising in industrial buildings, public buildings, sports and recreation facilities. Its prime mission is taking care of the quality of services and customer satisfaction.

The following is an analysis of the indicators used in the area of human capital management (Table 2).

Table 2. Measures and indicators of human capital management in Companies A and C, 2010–2012

Human capital measures	*Company A*			*Company C*		
	2010	*2011*	*2012*	*2010*	*2011*	*2012*
Number of managers [number of person]	20	22	22	15	15	18
Managers of higher education [% share in the total number of managers]	70	72	68	66	73	72
Average seniority of managers [years]	13.2	12.5	12.5	7.5	8.5	7.8
Acceptance rate [%]	5	5	9	6.7	13.3	5.6
Stability rate [%]	65	68	63	40	53	44
Managers' fluctuation rate [%]	0	0	14	13.3	0.0	5.6
Share of trained managers [%]	60	77	77	0	0	0

Average number of training days per manager [number of days]	1.8	2.6	2.1	0	0	0
Training costs in total labor costs [%]	0.6	0.4	0.3	0	0	0
The number of managers with planned career paths [number of person]	4	0	0	0	0	0
Promotion rate [%]	0	5	4.5	7	7	0
Indicator of making independent decisions [%]	60	55	55	66	66	55
The managers' participation rate in defining objectives [%]	100	100	100	40	40	38
Job satisfaction index[1-5 point scale]	5	x	5	5	x	5
Loyalty index[1-5 point scale]	5	-	5	4	-	4
Index of the sense of belonging to a team [1-5 point scale]	4.5*	-	4.5*	4	-	4
Indicator of the atmosphere in the company [1-5 point scale]	4	-	4	5	-	4
Indicator of personal life and career balance [1-5 point scale]	4	-	4.5*	5	-	4
The level of remuneration [Euro]	1058	1148	1171	1092	1205	1218
Level of salaries depending on effects [% share managers in total number of managers]	100	100	100	26.6	33.3	36.3
Indicator of the assessment system [%]	100	100	100	0	0	0

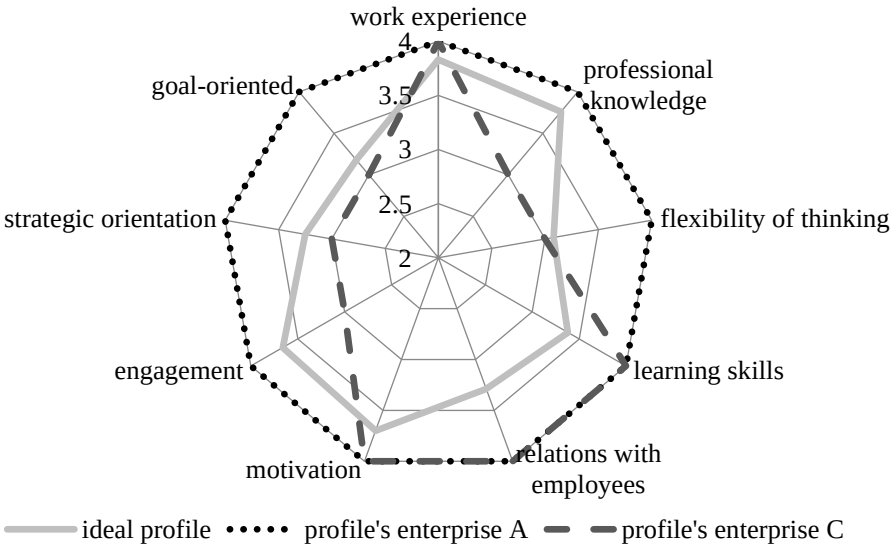
*No value occurring most frequently; the same number of people issued an assessment of 4 and 5

Source: Author's research.

The analysis of the measures of human capital started with the assessment of the condition of this capital. In both companies, the factors are forming up favourably, especially the structure of the management in terms of education, where most of the employees have a higher level of education. However, the average length of service of employees in Company A is higher than in Company C. This is reflected in the rate of admissions and in the index of fluctuations, which forms more favourably in Company A. The stability of employment calculated as a percentage of employees with experience longer than average is also higher in Company A. Another area of interest concerns the indicators of human capital training. All measures in this field, including the number of trained employees, the average number of days of training and the share of training costs in total labour costs, are much better in Company A than in Company C. The analysis of measures connected with the development of independence in the workplace also shows good human capital management in this area in both Companies A and C. Admittedly, the rate of promotion and the number of managers who have a planned career path is low. Taking into account the results of previous studies on internship and employment stability, this cannot raise reservations. Another meter concerning the independence in decision-making is shaped at the average level: approximately 60% in both companies. However, in the case of the participation of the leaders in defining objectives, the results in both companies vary. Company A has a 100% share of the leaders in setting goals, while in Company C this ratio is at most 40%. Subsequent measures concerning job contentment (satisfaction, loyalty, atmosphere at work, a sense of belonging to a team, ensuring a balance between work and private life) were rated quite high and obtained evaluations of 4 or 5. However, in the case of Company C, a decline in the assessment (from 5 to 4) for the atmosphere at work and ensuring balance can be noticed. The indicators which concern wages shape in an interesting way. In Company A, wages are slightly lower than in Company C. Although the differences are very small, in this company, the earnings of all the leaders depend on the results. All managers are also subject to assessment.

The next stage of the conducted case study was the evaluation of leader competence. The selection of the set of core competencies was made on the basis of previously conducted surveys, which were then evaluated in the surveyed enterprises and compared to the ideal profile (Figure 2).

Figure 2. Leadership competencies in Companies A and C



Source: Author's research.

The assessment of leader competence in Company A comes off considerably more favourably than in Company C. Moreover, the specific skills, knowledge and abilities were rated higher than the ideal profile, which is the average for the surveyed companies. All measures of human capital management are positive or very positive, which is reflected in the quality of this capital. This confirms that the human resources practices in Company A fulfil their role in favourably shaping leaders' competencies.

The analysis of organisational performance through the assessment of the financial situations of Companies A and C was then performed (Table 3).

Table 3. Measures of the assessment of the competitive advantage of Companies A and C, 2010–2012

Measures	*Company A*			*Company C*		
	2010	*2011*	*2012*	*2010*	*2011*	*2012*
Relative market share	42.2	48.9	49.8	39.0	31.5	28.3
Current fluctuation ratio	2.43	2.16	2.93	1.73	2.38	2.84
Quick fluctuation ratio	0.11	0.11	0.06	0.82	1.12	1.43
Ratio of debt in assets	45.5	52.5	39.4	40	37	31
Ratio of debt in ownership capital	83.5	110.5	64.9	61	58	44
Rate of the inventory turnover cycle [in days]	496	454	439	117	102	81
Days sales outstanding [in days]	5	4	2	40	29	25
Inventory turnover ratio [in days]	32	60	60	28	28	29
Return on Assets (ROA) [in %]	10.09	9.63	9.49	12.42	11.52	8.64
Net profitability [in %]	18.54	16.58	12.48	6.99	6.75	5.64
Return on Equity (ROE)	18.51	20.28	15.65	17.93	18.22	17.26
Profitability of human capital [Euros]	1.47	1.57	1.50	1.31	1.32	1.33
Added value of human capital [Euros]	19735	27070	26430	17482	22540	14813

Source: Author's research.

The performance increased significantly from 42.2% in 2010 to almost 50% in 2012 in the analysed period in Company A, and fell from 39% to 28% in Company C. The whole financial situation of Company A should also be evaluated as profitable. Although differences

between the two companies are not big, they point to the financial advantage of Company A. The financial ratios in both companies, which enable the analysis of the company's ability to settle short-term liabilities, deviate from the standard. However, they have their justification in the specifics of the construction industry – possessing great amounts of land. In addition, the very low day's sales outstanding cycle and long terms of regulating current liabilities are specific to companies with a strong market position. Due to the nature of construction companies, a lower overall debt ratio in comparison with a higher rate of the share of equity is a regularity, which is also present in the example shown. Profitability indicators, used primarily to assess the effectiveness and the ability of the company's management to involve financial resources in the activities of the enterprise, or the effective placement of the capital, are at an average level in both companies. Return on Assets (ROA) tells you how effectively the managing team manages the owned assets, and is thus considered to be the best indicator of the leadership competence in management, while the net profitability indicator demonstrates the possibility of generating profits by the company. Return on Equity (ROE) is one of the most important indicators from the point of view of the owner. In Companies A and B, a slight decline of these values can be observed. It is, however, a general trend in construction business, in which profitability ratios declined in 2012 when compared with 2011 and net profitability reached a negative level (Statistical Bulletin, 2013). The return on human capital is in a very good state, which shows how much the company gains from each Euro invested in an employee. In the analysed example, Company A gets about 1.50 Euro from every 1 Euro over the studied period, and Company B gets 1.30 Euro. The added value of human capital, which evaluates the profitability of the average worker, is also formed favourably in Company A.

CONCLUSION

The qualitative research presented in this paper positively verifies the conceptual framework that has been presented. Analysis of the two companies indicates that there are links between certain practices of human capital management, leadership competency and financial performance. Such a relationship was based on the measurement of specific indicators obtained in companies. An attempt to measure these relationships and the presented measures and indicators for this purpose may contribute to the development of a methodology in this area, as well as to the shaping of relations between human capital and organisational performance. The presented model not only has methodological value, providing a framework for further research, but it also has practical advantages, offering companies a model for shaping the relations analysed in this study.

REFERENCES

Almatrooshi, B., Singh, S.K. and Farouk, S. (2016) Determinants of organizational performance: a proposed framework. *International Journal of Productivity and Performance Management*, 65(6), 844-859.

Baron, A. and Armstrong, M. (2008) *Zarządzanie kapitałem ludzkim. Uzyskiwanie wartości dodanej dzięki ludziom*. Warsaw: Oficyna a Wolters Kluwer business.

Bass, B.M. et al. (2003) Predicting unit performance by assessing transformational and transactional leadership. *Journal of Applied Psychology*, 88(2), 207-218.

Becker, B.E. and Huselid, M.A. (1998) High performance work systems and firm performance: A synthesis of research and managerial implications. *Research in Personnel and Human Resource Management*, 16, 53-101.

Boyatzis, R.E. and Ratti, F. (2009) Emotional, social and cognitive intelligence competencies distinguishing effective Italian managers and leaders in a private company and cooperatives. *Journal of Management Development*, 28(9), 821-838.

