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Editorial

Journal of Econmics and Behavioral Studies (JEBS) provides distinct avenue for quality research in the ever-changing fields of economics & behavioral studies and related disciplines. Research work submitted for publication consideration should not merely limited to conceptualisation of economics and behavioral devlopments but comprise interdisciplinary and multi-facet approaches to economics and behavioral theories and practices as well as general transformations in the fileds. Scope of the JEBS includes: subjects of managerial economics, financial economics, development economics, finance, economics, financial psychology, strategic management, organizational behavior, human behavior, marketing, human resource management and behavioral finance. Author(s) should declare that work submitted to the journal is original, not under consideration for publication by another journal, and that all listed authors approve its submission to JEBS. Author (s) can submit: Research Paper, Conceptual Paper, Case Studies and Book Review. Journal received research submission related to all aspects of major themes and tracks. All submitted papers were first assessed by the editorial team for relevance and originality of the work and blindly peer reviewed by the external reviewers depending on the subject matter of the paper. After the rigorous peer-review process, the submitted papers were selected based on originality, significance, and clarity of the purpose. The current issue of JEBS comprises of papers of scholars from South Africa, Nigeria, Taiwan, Poland and Indonesia. Market orientation, employees job satisfaction, community based economy, banks stock prices, performance of high school students, consumer confidence & persuasibility, 3D experiential marketing and inflation, GDP, money supply, external financial flows & economic growth and determinants of foreign direct investment were some of the major practices and concepts examined in these studies. Current issue will therefore be a unique offer, where scholars will be able to appreciate the latest results in their field of expertise, and to acquire additional knowledge in other relevant fields.

Prof. Sisira R N Colombage, Ph. D.
Editor In Chief

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Market Orientation Determinants: Reflections from Academics in Universities of Technology in South Africa

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Abstract: Internationally, universities have come under increased pressure to respond to the changing market environment. A new axis for higher education institutions (HEIs) is a key to successful marketing, which lies in identifying the core business of institutions. Market orientation more closely reflects a philosophy that will not only serve to bring unity of purposes in HEIs, but serves as an indispensable tool that can assist HEIs to deliver their core business. The dynamics in the HE environment, the growth potential and the regulatory challenges make universities of technology (UoTs) ideal institutions for a study on the implementation of market orientation. It is against this backdrop that this paper considers the factors contributing to market orientation through the lenses of South African UoT academics through a quantitative study; 507 (n=507) academics participated in the study. Data are analysed through exploratory (to determine the factor structure) and confirmatory factor analysis (to confirm factor structure), descriptive and correlation analysis (to analyse the composition of the sample and to establish validity). Through the factor analysis procedure, seven factors were established, namely intelligence generation, inter-functional coordination, student-orientation, market intelligence dissemination, intelligence response design, intelligence response implementation and interdepartmental dynamics as a basis for operationalising the marketing orientation concept among UoTs. Through confirmatory factor analysis, the identified components seem to encapsulate the determinants of UoTs appropriately. From a practical standpoint, top management of universities could use these core market orientation factors to guide their strategic marketing plans and their strategic imperatives with the universities vision and mission in order to remain relevant and competitive. Future studies could expand these factors to provide a better understanding within HEIs in relation to their various stakeholders.

Keywords: *Higher education institutions, universities of technology, market orientation, factor analysis and academics*

1. Introduction

Competition, economic turbulence, government subsidy and reporting frameworks are underpinning elements, amongst others, of what public higher education institutions (HEIs) are contending with at present in South Africa as they can no longer rely on 'business as usual' (Altbach, 2010). This is hardly surprising. Giroux (2003) explains that universities are perceived as corporations influenced by business models of governance and reporting where accountability becomes the primary focus, as with corporations. In South Africa, higher education governance seems to be underpinned by the spirit of democracy, globalisation through internationalisation and a general shift towards market-orientation. These accumulating pressures of marketisation, globalisation and to some extent, the presence of private and corporate HEIs in South Africa, further gravitate towards public universities to produce graduates that are able to contribute to the labour market. In the past, public universities were accustomed to government financing, which is not adequate anymore in the present economic climate. This has ratcheted up the levels of complexity present within universities to find new sources of funds as public financing continues to wither, giving way to flows from market-related factors such as huge corporations (Mainardes, Raposo & Alves, 2014). This changing scenario has led researchers to examine how public HEIs can effectively improve their strategic intent to remain competitive, find innovative ways to withstand the economic vulnerability and at the same time serve their constituencies (Bowen & Fincher, 1996). These pressures have catapulted HEIs efforts in developing better and more efficient strategies in order to be recognised regionally, nationally and internationally as a university of choice (SARUA, 2012). Further, like comprehensive and traditional universities in South Africa, UoTs are called upon also to generate relevant and applicable knowledge and transfer high-level skills for the labour market (RSA, 2013:27).

Since 1994, numerous changes have taken place in the university landscape. Via a series of mergers and incorporations, South Africa now has 23 public universities. These comprise 11 traditional universities, six universities of technology (previously known as technikons) and six comprehensive universities (those that combine the functions of traditional universities and universities of technology). In 2014, two HEIs were introduced in the Northern Cape and Mpumalanga provinces, which were eventually transformed into universities, namely Sol Plaatje University and University of Mpumalanga (RSA, 2013: 27). However, with the advent of UoTs within the new government dispensation in 2004, stand-alone UoTs seem to be lonesome, while comprehensive and traditional universities trail blazer and some incorporating the best of both worlds in terms of infrastructure, facilities and staffing (Du Pre, 2009). In congruency with the White Paper for Post-School Education and Training and the Department of Education and Training's (DHET) primary focus is on promoting the improvement of quality and building appropriate diversity as well as to improve articulation between higher education institutions and between universities and other post-school institutions (RSA, 2013:130). Market orientation (MO) is seen as one of the ways to steer UOTs towards a more sustainable learning environment to become socially relevant. A source of inspiration often begins with a UoT marketing its services, courses, academics, infrastructure and resources to give credence to its vision and mission (Penceliah, 2004).

Although marketing literature is replete with definitions, the commonly cited are those of Narver and Slater (1990), and Kohli and Jaworski (1990). Narver and Slater (1990:21) define MO as "an organisational culture that effectively creates the behaviours necessary for the creation of superior value for buyers and superior performance for the business". On the other hand, Kohli and Jaworski (1990:6) define MO as an organisation-wide generation of marketing intelligence relating to current and future customer needs, dissemination of the intelligence across departments, and organisation-wide responsiveness to it". MO is also seen to have affected in many areas of HEIs such as having well-known curriculum with state-of-art technology to drive learning and learning environments. However, these imperatives come with costs associated with infrastructure, appropriate staff and top management with a management and marketing philosophy to succeed. Against this background of increasing competition, UoTs need to market themselves more explicitly (Hemsley-Brown & Oplatka, 2010).

As in other countries, HEIs in South Africa are faced with a dilemma where a significantly enormous sector is characterised by fierce competition for market share. HEIs were previously understood as experiences of a few but in the last two decades they have now become a normal part of the experiences of a larger and more diverse student population (Mitra, 2009). As a result, HEIs were compelled to find innovative ways to increase their competitive advantage as the sector went through an essential transformation. It has been argued that new HEI environments in South Africa replicate that which has driven business organisations to embrace marketing as a key strategic option due to radical transformation in South Africa. These transformations were promoted voluntarily by HEIs due to the pressures that exist today as a response to the demands of the market and orientation of university curricula. HEIs transformation management involved numerous aspects that had to be considered in addition to making educational, pedagogical and didactical decisions. These include, *inter alia,* social, cultural, ethical, environmental, technological, management and organisational considerations (Badat, 2007). Maringe and Foskett (2002:47) concluded that the universities of the region are at different stages of marketisation and their levels of marketing sophistication and understanding, which closely resemble those in the business sector, vary from institution to institution.

Whilst the concept of MO has emerged from conventional marketing (Mercer, 1998:2), it has evolved over time, with the most enduring theme being the centrality and sovereignty of stakeholders (Naude & Ivy, 1999:12). Kotler (2003:13) affirms that the key to achieving the organisational goals depends on determining the needs and wants of target markets and by delivering the desired customer satisfaction more effectively and efficiently than competitors deliver. A further stance cited within the definition necessitates institutions being socially responsible, embracing the notion of conducting business with the long-term interests of the consumers in an unambiguous manner (Batty, 2000:23). Essentially, the societal concept appeals to HEIs to be ethical and to embrace a social responsibility consciousness that rejects the idea of driving products and services at any cost. MO strategy thus relates to the development of an institution's appropriate marketing mix (Mazzarol & Souter, 1999:291). UoTs are the focus of the study as they also experienced radical transformation over the past decades. Being a new HE institution, UoTs provide a good pedestal for this study

as is they are major role-players in the knowledge and information technology environment. The present study is an attempt to fill part of the gap and open a window for research to understand the processes and factors involved in MO among UoTs. The primary objective of this study is to establish the factors that contribute to MO among UoTs in South Africa.

2. Market orientation

Despite the rapidly growing literature on MO, very few organisations actually implement the concept. One of the main problems contributing to this is that there is not a single unified concept of what is meant by MO. Hence, these diverse interpretations and definitions led to difficulties in the adoption and implementation of the concept. In the 1980s, efforts were undertaken to define or operationalise a MO focused on customers with very little on companies or the organisations (Venkatesan, 2000:1314). It is also interesting to note that there has been some differentiation in the literature on the use of terms market orientation and marketing orientation. The term market orientation, however, is preferred over marketing orientation as it emphasises an organisation-wide application of marketing (Kohli & Jaworski, 1990:6; Narver & Slater, 1990:21). Although the marketing literature is replete with definitions, the commonly cited are those of Narver and Slater (1990) and Kohli and Jaworski (1990). Narver and Slater (1990:21) define MO as "an organisational culture that effectively creates the behaviours necessary for the creation of superior value for buyers and superior performance for the business". On the other hand, Kohli and Jaworski (1990:6) posit, "market orientation is the organisation-wide generation of marketing intelligence pertaining to current and future customer needs, dissemination of the intelligence across departments, and organisation-wide responsiveness to it".

Hence, a proliferation of two overlapping streams of MO research was witnessed in the development and growing acceptance of the MO construct in the 1990s. The behavioural stream conceptualised by Kohli and Jaworski (1990:6) relates to specific actions or behaviours necessary to accomplish a market-orientated philosophy, while the cultural and organisational attitude stream conceptualised by Narver and Slater (1990:21) is reflective of the underlying characteristics of the organisations (Crittenden, Crittenden, Ferrell, Ferrell & Pinney, 2011:73). According to the former, MO is seen as a set of behaviours representing the implementation of the marketing concept and comprises market intelligence generation, market intelligence dissemination and responsiveness. The latter view MO as an organisational culture consisting of three components, namely customer orientation, competitor orientation and inter-functional co-ordination. Alhakimi and Baharun (2009:48) integrated these components of MO.

The complementary nature of these two perspectives emerges from the appreciation that unless an institution has developed a certain attitude, the strategies intended to maximise its adaptation to the market cannot be designed. Moreover, strategies designed to increase the degree of the institution's adaptation to the market cannot be executed unless the preoccupation to do so is acknowledged and appreciated (Avlontis & Grounaris, 1999). Therefore, the MO of HEIs is presented as a convergence of marketing and strategic management thinking (Binsardi, 2003). While there is no general agreement in the literature on the definition of MO (Rivera-Camino & Molero Ayala, 2010; Ross, Grace & Shao, 2012), the converged approach to MO, incorporating the MKTOR scale of Narver and Slater (1990) and the MARKOR scale of Kohli and Jaworski (1990), is used in this study to capture a comprehensive view of MO. This view is based on the components of MO identified by the authors among UoTs. In this context, MO components are regarded as means that enable managers to focus on activities, which ultimately influence the direction of an organisation and performance improvement (Tomaskova, 2008:14). These components are briefly discussed.

Intelligence generation: Intelligence generation entails the collection of information through formal and informal means about students, competitors and their actions, industry and business needs and preferences (Hemsley-Brown & Oplatka, 2010:209). It also includes information on the latest government regulations and technological changes taking place in the environment (Kaynak and Kara, 2002). HEIs in South Africa are obliged to submit annual reports on their performance while meeting the expectations of a range of stakeholders.

Intelligence dissemination: Intelligence dissemination refers to the process and extent of market information exchange within a given organisation (Kohli, Jaworski & Kumar, 1993). Part of the organisations ability to adapt to market needs is how effectively it communicates and disseminates market intelligence

among the functional areas (Lafferty & Hult, 2001:97). Unless market intelligence is communicated throughout the organisation, it is of little use in decision-making (Kohli & Jaworski, 1990). Effective dissemination of market intelligence, therefore, provides a shared basis for concerted actions by different departments (O'Connel, 2001:5).

Responsiveness to intelligence information: Responsiveness relates to the action taken in response to intelligence information that has been generated and disseminated. This requires a certain level of guidance from top management in the application of marketing tools to elicit favourable market responses. According to Kohli and Jaworski (1990), this can include, among others, selecting target markets, designing and offering products/services that cater for current and anticipated needs in a way that elicits favourable end customer response. In addition, employees need to be taught to recognise and respond to the significance of market intelligence. Unless an organisation responds to the information obtained, nothing is accomplished.

Customer orientation: Customer orientation represents superior skills in understanding and satisfying students and involves developing an understanding of the needs of current and future students (Day & Nedungadi, 1994). Institutions must have sufficient understanding of their target market and be able to create superior value for them continuously during the entire value chain (Day & Wensley, 1988). Through this approach, it would be possible to be more innovative and implement improvement for future students based on their anticipated needs (Hemsley-Brown & Oplatka, 2010).

Competitor orientation: For HEIs to be competitor-oriented, they must recognise both customers and competitors, since both appear in the marketplace (Hunt & Morgan, 1995). Narver and Slater (1990) argue that market-oriented organisations focus on not only customers, but also on competitors and this involves tracking competitor's actions ((Gray, Osborne & Mathear, 2000). The analysis of competitors' long-term capabilities, strengths and weaknesses is a key factor in determining MO and culture (Harrison & Shaw, 2004). HEIs must gather intelligence on the short- and long-term strengths, weaknesses, capabilities and strategies of both the key current and the key potential competitors (Day & Wensley, 1988).

Inter-functional coordination: The integration and coordination of all functions within a university is of paramount importance for the implementation of MO. This also applies to the integration and coordination of all the university's resources in creating superior value for target customers (Narver & Slater, 1990). In this regard, the cooperation of the different units of the university is required (Rivera-Camino & Ayola, 2010). For example, it is not only the sole responsibility of the recruitment department of the university to attract students, but it is the responsibility of every staff member in the university community. In doing so, faculties should also have full access to information about competition, the market environment and the community so that they too can play a role in attracting students.

3. Methodology

Data for the study were collected from academics in five of the six UoTs in South Africa using a quantitative research approach through a structured questionnaire.

Sample: The sample comprised full-time academics from the participating UoTs, employed for more than three years, who were also *au fait* with the functioning of their institutions. Academics were chosen, as it appeared that they were a desirable segment for determining the underlying dimensions of MO in their respective units and institutions. A non-probability convenient sampling technique using a cross-sectional survey was used in line with similar previous studies (Ivy, 2001; Rindfleish, 2003; Maringe, 2005; Zebal & Goodwin, 2012).

Measuring instrument: A structured questionnaire was chosen as a measuring instrument as it is simple to administer and reduces the variability in the results that may be caused by differences in other types of interviews (Malhotra, 2010). An instrument developed by Zebal (2003) and further modified for university context by Ma and Todorovic (2011) was used as a basis of the study. These items embraced variables contained from the scales developed by Narver and Slater (1990), and Kohli and Jaworski (1990). Minor changes in wording, where applicable, were affected in order to fit the current research content and purpose.

The items on the components of MO were based on a five-point Likert scale with one denoting strongly disagree to five denoting strongly agree. In addition, the demographic profiles of respondents were collected.

Data collection and procedure: A self-reported questionnaire was distributed to a convenient sample. An enclosed letter, clearly outlining the purpose of the study, was attached to the questionnaire. Of the 1250 questionnaires that were distributed, 518 questionnaires were returned of which 11 were incomplete and discarded. A total of 507 questionnaires were used for data analysis finally. Various ethical considerations were adhered to in administering the questionnaire. The participants' rights to anonymity, confidentiality, privacy or non-participation, protection from harm and victimisation were respected.

Reliability, validity and accuracy analysis: For the purpose of determining the reliability of this study, Cronbach alpha coefficients and composite reliability (CR) values were computed for the measurement scale (Table 1). Both reliability measures were used with a threshold value of 0.7 (Malhotra, 2010). Furthermore, a cut-off point of 0.50 on the item-to-total correlations was maintained. The Cronbach alpha values ranged from 0.817 to 0.926, which indicates a high level of reliability (Nunnally, 1978). Convergent validity of the measures was then assessed by calculating the factor loadings, using exploratory factor analysis. Table 2 shows that the standardised loadings ranged from 0.513 to 0.826, which were above the commonly accepted minimum value of 0.50 (Teo & King, 1996). Discriminant validity of the measures was assessed consistent with Jayanti and Burns (1998). This analysis technique involves correlating all the measures used as well as measuring the coefficient correlations against the alpha coefficients of the scales. As seen in Table 1, no correlation coefficient was higher than the alpha coefficient of the scales. These outcomes confirm the discriminant validity of the scales used. Discriminant validity was also assessed by checking if the AVE value was greater than the highest shared variance (SV) (Fornell & Larcker, 1981). In Table 1, all AVE values were higher than the SV, further affirming discriminant validity.