Cabrita, M., et al. (2007) Modelling the creation of value from intellectual capital. A Portuguese banking perspective. *International Journal of Knowledge and Learning*, 3(2/3), 266-280.

Curado, C., Henriques, L. and Bontis, N. (2011) Intellectual capital disclosure payback. *Management Decision*, 49(7), 1080-1098.

Demartini, P. and Paoloni, P. (2011) Assessing human capital in knowledge intensive business services. *Measuring Business Excellence*, 15(4), 16-26.

Elias, J. and Scarbrough, H. (2004) Evaluating human capital: An exploratory study of management practice. *Human Resources Management Journal*, 14(4), 21-40.

Guest, D.E. et al. (2003) Human Resources Management and Corporate Performance in the UK. *British Journal of Industrial Relations*, 41(2), 291-314.

Guest, D. E. (2011) Human resource management and performance: still searching for some answers. *Human Resource Management Journal*, 21(1), 3-13.

Hutchinson, S., Purcell, J. and Kinnie, N. (2000) Evolving high commitment management and the experience of the RAC call centre. *Human Resource Management Journal*, 10(1), 63-78.

Jardon C.M. and Martos M.S. (2009) Intellectual capital and performance in wood industries of Argentina. *Journal of Intellectual Capital*, 10(4), 1469-1930.

Kouzes, J.M. and Posner, B.Z. (1993) *Credibility*. San Francisco, CA: Jossey-Bass.

Kumar, C.R. and Kaptan, S.S. (2007) *The Leadership in Management: Understanding Leadership*. New Delhi: Wisdom, APH Publishing.

Lewicka, D. (2010) *Zarządzanie kapitałem ludzkim w polskich przedsiębiorstwach: Metody, narzędzia, mierniki*. Warsaw: Wydaw. Profesjonalne PWN.

Lim, L.K., Chan, C.A. and Dallimore, P. (2010) Perceptions of Human Capital Measures. From Corporate Executives and Investors. *Journal of Business and Psychology*, 25(4), 677-679.

Lin, L.S. et al. (2012) Human capital disclosure and organizational performance. *Management Decision*, 50(10), 1790-1799.

Lussier, R.N. and Achua, C.F. (2007) *Effective Leadership*. 3rd ed., Canada: Thomson South Western.

Mastrangelo, A., Eddy, E.R. and Lorenzet, S.J. (2004) The importance of personal and professional leadership. *Leadership and Organization Development Journal*, 25(5), 435-451.

Mastrangelo, A., Eddy, R.E. and Lorenzet, S.J. (2014) The relationship between enduring leadership and organizational performance. *Leadership and Organization Development Journal*, 35(7), 590-604.

Mayo, A. (2001) *The Human Value of the Enterprise – Valuing People as Assets – Monitoring, Measuring, Managing*. London: Nicholas Brealey.

McCall, M. and Hollenbeck, G. (2002) *Developing global executives: The lessons of international experience*. Boston, MA: Harvard Business School Publishing.

Mcnair, D.E., Duree, C.A. and Ebbers, L. (2011) If I knew then what I know now: using the leadership competencies developed by the American Association of Community Colleges to prepare community college presidents. *Community College Review*, 39, 3-25.

Moynihan, L.M. and Allen, M.R., (2005) The relationship between HR practices and firm performance: Examining causal order. *Personnel Psychology*, 58(2), 409-446.

Noe, R.A. et al. (2000) *Human Resource Management. Gaining a Competitive Advantage*. New York: Irwin-McGraw-Hill.

O'Reilly, C.A. and Pfeffer, J. (2006) *Lepsze zarządzanie kadrami*. Gliwice: Helion.

Paauwe, J. (2009) HRM and Performance: Achievements, Methodological Issues and Prospects. *Journal of Management Studies*, 46(1), 129-42.

Pradhan, S. and Pradhan, R.K. (2015) An empirical investigation of relationship among transformational leadership, affective organizational commitment and contextual performance. Vision. *The Journal of Business Perspective*, 19(3), 227–235.

Ryan, G., Emmerling, R.J. and Spencer, L.M. (2009) Distinguishing high-performing European executives: the role of emotional, social and cognitive competencies. *Journal of Management Development*, 28(9), 859-875.

Samul J. (2016) *Teamwork measures and organizational performance: some empirical observations*. Brno: Brno University of Technology.

Sanders, K., Shipton, H. and Gomes, J.F.S. (2014) Guest Editors' Introduction: Is the HRM Process Important? Past, Current, And Future Challenges. *Human Resource Management*, 53(4), 489-503.

Soebbing, B.P., Wicker, P. and Weimar, D. (2015) The Impact of Leadership Changes on Expectations of Organizational Performance. *Journal of Sport Management*, 29(5), 485-497.

Ssekakubo, J., Lwanga, F. and Ndiwalana, G. (2014) Employee Motivation, Job Satisfaction and Organizational Performance in Uganda's Oil Sub-sector. Global Advanced Research *Journal of Management and Business Studies*, 3(7), 315-324.

Statistical Bulletin (2013) Warsaw: GUS. [Online] 4, 03 August 2013. Available from: www.stat.gov.pl/bialystok [Accessed 23 August 2016].

Tomal, D.R. and Jones, K.J. (2015) A comparison of core competencies of women and men leaders in the manufacturing industry. *The Coastal Business Journal*, 14(1), 13-25.

Wall, T. and Wood, S. (2005) The romance of human resources management and business performance, and the case of the big science. *Human Relations*, 58(4), 429-462.

Wang, G., Oh, I.-S., Courtright, S.H. and Colbert, A.E. (2011) Transformational leadership and performance across criteria and levels: a meta-analytic review of 25 years of research. *Group and Organization Management*, 36(2), 223-270.

Yukl, G.A. (2001) *Leadership in Organizations*. 5th ed., Englewood Cliffs, NJ: Prentice Hall.

Yulk, G.A. (2010) *Leadership in Organizations*. 7th ed., Upper Saddle River, NJ: Prentice Hall.

Zenger, J. (2014) The 6 Competencies Global Leaders Need to Succeed. Forbes. [Online]. Available from: http://www.forbes.com/sites/jackzenger/2014/06/26/the-6-competencies-global-leaders-need-to-succeed/#77e4b50a7a8a [Accessed 25 June 2016].

7-Z29-4149

THE RELATIONSHIP BETWEEN FINANCIAL INNOVATION AND THE EFFECTIVENESS OF COMMODITY PRICES IN SOUTH AFRICA

MS. HLOMPO PANELOPE MARUPING[1] AND PROF. ITUMELENG PLEASURE MONGALE[2]

ABSTRACT

Despite being traded for over 100 years and even longer in other regions, commodity prices are still a comparatively indefinite asset class. For this reason, commodity prices are extraordinarily different from bonds and other conventional assets. This study aims to analyse the relationship between stock market returns and commodity prices. This study covers the period from 1980 to 2014. A series of statistical tests such as unit root tests, employed by means of the ADF and the Phillip-Perron test, indicate the presence of stationarity among the series. The Vector Error Correction Model (VECM) is employed to examine whether dynamic linkages exist between the research variables. Evidence suggests that there is a positive long-run relationship between stock market returns and commodity prices in South Africa. Furthermore, gold price, platinum price, and Brent Crude oil price affect JSE movement in the long run.

Keywords: Cointegration, Commodities, Macroeconomy, VAR, Stock Market.
JEL Classification: C2; G13; G14; P43; P45.

INTRODUCTION

According to Shiller (1988) time bonds, stock prices, financial market prices, foreign exchanges and bonds have shown great changes in volatility through time. There are years when prices show vast volatile upswings from day to day. Even monotonous markets have been known to change greatly on a daily and monthly basis. Despite being traded for over 100 years and even longer in other regions, commodity prices are still a comparatively indefinite asset class. For this reason, commodity prices are extraordinarily different from bonds, stocks and other conventional assets. In the midst of these dissimilarities, commodity prices are short maturity claims on real assets, not like financial assets, numerous commodities have manifested seasonality in fluctuations and price levels. All the same, little is known about commodity prices for the reason that there is a scarcity in obtaining data (Gorton and Geert-Rouwenhorst, 2005).

Decades ago an empirical debate concerning the relations between exchange rate and stock prices was initiated by a number of scholars. So, far a great number of empirical studies have been conducted to study this relationship, though some scholars have found opposing results concerning the directionality and existence of the relationship which has thrown finance literature off balance. Earlier studies exposed that there is a significant positive relationship between the variables. Examples of these studies include Aggarwal (1981), Giovannini and Jorion (1987) and Roll (1992). In contrast, other studies such as Soenen and Hennigar (1988) argue that there is a significant negative relationship between the variables. However, Solnik (1987), Bhattacharya and Mukherjee (2003), Franck and Young (1972), Nieh and Lee (2001), Chow et al. (1997) and Bahmani-Oskooee and Sohrabian (1992) concluded that there is no long-run relationship between the variables at all. Thus far, this goes to show that there is no empirical synchronisation among academics concerning the relationship between exchange

[1] Lecturer, Department of Economics, Faculty of Commerce and Administration, North West University (Mafikeng Campus), South Africa
[2] Lecturer, Department of Economics, University of Limpopo, (Turfloop Campus), South Africa

rates and stock prices, which substantiates the need for more research in this area to advance and add to the existing literature.

The main aim of this study is to investigate the relationship between financial innovation (Stock market returns) and commodity prices (Gold, Platinum and Brent Crude Oil). The paper will be divided into six parts. Following the introductory section, Section 2 deals with the theoretical and empirical literature surrounding the relationship between stock prices and commodity prices in South Africa. The methodology employed in the study, empirical model specification and empirical analysis of the adopted tests on South African data will be presented in Section 4. Section 5 presents the results of the relationship between stock prices and commodity prices. Finally, Section 6 gives a general summary of the study's major findings and policy recommendations.

LITERATURE REVIEW

The efficient market hypothesis (EMH) is a stock market theory that suggests that profiting from forecasting price movements is challenging and implausible. The driving force behind price changes is the arrival of new information. In the case of South Africa, a number of scholars have pointed out that the JSE is a weak form efficiency, meaning that historical data is also included in the existing pricing system, but investors cannot use historical data as a tool for profit. In an extensively cited study, Eugene Fama, Lawrence Fisher, Michael Jensen and Richard Roll studied the stock price reaction around stock splits. The authors established that stocks split in good times. On the other hand, following the split, they observed no evidence of normal stock price performance, implying that investors would not be able to profit by purchasing the stock on the split date. The evidence was consistent with the theory of EMH (Clarke, Jandik and Mandelker, 2001).