Table 1: Reliability, validity and accuracy analysis statistics

Market orientation factors	Cronbach alpha item-total	Alpha value	CR	AVE	Highest SV	Correlations						
						MO1	MO2	MO3	MO4	MO5	MO6	MO7
MO1	0.830	0.926	0.926	0.533	0.47	1.00	.48**	.63**	.57**	.68**	.59**	.65**
MO2	0.644	0.904	0.906	0.660	0.31	.48**	1.00	.56**	.46**	.35**	.55**	.39**
MO3	0.756	0.840	0.878	0.554	0.41	.63**	.56**	1.00	.54**	.50**	.61**	.51**
MO4	0.654	0.803	0.806	0.501	0.32	.57**	.46**	.54**	1.00	.45**	.53**	.42**
MO5	0.715	0.859	0.867	0.686	0.47	.68**	.35**	.50**	.45**	1.00	.47**	.58**
MO6	0.703	0.817	0.819	0.531	0.37	.59**	.55**	.61**	.53**	.47**	1.00	.41**
MO7	0.671	0.910	0.911	0.775	0.42	.65**	.39**	.51**	.42**	.58**	.41**	1.00

CR=composite reliability; AVE=average variance extracted; SV=shared variance.
** Correlation is highly significant at the 0.01 level (2 tailed).
MO=market orientation. Item total = Item total correlations

4. Results

Sample profile: There were more male academics (n=220; 43%) compared to female academics (n=287; 57%) in the sample. The majority of the respondents were between 30 to 39 years (n=172; 34%), followed by the age group between 40 and 49 years (n=160; 32%), the age group between 30 to 39 years, (n=81; 16%), the age group between 50-59 years, (n=66; 13%) and the age group of over 60 years, (n=28; 5%). Junior lecturers comprised majority of the sample (n=246; 49%), followed by those academics who were senior lecturers/associate professors (n=209; 41%). Heads of departments (HODs), deans/professors comprised the remainder of the sample (n=52; 10%).

Exploratory factor analysis (EFA): EFA was conducted on the data set to identify the different factors that contribute to market orientation practices and usage within UoTs. The appropriateness of factorability on the data set was first established. This was accomplished through the Kaiser-Meyer Olkin (KMO) and the Bartlett's test of sphericity measures of sampling adequacy. The KMO test yielded sampling adequacy of

0.955, which is within the acceptable range of between 0.5 and 1.00 (Malhotra 2010) and the Bartlett's test of sphericity results revealed significant chi-squares of 12537.054 (df=630; p=0.000<0.05). The two tests affirmed that patterns of correlation are compact and that factor analysis is appropriate for use on the data set (Kaiser, 1974:35). The percentage of variance explained (>50%) and an eigen value (equal to or greater than 1) criterion guided the extraction of factors (Bradley, 2010; Huck, 2012). The procedure resulted in seven extracted factors, which are reported in Table 2.

Table 2: Factor loading matrix

Description	Factors MO 1	MO 2	M0 3	MO 4	MO 5	MO 6	MO 7
Collection of information about the social and economic situation	**.615**	.140	.231	.335	.299	-.055	.024
Collection information about other disciplines and departments	**.630**	.153	.229	.390	.231	.006	-.040
Profile changes demanded by the labour market	**.577**	.137	.155	.394	.225	.123	.092
Review course development efforts in line with industry	**.627**	.139	.152	.233	.126	.217	.269
Student satisfaction disseminated at all levels	**.611**	.175	.175	.209	.002	.227	.246
Coordination of academics activities	**.693**	.163	.212	.031	.033	.278	.197
Dissemination of industry satisfaction with our graduates at all levels	**.680**	.096	.107	.038	.155	.200	.253
Survey of our industry	**.673**	.081	.166	.116	.209	.193	.248
Inter-functional meetings to analyse important market information	**.570**	.218	.135	.150	.336	.154	.246
Integration of business processes and departments	**.529**	.321	.197	.112	.362	.174	.108
The various departments informed about peer departments of other universities	**.570**	.232	.198	.103	.361	.154	.212
Prioritising meeting with students	.135	**.609**	.308	.076	.216	.153	.081
Dedication of departments in serving the needs of students	.140	**.765**	.215	.109	.158	.142	.055
Student learning experience contribution	.175	**.819**	.195	.173	.088	.164	.110
Sharing of resources by departments	.185	**.826**	.112	.158	.061	.164	.108
Talking to other department members	.176	**.791**	.123	.209	.061	.164	.166
Programmes response to existing demands	.256	.272	**.599**	.142	.289	.275	.169
Research helps to solve problems in society	.267	.206	**.639**	.223	.298	.217	.142
Research covers societal and business demand	.329	.147	**.638**	.212	.307	.162	.179
Monitoring and assessing commitment to serving students' needs	.230	.168	**.656**	.264	.198	.236	.171
Strategies driven by the goal of enhancing students learning experience	.166	.195	**.653**	.033	-.012	.025	.034
Competitive advantages based on understanding of students needs	.100	.306	**.513**	.199	-.044	.256	.264
Collection of information about other disciplines and departments off	.270	.239	.182	**.675**	.075	.151	.079
We collect information about training and research carried out in private universities	.158	.237	.134	**.662**	-.050	.207	.124
Academics spends time discussing students' future needs	.148	.158	.096	**.737**	.193	.140	.190

Held meetings with those who hire our students	.160	.046	.152	**.677**	.276	.128	.052
Flexibility in adapting or changing course material	.291	.188	.057	.248	**.632**	.261	.144
Held meetings to discuss the most relevant research issues	.349	.122	.220	.136	**.708**	.108	.247
Adapting teaching and research work to the needs of business and industry	.312	.129	.215	.163	**.711**	.070	.252
Rapid distribution of information	.223	.223	.305	.135	.042	**.658**	-.024
Relevant marketing information distribution to all	.207	.173	.234	.190	.106	**.720**	.090
Review of the changes in the higher education	.246	.278	.101	.200	.138	**.660**	.141
Students complaints are addressed	.246	.210	.067	.212	.392	**.561**	.104
Prevailing atmosphere	.337	.183	.217	.159	.200	.098	**.731**
Working relationship in various departments	.349	.146	.126	.181	.219	.069	**.788**
Major market information spreading	.359	.169	.204	.112	.226	.086	**.731**
Eigen value	15.829	2.406	1.525	1.312	1.195	1.074	1.012
Total variance explained	44.053	6.683	4.235	3.645	3.319	2.985	2.811
Cumulative variance explained	44.053	50.735	54.971	58.615	61.935	64.919	67.731

MO 1=Market intelligence generation; MO2=Inter-functional coordination; MO3=Student orientation; MO4=Market intelligence dissemination; MO5=Intelligence response design; MO6=Intelligence response implementation; MO7=Inter-departmental dynamics.

Measurement model assessment through confirmatory factor analysis (CFA): After the extraction of factors through an exploratory factor analysis procedure, confirmatory factor analysis (CFA) using AMOS 21.0 was performed to assess the usefulness of the factors and validate the measurement model. Model fit (misfit) is assessed using indices suggested by Bagozzi and Yi (2012) as follows: chi-square χ^2/df (<0.3), cmin/df (<0.3), increment fit index (IFI>0.90), comparative fit index (CFI>0.90) and the root mean square error of approximation (RMSEA<0.08).

Discussion: Table 2 displays the items comprising the MO measure for UoT settings. The factor structure shows seven elements of MO. These seven components were labelled market intelligence generation, inter-functional coordination, student orientation, market intelligence dissemination, intelligence response design, intelligence response implementation and inter-departmental dynamics.

Factor 1, M**arket intelligence generation**, (eigenvalue=15.829), accounts for approximately 44 percent of the total explained variance and consisted of 11 items with factor loadings ranging from 0.529 to 0.693. The factor relates to organisational activities that accompany the generation of market information as a source of ideas in implementation of the marketing concept across departments and individuals within the universities. The starting point of a market-oriented university is market intelligence philosophy that encompasses all the informal as well as formal means of generating market intelligence about students, competitors, industry and business needs and preferences (Penceliah, 2004:186; Hemsley-Brown & Oplatka, 2010:209). This includes monitoring current and prospective students, marketing activities implemented by other institutions, employing organisations and detecting fundamental shifts in higher education environments (Asaad, Cohen & Melewar, 2008:4). The generation of market information can be fostered through competitor orientation and customer orientation (Carr & Lopez, 2007:13). Market intelligence includes, amongst others, systematic methods of organising and retrieving current market information, intelligence network to collect and share information with everyone within the institution, systematic research approach to gather new market information, and process of analysing information for decision-making purposes (Drysdale, 1999:28-29). However, it is important to note that intelligence generation is not the exclusive responsibility of a marketing department only and unless market intelligence is communicated throughout the organisation, it becomes of little use in decision-making. This calls for UoTs to adapt to market needs through communicating and

dissemination of market intelligence amongst functional areas within the university (Gray, Osborne & Mathear, 2000:432).

Factor 2, I**nter-functional coordination**, (eigenvalue=2.406), accounts for approximately 7 percent of the total explained variance and consisted of five items with factor loadings ranging from 0.609 to 0.826. Inter-functional coordination relates to the capability of a university to achieve the cooperation of the different units in market intelligence generation (Rivera-Camino & Ayola, 2010:5). This can be achieved through integration and coordination of the UoTs resources (Hemsley-Brown & Oplatka, 2010:211). MO stresses inter-functional coordination because coordination and teamwork among different functional units and employees is necessary for efficient and effective business administration in UoTs (Voon, 2008:220). Through this approach, it would then be possible to be more innovative and implement improvement plans for future students based on anticipated needs. The key indicator of this characteristic is the total commitment of all members to a marketing philosophy (Drysdale, 1999:28). In developing effective inter-functional coordination, the marketing unit or any other advocate department must be extremely sensitive and responsive to the perceptions and needs of all other departments in business. Typical behaviour includes all departments and teams sharing market information, integrating strategies and willing to share resources in order to offer superior value to students and other stakeholders. Hence, the mechanism enables the necessary strategic orientation to work jointly.

Factor 3. S**tudent orientation,** (eigenvalue=1.525), accounts for approximately 4 percent of the total explained variance and consisted of six items with factor loadings ranging from 0.513 to 0.656. At the simplest level, universities can regard students as their primary focus as they are the ones who enter into relationships with HEIs (Naude & Ivy, 1999:127). Lindsay and Rodgers (1998:167) affirm that students are the ones who receive the benefit of the product or service and they are the ones who put their hands in their pockets to pay for it. Both of these conditions can apply to the student as well as the employing organisation. Therefore, the employing organisation can also be perceived as the university's customer. Consequently, both the student and the employing organisations are the principal customers of HEIs (Asaad et al., 2008:3). However, in this regard the role of other stakeholders like society and government should not be disregarded due to the influential role they play towards student's wants and preferences. Despite the unresolved debate whether or not students should be considered as customers, Rivera-Camino and Ayala (2010:4) maintain that customer orientation should be considered as an important component of market orientation.

Factor 4. M**arket intelligence dissemination,** (eigenvalue=1.312), accounts for approximately 4 percent of the total explained variance and consisted of four items with factor loadings ranging from 0.662 to 0.737. The intelligence generated through market intelligence generation, needs to be disseminated throughout the university both hierarchically and horizontally. While information is readily available, most HEIs find it difficult to disseminate market intelligence that will assist them to develop a quality image, which is a prerequisite to achieve sustainable competitive advantage and a university of choice (Caruana, Ramaseshan & Ewing, 1988:5). HEIs must then adapt to market needs through communicating and dissemination of market intelligence amongst functional areas (Gray et al., 2000). A flexible structure in an organisation could increase the flow of the information and push the decision-making to places where changes are made (Alhakimi & Bahuran, 2009:45) via cross-functional teamwork, flatter hierarchies and employee empowerment (O' Connel, 2001:5).

Factor 5. I**ntelligence response design**, (eigenvalue=1.195) accounts for approximately 3 percent of the total explained variance and consisted of three items with factor loadings ranging from 0.632 to 0.711. Response design takes the form of selecting target markets, designing services that cater to current and anticipated needs and promoting the services in a way that elicits favourable customer response (Zebal & Goodwin, 2012:345). Response design is one of the aspects relating to a successful response to the information generated about the market (Lings & Greenly, 2005:299) and involves the planning of programmes based on the needs of students, community, business and industry as a result of generated and disseminated market intelligence (Penceliah, 2004:200). An organisation can generate intelligence and disseminate it internally, but unless it responds to market needs, very little is accomplished (Kohli & Jaworski, 1990:6). Responsiveness is another behavioural element of MO, which refers to the action taken in

response to intelligence that is generated and disseminated such as taking action based on the intelligence (Zebal, 2003:53).

Factor 6. I**ntelligence response implementation,** (eigenvalue=1.074), accounts for approximately 3 percent of the total explained variance and consisted of four items with factor loadings ranging from 0.661 to 0.720. Response implementation involves the application of programmes geared towards the student or industry as a result of response design (Penceliah, 2004:223). Responding to changes taking place in higher education will in turn have an effect on generating further information. The core business of any HEI is its development of the curricula as a response to market intelligence generated and disseminated for the universities. Universities, therefore, need to design and align their marketing to reflect their core purpose in developing curriculum (Maringe, 2005:572). Finally, responsiveness addresses the execution of a plan of action or market-focused strategy (Zebal & Goodwin, 2012:345) and means implementing and altering products and services in response to customers current and future needs (Zebal, 2003:57).

Factor 7. I**nter-departmental dynamics** (eigenvalue=1.012), accounts for approximately 3 percent of the total explained variance and consisted of three items with factor loadings ranging from 0.731 to 0.788. This factor relates to manifestations of cohesion between staff members, which subsequently influences MO behaviours (Caruana et al., 1988:57). Interdepartmental dynamics is linked closely to the intensity of MO within an institution, which is understood to entail the existence of affinity and understanding among departmental members (Flavian & Lozano, 2006:456). Trueman (2004:8) argues that the existence of cohesion facilitates the generation of market information, its dissemination within the organisation and enables the development of a rapid response to information.

Acceptable model fit was confirmed by the chi-square (χ^2) value of 1698.853 with 573 degrees of freedom at a p value=0.000 <0.05; CMIN/DF = 2.965; IFI=0.908; CFI=0.908 and RMSEA = 0.062. The CFA results provided revealed that the overall fit of the measurement model was satisfactory (Fornell & Larcker, 1981; Browne & Cudeck, 1993) as it achieved the suggested thresholds, suggesting that the model converged well and could be a plausible representation of the empirical data structures collected among UoTs in South Africa.

Research contributions and implications for practioners: The study contributes a new direction in the research on MO by opening up a debate on the importance of MO practices in UoTs and identifying the components of MO that can be operationalised among UoTs in South Africa. For practitioners and academics, the study presents a list of factors that they may wish to consider in attempting to generate a greater degree of MO among UoTs. It is also interesting to note that the measures/scales applied fit very well to the UoTs context assessed by the statistical measures of accuracy tests identified in the study, which should provide avenues for researchers to explore components of MO within the HE landscape further. The support of those making strategic decisions is needed to garner the necessary support to other employees in UoTs, especially top and senior management's buy-in and support. To this end, managers and marketers are encouraged to acquire skills, knowledge, experience and other capabilities continuously, which will enable them to build up and attain higher levels of MO. Top management as well as academics need to optimise the effectiveness of their MO strategies. An iterative feedback mechanism needs to be designed in order to evaluate the success of the strategy. All this could be achieved by deliberate articulation of organisational commitment to the principles of MO.

Limitations and future research opportunities: The use of academics only as respondents makes it difficult to generalise the findings of the study to other university categories or environments such as traditional or comprehensive universities in South Africa. As a result, the respondents used in the study are not representative of the broader South African HEIs academic population. The adoption of a non-probability convenience sampling technique in selecting the sample increased the study's susceptibility to sampling bias. To enhance external validity, future research is warranted to obtain a representative sample from various respondents including non-academics. A single cross-sectional research design used in the study lacked the depth of a longitudinal study. South African HEIs should engage in longitudinal studies to establish the causal relationships among the variables and improve their understanding of their institutions' customers, stakeholders and competitors needs in order to implement MO. Furthermore, instead of adopting a purely quantitative design, a mixed method could be considered to refine the results of future studies on this topic. A

qualitative design may be helpful in making follow-ups to the responses provided in the quantitative design and it will be worthwhile to utilise both qualitative and quantitative paradigms to supplement each other.

5. Conclusion

The purpose of this paper was to identify the MO constructs for UoTs by bringing forward the concept of MO in South Africa, applied through HE. While research on MO applied in HE in SA is still developing, the study provides an opportunity for UoTs to improve the idea of MO by embracing the concept. This academic enquiry explored and highlighted the significance of MO components on HE. The findings of the study indicated that the MO of UOTs in South Africa was fundamentally determined by seven distinct, but interrelated, factors within the institutions, namely market intelligence generation, inter-functional coordination, customer orientation, market intelligence dissemination, intelligence response design, intelligence response implementation and interdepartmental dynamics. Most of these factors delineated in this study, are largely controllable by senior executives and marketing operatives, thereby allowing a purposeful implementation of MO. Future studies could expand the factors that were used in this study to better understand the implementation of MO and the relationship between its components. MO has an important role to play, as it is a boundary-spanning institutional function, through its constant interface with external environments at large and with customers, competitors and channel members in particular.