The Elliot Wave Principle (EWP) is a stock market theory which helps explain how financial markets are traded in repeated cycles. The theory is the cyclical quantification of investor psychology. Elliot's main argument was that crowd behaviour reverses and trends in recognisable and consistent patterns. The EWP occurs in any market with sufficient volume and liquidity. While the real-time application of EWP contrasts between a foreign exchange market and a commodity market, the basic principles governing the theory are equally applicable (Frost and Prechter, 2005).

The relationship between financial markets and oil prices seems to be natural. According to Mussa (2000), commodity prices fluctuations affect economic activity, monetary policy, inflation and corporate profits. Consequently, commodity price increases impacts on financial markets and asset prices. Chen et al. (1986) correspondingly used oil prices as a measure of economic risk in the U.S stock market. Hamao (1998) and Brown and Otsuki (1990) also maintain the findings that oil price plays a pivotal role in pricing equities for the Japanese markets. Ferson and Harvey (1993) used 18 state equity markets data and found that fluctuations in U.S crude oil prices are causal to volatility of the international economy.

Before the early 2000s, evidence suggested that commodity markets were comparatively segmented from each other and outside financial markets. Commodities individually had little positive return relationships with each other (Erb and Harvey, 2006). On daily and monthly basis, commodity returns (especially at short horizons) had an insignificant relationship with the SandP 500 return (Gorton and Rouwenhorst, 2006).

De Roon, Nijman and Veld (2000) and Bessembinder (1992) established that commodity future returns increased with net short points of commodity hedgers after controlling a systematic risk. Stocks whose prices carry a premium for methodical risk only and have a tendency to have substantial return relationships with one another's attributes are in sharp contrast to typical financial assets. Alternatively, these attributes reveal disorganised sharing of commodity price risk, which underlies the long-standing hedging pressure theory of commodity prices that dates back to Keynes (1930), Hicks (1939) and (more recently)

Hirschleifer (1988). This prominent theory suggests that commodity hedgers need to offer a positive risk premium to encourage investors to share the characteristic risk of the long positions.

In forecasting the turning points of an index of commercial shares on the JSE securities exchange, Moolman and Jordaan (2005) examined the feasibility of using leading indicators. The scholars wanted to measure and compare the performance of various leading indicators in leading the commercial share index and in forecasting turning points in the commercial share price index. A multivariate logit model was used and estimated using the leading indicators. It is possible that other leading indicators can lead the prices of certain group of shares (such as commercial shares) even though the overall share price index is a leading indicator in the business cycle. The outcomes of the empirical analysis showed that the best composite model included variables such as the yield spread, composite index of leading indicators, money supply, new orders, building plans, the Rand/US$ exchange rate and the nominal effective exchange rate.

Malik and Hammoudeh (2007) investigated the volatility and shock transmission mechanism between global crude oil markets and the US equity and Gulf equity markets (Bahrain, Saudi Arabia and Kuwait). Except in the case of Saudi Arabia, where volatility spill-over occurs from the equity market to the oil market, the authors documented that volatility spill-over occurs from the oil market to equity markets. Malik and Ewing (2009) employed a bivariate GARCH Model to simultaneously estimate the mean and conditional variance between the five US sectoral indices: industrials, financials, health care and technology, consumer services and oil prices. Significant evidence was found of the transmission of shocks and volatility between financials, oil prices, consumer services, industrials and health care sectors. The most current study by Arouri et al. (2011) investigated the extent of volatility transmission between oil stock markets in Europe and the US at the sector level. They applied a generalised VAR-GARCH approach and discovered volatility spill-over between oil and sector stock returns. The authors also documented that the spill-over is uni-directional (from oil markets to stock markets) in Europe, but bi-directional in the US.

Finally, Mongale and Eita (2014) examined commodity prices and stock market performance in South Africa using the Engle-Granger two-step econometric technique. The author's findings showed that an increase in commodity prices is positively related with an increase in stock market performance and other macroeconomic variables. This study will be adding to this body of literature and further attempting to bridge the gap in the existing studies on a developing economy such as South Africa.

METHODOLOGY

Data and model specification

This study employs time series data. Empirically, time series data assumes that the fundamental time series is stationary (Gujarati, 2003). Studies have nonetheless revealed that the bulk of time series variables are non-stationary (Engle and Granger, 1987). Granger and Newbold (1974) pointed out that the likelihood of obtaining spurious regression was high when utilising a non-stationary time series. Hence in an empirical study, before a scholar analyses the data, a stationarity test should be conducted by means of unit root tests. Various unit root tests are used in econometrics literature, mainly the Augmented Dickey Fuller (ADF) test and the Phillip-Perron (PP) test. This study employs both unit root tests to examine whether the time series data is stationary or non-stationary. The ADF test is achieved using the following regression:

$$\Delta yt = \beta_1 + \beta_2 t + \delta y_{t-1} + \alpha_i \sum_{i=1}^{m} \Delta y_{t-1} + \varepsilon_t^{\bullet} \quad \text{.....(1)}$$

where Δ is the difference operator, β, δ and α the estimated coefficients, and Y the variable whose time series properties is examined and is the white-noise error term. A non-parametric technique of regulating for higher order autocorrelation in a series is based on the following first order of auto-regressive AR(1) process:

$$\Delta Yt = \alpha + \beta Y_{t-1} + \varepsilon_t \quad \text{.....(2)}$$

where α is the constant, Δ the difference operator, Y_{t-1} the first lag of the variable Y, and β is the slope. It is advantageous to test whether a cointegrating relationship between the integrated variables exist when two data series are integrated of the same order. For this reason, the Johansen procedure is carried out (Johansen, 1988; Johansen and Juselius, 1990). The Johansen technique uses a maximum likelihood process to determine the presence of cointegrating vectors in a non-stationary time series as a vector autoregressive (VAR):

$$\Delta Y_t = C + \sum_{i=}^{k} \Gamma_i \Delta Y_{t-1} + \Pi Y_{t-1} + \eta_t \quad \text{.....(3)}$$

Method

This study adopts thee vector autoregressive (VAR) method. To an extent the VAR method has become standard over the years in time series modelling. In parallel with the structural approach, it circumvents the need to provide a dynamic theory specifying the relationships among the jointly determined variables. Another advantage is that it can handle endogenous variables on both sides of the equation as well as a mix of 1(1) and 1(0) variables in one system. The VAR system works in such a manner that each variable is regressed in its own lags plus the lags of other variables.

Unit root tests

In econometric analysis, it is applicable to test whether a particular data series is stationary. A non-stationary data series must be differenced "d" times before it can be stationary. Only then can it be said to be integrated of order "d", e.g. I(d). Applying the difference operator more than "d" times to an I(d) process will only result in a stationary data series, but with a moving average error structure. An I(0) is a stationary series, while I(1) has a unit root. An I(2) has two unit roots and so would require differencing twice to prompt stationarity. The Dickey and Fuller (1981; 1984) test and the Phillip and Perron (1988) test are two of many formal tests employed when testing for stationarity. These tests are centred on the following assumptions:

H_o, unit root exists (Accept null hypothesis)

H_1, unit root does not exist (Reject null hypothesis)

Cointegration

A cointegration tests calculates the long-run relationship between economic variables. A time series of two or more cointegrating variables suggests that there is a long-run equilibrium relationship among the variables. Consequently, the econometric analysis of cointegration illustrates that if two or more series related to form an equilibrium relationship in the long run, at that particular time in point may be non-stationary, they move closely together over time and their difference will be stationary. Their long-run relationship is the speed of adjustment to which the system converges over a certain period, and the error term can be interpreted as the disequilibrium error or the disturbance error at time *t*.

Cointegration has two main testing methods, namely the Johansen procedure (Johansen, 1991; Johansen, 1995) and the Engle Granger (EG) two-step method (Engle and Granger, 1987). The Johansen procedure determines the rank of the matrix, while the Engle Granger determines whether the residuals have an equilibrium relationship or whether the series are stationary.

Diagnostic testing

The diagnostic checks are vital to the business cycle model because they authenticate the parameter evaluation outcomes attained by the estimated model. When problems arise in the estimated model's residuals, it means the CLRM is violated and that the model is not the best fit.

Impulse response analysis

When a researcher wants to capture the short-run dynamics of the model, an impulse response functions. These impulse responses trace the effect of a one standard deviation shock in a variable on future and current values of the variables. The econometric model assumes that commodity prices do not react to disturbances in other macroeconomic variables. The shock can be identified through a standard Cholesky decomposition.

The CUSUM test

Lastly the model has to be checked for stability by means of the CUSUM stability test as suggested by Perasan and Perasan (1997). According to Bahmani-Oskooee (2004), the null hypothesis for this test is that the coefficient vector is the same in every period.

RESULTS AND DISCUSSION

Unit root test

The results in Table 1 indicate that the null hypothesis of non-stationarity cannot be rejected when variables are at levels except for the dependent variable (JSE). When the variables are tested in first difference of the series, all the variables become stationary. It can thus be concluded that the variables are first difference stationary: that is, each series is integrated of order one I(1).

Table 1. Unit root test results

Variable	ADF				PP			
	Level		1st Difference		Level		1st Difference	
	Constant	Constant and trend	Constant	Constant and trend	Constant	Constant and trend	Constant	Constant and trend
JSE	-6.251**	-7.984***	-8.755***	-8.691***	-7.397***	-9.873***	-25.15***	-28.67***
BCO	0.242	-0.089	-6.262***	-6.998***	0.459	-1.079	-6.355***	-8.538***
PT	-2.201	-2.418	-4.200***	-4.141***	-1.942	-2.082	-4.158***	-4.095**
COAL	-1.079	-2.182	-5.303***	-5.216***	-1.117	-2.360	-5.295***	-5.206***
GOLD	1.349	-0.706	-3.490***	-3.632***	1.348	-0.706	-3.490	-3.632**
Critical values								
1%	-3.568	-4.152	-3.571	-4.156	-3.568	-4.152	-3.571	-4.156
5 %	-2.921	-3.502	-2.922	-3.504	-2.921	-3.502	-2.922**	-3.504
10%	-2.598	-3.180	-2.59	-3.181	-2.598	-3.180	-2.599**	-3.181

1. *Using critical values by Mackinnon, 1996.*
2. ** indicates stationary at 1% level, ** indicates stationary at 5% level, *** indicates stationary at 10% level.*
3. *Selection of bandwidth in the case of PP unit root test according to Newey-West, 1994.*

Cointegration

The maximum eigenvalues and the trace test statistics results for the two models are represented in Table 2. The result of the test statistic indicates that the null hypothesis of no cointegration among the variables can be rejected for South Africa. The results also reveal that at least two cointegrating vectors exist among the above stated variables. In a model that employs a VAR system, the existence of a long-run relationship among the variables must be

measured. As the variables are cointegrated, the equations of the VAR also include the lagged values of the variables in levels to capture their long-run relationships.