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Determinants of Employees Job Satisfaction in Polish Enterprises–Findings of Empirical Studies

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Abstract: Employees' job satisfaction is influenced by a number of diverse determinants which are related with the work performed by an employee, depend on individual characteristics of an employee, and result from the features of the environment in which a given organisation is functioning. Job satisfaction affects the functioning of an enterprise, its competitiveness and profitability, and high level of employees' satisfaction may be a key factor impacting the success of the whole organisation. The aim of the paper is to show which determinants of job satisfaction, and at what level, can be distinguished among employees of Polish enterprises, depending on selected variables. A questionnaire survey conducted in 2015 on a group of 158 enterprises enabled identification of statistical dependences and verification of formulated research hypotheses which defined, among other things: the impact of the determinants of employees' job satisfaction depending on the age of a company, its size, or period of employment of its employees.

Keywords: *Employees' job satisfaction, satisfaction determinants, Polish enterprises*

1. Introduction

Job satisfaction is a central concept in organizational psychology, and research on its determinants and outcomes has strong practical relevance for management of human resources (Hauff, Richter, Tressin, 2015). Job satisfaction is critical to life satisfaction, to the quality of employees' working life, and to their performance and organizational commitment (Moniarou-Papaconstantinou & Triantafyllou, 2015). Many entrepreneurs attach great importance to satisfaction of an employee, assuming that increased satisfaction will lead to increased work effectiveness. The concepts presenting how job satisfaction is shaped indicate the role of both an organisation and working environment in this process as well as factors that exist in an individual and affect the level of satisfaction. The subject of job satisfaction attracts undiminished interest of both researchers and management practitioners. This results in a number of definitions of the concept of job satisfaction provided by literature. In general, employees' satisfaction is a positive attitude to their enterprise, co-workers and work they do. One of the most widely used definitions in economic literature is that of Locke (1976), who defines job satisfaction as "a pleasurable or positive emotional state resulting from the appraisal of one's job or job experiences". Thus, job satisfaction refers to positive or/and negative feelings and attitudes towards work, shaped by a number of factors connected with one's work, individual factors connected with the person of an employee and characteristics of the environment in which a specific organisation is functioning.

It is pointed out that employees with higher job satisfaction show more initiative, less reluctance to innovations, are more loyal to the company for which they are working, create a specific organisational climate and have a lower level of absence (Bartkowiak, 2009). This impacts not only profitability but also competitiveness of an organisation operating in the conditions of globalisation (Mynarzová & Kaňa, 2014). Therefore, it is very important to examine job satisfaction and relationships between the different elements of work and job satisfaction. The aim of this paper is to show which determinants of job satisfaction, and at what level, can be distinguished among employees in manufacturing, services and commercial enterprises, depending on the size of a company, how long it has been functioning on the market and how long an employee has been working in a given company. Its aim is also to define possibilities of employees' personal development in various groups of enterprises. The inference performed in this paper is based on findings of questionnaire surveys conducted in 2015 on a group of 158 enterprises carrying out economic activity across Poland.

2. Employees' Job Satisfaction and its Determinants in the Process of Functioning of an Organisation - Selected Aspects

The importance of work in the life of a human being is huge and undeniable, and job satisfaction is one of the most important elements affecting employees' satisfaction, their performance and effectiveness (Potkany, 2008; Potkany & Giertl, 2013). Bartkowiak stresses that satisfaction is an element of a human being's motivation in a broader sense or well-being, which results from fulfilment of their needs and aspirations (Bartkowiak, 2009). Job satisfaction has turned out to be closely connected with life satisfaction (see Judge, & Watanabe, 1993). In general, job satisfaction is defined as a positive attitude reflected in an employee's opinion about the work they do and its character (Mincu, 2015). Koys (2003) defines job satisfaction as a way in which an employee perceives and assesses their work, whereas Bernhardt, Donthu and Kennett (2000) claim that job satisfaction refers to more personal feelings and involves a personal evaluation of working conditions as well as results of performed work. According to Herzberg (1987), satisfaction is achieved through the character of work, while dissatisfaction results from work affecting factors, such as remuneration (Conte &Landy, 2010). Employees' satisfaction affects effectiveness and profitability of an enterprise, and thus implementation of long-term plans of every organisation (Rostkowski, 2004). Research confirms a positive relationship between employees' job satisfaction and their effectiveness, which impacts not only employees' effectiveness at work but also the effectiveness of the whole organisation (Koys, 2001). As Sienkiewicz (2010) stresses, market success in a turbulent environment requires employees that are ready to learn (Gorzeń-Mitka, 2013), as this helps them respond to changes, be creative and easily embrace new work methods or tools. Academic literature also offers empirical studies of the business sector which show a positive relationship between a learning organisation and job satisfaction of its employees (Kurland & Hasson-Gilad, 2015).

According to Saari and Judge (2004), job satisfaction is a result of a number of factors resulting e.g. from employees' conduct and positive or negative attitude to work. Spector (1997) stresses that job satisfaction that affects employees' satisfaction depends on a range of factors that include remuneration, additional benefits, leadership style, supervision in an organisation, character of the work, as well as personality of co-workers. Steers and Mowday (1981) emphasize that every employee will have a slightly different set of expectations about their work, depending on their own values and needs in a given moment. Therefore, satisfaction factors indicated by employees will vary depending on the character of the organisation itself, the environment in which it functions as well as personal objectives and preferences of an individual employee. Job satisfaction is determined by the microenvironment, including political, social, economic and cultural environment (Kaasa, 2011; Tomski, 2011), as it is hard to separate organisations functioning in a certain environment from their employees. Another factor influencing satisfaction of an organisation's employees is the organisational culture existing in that enterprise. Some studies show a positive relationship between job satisfaction and organisational culture (Lovas, 2007; Fleskova & Podolcova, 2010; Sipa, 2015) and between running a socially responsible business and satisfaction of employees of organisations implementing sustainable programmes (Fleskova, 2011; Chudy, 2012).

The significance of factors affecting employees' satisfaction can be connected, as Springer (2011) shows in his research, with the position held and type of performed work. A different set of factors will be important and relevant for the lowest-level employees than for specialists or independent employees. Therefore different employees will have different preferences concerning working conditions and will choose work based on different features (Shin, Koh & Shim, 2015). The choice of the right profession, position at work or work character has a direct impact on an employee's satisfaction, and their criteria for choosing the future job should correspond to their expectations or be closely correlated with them. Ellickson, and Logsdon (2002), in their research into job satisfaction factors, confirmed that there are no differences between sexes as far as general job satisfaction is concerned. The research did not find out a different range of factors for working women and men. Based on multinational research, Hauff, Richter, Tressin (2015) stress that job satisfaction factors will vary across countries. Some factors have equal impact on job satisfaction in different countries, e.g.: high income, good relations with co-workers, whereas other factors vary across the countries examined, e.g. security or chance of promotion. Sense of security, as an important determinant of job satisfaction, can both increase and decrease satisfaction level (Green & Tsisianis, 2005).

An important factor affecting job satisfaction is good relations with superiors, who should strive to eliminate employees' discomfort and distrust. Good relations with superiors can affect performance and mutual relations, which in turn leads to better communication in an organisation (Ellickson, Logsdon, 2002). Research by Quintan, Park and Cabrera (2015) shows that the leader of an organisation is significant for and affects employees' satisfaction. A leadership style affects not only the economic result of an enterprise's activity, but also employees' satisfaction, which in turn affects the success of the whole organisation (Havig at el., 2011). The personality of the leader in an organisation, their leadership style, can impact the feelings of employees, who, having different personalities may vary in how they feel job satisfaction. (Yun et al. 2007). Employees' involvement, as another factor impacting success of an organisation, can also depend on employees' job satisfaction. Research by Bhuvanaiah and Ray (2014) shows that the issue of employees' involvement is closely connected with the success of an organisation and practically results from job satisfaction. An uninvolved employee is hardly likely to feel job satisfaction. Employees' job satisfaction can also be connected with how long they have been employed in a given company, as studies indicate that people who have worked in a certain company for a shorter period of time show a higher level of satisfaction with their work compared to those working longer than 15 years (Tomovska-Misoska at el., 2014). Further, job satisfaction has a negative impact on staff's voluntary rotations, which affect operating expenses, especially in enterprises using the latest technologies (Kessler, 2014). There is also a significant difference between part-time and full-time employees in terms of job satisfaction. Full-time employees show a higher level of job satisfaction compared to part-time or temporary employees (Giannikis & Mihail, 2010).

Research into factors affecting employees' job satisfaction also focused on examining job satisfaction factors of employed and self-employed persons. Research of Blanchflower (2004), Hamermesh (1977), Clark (1996), Clark at el. (1998) among others, shows that self-employment usually gives more pleasure and satisfaction compared to employed persons. A significant role is played here by advantages of self-employment, such as flexible working hours, freedom to take decisions, or lack of a direct superior. One should however bear in mind that not every employed person can function well as a self-employed person, due to the characteristics of self-employment listed as the advantages of self-employment (Lemańska-Majdzik, 2009). It has also been shown that processes taking place in an organisation, understood as a sequence of interrelated actions taken by a specific employee in an organisation to bring intended effects for the enterprise, have an impact on their job satisfaction, due to e.g. the use of technology. It is also important in this case whether given business processes are being implemented in an organisation or only improved (Bala & Venkatesh, 2013). A different range of determinants will be indicated by employees who, working in an organisation, are implementing a system of process management.

3. Methodology and characterisation of the study group

The aim of the survey was to show job satisfaction determinants of employees in manufacturing, services and commercial enterprises operating across Poland, depending on the size of a company, how long a company has been functioning on the market and how long an employee has been working in a given company, and to define the possibilities of employees' personal development. Given the main aim of the paper, the following research hypotheses have been formulated:

- H1 - in smaller enterprises, job satisfaction determinants have a stronger impact on the increase in a job satisfaction level than in larger companies;
- H2 - in enterprises that have been functioning on the market for a shorter period of time, job satisfaction determinants have a stronger impact on the increase in a job satisfaction level than in enterprises with a longer history of operation;
- H3 - how long an employee has been working in a given enterprise impacts their selection of job satisfaction determinants.

A statistical analysis of a survey results enabled full or partial verification of the hypotheses formulated. The survey used a purposing sampling. It was conducted in Q1 of 2015 on a group of 158 employees of small, medium-sized and large enterprises operating across Poland. The research tool was a survey questionnaire containing 13 closed questions. The sample was not fully representative, therefore the survey should be treated as pilot research that can be used to further explore the issue in the future by conducting representative research. However, the size of the sample allows initial conclusions to be drawn and

regularities to be identified. The findings presented in the paper are only a fragment of empirical studies conducted. In order to determine factors affecting employees' satisfaction in various groups of enterprises, 9 selected determinants were diagnosed. For the analysis of the gathered material, a 5-level Likert scale was used, which allowed the authors to obtain a more detailed opinion on the impact of determinants on employees' satisfaction. Relationships between the variables: number of employees, how long a company has been functioning and how long an employee has worked in a given enterprise, and the answers contained in the survey questionnaire on rank scales, i.e. an employee's assessment of the enterprise's position on the market, assessment of an employee's chance to improve their qualifications and selected determinants of job satisfaction, were analysed by calculating Kendall tau rank correlation coefficients. Test probability $p<0.05$ was considered as significant, whereas test probability $p<0.01$ was considered as highly significant. The results were analysed using the statistical application PQStat ver. 1.6.

The survey shows that very small companies, i.e. employing up to 9 people, constituted the biggest group of the enterprises whose employees indicated factors impacting job satisfaction, accounting for almost 33% of the enterprises. They were followed by small enterprises, i.e. employing 10 to 49 people, which accounted for almost 27% of the enterprises, and large companies, i.e. employing over 250 people, accounting for over 24% of the enterprises. In total, the SME sector accounted for almost 76% of the enterprises whose employees were surveyed. The respondents were mainly working in services – this type of activity accounted for almost 37% of all types of activity, followed by manufacturing (25.3%) and commercial companies (16.5%). Overall, the respondents were new employees - almost 32% of them have been working in the current company for less than a year. The largest group of those surveyed, i.e. 40%, have worked in the current company from 1 to 5 years, almost 13% of employees have worked from 5 to 10 years, whereas 16% - for over 10 years. Among the enterprises, those functioning on the market for over 10 years prevailed and accounted for over 65%, enterprises operating for 5 to 10 years accounted for over 19%, whereas only 4 young companies could be called young.

4. Results

Determinants of Employees' Job Satisfaction - Results of Empirical Studies: The survey shows that almost 85% of employees of the companies surveyed evaluate the position of their company as very good and good, whereas almost 14% evaluate it as poor and passable. No statistically significant dependence ($p>0.05$) was however identified between the evaluation of a company's position on the market, length of its functioning and length of an employee's work in a given enterprise (table 1). Thus, it turns out that such parameters as: the size of a company, length of its functioning on the market or period of employment in a given enterprise has no impact on the evaluation of the position of a company on the market.

Table 1: Position of an enterprise on the market as evaluated by its employees

	Number of employees in a company		How long a company has been functioning on the market		How long an employee has been working in a company	
	tau	p	tau	p	tau	p
Evaluation of an enterprise's position on the market	0.0862	0.1080	0.0774	0.1491	-0.0216	0.6877

Source: Own work based on a survey

Among the selected factors impacting satisfaction of enterprises' employees, 9 determinants influencing job satisfaction were distinguished. The survey shows that the determinants impacting job satisfaction most often indicated by the employees surveyed are: sense of security, which scored 4.02, and working conditions, which scored 4.01 on a five-level Likert scale. The factors that were least often indicated by employees were: possibility of promotion, development of career and additional benefits, which on average scored 3.24 and 3.00.

Table 2: Determinants of job satisfaction and the size of an enterprise

Job satisfaction determinants	Number of employees in a company	
	tau	p
working conditions	-0.2144	0.0001
remuneration	-0.1939	0.0003
sense of security	-0.2220	0.0000
policy towards employees	-0.1222	0.0226
atmosphere at work	-0.1872	0.0005
System of rewarding employees, bonuses, etc.	-0.1301	0.0152
possibility of promotion, development of career	0.0703	0.1901
investments in the development of an employee	0.0193	0.7185
additional benefits for an employee	0.0322	0.5476

Source: Own work based on a survey

The survey has showed that such determinants as: working conditions, remuneration, sense of security, atmosphere at work, are statistically highly significant and negatively correlated at a moderately low level with the number of employees in an enterprise, i.e. the size of a company. The factors: policy towards employees, system of rewarding employees, bonuses etc. are significant at a low level and negatively correlated with the number of employees in a company (table 2). Thus, it turns out that the smaller an enterprise, the more often the above-mentioned factors are indicated as ones impacting employees' satisfaction.

Table 3: Job satisfaction determinants vs. how long a company has been functioning on the market

Job satisfactiondeterminants	How long a company has been functioning on the market	
	tau	p
working conditions	-0,2571	0.0000
remuneration	-0,1782	0.0009
sense of security	-0,1104	0.0395
policy towards employees	-0,1107	0.0391
atmosphere at work	-0,1592	0.0030
System of rewarding employees, bonuses, etc.	-0,1897	0.0004
possibility of promotion, development of career	-0,0119	0.8249
investments in the development of an employee	-0,1388	0.0096
additional benefits for an employee	-0,1037	0.0530

Source: Own work based on a survey

The survey shows that how long a company has been functioning on the market, i.e. its age, is significant when evaluating the impact of selected factors on employees' job satisfaction. As many as 7 out of 9 determinants proved to be statistically highly significant ($p<0.01$) or significant ($p<0.05$) with the period of functioning of an enterprise on the market. In all the cases, a negatively correlated dependence was observed at a rather low level, only in the case of working conditions it was at a moderate level (tau=-0,2571) (table 3). In enterprises that have been functioning on the market for a shorter period of time, higher frequency of factors indicated as impacting satisfaction was observed, i.e. in young companies employees indicated more factors that impacted their job satisfaction, whereas in enterprises that have been functioning on the market for a longer period of time, a much lower frequency of indicating job satisfaction factors was observed.

Table 4: Determinants of job satisfaction vs. how long an employee has been working in the company

Job satisfactiondeterminants	How long an employee has been working in the company	
	tau	p
working conditions	-0.0820	0.1263
remuneration	-0.0041	0.9390
sense of security	0.0940	0.0798
policy towards employees	-0,0528	0.3250
atmosphere at work	-0.1961	0.0003
System of rewarding employees, bonuses, etc.	-0.0094	0.8611
possibility of promotion, development of career	-0.0816	0.1280
investments in the development of an employee	0.0972	0.0699
additional benefits for an employee	0.0759	0.1571

Source: Own work based on a survey

The survey of a group of employees of enterprises operating across Poland shows that the period of employment of an employee is not very significant statistically when evaluating factors impacting employees' satisfaction. Only in the case of the 'atmosphere at work' determinant, statistically highly significant dependence was observed (p=0.0003). This dependence is negatively correlated at a moderately low level and means that the shorter the period of employment of an employee, the more often atmosphere at work is indicated as significant and determines job satisfaction of an employee (table 4). The survey shows that the evaluation of the possibilities of personal development through improvement of skills, competences and professional qualifications by an employee is statistically highly significant (p=0.003) with the size of an enterprise. It turns out that the evaluation of the possibilities of employees' personal development is negatively correlated, though at a rather low level, with the number of employees, i.e. the more employees an enterprise employs, the less possibilities of improving qualifications.