Table 2. Johansen cointegration test

Hypothesised no of CE(s)	Eigenvalue	Trace statistic	0.05 Critical value	Max-Eigen statistic	0.05 Critical value
None	0.860676	119.2970***	69.81889	63.07045***	33.87687
At most 1	0.639879	56.22658***	47.85613	32.68209***	27.58434
At most 2	0.388124	23.54449	29.79707	15.71922	21.13162
At most 3	0.206814	7.825275	15.49471	7.414335	14.26460
At most 4	0.012760	0.410941	3.841466	0.410941	3.841466

Trace test indicates 2 cointegrating eqn(s) at the 0.05 level
Max-eigenvalue test indicates 2 cointegrating eqn(s) at the 0.05 level
**denotes rejection of the null hypothesis at the 0.05 level*

Engle-Granger two-step method

A Granger causality test is conducted to capture the direction and the degree of the long-term correlation between stock market returns and commodity prices. The results are represented in Table 3. From the probability statistics given, it can be deduced that the null hypothesis – "BCO does not Granger Cause JSE" – cannot be rejected as the obtained F-statistic, 2.385, is greater than the critical value of 0.05. However, we can reject the null hypothesis – "COAL does not Granger Cause JSE" – since the critical value is greater than the obtained probability value of 0.040, the notion of rejecting the null hypothesis also applies to the following, "GOLD does not Granger Cause JSE" "COAL does not Granger Cause BCO" and "COAL does not Granger Cause PT." For the rest of the variables stated below, however, it can be concluded that the null hypothesis cannot be rejected, indicating no causal relationship among the variables.

Table 3. Granger causality tests

Null Hypothesis	F-Statistic	Probability
BCO does not Granger Cause JSE	2.38494	0.0942
JSE does not Granger Cause BCO	0.40373	0.7516
PT does not Granger Cause JSE	0.74833	0.5340
JSE does not Granger Cause PT	1.50528	0.2385
COAL does not Granger Cause JSE	3.22685*	0.0403
JSE does not Granger Cause COAL	0.38522	0.7646
GOLD does not Granger Cause JSE	2.74067*	0.0055
JSE does not Granger Cause GOLD	0.15284	0.9268
PT does not Granger Cause BCO	0.25174	0.8593
BCO does not Granger Cause PT	0.20113	0.8946
COAL does not Granger Cause BCO	7.43516*	0.0011
BCO does not Granger Cause COAL	0.34199	0.7952
GOLD does not Granger Cause BCO	1.90035	0.1565
BCO does not Granger Cause GOLD	2.11093	0.1253
COAL does not Granger Cause PT	0.29732*	0.0270
PT does not Granger Cause COAL	1.02315	0.3999
GOLD does not Granger Cause PT	0.22990	0.8746
PT does not Granger Cause GOLD	0.04720	0.9861
GOLD does not Granger Cause COAL	1.74136	0.1853
COAL does not Granger Cause GOLD	16.9002	4.E-06

**indicates significant causal relationship at 5%*

Table 4. Normalised cointegration equation

Normalised cointegrating coefficients (standard error in parentheses)

D(JSE)	D(BCO)	D(PT)	D(COAL)	D(GOLD)
1.000000	0.073920	4.546651	-2.825069	47.54217
	(0.04620)	(4.19277)	(36.6070)	(15.3503)

4.4 Vector Error Correction Modelling

Table 5. VECM, short-run analysis

Modelling the VECM		
Independent variables	Coefficient	t-value
Constant	1.527	0.101
$DBCO_{t-1}$ DPT_{t-1} $DCOAL_{t-1}$ $DGOLD_{t-1}$	-0.118 -0.005 -0.003 -0.006	-0.054 -0.279 -1.009 -0.895
ECT_{t-1}	-0.321	-1.747
$R^2 = 0.659$	RESET Test, 0.046	Normality Test, 0.029
Note: Normality is the Jarque-Berra test for normality of the residuals; RESET is a general test for model mis-specification.		

The estimated ECM for South Africa takes the following form:

$$\Delta JSE_{it} = \alpha + \Sigma\beta_{1i}\Delta BCO_{it-1} + \Sigma\beta_{2i}\Delta PT_{it-1} + \Sigma\beta_{3i}\Delta COAL_{it-1} + \Sigma\beta_{4i}\Delta GOLD_{it-1} + \varphi ECT + u_{1it}$$

Where Δ is the difference operator, JSE_t, BCO_t , PT_t , $COAL_t$ and $GOLD_t$ are as defined before, ECT_{it-1} is an error correction term resulting from the long-run cointegrating relationship, U_{1t} is the white noise error terms, t denotes the years and n_1 is the lag orders of α's and β's respectively. The coefficients indicate that there is a long-run causal relationship the independent and independent variables, while the ECM shows the speed of adjustment to the long-run equilibrium relationship. The following ECM was formulated using 33 observations:

$$DJSE_{it} = 1.527 - 0.109DBCO_{t-4} + 1.335DPT_{t-4} - 30.178DCOAL_{t-4} - 29.991DGOLD_{t-4} - 0.321ECT_{t-1}$$

Se. (15.0205) (0.01722) (2.73199) (21.5463) (5.30602) (0.18357)

The error correction term is negative and significant at 10%. This implies that the model is stable and supporting cointegration results. A value of -0.321 of the error term coefficient indicates that the South African economy -0.321 movement back towards equilibrium following a back towards long-run equilibrium after a fluctuation on the stock market turnover. The R^2 of the model is 65%, which suggests that the model is a good fit.

Diagnostic tests

The diagnostic test results are presented in Table 5, and these assist in checking for serial correlation, normality and heteroscedasticity. These diagnostic checks are based on the null hypothesis that there is no serial correlation for the LM test, there is normality for the Jarque-Bera test and there is no heteroscedasticity for the White heteroscedasticity test.

The estimated model fits well with an adjusted R^2 of 66%. Furthermore, the LM test, which is a stricter test for correlation, is also applied in the analysis. The results for the diagnostic checks for serial correlation, normality and heteroscedasticity show that the data is fairly well behaved.

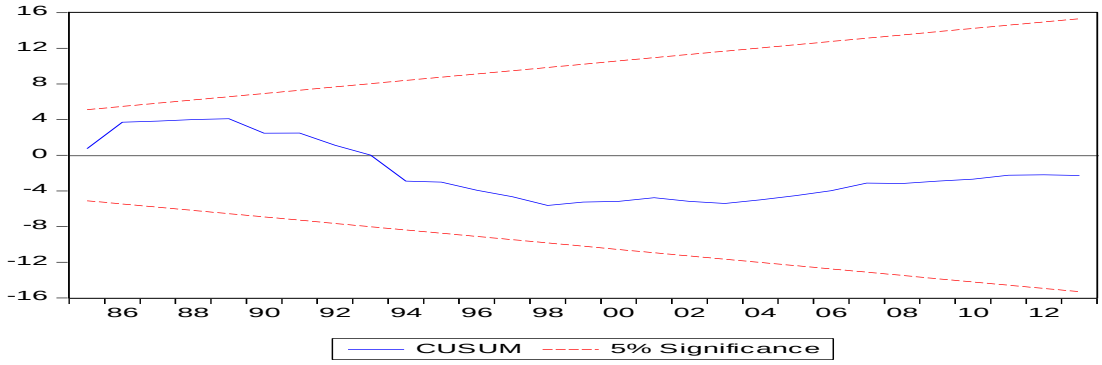
Table 6. Diagnostic test summary

Test for	Test	p-value	Conclusion
Normality	JB	0.029	Accept Ho
Serial correlation	LM	0.005	Accept Ho
Heteroscedasticity	Breusch-Pagan	0.005	Accept Ho

CUSUM test

The plot of the CUSUM of recursive residual stability test in Figure 1 indicates that all the coefficients of the estimated model remain stable over the study period since they are within the 5 percent critical bounds.