Table 5: Possibilities of employees' personal development

	Number of employees in a company		How long a company has been functioning on the market		How long an employee has been working in a company	
	tau	p	tau	p	tau	p
Evaluation of the possibilities of employees' personal development	-0.1591	0.0030	0.0861	0.1085	0.0260	0.6284

Source: Own work based on a survey

Such dependence was not observed in the case of the length of functioning of a company on the market and period of employment in a given enterprise (table 5).

5. Conclusion

The aim of the survey of a group of very small, small, medium-sized and large enterprises operating across Poland was to show job satisfaction determinants of employees in enterprises functioning across Poland depending on the size of a company, how long a company has been functioning on the market and how long an employee has been working in a given company, as well as to define possibilities of employees' personal development. The factors affecting job satisfaction that were most often indicated in the questionnaire survey include: sense of security, which scored 4.02, and working conditions, which scored 4.01 on a 5-level scale, whereas the least often indicated factors include: possibility of promotion, development of career and additional benefits, which on average scored 3.24 and 3.00. Parameters such as the size of a company, how long it has been functioning on the market and period of employment of an employee in a given enterprise do not impact employees' evaluation of the market position of the enterprise they work for. It has also been found out that the more employees an enterprise employs, i.e. the bigger it's size, the less possibilities of

personal development of its employees. According to those surveyed, development possibilities in smaller companies are much greater.

The survey enabled verification of the research hypotheses formulated in the paper, namely:

- H1 has been partially confirmed; it has been found out that such determinants as: working conditions, remuneration, sense of security, atmosphere at work, are statistically significant and negatively correlated at a moderately low level with the number of employees in an enterprise, i.e. the size of a company; it has been found that the smaller an enterprise, the more often the above mentioned factors are indicated as impacting satisfaction of employees.
- H2 has been confirmed in general, as 7 out of 9 determinants have been found out to be statistically highly significant or significant with the length of an enterprise's functioning on the market - in all the cases, a negatively correlated dependence was observed at a rather low or moderate level; in enterprises that have been functioning on the market for a shorter period of time, satisfaction impacting factors were indicated more frequently, i.e. in young companies, employees indicated more factors that impacted their job satisfaction.
- H3 has generally not been confirmed, as the period of employment of an employee is not very significant statistically when evaluating factors impacting employees' satisfaction; only in the case of 1 out of 9 determinants a statistically highly significant dependence negatively correlated at a moderately low level was observed, which means that the shorter the period of employment of an employee, the more often atmosphere at work is indicated as significant and determining an employee's job satisfaction.

It is worth considering carrying out a similar survey on a representative group of enterprises or groups of enterprises in different countries in order to find regularities and present recommendations.

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A Study of Indigenous Community-Based Economy at the Regency of Jayapura

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Abstract: The research aims to discover the potential of local natural resources in improving the economic life by utilizing the indigenous communities' local wisdom at the regency of Jayapura. Two local customary councils namely Sentani and Moi were used as samples. Data was collected by the interviews to both tribal leaders and heads of village, observation as well as secondary data analysis and analyzed by three stages: data reduction, presentation of the data and drawing conclusion. The results show that the livelihood of DAS Sentani is farming, fishing and taping sago where their natural resources are fish, sago, coconut, areca nut while that of DAS Moi is farming and livestock and the natural resources are gold and rock mines, tourist attraction, sago, durian and rambutan. Both indigenous communities have their local wisdoms that are believed to have rewards if they obey and sanctions or punishments if disobeyed. Some local government's strategies are recommended to be done in order to help both communities to improve better quality of life.

Keywords: *Local natural resources, Local wisdom, Indigenous community, Economy*

1. Introduction

Local wisdom is the ancestral heritage in the values of life fused in the form of religion, culture and customs. Customary community adapt to their environment by developing local knowledge or wisdom in the form of ideas, tools, combined with customary norms, cultural values, and environmental management activities in order to meet their life needs (Suhartini, 2009). The community have distinctive characteristics, living in groups regularly and harmoniously in accordance with customary law and have strong ties to the ancestral origins. They reside in a particular region, have a strong relationship with the land, forests, natural resources and environment, control, possess, organize, manage and utilize the hereditary. Human history from the very primitive to the highly modern development can never be separated from its dependence on natural resources. This dependence has produced a variety of models of development of natural resources whose primary purpose is to maintain its sustainability. Natural resource management model is highly dependent on the characteristics of the natural resources, regional and socio-economy of the community. The evolution of human relationship with nature has formed a harmonious relationship called pan cosmism where men seek to live in harmony with nature (Hadi, 2009). In the view of people at that time, the nature was great and sacred; it must therefore be maintained so that there was no damage to nature and negative consequences for human. In the realization of the idea, human created taboos or ethics of how to act and behave towards nature and most of the ethnic groups in this country have such measures or referred to as environmental wisdom (Suhartini, 2009).

In Papua especially in Jayapura, the local wisdom historically has existed and gained the recognition in indigenous communities. The rights and existence of these communities for generations have been inherited and taken place in the midst of society. However due to the diversity of customs in Indonesia and the inclusion of government among the people, the indigenous communities are increasingly marginalized by the government policy and the impact of globalization. In order to preserve and protect these communities, the Provincial Government through the Special Regional Regulation (Perdasus), Papua Province No. 21 in 2008 pertaining the Recognition of Customary Land Rights of Indigenous community has been given. The government through the Minister of Home Affairs No. 52 in 2014 on Guidelines for the Recognition and Protection of Indigenous People which is followed up by the Government of Jayapura, through Regent Decree, Jayapura No. 319 in 2014 on the Recognition and Protection of Indigenous Peoples at Jayapura District confirms that the Government of Jayapura recognize the 9 (nine) of indigenous peoples' territories comprising; 1) Sentani/Bhuyakha consists of Ralibhu, Nolubhu, Waibu 2) Moi 3) Tepra 4) Ormu 5) Yokari 6) Jouwwarry or Tarpi 7) Demutru consists of a custom sub-region: Nambluong, Klisi, Kemtuik 8) Elseng 9) Oktim with the aim of protecting the rights of indigenous people: 1) Protection against tribal governments; 2)

Protection of wealth and/or custom objects; 3) Protection against the norms of customary law; and 4) Protection of communal rights: soil, water, air, forests and natural resources.

Protection of customary rights such as, land, water, air, forest and natural wealth contained therein is needed to do because they have economic values with the aim of meeting the financing needs of life and the need for food and clothing. It is also crucial in improving the human's well-being. People to have a better life will be fulfilling the daily needs, they are therefore required to manage natural resources and preserve them so that the principle of benefit and priority needs to be taken into account that ecosystems and natural resources are maintained and available. The growing population and higher economic needs are factors that deplete the availability of natural resource. Local wisdom that was once the customary law community are well preserved to be eroded by the problems of economic necessity. That requires a research and study indigenous-based economy that will explore natural resources as the major economic activities of indigenous people, the way of nature management, maintenance of the existence of biological resources and vegetable. In order protect local wisdom from being marginalized and getting lost due to the influence of the modern economy and liberal economic system, local government strategies are importantly needed, so that existing economic systems of indigenous peoples in accordance with modern economic system do not leave the local wisdom. This research was conducted in order to explore what are the sources of the economic potential of the indigenous peoples in Jayapura district? How is it to utilize local wisdom in developing the economy of indigenous peoples? What are Government strategies to improve the economy of indigenous peoples? What are the rights and obligations of indigenous stakeholders in the management of natural resources to support the economy, especially the indigenous peoples?

2. Methodology

The location of this research is in Jayapura regency. It is mainly based on the consideration that the Jayapura regency is a regency surrounded by coastal Sentani Lake, hills and oceans. Additional information is that in some districts/villages in the regency, coastal communities have local knowledge (rituals) related to the natural resource management of coastal, ocean and hills. The population in this study are all the Local Customary Council (DAS) where there are 9 DASs and the sample in the study is two (2) existing DAS namely DAS Sentani and DAS Moi. Data needed in research data were sourced from primary and secondary data. The primary data obtained directly from respondents through interviews and observations while secondary data obtained indirectly/through a second party by studying the documentation or literature. The sampling techniques used:

- Location village used sampling region techniques (area probability sample): The sample is done by taking representative of each village contained in the population (Arikunto, 1997). It is based on the consideration of traits or characteristics of the areas in terms of the natural resources and values of local wisdom that only exist in the location or region.
- Community leaders (Old Traditional/Indigenous Stakeholder): they are non-formal institutions that grow up around the community and seen to understand the problems of indigenous rituals associated with resource use and management which hereinafter be referred to as key persons. Determination of key persons can be done by using purposive sample or a sample of a particular purpose and done by taking the subject not based on strata, random or region, but based on their particular purpose (Arikunto, 1997). The determination of key person in this study is carefully selected and tailored to target the achievement of the required information in the study; the number of respondents for each of the selected villages is more than 7-10 people.
- Village government: It is a formal institution that grows and develops around the coastal areas that are considered to understand the problems of utilization and management of coastal and marine resources as well as the values of local wisdom that live and thrive in coastal communities. They are the head of village, secretary, hamlet head, and former head of the village. Samples of each village are about 2-3 people.

The approach taken in this study is a qualitative approach. Researchers use triangulation methodology to collect data on the overview of local knowledge. Triangulation methodology used is a combination of data collection techniques using in-depth interviews, observations and secondary data analysis. The qualitative data is presented in the form of a diary. The contents of the diary are the results of observations, interviews,

and excerpts from various documents (Sitorus, 1998). Miles and Huberman (1992) as cited by Sitorus (1998) define the stages of data analysis as follows:

- Data reduction is the selection process, focusing on simplification, abstraction and transformation of "rough" data that emerged from the notes written in the field. Data reduction is a form of analysis that sharpens, classify, direct, dispose of unnecessary information, and organize data in a way such that the final conclusions can be drawn.
- Presentation of data is a set of structured information that gives the possibility of drawing conclusions and taking action. Presentation of data can take a variety of forms of narrative text and matrices, graphs, networks, and charts.
- Drawing conclusions in this case includes how to verify the conclusion that the way: rethink during writing, a review of the records of the field, review and exchange of ideas among peers to ensure the sharpness of the conclusion made.

Profile of DAS Sentani/Bhuyaka: Sentani area is situated along the Sentani Lake and divided into the west, centre and east part entered in the District of Sentani at Jayapura regency, while some areas in the eastern part of the entry into the territory of the city of Jayapura. In the indigenous peoples, Sentani tribe itself is traditionally divided into three sections namely Eastern Sentani, Central Sentani and Western Sentani. This division is based on two factors: firstly, the accent of the language and the second, the traditional leaders. In Sentani there are three major Ondoafi called Hu Ondofolo where western part of Sentani is occupied by Marwery family, eastern part by Ohee family and Central Sentani by Eluay family. A leader in the indigenous community of Sentani is known as Ondofolo or Ondoafi. The Ondofolo or Ondoafi is the head of custom government obtained from generations, especially inherited by the eldest son of the wife or the oldest first son. So that, the system of leadership or authority in indigenous communities in Sentani is called “Ondoafi system”. In his position and responsibility, under Ondofolo or Ondoafi, there is koselo-koselo or chieftain who sometimes is also called “Keret” and there is always koselo to lead in each tribe. Ondofolo oversees the village with his power and can act as koselo for the village.

Ondoafi has the authority to resolve disputes that occur in the area of power. Ondoafi also reserves the right to announce a war or protect the people in the region. In essence it can be said that Ondoafi functions as public protector. Based on traditional practices that have been done, Ondoafi may take more than one person, but a maximum of 5 (five) people. In the governance system of Indigenous Sentani, there is formal government system in the form of village government and non-formal governmental system or called traditional government (custom government). Village is the lowest government in the unitary state of Indonesia under the sub-district administration. The traditional government (custom government) is a native Sentani government that has existed since the time immemorial hereditary. The total area of custom (traditional) administration is not always the same as that of the village. However in the reign of the Netherlands, the area of the custom administration was same as that of the village administration. Leadership positions were into one that could lead to the multiple roles. His name was also different, where the head of the custom administration was called Yo Ondofolo or Ondoafi, while the position of village head was called Korano.

Profile of DAS Moi: The areas of indigenous Moi community exist in the western part of the capital regency of Jayapura with the distance of approximately 25 km, using two-wheeled and four-wheeled vehicles. Their territory is among Tepra and Yewena Yoosu at the north, Kemtuik at the south, Bhuyakha at the east and Yokari at the western part. The customary law community Moi have similarities in language, physical traits, character and social values and culture, politics, economics, and customary law with indigenous communities Klesi, Nambluong and Kemtuik. This is due to several things, the first, they have territorial proximity and the second, they have social, cultural and economic relations built on a regular basis, and the third that they have a historical linkage relationship with the ancestral origins. The ancestors of customary law communities Moi began their life to settle and organize the group in an organized social structure. They built a large system of monarchy with a head of government called done. They arranged their structure in five areas where all these five areas support each other and Done as the head of government, Trang as the manager of customary law, Tekay as acting government, Bemey as economic and financial managers as well as Srom as managers of household. Post-entry of the church and the formal government during Netherlands era, the original rule was

considered as a barrier because people are more obedient to Done than Korano (village head appointed by the government).

In the bigger unit of the indigenous peoples, Moi is divided into four sub-tribes: Kwansu Mlab, Kleku, Damaiblo, and Moi Pay. These groups are divided in three regions in the topography of the landscape that is located in the hilly area (Iwalom), the slope (teble-teble) and the lowland (Pay). Indigenous Moi community in general are profoundly ignorant of the law or rules that are formally set up in detail and the provisions for sanctions. However they know and have awareness that there is a ban and if broken, there will be negative impacts, known as a punishment. Penalties or sanctions generally is not just borne by the offender himself but could involve the family, relatives, and more on the responsibility of the custom government or village. In Moi's social life, people generally recognized the norms of social nature in which they have no sanctions or penalties. However, due to their belief in the meaning of a ban then there will be an indirect result, for example, the perpetrator experiencing pain in various forms. In this case, the perpetrator could be cured if the apology and forgiveness are given by the owner. The second is the norms of customary law which every action there will be a sanction given to actors, either in the form of sanctions or corporal punishment (body) or in the form of fines with the provision of material. Liability to punishment or sanctions in the form of fines (materials) usually is not only borne by the offender but involving family, relatives, and even entire villagers.

3. Results and Discussion

DAS Sentani/Bhuyaka The research focus in DAS Sentani/Bhuyaka lies in Yobeh village as one of the 6 (six) villages mentioned in the administrative area of the district of Sentani. The village is located in the southern district of Sentani, about 10 km reached by a wooden bridge made by local villagers.

a) **Economic conditions of DAS Sentani/Bhuyaka:** People's livelihoods in Yobeh, DAS Sentani are farming, fishing in lakes and tapping sago. The management of farming still applies traditional patterns such as, opening new land, left the old land and continue to repeat the pattern. For those who live and settle in Komba, they are already familiar with the fixed agricultural system where they used fertilizers to increase production and fishing is thus already using more modern methods. Those who live in areas of the island are still using traditional ways, such as, fishing, using sumput and balobe.

b) **Potential of Natural Resources of DAS Sentani/Bhuyaka:** Daily activities of local people are finishing and farming. In farming, the society is still using traditional patterns where they clean the land, cut down and burned and then planted. The land that has been used will be left to open up new land and this is done continuously. Potential Sentani Lake near the village makes most people work as fishermen or bumerau (an expert in catching freshwater fish in the Lake). Other livelihood owned by the society is sago gatherers, civil servants and private employees.

This study summarizes the results from interviews taken with key informants following:
(Translated) "Potential resources that exist in Yobeh is a lake, providing fish and there is also nature that provides sago. The nature is provided from ancestors like sago palm used for consumption of staple food for villagers". - ***The head of the village***
(Translated) "The daily activities of the people here are catching fish in the Lake, taking vegetables and firewood and taking a boat to go to the next village" - ***One of the residents***
(Translated) "Resources are the potential sources of nature such as vegetable, nut and sago. In addition they have a small fish farm under their homes ". – ***Ondoafi***

The results of interviews conducted with key informants found that the potential of existing resources in Yobeh is Sentani Lake as a provider of freshwater fish with different types. One informant suggested that some residents have freshwater fish ponds under the house in order to then be sold to customers or for the purpose of personal consumption and family. Sentani Nature generates potential sago trees that have become the ancestral heritage and been inherited for a long time. The sago palm then has become the staple food of the local community in addition to the rice which is always consumed by the public. Natural resource management is still done traditionally and in groups despite the advances in the technology information that already exists and affects the pattern of life and livelihoods. In addition to managing natural resources,

Sentani community also conduct hunting activities where those are skilled in hunting called Jeremeu. Animals often hunted are pork consumed in the family or used for traditional events. Interviews with other key informants found some potential natural sources of the local area, like, water spinach, coconut, corn and nut where those who are experts in farming are called Fimereu. Villagers usually manage their resources in simple ways, part of these resources are then sold and the rest is consumed for daily life. The study found that the revenue from the natural resources sale is then used to fund the school children and for the cost of eating and drinking every day.

The potential for freshwater fish, sago, coconut, areca nut and other natural resources can evolve when there is a commitment from all parties, both government and local communities. The support can come from internal or external. Support from the government in this case does not imply the dependence of society and the government, but the type of assistance will provide motivation to work for the community. The results of interviews also found some support from the government in the form of the village's financial assistance program namely Anggaran Dana Kampung (ADK) where the village government received twice process of funding. These funds were used to buy seeds for the continuation of farming fish or farming equipment to create more income. Other supporting factors are derived from the availability of the boat. The study found that because most people in Yobeh work as fishermen, the boat as a means of transportation is so important. Good weather is also considered as a factor in favour of their work.