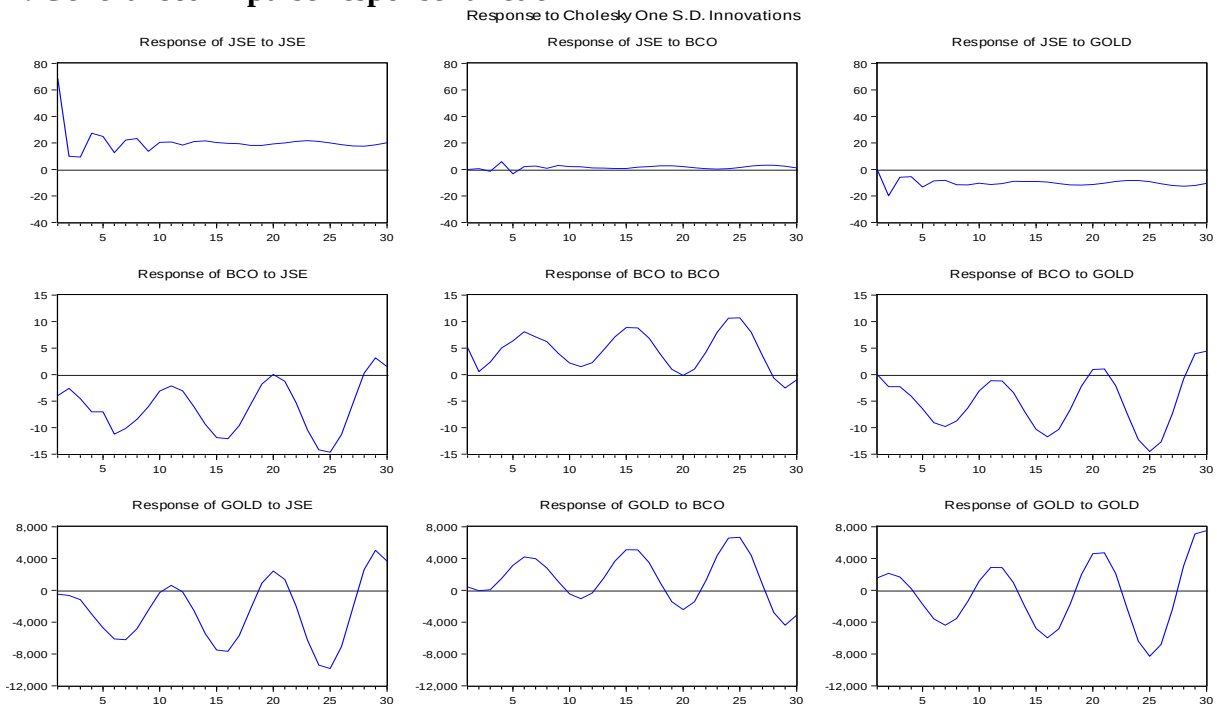
Figure 1. CUSUM test



Impulse Response Analysis Function

Figure 2 shows the accumulated response to stock market returns over a period of 30 years. These results suggest that a rise in the stock market returns has positive effects on the variable itself. A one stand deviation of JSE induces a decrease in BCO and GOLD, while remaining steady in itself. On average, the unexpected standard deviation in BCO prompts a steady decrease in JSE and GOLD and an increase in BCO. A one standard deviation shock of GOLD encourages a decrease in JSE, BCO and GOLD. These results suggest that stock market returns have a positive effect on GOLD over the years, as expected, whereas it leads to a decrease in COAL over the preceding period.

Figure 2. Generalised impulse response function



CONCLUSION AND RECOMMENDATIONS

This study empirically examines the dynamics between the volatility of stock market returns and the movement of the commodity prices in relation to the degree of interdependency and causality in South Africa. Firstly, the unit root test was employed to test whether the data series was stationary. The results confirmed that all the data series of the variables are non-stationary and integrated of order one. The Johansen procedure was then used to test for the possibility of a cointegrating relationship. The results showed that there is cointegration between stock market returns and commodity prices. This simply suggest that there is a long-run relationship between the variables. The Granger causality test indicates that JSE does not Granger cause Commodity prices. Participants in the commodity markets can use the information from stock prices to forecast on stock market returns of economies in future. Stock markets and commodity prices are, and most likely will continue to be, one of the most dynamic fields in economic analysis.

The results of this study suggest numerous policy recommendations which could fortify the connection between the stock market and commodity prices in South Africa. It is a widely-known fact among scholars that the stock market operates in a macroeconomic background. Stock market management should be deregulated. Market forces of demand and supply should be permitted to function without any influence or interference from external sources.

REFERENCES

Aggarwal, R. (1981) Exchange rates and stock prices: A study of the US capital markets under floating exchange rates. *Akron Business and Economic Review*, 12, 7-12.

Arouri, M. E. H., Lahiani, A. and Nguyen, D. K. (2011) Return and volatility transmission between world oil prices and stock markets of the GCC countries. *Economic Modelling*, 28(4), 1815-1825.

Bahmani-Oskooee, M. and Sohrabian, A. (1992) Stock prices and the effective exchange rate of the dollar. *Applied Economics*, 24(4), 459-464.

Bessembinder, H. (1992) Systematic risk, hedging pressure, and risk premiums in futures markets. *Review of Financial Studies*, 5(4), 637-667.

Bhattacharya, B. and Mukherjee, J. (2003) Causal relationship between stock market and exchange rate. Foreign exchange reserves and value of trade balance: A case study for India. [Online]. Paper presented at the Fifth Annual Conference on Money and Finance in the Indian Economy, January 2003. Available from: http://www.igidr.ac.in/conf/oldmoney/mfc_5/basabi.pdf [Accessed 24 August 2016].

Brown, S. and Otsuki, T. (1990) Macroeconomic factors and the Japanese markets: The CAPM project. In: E. J. Elton and M. J. Gruber (eds.). *Japanese Capital Markets*. New York: Harper and Row, 175-192.

Campbell, J.Y. and Shiller, R.J. (1988) Stock prices, earnings, and expected dividends. *The Journal of Finance*, 43(3), 661-676.

Clarke, J., Jandik, T. and Mandelker, G. (2001) The efficient markets hypothesis. In: R. Arffa (ed.). *Expert Financial Planning: Advice from Industry Leaders*. New York: Wiley and Sons, 126-141.

Chen, N., Roll, R. and Ross, S.A. (1986) Economic forces and the stock market. *The Journal of Business*, 59(3), 383-403.

Chow, E. H., Lee, W. Y. and Solt, M. S. (1997) The exchange rate risk exposure of asset returns. *The Journal of Business*, 70(1), 105-123.

De Roon, F., Nijman, T. and Veld, C. (2000) Hedging pressure effects in futures markets. *The Journal of Finance*, 55(3), 1437-1456.

Dickey, D. A. and Fuller, W. A. (1981) Likelihood ratio statistics for autoregressive time series with a unit root. *Econometrica*, 49(4), 1057-1072.

Dickey, D.A. and Fuller, W.A. (1984) Testing for unit roots in autoregressive moving averages models of unknown order. *Diometrika*, 71(3), 599-607.

Engle, R.F. and Granger, C.W. (1987) Co-integration and error-correction: Representation, estimation and testing. *Econometrica*, 55(2), 251-276.

Erb, C. and Harvey, C. (2006) The strategic and tactical value of commodity futures. *Financial Analysts Journal*, 62(2), 69-97.

Fama, E.F. et al. (1969) The adjustment of stock prices to new information. *International Economic Review*, 10(1), 1-21.

Franck, P. and Young, A. (1972) Stock price reaction of multinational firms to exchange realignments. *Financial Management*, 1(3), 66-73.

Frost, A.J. and Prechter, R. R. (2005) *Elliott Wave Principle*. 10th ed., Gainesville, GA: New Classics Library.

Giovannini, A. and P. Jordan. (1987) Interest rates and risk premia in the stock market and in the foreign exchange market. *Journal of International Money and Finance*, 6(1), 107-123.

Gorton, G. and Geert-Rouwenhorst, K. (2005) *Facts and fantasies about commodity futures*. Oxford: Oxford University Press.

Gujarati, D. N. (2003) *Basic Econometrics*. 5th ed., New York: McGraw Hill.

Hamao, Y. (1988) An empirical examination of arbitrage pricing theory, using Japanese data. *Japan and the World Economy*, 1(1), 45-61.

Harvey, A.C. (1993) *Time Series Models*. 2nd ed., New York: Harvester, Wheatsheaf.

Johansen, S. (1988) Statistical analysis of cointegration vectors. *Journal of Economic Dynamics and Control*, 12(2-3), 231-254.

Hicks, C. (1939) *Value and Capital*. New York: Oxford University Press.

Hirshleifer, D. (1988) Residual risk, trading costs, and commodity futures risk premia. *Review of Financial Studies*, 1(2), 173-193.

Johansen, S. (1991) Estimation and hypothesis testing of cointegration vectors in Gaussian vector autoregressive models. *Econometrica*, 59(6), 1551-1580.

Johansen, S. (1995) *Likelihood-based inference in cointegrated vector auto-regressive models*. Oxford: Oxford University Press.

Johansen, S. and Juselius, K. (1990) Maximum likelihood estimation and inference on cointegration with applications to the demand for money. *Oxford Bulletin of Economics and Statistics*, 52(2), 169-210.

Keynes, J. M. (1930) *A Treatise on Money: The Applied Theory of Money*. London: Macmillan.

Malik, F. and Ewing, B. T. (2009) Volatility transmission between oil prices and equity sector returns. *International Review of Financial Analysis*, 18(3), 95-100.

Malik, F. and Hammoudeh, S. (2007) Shock and volatility transmission in the oil, US and Gulf equity markets. *International Review of Economics and Finance*, 16(3), 357-368.

MacKinnon, J. G. (1996) Numerical distribution functions for unit root and cointegration tests. *Journal of Applied Econometrics*, 11, 601-618.

Mongale, I.P. and Eita, J.H. (2014) Commodity Prices and the Stock Market Performance in South Africa. *Corporate Ownership and Control*, 4(11), 370-375.

Moolman, E. and Jordaan, J. (2005) Can leading business cycle indicators predict the direction of the South African commercial share price index? *South African Journal of Economics*, 73(1), 68-78.

Nieh, C.C. and Lee, C.F. (2001) Dynamic relationship between stock prices and exchange rates for G-7 countries. *Quarterly Review of Economics and Finance*, 41, 477-490.

Pesaran, H.M. and Pesaran, B. (1997) *Microfit 4.0*. Oxford: Oxford University Press.

Phillips, P.C.B. and Perron, P. (1988) Testing for a Unit Root in Time Series Regression. *Biometrika*, 75(2), 335-346.

Roll, R. (1992) Industrial structure and the comparative behavior of international stock markets indices. *Journal of Finance*, 47(1), 3-41.

Soenen, L. and Hennigar, E.S. (1988) An Analysis of Exchange Rates and Stock Prices: The U.S. experience between 1980 and 1986. *Akron Business and Economic Review*, 19, 7-16.

Solnik, B. (1987) Using financial prices to test exchange rate models: A note. *Journal of Finance*, 42(1), 141-149.

25-Y26-4276

A MULTI-DISCIPLINARY APPROACH AND THE NEED TO DRAW KNOWLEDGE FROM SOCIAL WORK TO GAIN A BETTER UNDERSTANDING OF EMPOWERMENT

ROZANA A. HUQ[1]

ABSTRACT

There is a high level of consensus in the management literature that employee empowerment is necessary for the survival and success of organisations. It is a management response to an increasingly complex and competitive external environment, and its popularity has been enhanced by the quality movement in general, and by Total Quality Management (TQM) and the European Foundation for Quality Management (EFQM) Excellence Model in particular. However, there are still considerable gaps in our knowledge and understanding of a range of issues concerning employee empowerment, both at the conceptual and practice levels (Huq, 2008). These gaps need to be filled, as the danger is that organisations may attempt to implement employee empowerment without a clear understanding of what it means, its complexity, or how to implement it. The knowledge drawn from the management literature review proved unsatisfactory, so it was deemed necessary to draw knowledge from another discipline, social work (Huq and Hill, 2005; Huq, 2015), where empowerment is an important construct: "the practice of empowerment is now a central paradigm…" (Adams, 1996, p. xv).