Fish Pond owned by Sentani man

c) Local wisdom: Local Wisdom from the society Yobeh, DAS Sentani in various product and culture:

- The Lake must be kept clean, must not be poisoned by drugs.
- Sunday is established as a day of worship and prohibited from engaging in economic activities.
- Economic activity needs to be done in work together. Especially in cultural activities, residents flocked to collect their harvest and donate to the chiefs for cultural activities.
- Not allowed to take indiscriminate when local people make the traditional feast.
- Comply with the rules and abstain from restrictions or taboos established by Chieftains.

There are rewards if the community obey and sanction if disobey the local wisdom:

a) The consequences of being obedient to the local wisdom, children as well as their offspring would be healthy and not be problematic.
b) If taking goods that are prohibited, it will be sore ulcers.
c) If disobeying the local wisdom, they are ostracized by the community. Not getting a good reception from the public although it remained and settled in the region.

Management of natural resources as well as its potential cannot be separated from the local knowledge possessed and sourced from individuals whose behaviour becomes habits and have normative binding. Compliance with the rules and consideration of sanctions binding Yobeh society in managing natural resources by the rules of local wisdom has been passed down by our ancestors long ago. This belief then shapes the mindset and behaviour of the population in the management of and utilization of natural resources. Local wisdom in the management of economic resources in DAS Sentani, Yobeh village although at levels of folkways, it is indeed based on understanding the principles of ecology and ecosystems. Wisdom is packaged using a simple language in the form of a philosophy which contains substances of values and norms. The most significant reference source of the economic activities of local communities is derived from the values of the Christian in which people are required to attend worship on Sundays so that their economic is waged in the days of their lives. The adherence to the rules and restrictions imposed by the Indigenous Chief become something that must be considered by the society considering the sanctions to be imposed when violated.

d) Strategy-Based Economy Improving Indigenous DAS Sentani/Bhuyaka

- The fishermen need to be given training in how to find or catch fish using modern methods while maintaining the balance of natural ecosystems.
- Need for local economic development in developing local products like fish, sago, coconut and nut, vegetable and emphasize the empowerment of local existing potential through the involvement of indigenous people in order to create prosperity. Special training to improve skills in local economic development efforts also need to be done.
- Develop production centres (fisheries, agriculture, farming, trade and services) as well as the targeted marketing and sustainable distribution channels for local communities.

DAS Moi: DAS Moi community live in the areas of West Sentani District consisting of 5 (five) villages namely Sabron Sari, Sabron Yaru, Dosay, Wabron and Maribu. Information about the natural resources and local knowledge of DAS Moi is more focused on Dosay village because the Ondoafi is domiciled in that village. However, the research describes the economic conditions of DAS Moi are much directed at the West Sentani district.

a) Economic conditions of DAS Moi: Agriculture and livestock in the DAS Moi have considerable potential to generate revenue for local residents. The results showed that the population of livestock such as cattle have a sizeable number of nearly 1,852 where Maribu has the highest number of cattle compared with other villages, followed by Waibron and Dosai. A small number of livestock in this DAS are goats and pigs where Maribu have the largest number of pigs and goats and followed by Sabron Sari and Dosai. Yabron have goats and pigs with the smallest number other than four villages. The plantation sector in this community showed extensive plantation of coconut and chocolate plant species occupying a sizeable amount. Cocoa plantation land is around 601 ha and 297 ha for the coconut. In the sector of trade and industry, the results showed that the Maribu have one trade sector in small and medium classes as well as the home furnishings industry. The mining sector is also seen in several villages in DAS Moi namely Dosai and Sabron Sari and this sector needs to be developed because of its ability to generate income for local residents.

b) Potential of Natural Resources of DAS Moi: Natural resources owned by DAS Moi potential for the creation of income for the local population are the results of mining, usually called category C (Golongan C), Damsari River (Kali Damsari) and gold mine (Waibro) which nevertheless are still using traditional tools. Results found that regardless of the region's potential owned by this DAS, the activities and work of the people in each village almost equal. Majority of the population in Sabron Sari work in the field of agro-tourism and gardening on their own farms. Sabron Yaru residents have activities in the field of agriculture, livestock and gardening, while residents of Dosay farming and animal husbandry but many work as civil servants, police and private employees. Majority of people in Wabron and Maribu work as farmers where some manage sago for sale.

Regardless of differences in DAS Moi's livelihoods from each village, the significant result of the earth is the result of mining "category C" where the stones will be collected with heavy equipment and then delivered for

rock orders. Tourism potential called Kali Damsari used as tourist attractions that could potentially generate profits need to be managed properly in order to be clean so that visitors feel comfortable when visited. In addition, great natural potential in this DAS is suitable for farming activities to produce banana, durian and rambutan which can be sold on the market or in front of the house. Here are the results of interviews with key informants in this study:

(Translated) "The result of mining is called "category C" (stone), attraction place (Kali Damsari), gold mine (waibro) but still using traditional tools. Stone will be collected with heavy equipment and then delivered to meet the order. Keeping the attraction places well and clean so that visitors will feel comfortable, providing a decent place to rest as lodges. Plantation crops such as rambutan, durian during the season can be sold to the market or in front of the house ". – ***The chief of the district***
(Translated) "..... . natural resource owned (potential) is Kali Damsari and mine c (rock)" - ***Management of DAS Moi.***

Although the majority of the population are farming and fishing, some residents also have fish ponds which can be used for sale or consumed by the family. Some factors in favour of the management of natural resources in DAS Moi is the quality of fertile soil for agriculture and plantation. Moreover, because the large land area with plenty of vacant land in this DAS, it is then used to raise cattle. The obstacles to the management of natural resources are the lack of ability to manage the existing natural resources, limited skill and knowledge and lack of equipment. This is due to lack of professional consultation provided by the government. The results showed that some consultation has been done despite in traditional ways.

The results also show that some of the government programs used for the management of natural resources is ADK fund, for example funds for cottages in Kali Damsari and for farmers in the form of seeds saplings pigs. Some mentoring programs are also conducted for agricultural production through the assistance to maintain cleanliness in the places of tourism. The results also found that in addition to providing information, the government also provides an assistance of fertilizer to the owner of the garden.

Handy crafts from one mother in DAS Moi

c) **Local wisdom:** Some local knowledge possessed by the inhabitants of DAS Moi affects how people use and take advantage of the resources. Types of local wisdom are explained by the underlying sanctions.
- It is recommended to residents for not too often dig rocks because there is a negative impact of quarrying stone.
- Day of the week established as a day of worship and prohibited from engaging in economic activities on Sunday.
- Trust in God is more important than other things.
- Prohibition to go to the "rawa gantung" or hanging bog during the working day because it is believed that anyone who entered that place would never return.

There are rewards if the community obey and the sanction if disobey the local wisdom:

- Those who are not obedient with the values in the form of local wisdom in the community will feel discomfort in life and feelings of guilt to others and to him.
- Non-compliance could cause some pain that is not understood and if compliance to the local wisdom, life be given tranquillity and no security problems.
- Excessive fear to interfere with a person's psyche as a result of disobedience.

The values classified into the culture and local wisdom in DAS Moi have been much influenced by the belief in God. The inclusion of religion in public life makes people hold the values taught in religion and their beliefs. The sanctions that are binding when there is infringement of an individual or group still use traditional belief in nature. Local knowledge possessed in principle moves from values to maintain the balance of nature which is God's creation. This trust was established to preserve and protect natural ecosystems with all that is in it. Nonetheless, local knowledge possessed is not regulated in societal norms and written rules.

d) Strategy-Based Economy Improving Indigenous DAS Moi

- Need for local economic development through the provision of training in developing local products such as corn and other crops.
- Need to develop the potential of natural resources Gol.C are like mining, tourist attractions Kali Damsari, gold mines through sufficient promotion to stakeholders.
- Develop centres of production (agriculture, farming, trade and services) as well as targeted marketing and distribution channels are sustainable for the community in order to improve welfare.
- Encouraging new investment in any field of business in the area locally, nationally and internationally through the promotion of sustainable reply.
- Facilitating the development of partnerships with forums for dialogue involving all stakeholder to think of the way in the development of local economies.

4. Conclusion

This study emphasizes the development of the economic resources of indigenous peoples of Moi and Sentani in Jayapura regency taking into account their local knowledge. Economic development needs to consider the concept of sustainability meaning to meet the needs of the present without compromising the ability of future generations to meet Reviews their own needs. Natural resources becoming the economic potential of the region should be explored in order to meet human needs while still preserving the surrounding environment. Strategies of the government in improving the economy of indigenous peoples on local knowledge should be given in order to improve people's lives. DAS Sentani's livelihoods are farming, fishing in the lake, tapping sago and hunting animals. Their natural resources used to support society's economic life are fish, sago, coconut, areca nut and other natural resources. Some local wisdoms believed by people in conducting their economic life are in carrying out economic activities in working together or called "gotong royong" where people get together for harvest and donate some portion of their harvest to the chief for cultural activities. On account of the area close to Sentani Lake where the community use for fishing, maintaining the quality of the lake and keep it clean is therefore very important.

The livelihoods of DAS Moi's community are farming and livestock where the majority of the people work for their farm. The natural sources of DAS Moi are the mines, usually called category C, tourist attractions at Damsari River, gold mine (Waibro), sago, durian and rambutan and cattle farm. The local wisdom that bind the community in life in doing their economic activities every day are that people are required not to dig rocks too often because this will harm the environment. It is not allowed to do any economic activities on Sunday as God is more important than others. There are always rewards and sanctions in obeying or disobeying the local wisdom and the community are well understood about the consequences. Strategies need to be addressed by the government in order to improve the quality of human life for both indigenous communities. Some strategies given are that there need to be done some trainings for both communities about how to develop their local resources. Both communities need to have centre of production for agriculture, farming, trade, services in order to attract investors and the government need to support it. It is

also important to have the targeted marketing and distribution channels so that both communities understand clearly about where to sell their products to outside.

The local government must maintain to protect and preserve the mainstay products of the region as an asset. The government should keep a mainstay product not to disappear from the area and to provide an open space for manufacturers to develop regional flagship products and business development. Considering the important role of local communities in conserving the environment, it is important to maintain and protect the actions of the community which is a form of local wisdom. Communities need to be trained how to use natural resources in more practical, effective and efficient ways. Creative economic development also needs to be done, especially for small businesses population. Local governments need to find or create regulations for small or middle businesses about how to well manage the natural resources on a regular basis and the use of technology should environmentally friendly in the production process, so it does not damage the environment.

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Modeling South African Banks closing stock prices: a Markov-Switching Approach

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Abstract: In this paper, we provide evidence that the five variables used in the study were nonlinear in nature, while finding a better Markov-switching model. The study used dailydata obtained from the Johannesburg Stock Exchange over the period from January 2010 to December 2012. An extension of Markov Switching with autoregressive model was used for empirical analysis. Prior to using this model, the series were tested for nonlinear unit root with modified Kapetanois-Shin-Snell nonlinear Augmented Dickey-Fuller (KSS-NADF) test which successfully provided positive results.Other preliminary tests selected the first lag as optimal and confirmed that stock prices may switch between two regimes. Further empirical findings proved that stock prices can be successfully modelled with Markov Switching Autoregressive model of order one. First National bank was found to have 99.64% longer stock price stability if adjustments regards tofinancialpolicies are made. Capitec Bank was the least favoured among the banks.

Keywords: *Closing Stock price; Nonlinearity test; Markov switching autoregressive model*

1. Introduction

In recent years, stock markets data analyses have become very important object of academic research. In the course of establishing deeper understanding of the 2007-2008 financial crises, research findings reported that standard time series models have several shortages in precision and robustness. The conventional methods often employed by data analysts to capture the dynamics and patterns in the most financial time series based on the assumption of linearity, leading to failure by majority of models failing to address the fundamentals of most financial data. Having discovered the glitch, various researchers and financial practitioners have shifted their attention to the use of nonlinear prediction methods. These modelling techniques fulfil many other useful roles such as generating forecasts whilst capturing volatility and nonlinearity very well. Applications of such techniques in the field of finance have proven to reflect valid empirical and theoretical knowledge of how financial markets work.They also help in explaining changes in financial markets and the anticipation of any unexpected changes. Where linear methods fail to describe the dynamics of finance time series, nonlinear methods are the main alternatives.

Literature highlights evidence of occasional sudden breaks in many financial and economic time series, especially stock market data, making it extremely difficult for accurate prediction. These changes have been attributed to several reasons including changes in economic conditions, investor expectations, relative performance of other stock markets, responses to shocks from exogenous geopolitical events or financial crises, or disruptions due to weather related catastrophes, just to mention a few. This is supported by Vasanthi et al. (2011) who reiterated that prediction of financial market could be a complex task since the distribution of such data often changes over a period of time. Consequently, determining more effective and efficient ways of predicting the movement of stock market prices are important. The findings of this study could be useful to finance professionals who refer to forecasts when making financial plans. The five suggested banks and others may also use the findings when compiling report regards to their earnings expectations. Investors on the other hand need to be assured of their value for money as they invest their hard earned capital in stocks with the expectation of gaining from their investment through a positive payoff (Ababio, 2012). As a result, availability of knowledge about share price movement in the future serves the interest of financial professionals and investors. Through this knowledge, investor's confidence may be boosted by way of consulting and investing.

The most basic reason for forecasting stock market price is financial gain. Any model found to be reliable in forecasting stock market prices would make the owner of the method very popular and wealthy. Hence, many individuals, including academics, researchers, investment professionals and investors are searching for a superior method which will offer high returns (Dase et al., 2011). According to Hemanth et al. (2012), the

main objective of stock market forecasting is to determine the future price of a company stock or other financial instrument traded on a financial market exchange. The successful prediction of a stock's future price could help the buyer and seller to make good decisions. The investor may realise a significant profit by buying stock at its lowest price and sell when the price is at its highest level. This study explores the efficiency and robustness of a nonlinear Markov-Switching autoregressive (MS-AR) model in predicting closing stock prices of the five major Banks in South Africa. The model yielding the least error margin will be of much interest to financial professional and investors. There is death of literature on the application of the MS-AR model in stock prediction in the context of South Africa. As a result, this study contributes to literature in this area. The application of this method may also stimulate interest to other scholars who wish to analyse other financial data exhibiting nonlinearities. The MS-AR model is vouched for by a number of authors who have published in the areas of finance and economics in different countries as an efficient and good predictor when used in financial data. In the next section, literature reviewed justifies the applicability of MS-AR model in finances by different authors from different countries. The rest of the paper is organized as follows. Section 2 provides a summary review of literature, Section 3 description ofMS-AR model. In Section 34, the discussion of empirical results is provided and conclusions and recommendations are given in Section 4.

2. Literature Review

A number of studies applied MS-AR model in both financial and economic data analysis. Hamilton applied Markov Switching Models in 1989 to explain the specific features of macroeconomic and financial time series.Specifically, Turner et al. (1989), Cecchetti et al. (1990) and Schaller and van Norden (1997) use MSM to model stock market return while Gray (1996), Hamilton (1988) and Ang and Bekaert (2002) employed this techniques to explain the behaviour of interest rates. The first application of Markov Switching model in financial econometrics was done by pioneers Turner et al. (1989). The authorswere the first to apply MS-AR model to capture the regime shifts behaviour in stock market returns. The study applied the model of normal distribution to study the relationship between the market risk premium and variance of stock returns using monthly prices of the S & P 500. The findings revealed the usefulness of the MS-AR allowing the regime shifts to happen in mean and variances and fitting the data effectively compared to other specifications of Markov regime switching models. A follow-up study which applied this model by Chu et al. (1996) examined the relationship between stock market returns and stock market volatility. The study revealed a nonlinear and asymmetrical relationship between returns and volatility. The findings of the two studies provide more bases to conclude that MS-AR model is good in revealing the features in the data that other nonlinear models fail to reveal.

Liu (2011) conducted a study similar to Turner et al. (1989) and Schaller and Norden (1997). The authors incorporated regressors in the state-dependent volatilities through a link function to Markov switching model. This incorporation was done to assess sources of persistence on state-dependent volatilities. The model effectively produced new evidence on the relationship between market volatility and expected returns. Specifically the authors were studying the effect of two important volatility determinants of both price range and trade volume, thus assessing their importance in terms of both explanatory power and predictability for return volatility. The findings revealed strong evidence of switching behaviour in the US stock market with equities switching between two states; low expected return and high volatility state. The study by Wasim and Bandi (2011) aimed at determining if there existsbull and bear in the Indian stock market. The Akaike, Hana-Quinn and Schwartz information criteria were used to identify the model best fitting the data. Two-state MS-AR (2) model was used to identify bull and bear market regimes. The predictions by the model showed that Indian stock market remain under a bull regime with very much higher probability than the bear regime. The findings further showed that bull regime was more than a month in both the markets and that bear phases occurred during all major global economic crises including recent US sub-prime (2007-2008) and European debt crisis (2010).

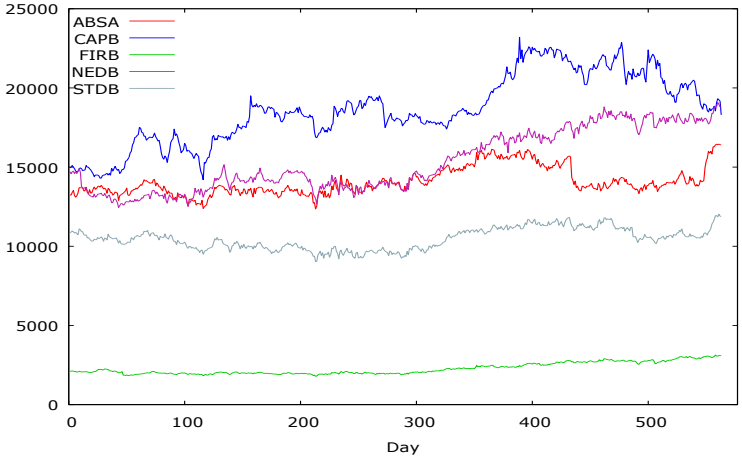
Cruz and Mapa (2013) also contributed to the literature by developing an early warning system (EWS) for predicting inflation in the Philippines. The study used four two-regime $MS-AR(1)$ to $MS-AR(4)$ models. The Akaike information criterion used and various diagnostic tests were in favour of the$MS-AR(2)$. The study concluded that Philippine inflation rate is better when modelled by a two-state$MS-AR(2)$, with the

estimated average inflation rate. The predictions further suggestedlower inflation rate targets for Bangkok Sentraling Philippines.

Application to South African banking Stocks: This section provides a description for the data and ensures it is ready for application by addressing nonlinearity in unit root using the Kapetanois-Shin-Snell Nonlinear Augmented Dickey-Fuller Unit (KSS-NADF). The application of MS-AR models becomes effective on nonlinear unit root data.A review of the MS-AR model is also provided in this section.

Data: The study employed the stock prices of South Africa collected daily for the period 2010-2012. A total of 563 observations were obtained from http://www.jse.com. The banks that responded were ABSA Bank (ABSA), Capitec Bank (CAPB), First National Bank (FIRB), Nedbank (NEDB) and Standard Bank (STDB) and ccoincidentally, these five banks constitute the five largest banks listed on the JSE. These also happened to be the five major banks in the country. Figure 1 is a depiction of the closing stock price series. The purpose of this figure is to identify broad characteristics of the variables used in this study.

Figure 1: Graphical Representation of the Five Closing Stock Prices



A visual examination of the plot reveals different patterns. FIRB has the lowest stock prices and is estimated by an upward sloping trend. Stock prices of other banks are explained by irregular increasing patterns with ABSA and NEBD showing convergence at several stages. Given this movements by the stock prices, the data is not stationary at all levels. Further empirical analysis is continued by employing the nonlinear unit root test discussed in the next section.

Preliminary tests: The Kapetanois-Shin-Snell (KSS) is used to test unit root in nonlinear time series. The KSS test is a modification of the Augmented Dickey-Fuller (ADF), based on the following nonlinear model specification (Kapetanios et al., 2003):

$$X_t = \beta X_{t-1} + \gamma X_{t-1}[1-\exp(-\theta X_{t-d}^2)] + \varepsilon_t, \qquad (1)$$

Which when parameterised yields:

$$\Delta X_t = \delta X_{t-1} + \gamma X_{t-1}[1-\exp(-\theta X_{t-d}^2)] + \varepsilon_t, \qquad (2)$$

Where $\delta = \beta - 1$, γ, θ are parameters that must be estimated and ε_t is the residual term. The KSS test sets $\delta = 0$ and the decay parameter, $d = 1$, so that the test is formally based on the following specification:

$$\Delta X_t = \gamma X_{t-1}[1-\exp(-\theta X_{t-d}^2)] + \varepsilon_t. \qquad (3)$$

The KSS tests the null hypothesis of linear stationarity by setting $\theta = 0$ against the alternative that $\theta > 0$. However, Katepenios et al. (2003) argue that it is impossible to directly test the null hypothesis since the speed of reversion, γ, is unknown. Using a first-order Taylor series approximation, Luukkonen et al. (1988) reformulated an estimable nonlinear specification for testing nonlinear stationarity in X_t as:

$$\Delta X_t = \xi . X_{t-1}^3 + \varepsilon_t. \qquad (4)$$

To account for the possibility of serial correlation in the error term, equation (4) is augmented with lags of the first-difference of X_t as:

$$\Delta X_t = \xi . X_{t-1}^3 + \sum_{j=1}^{p} \delta_j . \Delta X_{t-j} + \varepsilon_t \qquad (5)$$

Where ξ is the coefficient used to test the presence of a unit root. From the nonlinear stationarity specification, the KSS-NADF unit root test is based on the t-statistic:

$$\tau_{NL} = \frac{\hat{\xi}}{s.e.(\hat{\xi})} \qquad (6)$$

where s.e.(ξ) is the standard error of ξ. The following hypotheses are tested:

$H_0 : \xi = 0$ (Nonlinear nonstationarity)

Vs. $H_1 : \xi < 0$. (Nonlinear stationarity)

Three different asymptotic critical values are constructed with three different nonlinear model specifications - raw data, demeaned data, and de-trended data (Kapetanios et al., 2003). The following scenarios prevail:

- If X_t has a zero mean, then the appropriate data to use is $Y_t = X_t$, the raw data.
- If X_t has a non-zero mean and zero trend, then the appropriate data to use is $Y_t = X_t - \bar{X}$, the demeaned data, where $\bar{X}$ is the mean of the data.
- If X_t has a non-zero mean and non-zero trend, then the appropriate data to use is $Y_t = X_t - (\alpha_0 + \alpha_1 t)$, the de-trended data, where $\alpha_0 + \alpha_1 t$ is the trendline obtained by regressing X_t on time point t=1, 2, 3,.., n with an intercept term.

The KSS-NLADF test is sensitive to the choice of lag length, p. One prominent approach to select p is use of general-to-specific method suggested by Hall (1994). This involves setting up an upper bound, p_{max}, suggested by Schwert (1989):

$$p_{max} = \text{intger}\left[12.\left(\frac{n}{100}\right)^{1/4}\right] \qquad (7)$$

Where n is the sample size, estimating the test regression with $p = pmax$. This study will, however, appeal to the lag length of 8 as recommended by Liew *et al.* (2004). At the 1%, 5% or 10% level, if the last included lag is significant, it is retained as the optimal lag and used in the KSS-NLADF unit root test. However, if the last included lag is not significant, p is reduced by one lag until last included lag is significant, and used as the optimal lag for the KSS-NLADF unit root test. The null hypothesis of the nonlinear unit root is rejected in favour of the alternative if the t-statistic is greater than the critical value as some α-level of significance. Table 1 presents asymptotic critical values at the 1%, 5% and 10% levels.

Table 1: Critical Values for KSS Nonlinear Unit Root Tests

Significance Level	Raw Data	De-Meaned Data	De-Trended Data
1	-2.82	-3.48	-3.93
5	-2.22	-2.93	-3.40
10	-1.92	-2.66	-3.13

Source: Kapetanios et al. (2003)

As a starting point for the KSS-NLADF, various regression analyses were conducted to examine whether the raw (zero-mean), de-meaned (single-mean) or de-trended data be used in conducting the KSS-NLADF test as discussed in Section 3.2. Preliminary results proved that the intercept term, c, and trend variable, t, to be significant at the 5% significance level for all five variables, thus suggesting that de-trended variables be used in the KSS-NLADF unit root tests. Upon using the Schwartz Bayesian Criterion, an optimal lag one was selected and included in the analysis. The results for KSS-NLADF are summarised in Table 2.

Table 2: KSS Nonlinear Unit Root Test

Bank	Optimal Lag, P	Estimate	Std. Err	t-Value	p-Value	KSS
ABSA	1	-.000000020	7.487E-9	-2.68	0.0077	-2.67664
CAPB	2	-.000000005	1.9813E-9	-2.70	0.0071	-2.70126
FIRB	3	-.000000206	8.7758E-8	-2.35	0.0193	-2.34622
NEDB	1	-.000000015	4.3729E-9	-3.32	0.0010	-3.32274
STDB	0	-.000000060	1.2588E-8	-4.77	0.0001	-4.76565

Critical values of the KSS-NLADF test with constant and trend at the 10%, 5% and 1% significant levels are -3.13, -3.40 and -3.93, respectively

Referring to the results in Table 2 and the critical values in Table 1, the null hypothesis of nonlinear unit root is rejected for all the five banks at all levels of significance. The observedp-values for KSS test are all less than the conventional levels of significance. This means that the data exhibit asymmetric and nonlinear stationarity allowing the application of MS-AR model to be used.

3. Model estimation

The underlying principle of Markov Switching Models is to decompose nonlinear time series into a finite sequence of distinct stochastic processes, states or regimes, whereby the parameters are allowed to take on different values with regard to the state/regime prevailing at time t. Switches between states/regimes arise from the outcome of an unobservable regime variable, S_t, which is assumed to evolve according to a Markov Chain Given the time series $\{X_t : t = 1,2,3,\ldots,n\}$, the MS-AR model assumes the representation adopting Hamilton (1989):

$$X_t - \mu(S_t) = \varphi_1[X_{t-1} - \mu(S_{t-1})] + \varphi_2[X_{t-2} - \mu(S_{t-2})] + \ldots + \varphi_p[X_{t-p} - \mu(S_{t-p})] + \varepsilon_t, \quad (8)$$

Which, when re-parameterised yields:

$$X_t = c + \varphi_1 X_{t-1} + \varphi_2 + \ldots + \varphi_p X_{t-p} + \varepsilon_t,$$

$$\text{or} \qquad X_t = \sum_{i=1}^{p} \varphi_i X_{t-i} + \varepsilon_t, \quad (9)$$

where $\varphi_1, \varphi_2, \ldots, \varphi_p$ represent the coefficients of the AR(p) process, $\varepsilon_t \sim iid(0, \sigma_\varepsilon^2)$ and $\mu(S_t)$ are constants that are dependent on the states/regimes S_t and represent μ_1 if the process is in state/ regime 1 ($S_t = 1$), μ_2 if the process in state/regime 2 ($S_t = 2$), ..., and μ_R if the process is in state/regime R ($S_t = R$, the last state/regime). The change from one state to another is governed by the R-state first-order Markov Chain with transition probabilities, expressed as:

$$p_{ij} = P(S_t = j | S_{t-1} = i),\ i, j = 1,2 \quad (10)$$

where p_{ij} is the probability of moving from state i at time $t-1$ to state *j* at time *t*. Using the fact that:

$$p_{1i} + p_{2i} + \ldots + p_{Ri} = 1, \quad (11)$$

the probability of state i being followed by state *j* (also known as the transition matrix) is given by:

$$P = \begin{pmatrix} p_{11} & p_{21} & \cdots & p_{R1} \\ p_{12} & p_{22} & \cdots & p_{R2} \\ . & & & \\ . & & & \\ p_{1R} & p_{2R} & \cdots & p_{RR} \end{pmatrix} \quad (12)$$

In the current study, two states or regimes assumed that $R = 2$ and the underlying $MS - AR\ (p)$ model is given by:

$$X_t = \begin{cases} c_1 + \sum_{i=1}^{p} \varphi_{1,i} X_{t-i} + \varepsilon_{1,t}, & \text{if } S_t = 1 \\ c_2 + \sum_{i=1}^{p} \varphi_{2,i} X_{t-i} + \varepsilon_{2,t}, & \text{if } S_t = 2 \end{cases} \quad (13)$$

The transition matrix is, thus, given by:

$$P = \begin{pmatrix} p_{11} & p_{21} \\ p_{12} & p_{22} \end{pmatrix} \quad (14)$$

so that $p_{11} + p_{12} = 1$ and $p_{21} + p_{22} = 1$. P represents the probability of change in regime. For this two-regime MS-AR model, there are four transition probabilities given by:

$$\begin{aligned} &P(S_t = 1 | S_{t-1} = 1) = p_{11} \\ &P(S_t = 2 | S_{t-1} = 1) = p_{12} = 1 - p_{11} \\ &P(S_t = 2 | S_{t-1} = 2) = p_{22} \\ &P(S_t = 1 | S_{t-1} = 2) = p_{21} = 1 - p_{22} \end{aligned} \quad (15)$$

The MS-AR allows one to make inferences about the value of the observed regime, S_t, through the observed behaviour of X_t. This inference takes the form of probabilities called 'filtered probabilities', which are estimated using a simple iterative algorithm that computes both the likelihood function recursively and $P(S_t = i | \Omega_t)$, the filtered probability conditional on the set of observations, $\Omega_t = (X_t, X_{t-1}, X_{t-2}, ..., X_1, X_0)$ up to time t. If the whole data set is used, the probabilities obtained are called the 'smoothed probabilities' which is estimated conditional on all the n available observations, $\Omega_n = (X_t, X_{t-1}, X_{t-2}, ..., X_1, X_0)$. An important result that can be derived from the transition matrix is the expected duration (or average duration) of regime *i* as well as the average duration of regime *i*. The expected duration of regime *i*is given by:

$$E[D(S_t = i)] = \bar{D}(S_t = i) = 1/(1 - p_{ii}) = 1/p_{ij}. \quad (15)$$

A small value of p_{ij} $(i \neq j)$ is an indication that the model tends to stay longer in state i while its reciprocal $1/p_{ij}$ describes the expected duration of the process to stay in state *i*.

4. Results

In order to ascertain the possibility of using two-regime switching models for the variables, linearity likelihood ratio (LR) tests were conducted and the regime results reported in Table 3.

Table 3: Linearity LR Test of Two-Regime Switch

Variable	Chi-Square Test Statistic	P-value
ABSA	53.794	0.0000
CAPB	100.100	0.0000
FIRB	21.788	0.0006
NEDB	11.296	0.0796
STDB	12.042	0.0610

Findings from the linearity LR results suggest that the null hypothesis of no regime switching is rejected in favour of the two regimes. The p-value of the chi-square statistics for all the five variables are all significant at the 10%, 5% or 1% level. Therefore, theLR test results support a two-state regime for all the five variables. Similar results were reported by Ismail and Isa (2007), Psaradakis et al. (2009), Wasin and Bandi (2011) and Yarmohammadi et al. (2012). The information gathered from preliminary analysis was consolidated to run the analysis using the MS-AR(1) model and the results are summarised in Table 4. As observed from these results, with ABSA, CAPB and FIRB, the variance of Regime 2 $\sigma^2(s_t = 2)$ is greater than the variance of Regime$\sigma^2(s_t - 1)$. This suggests that Regime 2 is more volatile than Regime 1 regards to the three stocks. In other words, Regime 2 captures the volatility behaviours in ABSA, CAPB and FIRB in an unstable manner while Regime 1 captures the behaviours of the three stock prices in a stable manner. The opposite is true for

NEDB and STDB since the variances of Regime 1, $\sigma^2(s_t = 1)$ is greater than the variance of Regime 2, $\sigma^2(s_t = 2)$. It is also observed that, for ABSA, FIRB, NEDB and STDB, the estimated regime-dependent intercepts (expected daily increments in closing stock prices) are higher in Regime 1 than in Regime 2 (that is, $\mu(s_t = 1) > \mu(s_t = 2)$ for ABSA, FIRB, NEDB and STDB) while the opposite holds in the case of CAPB. In other words, changes in ABSA, FIRB, NEDB and STDB closing stock prices increased in a stable state while opposite holds for CAPB.

Table 4: Two-Regime MS-AR Modelling Results

	ABSA	CAPB	FIRB	NEDB	STDB
$\mu(s_t = 1)$	13749.6	17853.9	2276.56	15390.1	10507.0
$\mu(s_t = 2)$	13642.6	18761.8	2194.16	14488.6	10457.0
$\phi_1(s_t = 1)$	0.996758	1.00108	0.998810	0.994343	0.973702
$\phi_1(s_t = 2)$	0.531652	0.945820	1.259510	1.000960	1.180030
$\sigma^2(s_t = 1)$	178.457	201.356	34.4960	241.296	137.350
$\sigma^2(s_t = 2)$	241.037	331.188	116.217	190.232	18.7274
p_{11}	0.989355	0.98621	0.995928	0.995980	0.94730
p_{12}	0.061359	0.041621	0.999979	0.004151	0.69051
p_{21}	0.010645	0.013793	0.0040724	0.004019	0.052702
p_{22}	0.938640	0.958380	0.0000212	0.995850	0.309490
$E[D(s_t = 1)]$	16.2975	24.0263	1.0000	240.8884	1.4482
$E[D(s_t = 2)]$	93.9408	72.5005	245.5554	248.8181	18.9746

Furthermore, the probabilities of a closing stock price remaining in Regime 1, p_{11}, are smaller than the probability of a closing stock price staying in Regime 2, p_{22}, for all the five closing stock prices. In fact, the probabilities of a closing stock price staying in Regime 1 lie in the range of 0.947 to 0.996 with an expected duration, $E[D(s_t = 1)]$, of 1 to 241 days. Similarly, the probabilities of a stock price staying in Regime 2 lie in the range 0.000 to 0.958 with an expected duration, $E[D(s_t = 2)]$, of 19 to 249 days. In other words, closing stock prices can stay slightly longer in Regime 2 than in Regime 1. Appendix Adisplays the smoothed probability plots for the two-regime MS-AR models fitted to the five closing stock prices. Having a close look at these results, it appears that there is a correlation between the two regimes. This is because when the probability of Regime 1 is close to one, the probability of Regime 2 is close to zero, and vice versa. These finding suggests that the estimated MS-AR models perform very well in getting the direction of change of a series from Regime 1 to Regime 2 or from Regime 2 to Regime 1. The findings of this study are accordance with those by Hamilton (1989), Turner et al. (1989), Chu et al. (1996) and Wasim and Bandi (2011).