Key words: Human resource management, model of employee empowerment, social work and empowerment, power-sharing and powerlessness and empowerment and disempowerment

BACKGROUND

Despite the virtues of employee empowerment that have been extolled and the perceived need to implement it at the work place, there is concern in the management literature regarding the lack of published research findings, which has led to significant weaknesses and gaps in the existing body of knowledge on this subject (Huq, 2008; 2010; 2015).

Several authors are concerned about the paucity of research on employee empowerment, both at the theoretical and practical levels (Conger and Kanungo, 1988; Thomas and Velthouse, 1990; Lashley and McGoldrick, 1994; Keller and Dansereau, 1995; Spreitzer, 1995; Spreitzer, 1996; Thorlakson and Murray, 1996; Wilkinson, 1998; Hales, 2000; Denham Lincoln et al., 2002; Seibert et al., 2004; Greasley et al., 2005; Logan and Ganster, 2007).

Conger and Kanungo (1988, p. 480) state: "Although empowerment has been discussed by several management scholars, little empirical work has been performed." There are also significant concerns that the lack of research on employee empowerment has resulted in "the divergence between the widespread rhetoric of empowerment and limited reality of empowerment programmes" (Hales, 2000, p. 501). Indeed, Morrell and Wilkinson (2002) caution that "the term (empowerment) is complex and subject to different interpretations. The implications of this are that it will not be perceived in the same way by different organisations, nor will people within the same organisation think of empowerment in the same way" (p. 121). Thus, our understanding of employee empowerment is restricted in both theory and practice (Conger and Kanungo, 1988, p. 471-472).

This paper explains the reasons why it was important to conduct a multi-disciplinary literature review, grounded on my doctoral thesis, "An Investigation of What Employee Empowerment Means In Theory and in Practice" (Huq, 2008). This research was conducted in

[1] Freelance Educator and Lecturer, United Kingdom. E-mail:- rozanahuq@gmail.com

UK and comprised of two case studies. One was a publicly owned subsidiary of a multinational communications company, and the other a privately owned manufacturing company.

Ambiguity regarding the concept of employee empowerment in the management literature led to the need for an investigation into what employee empowerment means in another discipline, social work. In this body of literature, empowerment is central to social work theory and practice: "Without empowerment, it could be argued that something fundamental is missing from the social work being practised" (Adams, 1996, p. 3).

Several contributors to the body of management literature are concerned that the term employee empowerment is used "loosely" (Thomas and Velthouse, 1990, p. 666). Furthermore, lack of appropriate definitions and frameworks for implementing employee empowerment has caused considerable confusion in organisations.

After a review of the management literature, it became clear that employee empowerment is multi-dimensional and consists of several themes (Huq, 2015). I have attempted to draw out four of those key themes: power-sharing, participative decision-making, devolution of responsibility and a people-oriented leadership style (see Huq's Model A: Huq, 2015).

- Theme: Power-sharing
- Theme: Participative decision-making
- Theme: Devolution of responsibility

- Theme: A people-oriented leadership style

Themes of employee empowerment emerging from the management literature

Figure 1: Huq's Model A

A review of the management literature alone did not reduce the conceptual ambiguity of employee empowerment, either at the conceptual and practice levels. This author felt the need to delve into the social work literature, the purpose of which was to understand what is meant by empowerment in social work. What are the methods used from the practising point of view, and (more importantly) what knowledge can be drawn?

A multi-disciplinary approach is also advocated by a number of authors as necessary to put employee empowerment in a richer, contextual setting (Zimmermann, 1990; Collins, 1996; Denham Lincoln et al., 2002). Hence, key concepts of empowerment in social work are examined to gain knowledge and increase our understanding of this subject, as mentioned earlier.

It is essential to note that, in the management literature, the concepts of power and oppression are rarely examined. In this respect, the social work literature is an important discipline through which to learn about empowerment and disempowerment.

Enablement, a crucial theme of empowerment that is not discussed in the management literature, is also examined. The social work literature argues that there are two other themes necessary in the practice of empowerment, which are again missing in the management literature: access to information and collaboration. These, too, are discussed.

The main argument of this paper is that there is a need to address the gaps in knowledge in the management literature regarding what employee empowerment means at the conceptual and practice levels. Thus, in an attempt at enlightenment, the secondary research for the study has drawn on the social work literature (Huq, 2015), where there is a strong consensus that empowerment is not only a "goal for client groups" (Frans, 1993, p. 312), but also a central paradigm. Adams (1996, p. xv) states that "the practice of empowerment is now a central paradigm".

KNOWLEDGE DRAWN FROM SOCIAL WORK LITERATURE

Several authors in the social work literature note that there is a significant paradigm shift in practice, which is increasingly moving towards empowerment (Stanton, 1990; Parsons, 1991; Frans, 1993; Sheppard, 1995; Adams, 1996; Guterman and Bargal, 1996; Kirst-Ashman, 2003).

There is a high level of consensus that empowerment is central to social work theory and practice: "Without empowerment, it could be argued that something fundamental is missing from the social work being practised" (Adams, 1996, p. 3). Undoubtedly, as Adams (1996) states, "the development of an empowering practice in social work is a professional necessity" (p. xvi).

There has been a significant paradigm shift regarding the practice of social work that is increasingly moving towards empowerment. Adams (1996) explains that empowerment in social work is now a central paradigm that has replaced the old paradigm of "client treatment" (p. xv) which dominated social work in the past, and adds that the empowerment of service users is becoming "*the* central, energising feature of social work" (Adams, 1996, p. 2-3).

In social work, empowerment is viewed as a process (Adams, 1990; Beresford and Croft, 1993; Frans, 1993) which enables people to take greater control of their lives. According to the body of social work literature, empowerment can enable individuals, groups and/or communities to achieve goals and control their lives, thereby achieving empowerment from within (Adams, 1990; Frans, 1993; Parsons, 1991; Huq, 2015).

Interestingly, at the practice level, although empowerment is viewed as a means whereby social workers, groups of people and/or communities are enabled to take control of their lives, the growth of the individual is also considered important (Rappaport, 1987; Adams, 1990).

The concept (of empowerment) suggests both individual determination over one's own life and democratic participation in the life of one's community (Rappaport, 1987, p. 121). Hence, empowerment needs to be understood at both an individual and a collective level (Rappaport, 1987; Adams, 1990 and 1996); again, something that is not emphasised in the management literature. Beresford and Croft (1993) define "empower" to mean "making it possible for people to exercise power and have more control over their lives" (p. 50), which also defines enablement. Hence, having some control over people's lives and situations is regarded as crucial in social work (Adams, 1990; Prestby et al., 1990; Zimmerman, 1990 and 1991; Beresford and Croft, 1993; Lord and Hutchison, 1993; Sheppard, 1995; Adams, 1996; Adams, 2003; Kirst-Ashman; 2003; Dubois and Miley, 2005).

The diverse meanings of empowerment in social work are captured by Rappaport's (1987) definition, which demonstrates that empowerment is not just an individual construct, or for one group of people. Rather, it is diverse and global:

> Empowerment is not only an individual psychological construct, it is also organisational, political, sociological, economic and spiritual. Our interests in racial and economic justice, in legal rights as well as in human needs, in health care and educational justice, in competence as well as in a sense of community, are all captured by the idea of empowerment (p. 130).

One observation from the review of the management literature and the findings of this study is that employee empowerment is always a top-down management agenda in organisations. In contrast, in the social work literature, there is a shift in attitude/viewpoint. Kirst-Ashman (2003) advocates that empowering people needs a "bottom-up" approach. A "grassroots, bottom-up approach" means that people at the bottom of the formal power structure, such as ordinary citizens, band together to establish a power base (Ashman, 2003, p. 203).

By taking such a "bottom-up" approach, service users collectively and individually challenge authorities and attempt to bring about change in their lives. This has resonance with the definition of empowerment offered by "The Blackwell Encyclopaedia of Social Work" (2000): "For service users, *empowerment* means challenging their disempowerment, having more control over their lives, being able to influence others and bring about change" (p. 116). It is worth noting that this kind of attention to employees having control over their working lives at the "grassroots" level is largely missing in the management literature.

Power, oppression and powerlessness

Discussions regarding power, oppression and powerlessness are rarely found in the management literature. However, in social work literature, this issue is paramount. Parsloe (1996, p. 56) states that "it is the conception of power that gives life to empowerment."

Without the sharing of power, empowerment in social work is viewed as having no meaning. It is worth noting the theory of empowerment described in the "Dictionary of Social Work":

> Theory concerned with how people may gain collective control over their lives, so as to achieve their interests as a group, and a method by which social workers seek to enhance the power of people who lack it (Thomas and Pierson, 1995, p. 134).

However, powerlessness can be a common experience of many groups discriminated against by society, such as women, the aged, ethnic minorities and the disabled. From the results of their study on the process of empowerment, Lord and Hutchison (1993) report how participants experienced extensive powerlessness in their lives, and they described in great detail "the anguish" of powerlessness (p. 9). The authors also note that "no single factor or experience created a sense of powerlessness; rather, it was a build-up of factors and experiences that developed into a disempowering situation" (Ibid: 9). This is parallel to my findings regarding the plight of "agency workers", who suffer intense feeling of powerlessness (Huq, 2010 and 2015).

Feelings of powerlessness occur when people believe they are unable to cope with the physical and social demands of the environment (Conger and Kanungo, 1988; Spreitzer, 1995; Greenberg and Baron, 2000). This feeling is damaging in a variety of situations, including the workplace, as it creates stress (Spreitzer, 1995; Greenberg and Baron, 2000), leading to further feelings of powerlessness. The danger is that disempowered employees can begin to feel disenfranchised, and Peters (1994) emphasises that the "central ethical issue in the workplace should be protection and support for people who are unempowered, especially the frontline worker" (p. 87).

Employee empowerment can be enhanced if organisations remove all impediments that lead to a sense of powerlessness, such as unnecessary rules and regulations and limited participation. It is surprising how many of the aforementioned impediments still remain in organisations; as Pearlstein (1991) in the management literature notes, many organisations are so bureaucratic that even routine actions need some form of permission or approval from the top.

It is generally recognised that individuals and groups have unequal power in society, and with this in mind, Parsons (1991) argues that the common goal of social work activities must be the empowerment of service users. Braye and Preston-Shoot (1995) emphasise the need for an "organisational change", advocating power-sharing with service users:

> For empowerment in social care to have meaning, the organisational culture must move away from that of power (control of the expert) and role (emphasis on given tasks and procedures) to that of community (learning with users) (p. 115).

A number of authors agree that inequalities in power come from oppression, and therefore there is a need to address power imbalances (Freire, 1972; Friedmann, 1992; Breton, 1994; Dalrymple and Burke, 1995; Sheppard, 1995; Parsloe, 1996; Kirst-Ashman, 2003). This is highly essential, as disempowered people lack control over their lives, in part because they lack control over the decisions and the resources that affect the quality and direction of their lives. In management, this is crucial for leaders to take into account, particularly if front-line employees or agency workers are to be empowered.

The next section discusses the key themes of empowerment that are seen to be essential regarding empowerment in social work – access to information, collaboration and enablement.

Access to information

Although access to information seems obvious, as people must have information to be empowered to make choices and decisions, information can surprisingly often be the most difficult thing to access (Huq, 2015). In many cases, this is due to a lack of planning regarding who the information is for (target audience), what it should contain and how it should be disseminated (Pierson and Thomas, 2002). It is essential to remember that social work deals with a diverse group of individuals from different backgrounds, and it is vital to tailor information to suit the needs of various groups.

It is worth noting the psychological benefits that can also be gained from having access to information, such as self-confidence: "One of the results of gaining more information … was that people felt more confident" (Wilson, 1995, p. 84). An important point to note is that it is not just service users, but professionals working in the discipline of social work who need access to information, otherwise they too can suffer from disempowerment.

Collaboration

It is important to understand what collaboration means and how it can play a part in the process of empowerment. It has already been noted that The Blackwell Encyclopaedia of Social Work (2000) offers the following definition of collaboration: "Collaboration refers to working together to achieve common goals" (p. 67). In a similar vein, The Concise Oxford Dictionary (1976) also explains "to collaborate" as meaning to "work jointly" (p. 196). These definitions helps one understand what an important role collaboration plays in the empowerment of people in social work (Mattaini et al., 1998; Kirst-Ashman, 2003; Weinstein et al., 2003; DuBois and Miley, 2005).

Collaboration is an important part of empowerment, as "much social work involves collaborating with organisations and communities to improve social and health services" (Kirst-Ashman, 2003, p. 5). In a similar manner, DuBois and Miley (2005) state: "Empowerment-oriented social workers work collaboratively with their clients. They focus on clients' strengths and adaptive skills as well as clients' competencies and potential" (p. 27).

To enable and maximise service users' capabilities, it is imperative that social workers do not assume the role of experts. Breton (1994, p. 29) highlights: "If professionals accept that they don't know best, and if they accept to let go of the role of expert, they will be able to engage in a genuine dialogue with the oppressed and will be ready to learn from them. This necessitates a non-authoritarian approach – not easy for practitioners who find themselves in more or less authoritarian settings." Hence, social workers need to "replace paternalistic and elitist forms of intervention (those that assume the worker knows best) with approaches that maximise people's rights, strengths, and capabilities" (Mattaini et al., 1998, p. 221). Similarly, DuBois and Miley (2005, p. 27) warn: "The embedded patriarchal organisational culture of social service delivery thwarts collaborative work with clients".

Another important point is that not only do social workers need to collaborate with their service users, they also need to collaborate with the different service agencies responsible for providing services for the users. In this case, too, social workers need to collaborate with service providers to get the best outcome possible for the individuals and groups they are trying to empower. Hence, it is imperative that they "work jointly" with service providers to enable their service users to achieve their needs and feel empowered.

From the aspect of collaboration, if organisations want to practise employee empowerment, then leaders/managers need to work in collaboration (jointly) with all employees (management and non-management personnel) to achieve common goals. In such cases, a command and control culture is disempowering and disabling, and thus works against the practice of employee empowerment.

Enablement

Enablement is a process that empowers people to take greater control over their lives (Adams, 1990; Beresford and Croft, 1993; Frans, 1993), hence it is an important concept in social work regarding empowerment (Kieffer, 1984; Adams, 1990; Frans, 1993; Means et al., 1993; Adams, 1996; Parsloe, 1996; Mattaini et al., 1998; Kirst-Ashman, 2003; Zastrow, 2003). The problem in the management literature is that the majority of management researchers refer to empowerment in the sense of delegation rather than in the sense of enabling (Conger and Kanungo, 1988). It is useful to note the definition of "enable" in The Concise Oxford Dictionary: "Authorize, empower, (person *to* do); supply (person etc.) with means *to* (do); make possible" (p. 340).

Zastrow (2003) emphasises that one of the roles social workers must assume is that of an "enabler", which resonates with the above definition. The role of the enabler is to help, facilitate, or make it possible for the person concerned to achieve his/her goals.

In this role a worker *helps* individuals or groups articulate their needs, clarify and identify their problems, explore resolution strategies, and select and develop their capacities to deal with their own problems more effectively. (Zastrow, 2003, p. 13).

It is important to note from the social work literature that there are two elements of enablement. One is giving people more control over their lives; the other is to help them exercise this control effectively. In this sense, facilitation becomes an important skill for social workers, as enabling is not only about equipping people with the skills to control their lives. Sometimes, social workers also have to act as facilitators to help achieve this (Kieffer, 1984).

While we cannot stimulate or cognitively duplicate the fundamental dynamic of empowering learning, we can actively facilitate individuals, or citizen organisations, in their own critical and constructive examination of their efforts towards changing social and political situations. (p. 28).

Just by telling people they are empowered does not necessarily produce results, there must be strategies to enable employees to be and feel empowered. Empowerment needs to be supported by leaders; providing resources and training are also necessary, as these are seen as enablers of the empowerment process in practice.

It is instructive to learn that key themes emanating from the social work literature regarding empowerment that are largely missing in the management literature. These include access to information, collaboration and enablement, which are referenced as (Huq's Model B):

- Theme: Access to information
- Theme: Collaboration
- Theme: Enablement

Themes of empowerment emerging from the social work literature
Figure 2 (Huq's Model B)

The combined themes from the management literature and the social work literature formed A "*kaleidoscope of themes*", Huq's Model C (Huq, 2015, p. 209-10):

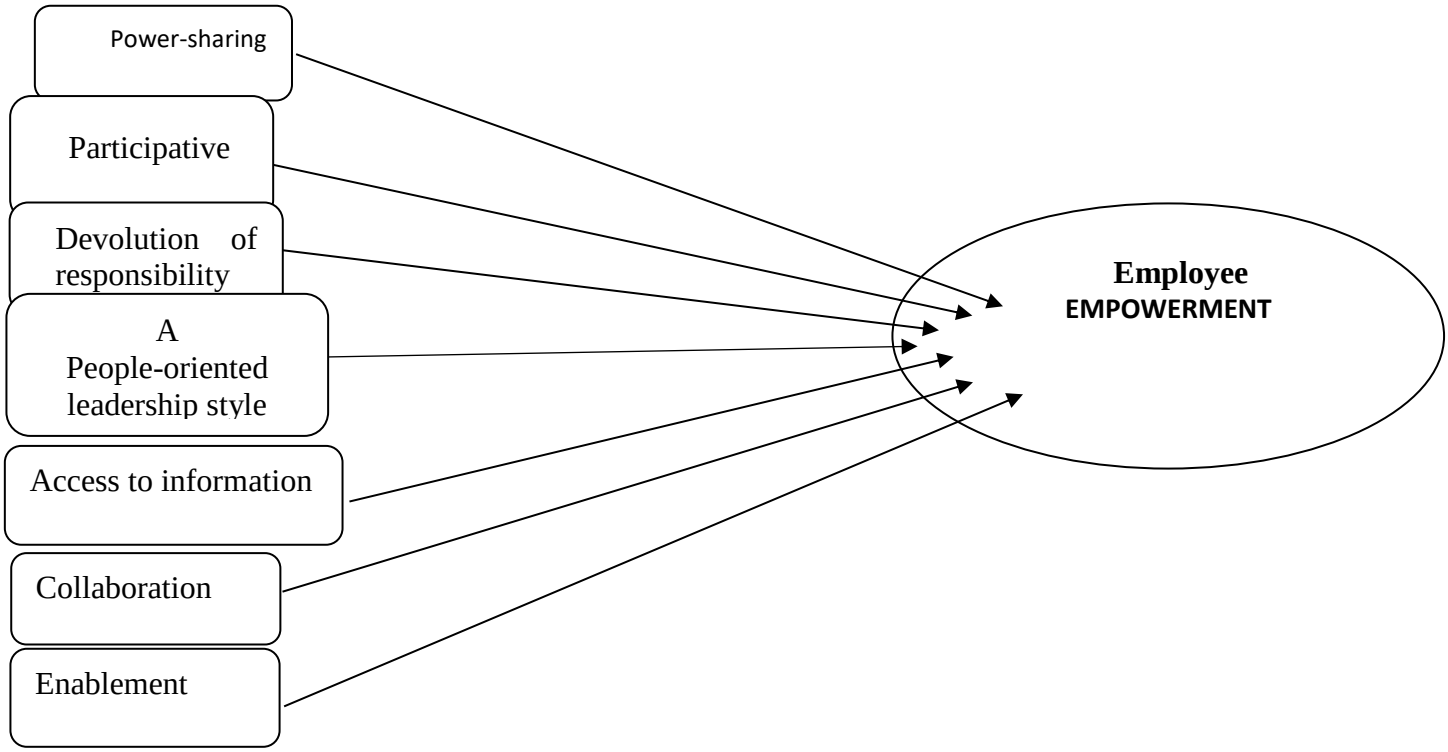


Figure 3. Huq's Model C: A "*kaleidoscope of themes*" of employee empowerment

CONCLUSION

This paper provides an insight into the knowledge derived from social work literature, and attempts to bridge some of the gaps in management literature with regards to empowerment. It assists in contributing and adding to the existing body of knowledge, particularly touching on themes that are largely missing in management literature, thus enhancing our understanding of empowerment.