Model Evaluation: Just as in the case of linear models, evaluation of nonlinear models is necessary. The evaluation of nonlinear models is based on the properties of resulting residuals. Various tests for misspecification; including non-normality, stability and autocorrelation are conducted.

Normality of residuals: Assessing the assumption of normality is required by most statistical procedures. Parametric statistical analysis assumes a certain distribution of the data, usually the normal distribution. If the assumption of normality is violated, interpretation and inference may not be reliable or valid. Therefore it is significant to test this assumption before forecasting with the estimated model. This study uses the histogram to assess residuals for normality. This method recommended by to Razali & Wah (2011) leads to similar conclusions provided by empirical tests. Histograms for the five closing stock prices are shown as Appendix D. A visual inspection of these figures proves that the five stocks are explained by a normal distribution. This also implies that the residuals of the MS-AR model residuals are identically and independently distributed and conform to normality assumption.

Autocorrelation check: A simple test commonly used to detect autocorrelation of residuals at two time points, t and t-1, is the Durbin-Watson (DW) statistic. The residuals, ε_t assume the AR (1) representation:

$$\varepsilon_t = \rho.\varepsilon_{t-1} + v_t, \quad \text{where} \quad v_t \sim iid(0,\sigma_v^2). \quad (16)$$

In the absence of autocorrelation in $\rho = 0$. Hence, the hypotheses usually considered in the Durbin-Watson test are:

$H_0 : \rho = 0$

$H_1 : \rho \neq 0$

The test statistic is:

$$DW = \frac{\sum_{t=2}^{n}(\varepsilon_t - \varepsilon_{t-1})^2}{\sum_{t=1}^{n}\varepsilon_t^2} \quad (17)$$

Where $\varepsilon_t = y_t - \hat{y}_t$ and y_t and $\hat{y}_t$ are, respectively, the observed and predicted values of the response variable. Upper and lower critical values, d_U and d_L have been tabulated for different values of k (the number of explanatory variables) and n. Based on the estimated DW, the following decisions suffice:

- H_0 is rejected if $DW < d_{L,\alpha/2}$ or if $(4 - DW) < d_{L,\alpha/2}$,
- H_0 is not rejected if $DW > d_{U,\alpha/2}$ or if $(4 - DW) > d_{U,\alpha/2}$,

Inconclusive if $d_{L,\alpha/2} \leq DW \leq d_{U,\alpha/2}$ and if $d_{L,\alpha/2} \leq (4 - DW) \leq d_{U,\alpha/2}$.

The autocorrelation test results are summarised in Table 5. The results in Table 3 show the insignificant p-values of the Durbin-Watson and Breusch-Godfrey test statistics. These observed probabilities are greater than the 1%, 5% and 1% significance levels, suggesting that the residuals are not auto correlated. This means that the MS-AR model residuals do not violate the serial correlation assumption. This finding is supported by the Portmanteau test results reported in Table 4 (that is, the p-values of the chi-square test statistics are greater than 1%, 5% or 10% levels).

Table 5: Durbin-Watson and Breusch-Godfrey Tests of Residuals from MS-AR Models

Autocorrelation Tests of Residuals							
	Durbin-Watson Test				**Breusch-Godfrey Test**		
Residual Variable	**Order**	**DW**	**Pr < DW**	**Pr > DW**	**Alternative**	**LM**	**Pr > LM**
ABSA	1	2.2164	0.9950	0.0050	AR(1)	6.5863	0.0103
	2	2.0236	0.6262	0.3738	AR(2)	6.9170	0.0315
	3	1.9552	0.3277	0.6723	AR(3)	7.0898	0.0691
	4	1.9656	0.3893	0.6107	AR(4)	7.2620	0.1227
	5	1.9946	0.5419	0.4581	AR(5)	7.2658	0.2016
CAPB	1	1.8644	0.0537	0.9463	AR(1)	2.4202	0.1198
	2	1.8338	0.0267	0.9733	AR(2)	5.7201	0.0573
	3	2.0462	0.7364	0.2636	AR(3)	6.4492	0.0917
	4	1.9734	0.4251	0.5749	AR(4)	6.4748	0.1664
	5	2.0071	0.6000	0.4000	AR(5)	6.4860	0.2618
FIRB	1	2.0739	0.8096	0.1904	AR(1)	0.7684	0.3807
	2	2.2016	0.9926	0.0074	AR(2)	6.6655	0.0357
	3	2.1766	0.9855	0.0145	AR(3)	12.0590	0.0072
	4	1.9171	0.1958	0.8042	AR(4)	12.2991	0.0153
	5	1.9712	0.4314	0.5686	AR(5)	12.3304	0.0305
NEDB	1	2.0216	0.6012	0.3988	AR(1)	3.7097	0.0541
	2	2.1727	0.9819	0.0181	AR(2)	5.7199	0.0573
	3	2.0847	0.8620	0.1380	AR(3)	5.7823	0.1227
	4	1.9458	0.3028	0.6972	AR(4)	5.8780	0.2084
	5	2.0223	0.6679	0.3321	AR(5)	7.2371	0.2036
STDB	1	2.1703	0.9785	0.0215	AR(1)	4.0822	0.0433
	2	2.1492	0.9652	0.0348	AR(2)	7.9635	0.0187
	3	1.9396	0.2636	0.7364	AR(3)	8.0898	0.0442
	4	1.9712	0.4151	0.5849	AR(4)	8.1527	0.0861
	5	2.0337	0.7152	0.2848	AR(5)	8.2477	0.1431

Model stability: One other way of assessing model robustness is by comparing the actual and predicted values of a series. Appendix C displays the overlay plots of the actual series and predicted series from the MS-AR (1) model. The model appears to predict the actual series well, suggesting that the MS-AR model could performed relatively well in tracking the behaviours of the five closing stock prices. Both series are moving along the same trend suggesting that MS-AR model could provide efficient and robust forecasts of the closing five stock prices. Based on the smoothed probabilities of the various MS-AR (1) models, closing stock yields were classified into one of the two regimes – stable regime (Regime 1) and volatile regime (Regime 2) as reported in Table 6. The classification results show FIRB closing stock prices having the longest period of stability, i.e. 560 days or 99.64% stability, with an average duration of almost 186.67 days while NEDB closing stock price have the shortest period of stability (290 days or 51.60% stability) with an average duration of 290.00 days.

Table 6: Regime Classification Based on Smoothed Probabilities

Stock Price	Regime 1 (Stable State)	Regime 2 (Volatile State)
ABSA	Total Days: 485 (86.30%) Avg. Duration: 97.00 Days	Total Days: 77 (13.70%) Avg. Duration: 19.25 Days
CAPB	Total Days: 420 (74.73%) Avg. Duration: 60.00 Days	Total Days 142 (25.27%) Avg. Duration: 23.67 Days
FIRB	Total Days: 560 (99.64%) Avg. Duration: 186.67 Days	Total Days: 2 (0.36%) Avg. Duration: 1.00 Day
NEDB	Total Days: 290 (51.60%) Avg. Duration: 290.00 Days	Total Days: 272 (48.40%) Avg. Duration: 136.00 Days
STDB	Total Days: 543 (96.62%) Avg. Duration: 45.25 Days	Total Days: 19 (3.38%) Avg. Duration: 1.73 Days

5. Conclusion

The study modelled the daily closing stock price series of five variablesin South Africa. Data was obtained from the Johannesburg stock exchange covering the period 2010 to 2012. Prior to application of the MA-AR model, the data used was prepared by checking nonlinearity in unit root using the KSS-NLADF test. This is a basic assumption for using the suggested model. The results from this test confirmed that the five stock prices are indeed nonlinear and the stationarity condition was also captured. This implies that the South African stock prices are no different from those of other countries as reported in literature. The data does conform to time series properties and is suitable for application of nonlinear models. The suggested MS-AR model was used to provide results in the primary analysis. The SBC was used as a guiding criterion to select an optimal used in building the model. The analysis also suggested an MS-AR model switching between two regimes. The daily stock prices of the three banks ABSA, Capitec and First National banks proved to be more volatile compared to those of Standard bank and Nedbank. The findings further revealed that the expected daily increment in daily stock prices for ABSA, Nedbank, Standard and First National banks are stable and higher in Regime 1 than in Regime 2 overtime. This could also mean good returns for clients using these banks. The results rule out Capitec Bank as providing value for money in terms of investment.

However, classification results proved FIRB closing stock prices as having the longest period of about 99.64% stability, i.e. a total of about 560 days in average of 187 days. Standard bank is the second revealing about 96.62% running over 543 days on an average of 45 days. Nedbank was identified as having the lowest stability of about 51.6% over 290 days. Further analysis proved that the MS-AR (1) is a best modeller of closing stock prices in South Africa and that the model can be used to generate forecasts when planning for future. Based on these conclusions, the study makes the following recommendations:

- Since MS-AR (1) model proved to be effective in capturing regime shifts behaviour in stock market returns, asymmetrical relationships between returns, nonlinear unit root and volatility, analysts of stock markets from other countries may use this model in their studies.

- Further studies may apply Markov Switching model with extension of moving averages (MA) and autoregressive moving averages (ARMA). Just like the autoregressive (AR) model, the MA and ARMA are Box-Jenkins univariate processes built for stationary and linear time series. Their integration of AR model in Markov Switching provided robust model which may be used for further analyses.
- For policy purposes, financial analysts at the five banks may refer to the findings of this study when revising their policies. Closing stock prices have proven to be volatile for ABSA, Capitec and First National banks and as a result policies to address such instability have to be formulated. Provided adjustments are made to stock prices, there are 99.64% chances that First National Bank prices will be stable for 560 days. ABSA and Capitec banks may experience improved 86.3% and 74.7% stability in prices for 485 and 420 days respectively. This provides guarantee for investors and/or clients of these banks that they will enjoy value for their money. Some banks may however lose their clients to others on the process.

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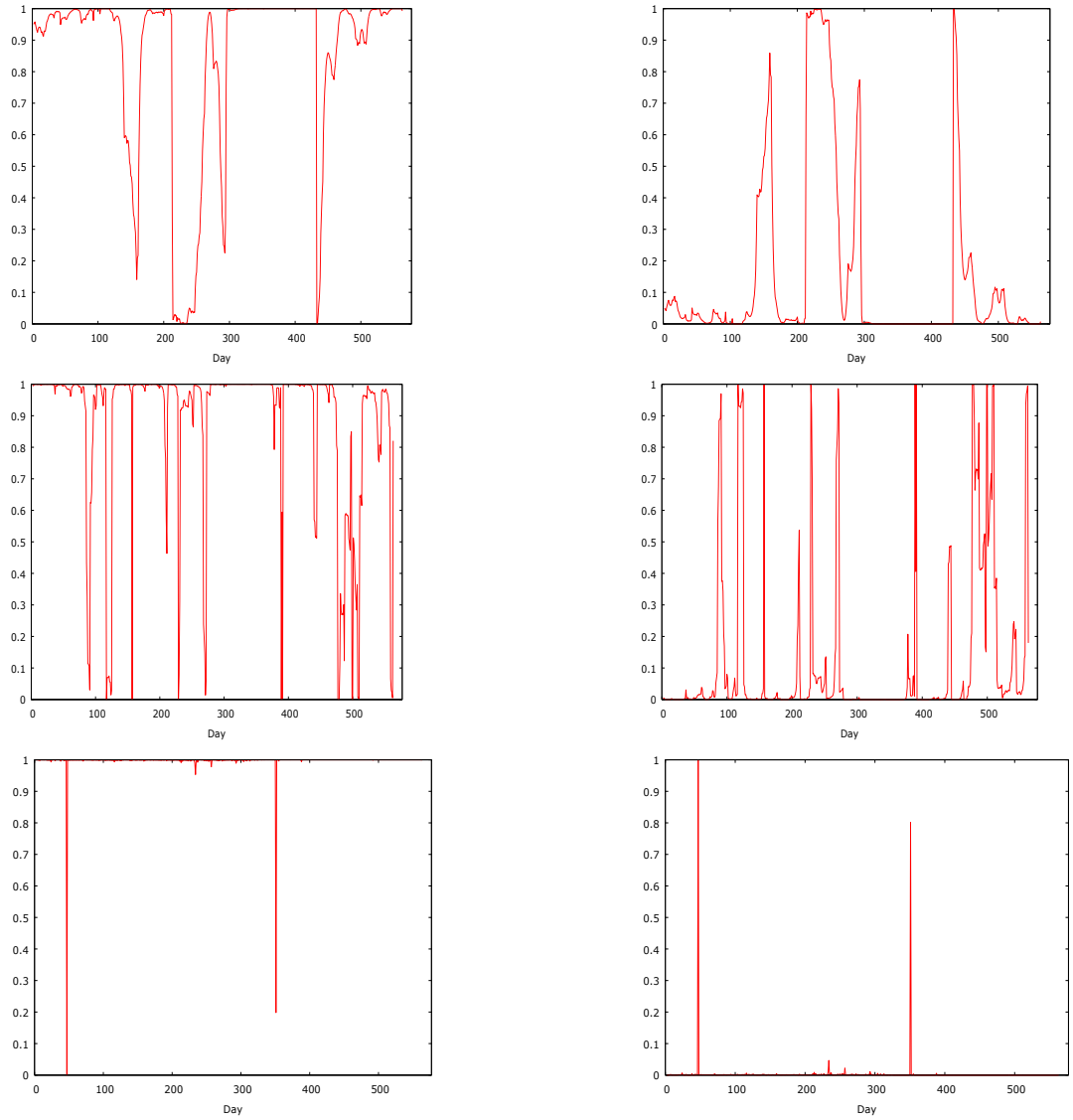
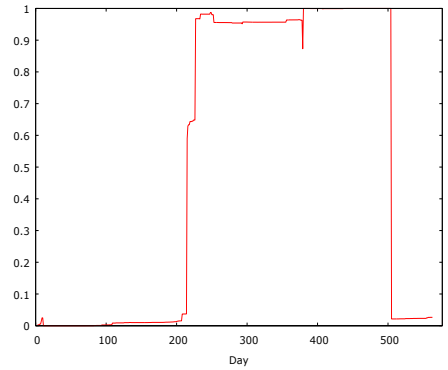
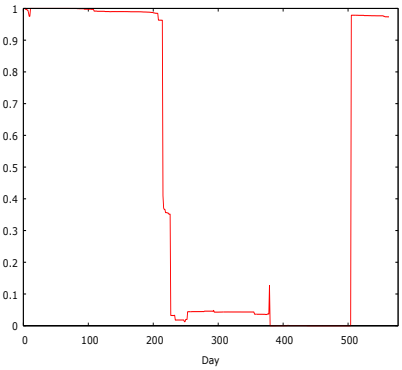
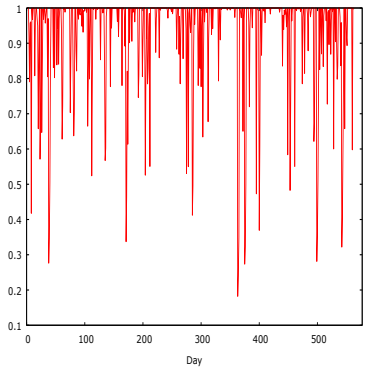
Appendix A

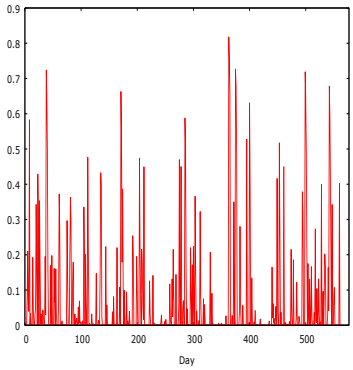
Smoothed Probabilities of Regime 1 and Regime 2