The development of an empowering practice is regarded as an important "value" in social work and a "professional necessity" (Adams, 1996, p. xvi). Clearly, there is a high level of consensus in social work literature regarding a significant paradigm shift in practice, which is increasingly moving towards empowerment. In view of this, knowledge drawn from the social work discipline might inform management thinking, aid understanding about empowerment and help reduce some of the confusion and ambiguity in the management domain, thus bringing our attention to the need to develop an employee empowerment practice as a *professional necessity*.

This research attempts to develop knowledge by synthesising learning from reviewing both bodies of literature (management and social work). It presents the key themes of employee empowerment – power-sharing, participative decision-making, devolution of responsibility and a people-oriented leadership style – emerging from the management literature (Huq's

Model A), and combines them with access to information, collaboration and enablement, the key themes emerging from social work literature (Huq's Model B). These themes comprise Huq's Model C: A "*kaleidoscope of themes*" of employee empowerment**,** which was used to evaluate the employee empowerment strategies and practices of the two case organisations, Large and Small, in my research.

Note: A framework for the implementation of employee empowerment in organisations, Huq's Model of Employee Empowerment, (Huq's Model D) is offered by this author. Due to lack of space, Huq's Model D could not be included.[2] *

REFERENCES

Adams, R. (1990) *Self-Help, Social Work and Empowerment*. London: Macmillan.

Adams, R. (1996) *Social Work and Empowerment*. London: Macmillan.

Adams, R. (2003) *Social Work and Empowerment*. 3rd ed., New York: Palgrave Macmillan.

Beresford, P. and Croft, S. (1993) *Citizen Involvement, A Practical Guide for Change*. Basingstoke: Macmillan.

Braye, S. and Preston-Shoot, M. (1995) *Empowering Practice in Social Care*. Buckingham: Open University Press.

Breton, M. (1994) On the Meaning of Empowerment and Empowerment-Oriented Social Work Practice. *Social Work with Groups*, 17(3), 23-37.

Collins, D. (1996) Whither Democracy? Lost Debates in Management Empowerment. *Empowerment in Organisations*, 4(1), 12-24.

Conger, J.A. and Kanungo, R.N. (1988) The Empowerment Process: Integrating Theory and Practice. *Academy of Management Review*, 13(3), 471-482.

Dalrymple, J. and Burke, B. (1995) *Anti-oppressive Practice, Social Care and the Law*. Buckingham: Open University Press.

Denham, L. N. et al. (2002) The Meaning of Empowerment: the Interdisciplinary Etymology of a New Management Concept. *International Journal of Management Reviews*, 4(3), 271-290.

DuBois, B. and Miley, K.K (2005) *Social Work an Empowering Profession*. 5th ed., USA: Pearson Education Inc.

Frans, D.J. (1993) A Scale for Measuring Social Worker Empowerment. *Research on Social Work Practice*, 3(3), 312-328.

Freire, P. (1972) *Pedagogy of the Oppressed*. Harmondsworth: Penguin.

Friedmann, J. (1992) *Empowerment, The Politics of Alternative Development*. Massachusetts, USA: Blackwell Publishers.

Greasley, K. et al. (2005) Employee Perceptions of Empowerment. *Employee Relations*, 27(4), 354-368.

Greenberg, J. and Baron, R.A. (2000) *Behavior in Organisations, Understanding and Managing the Human Side of Work*. 7th ed., New Jersey: Prentice Hall, Inc.

Guterman, N.B. and Bargal, D. (1996) Social Worker's Perceptions of their Power and Service Outcomes. *Administration in Social Worke*r, 20(30), 1-20.

Hales, C. (2000) Management and Empowerment Programmes. *Work, Employment and Society*, 14(3), 501-519.

Heslin, P. (1999) Boosting Empowerment by Developing Self-efficacy. *Asia Pacific Journal of Human Resources*, 37(1), 52-64.

[2] Full details of Huq's Models A, B, C and D are available in *The Psychology of Employee Empowerment. Concepts, Critical Themes and a Framework for Implementation* (https://www.routledge.com/products/978140944890).

Huq, R. and Hill, F. (2005) An Attempt to Clarify Employee Empowerment by Drawing Knowledge from the Social Work Literature, Track: Organisational Behaviour, September, 8th Annual Irish Academy of Management Conference, Galway Mayo Institute of Technology, Ireland.

Huq, R. (2008) An Investigation of What Employee Empowerment Means in Theory and in Practice. PhD, Queen's University Belfast. UK.

Huq, R. (2010) *Employee Empowerment the rhetoric and reality*. Devon, UK: Triarchy Press.

Huq, R. (2015) *The Psychology of Employee Empowerment. Concepts, Critical Themes and a Framework for Implementation*. UK: Gower Publishing.

Keller, T. and Dansereau, F. (1995) Leadership and Empowerment: A Social Exchange Perspective. *Human Relations*, 48(2), 127-146.

Kieffer, C.H. (1984) Citizen Empowerment: A Development Perspective. *Prevention in Human Services*, 3 (2-3), 9-36.

Kirst-Ashman, K.K. (2003) *Introduction to Social Work and Social Welfare: Critical Thinking Perspectives*. USA: Thomson Learning.

Lashley, C and McGoldrick, J. (1994) The Limits of Empowerment, A Critical Assessment of Human Resource Strategy for Hospitality Operations. *Empowerment in Organisations*, 2(3), 25-38.

Lashley, C. (2001) *Empowerment: HR Strategies for Service Excellence*. Oxford, Butterworth-Heinemann.

Leiba, T. and Weinstein, J. (2003) Who are the Participants in the Collaborative Process and What Makes Collaboration Succeed or Fail? In: J. Weinstein, C. Whittington and T. Leiba (eds.). *Collaboration in Social Work Practice*. London: Jessica Kingsley, 63-82.

Logan, M.S. and Ganster, D.C. (2007) The Effects of Empowerment on Attitudes and Performance: The Role of Social Support and Empowerment Beliefs. *Journal of Management Studies*, 44(8), 5-15.

Lord, J. and Hutchinson, P. (1993) The Process of Empowerment: Implications for Theory and Practice. *Canadian Journal of Community Mental Health*, 12(1), 5-22.

Mattaini, M.A., Lowery, C.T. and Meyers, C.H. (1998) *The Foundations of Social Work Practice: A Graduate Text*. 2nd ed., Washington DC: National Association of Social Workers (NASW) Press.

Means, R., Richards, S. and Smith, R. (2003) *Community Care, Policy and Practice*. 3rd ed., Basingstoke: Palgrave Macmillan.

Morrell, K. and Wilkinson, A. (2002) *Perspectives on Practice. Empowerment: Through the Smoke and Past the Mirrors?* London: Routledge, Taylor and Francis.

Parsloe, P. (1996) *Pathways to Empowerment*. Birmingham: Venture.

Parsons, R.J. (1991) Empowerment: Purpose and Practice Principle in Social Work. *Social Work with Groups*, 14(2), 7-21.

Pearlstein, R.B. (1991) Who Empowers Leaders? *Performance Improvement Quarterly*, 4(4), 12-20.

Peters, T. (1994) *The Pursuit of Wow*! London: Macmillan.

Pierson, J. and and Thomas, M. (2002) *Collins Dictionary: Social Work*. London: Collins Publications.

Prestby, J.E. et al. (1990) Benefits, Costs, Incentive Management and Participation in Voluntary Organisations: A Means to Understanding and Promoting Empowerment. *American Journal of Community Psychology*, 18(1), 117-149.

Rappaport, J. (1987) Terms of Empowerment/Exemplars of Prevention: Toward a Theory of Community Psychology. *American Journal of Community Psychology*, 15(2), 121-148.

Seibert, S.E., Silver, S.R. and Randolph, W.A. (2004) Taking Empowerment to the Next Level: A Multiple Level Model of Empowerment, Performance, and Satisfaction. *Academy of Management Journal*, 47(3), 332-349.

Sheppard, M. (1995) *Care Management and the New Social Work: A Critical Analysis*. USA: Whiting and Birch.

Spreitzer, G.M. (1995) Psychological Empowerment in the Workplace: Dimensions, Measurement and Validation. *Academy of Management Journal*, 38(5), 1442-1465.

Spreitzer, G.M. (1996) Social Structural Characteristics of Psychological Empowerment. *Academy of Management Journal*, 39(2), 483-504.

Stanton, A. (1990) Empowerment of Staff: A Prerequisite for the Empowerment of Users. In: P. Carter, T. Jeffs and M. Smith, *Social Work and Social Welfare Yearbook 2*. Milton Keynes: Open University Press, 122-133.

Davies, M. (ed). (2000) *The Blackwell Encyclopaedia of Social Work*. Oxford: Blackwell.

Sykes. J.B. (ed). (1976) *The Concise Oxford Dictionary of Current English*, 6th ed., London: Oxford University Press.

Thomas, K.W. and Velthouse, B.A. (1990) Cognitive Elements of Empowerment: An "Interpretive" Model of Intrinsic Task Motivation. *Academy of Management Review*, 15(4), 666-681.

Thomas, M. and Pierson, J. (1995) *Dictionary of Social Work*. London: Collins Educational.

Thorlakson, A.J.H. and Murray, R.P. (1996) An Empirical Study of Empowerment in the Workplace. *Group and Organisation Management*, 21(1), 67-83.

Weinstein, J., Whittington, C. and Leiba, T. (2003) (eds.) *Collaboration in Social Work Practice*. London: Jessica Kingsley.

Wilkinson, A. (1998) Empowerment: Theory and Practice. *Personnel Review*, 27(1), 40-56.

Wilson, F. (1995) Managerial Control Strategies Within the Networked Organisation. *Information Technology and People*, 8(3), 57-72.

Zastrow, C.H. (2003) *The Practice of Social Work: Applications of Generalist and Advanced Content*. 7th ed., USA: Thomson Learning.

Zimmermann, M.A. (1990) Taking Aim on Empowerment Research: On the Distinction Between Individual and Psychological Conception. *American Journal of Community Psychology*, 18(1), 169-177.

APRIL 2017

International Journal of Economics, Finance and Business Management Studies

VOLUME 3 ISSUE 1 ISSN: 2397-6926 (Online)

FLE Learning

T: 0044 131 463 7007 **F**: 0044 131 608 0239

E: submit@flelearning.co.uk **W**: www.flelearning.co.uk