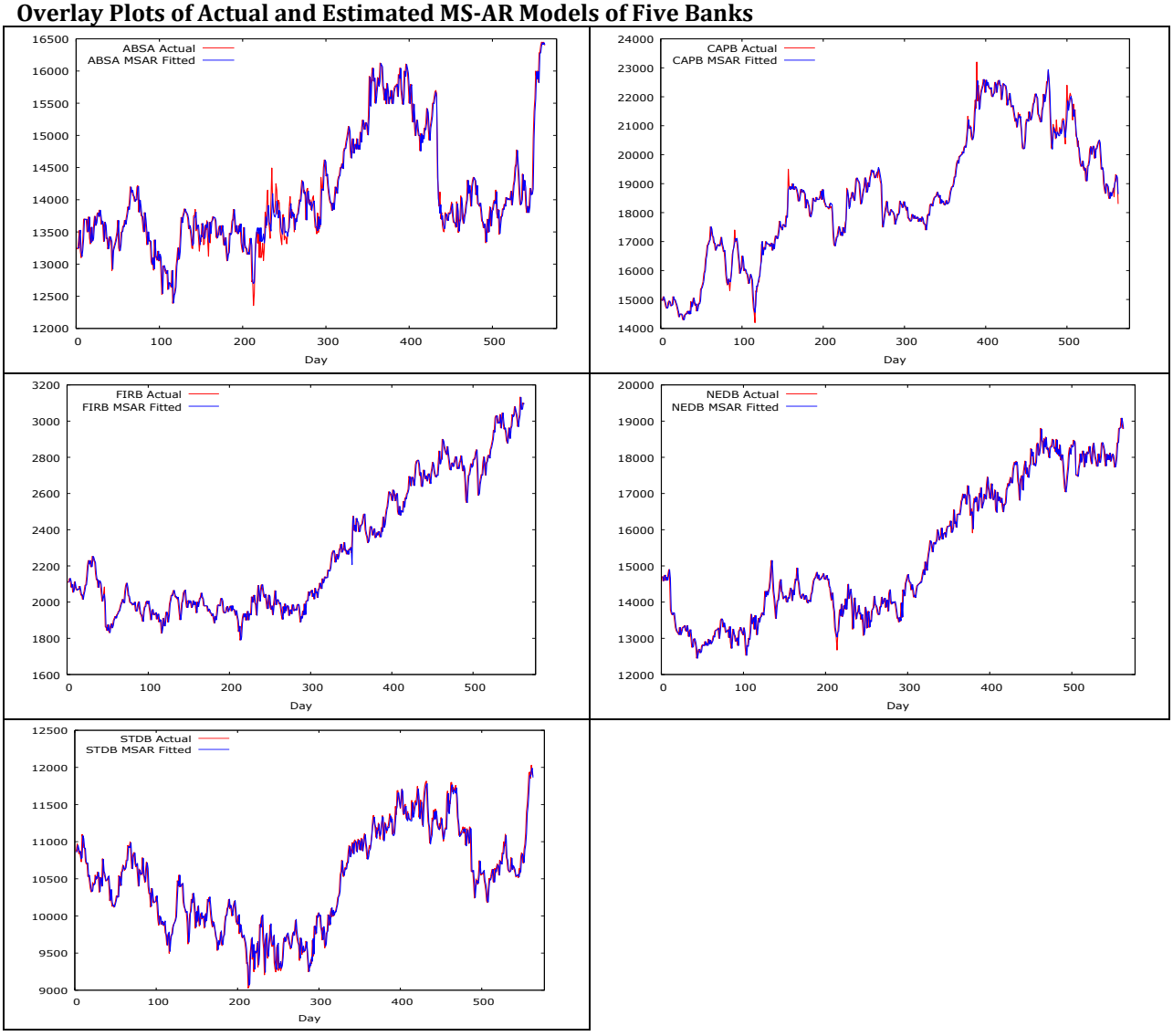
Appendix B

Schwartz Bayesian Criteria (SBC) From Two-Regime MS-AR Model Identification

AR Lag, p	ABSA	CAPB	FIRB	NEDB	STDB
1	13.46487	13.88768	10.03544	13.61097	12.73145
2	13.47251	13.91295	10.07151	13.70889	12.75810
3	13.59242	13.93030	10.07839	13.66788	12.73734
4	13.61415	13.95129	10.15116	13.76884	12.80347
5	13.63616	19.97345	10.17336	13.79278	12.82227

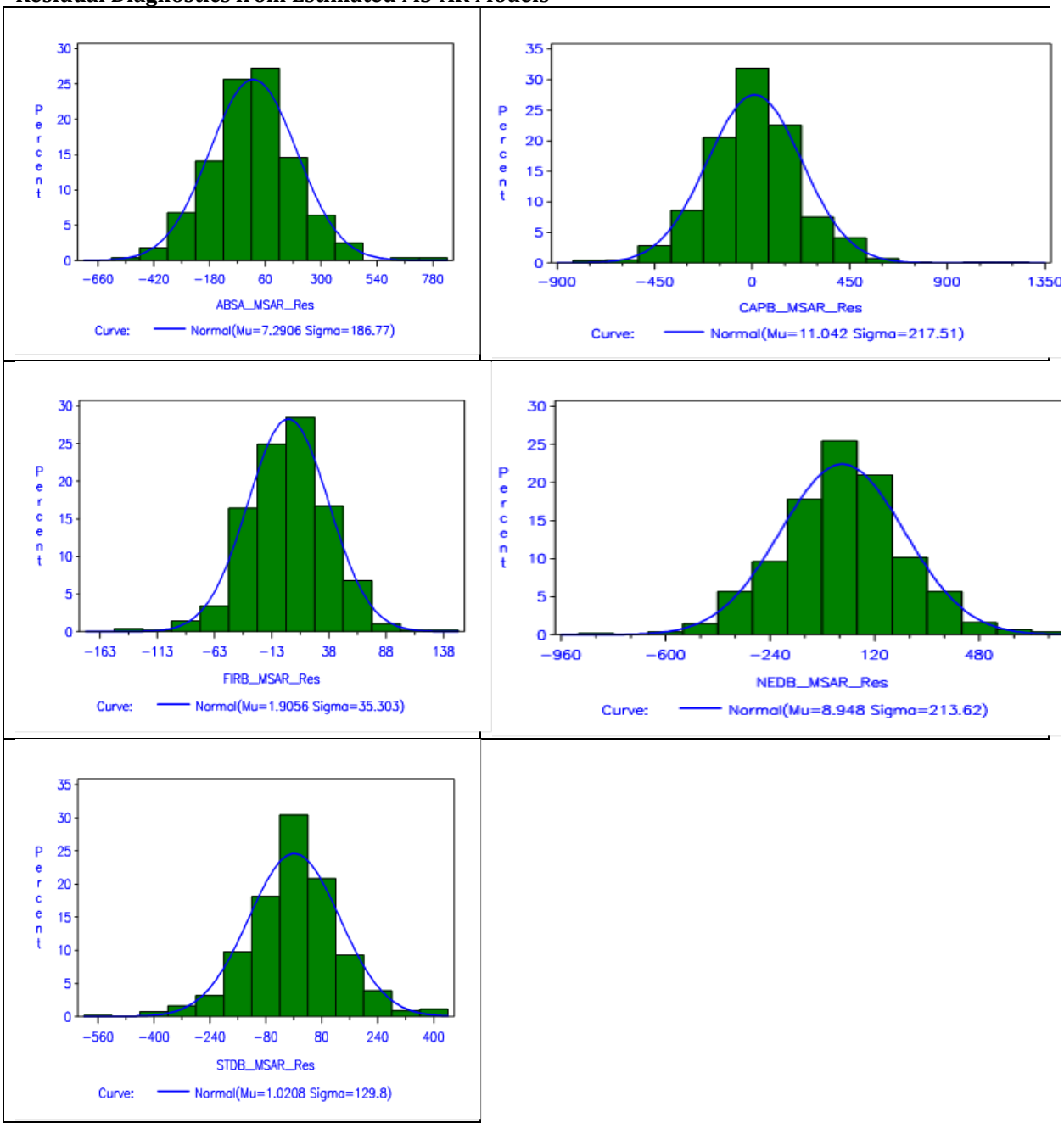
Appendix C

Overlay Plots of Actual and Estimated MS-AR Models of Five Banks



APPENDIX D

Residual Diagnostics from Estimated MS-AR Models



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Performance of High School Students in Vhembe District

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Abstract: Despite the attempts by South African government to make education accessible to all by introducing free food and free textbooks at the primary school level, there is still high failure rate in mathematics and science in high schools in the country. This study makes attempt to establish some factors that affect the performance of students, especially in science subjects in high schools in the Vhembe district in the Limpopo province. A survey was conducted in 17 high schools randomly sampled in the Vhembe district. Purposive sampling was used to get the grade 11 and 12 students and their teachers. About 700 students, 70 teachers and 17 principals were interviewed. The study concludes that the overall pass rate is 70% but the rate in mathematics and science is hardly 40%; and the key factors affecting performance are lack of laboratory for practical, awards, shuffling and textbooks. The study recommends that science laboratories be built in schools, textbooks be supplied in good time and teachers to motivate students by giving awards.

Keywords: *Shuffling, laboratory, textbooks, awards, educational environment*

1. Introduction

Poor performance of students in high and higher institutions in South Africa comes from many dimensions – unqualified staff, staff members who are neither committed nor regular at school and a host of them. High schools are meant to prepare students (learners) for colleges or tertiary institutions which have the clear duty internationally, to build the right set of knowledge, skills and attitudes that will increase the employability of students. Good academic performance in high school is therefore crucial and that requires a positive school environment for students to feel comfortable in school, much as at home. Education and skills development promote individual, social and economic development. High quality education and appropriate competences and capabilities are prerequisites for growth, development and citizenship, which in turn can afford more people the opportunity to learn to enhance their capabilities and to contribute to a productive society (McGrath, 2010: 2). For decades and even now a lot of constraints have hampered academic performance at high school level in South Africa. Unqualified teachers, shortage of staff, inadequate resources, teenage pregnancies and lack of support and mentorship, have all contributed to the poor performance of students in high schools. Education and training during the old regime in South Africa was characterised by the underdevelopment of human potential, especially among the blacks. The teaching and learning of Mathematics and the Sciences, in particular, were affected the most. For example, the Third International Mathematics and Science Study conducted in 1995, in which South Africa participated with 41 others, reported that South Africa students came last with a score of 351 (Mji and Makgato, 2006: 253). In 2013, they again came last with a score of 380. Post-apartheid African National Congress government has repeatedly said that they have come to redress the inequality that existed during the apartheid regime. They came with a formula which states, among other things, that the poorest 40% of schools should receive 60% provincial schooling non-personnel budget allocation; and the less poor 20% of schools are to receive 5% of the resources (National Maintenance Act, (NNSSF Act), 1998). The question now is: has this formula been able to redress the poor performance of the rural students in Vhembe? This paper examines the performance of grade 12 (form five students in high schools) in the Vhembe district and, determines factors affecting performance and recommends measures needed to turn the negative results around.

2. Literature Review

Although there are substantial global efforts to increase and improve the scientific literacy in the country, it has however been recently realized that the science education systems are turning out less science graduates at all levels than the global economy requires (Muwanga-Zake, 2008: 1, Muzah, 2011: 112; Cameron, 2009:15-16; Einhorn, 2008: 2). There has been a decline in science graduates all over the world and that has contributed to failure rate in schools (Fonseca and Conboy, 2006:82; Madibeng, 2006:1-2).The most common

problem linked to students' poor performance in science in most developed countries is mainly shortage of qualified and experienced science teachers (Ruby, 2006: 1007). In contrast, most developing countries, including South Africa, have a host of factors ranging from lack of adequate science resources and facilities such as apparatus and laboratories, shortage of trained and qualified science educators, large science classes, limited proficiency in medium of instruction to outdated teaching methods (Howe, 2003: 1-2; Makgato, 2007: 90; Mji and Makgato, 2006:259-261; Muwanga-Zake, 2008: 4-6). Studies have associated shortage of qualified teachers with lack of thorough preparation for lessons and reduced coverage of content (Muzah, 2011: 109).

Education researchers in South Africa agree that there are acute shortages of teachers, especially in Sciences and Mathematics. Many institutions in the country lack infrastructural facilities that promote healthy learning (Ardens, 2010: 1-3).There are several studies locally and internationally regarding poor performance at high school level. These studies revealed that in many cases the level of academic performance in urban and rural areas is not the same, and that the urban students tend to perform better than those in the rural areas (Saiduddin, 2003: 22; Themane, 1989: 151; Munn, 1996:44). However, Kyei and Nemaorani (2014) found out that the performance of grade 10 (form three students) in rural areas in the Vhembe district is rather better than in urban areas; the reason they attributed to lack of entertainment/social centres in rural areas to attract and distract students from their studies. According to Muzah (2011:54), the views and opinions of educators and learners showed that the main causes of high failure rates are poor teachers' qualifications, outdated teaching methods, massive workloads, high levels of absenteeism and acute deficiencies in aspects related to: resources, subjects content, classroom management skills, proficiency in language of instruction and assessment, motivation and perseverance as well as poverty.

The UN convention on the Rights of the Child states that every child has the right to an education that develops their personality, talents, mental and physical abilities to their fullest potential (*www: unicef.org/southafrica).* And every school's mission should be the education of students to become knowledgeable, responsible, socially skilled, healthy, caring and contributing citizens (*www: unicef.org/southafrica).*Though there are increasing levels of female school participation in South Africa as elsewhere in sub-Saharan Africa, a great number of young female students become pregnant, perform poorly or fall out of school; and the (pregnancy) prevalent rate in South Africa is shocking (Grant and Hallman, 2006:12). The high failure rate in Mathematics and Science in South Africa continues to be very disturbing and creates concerns, especially in historically disadvantaged townships and rural public high schools. Under-achievement in Science and Mathematics in these schools is skyrocketing in an era when the ability to apply science is spreading out at an exponential rate to the daily lives and worldwide events (Muzah, 2011:91). Maybe the underlying reasons for under-achievement of students in science at final year (matriculation) level, particularly in historically disadvantaged public high schools of South Africa, have not yet been sufficiently researched or appropriately treated.

3. Methodology

Material/Data: A survey was conducted within seventeen high schools randomly sampled in the Vhembe district. The principals, teachers (educators) teaching science subjects and students in grades 11 &12 (forms 4 & 5) were purposively selected from the sampled schools and interviewed. About 700 students, 70 teachers and 17 principals were involved. Some of the questions in the questionnaire were the following: Does class size affect academic performance? Do you do Physics practical in your school? Do you do Life-Science practical in your school? Do you have a textbook for each subject that you are taught? Are you shuffled in your school/classes? And do you get Awards if you have performed well academically?

Analysis: The analytical tools employed for this study include a logit model and multiple regressions. A logit model is a useful measure to study the relationship between a binary response variable and one or more explanatory variable(s). Multiple regression modelling provides an elegant method of describing a relationship between a response variable and predictors. The models provide improved precision for estimation and prediction by using a linear surface such as a plane or hyper plane to approximate the relationship between a continuous response variable and a set of predictor variables (which may be continuous or categorical) (Larose, 2006: 93- 99).

4. Results

Table 1: Basic statistical analysis (Univariate Analysis)

Variable	Frequency	Percentage
Does class size affect academic performance?		
No	350	53.0
Yes	311	47.0
Do you do Physics practical in you school?		
No	226	38.8
Yes	357	61.2
Do you do Life-Science practical in your school?		
No	307	52.9
Yes	273	47.1
Do you have a textbook for each subject you are doing?		
No	199	30.0
Yes	465	70.0
Are you shuffled in your school/classes?		
No	497	75.6
Yes	160	24.4
Do you get Awards if you have performed well academically?		
No	272	41.3
Yes	386	58.7

Table 2: Bivariate analysis of students/learners' performance

Variables	0%-49%	50%-100%
Does class size affects academic performance?		
No	198	152
Yes	146	165
(*p-value*=0.028)		
Do you do Physics practicals in your school?		
No	95	131
Yes	233	138
(*p-value* =0.000)		
Do you do Life science practicals in your school?		
No	143	164
Yes	169	104
(*p-value* =0.209)		
Do you have a textbook for each subject you are doing?		
No	92	107
Yes	252	213
(*p-value* =0.036)		
Are you shuffled in your school?		
No	242	255
Yes	99	61
(*p-value* =0.002)		
Do you get awards in your school if you have performed well academically?		
No	129	143
Yes	214	172
(*p-value* =0.026)		

Table 3: Variables in the equation of students' performance- Logistic regression

Variables	B	SE	WALD	df	Sig	Exp(B)
Size	-0.280	0.183	2.335	1	0.127	0.756
Physics	0.563	0.233	5.825	1	**0.011**	1.756
Life Science	0.271	0.216	1.576	1	0.209	1.312
Textbook	0.184	0.197	0.871	1	**0.098**	1.202
Shuffle	0.210	0.225	0.867	1	**0.042**	1.233
Award	0.309	0.185	2.793	1	**0.028**	1.362
constant	-7.60	0.231	10.815	1	0.001	0.468

Table 4: Pass rate of grade 12 learners for the 17 schools

Year & pass rate	Frequency	Percentage
2007		
0-49%	6	35.3
50-100%	11	64.7
2008		
0-49%	3	17.6
50-100%	14	82.4
2009		
0-49%	5	29.4
50-100%	12	70.6
2010		
0-49%	5	29.4
50-100%	12	70.6

Table 5: Qualification of teachers/educators in the 17 schools

Variable	Frequency	Percentage
Master's degree		
Rarely	14	82.4
Often	3	17.6
Honours degree		
Rarely	15	88.2
Often	2	11.8
Bachelor degree		
Rarely	4	23.5
Often	13	76.5
Diplomas		
Rarely	6	35.3
Often	11	64.7
Certificates		
Rarely	2	15.4
Often	11	84.6

Table 6: Regression analysis (OLS)

Source	SS	df	MS	F	Sig
Corrected Model	59.583	5	11.917	6.406	0.000
Intercept	59.111	1	59.111	31.777	**0.000**
Physics	7.048	1	7.048	3.789	**0.003**
Textbook	6.471	1	6.471	3.479	**0.063**
Shuffle	16.023	1	16.023	8.614	**0.052**
Awards	6.303	1	6.303	3.388	**0.046**
Class size	1.984	1	1.984	1.067	0.302
Life science	3.771	1	3.771	2.052	0.153
Error	1043.552	561	1.860		
Total	8321	567			
Corrected Total	1103.136				

Dependent variable: performance (pass rate of gr 12)

Table 6b: Coefficients of learners' performance

Parameter	B (Unstandardized)	SE	Beta (standardized)	T	Sig
Intercept	2.052	0.364	-	5.637	0.000
Physics	0.248	0.128	0.254	1.947	**0.003**
Textbook	0.240	0.128	0.240	1.865	**0.063**
Shuffle	0.418	0.142	0.366	2.935	**0.052**
Awards	0.219	0.119	0.215	1.841	**0.046**
Class size	-0.122	0.118	-0.156	-1.033	0.302
Life science	0.204	0.143	0.210	1.432	0.153

Dependent variable: performance (pass rate of gr 12)

Table 7: ANOVA

Model	Sum of Squares	df	MS	F	Sig
Regression	7.753	6	1.292	5.454	.000
Residual	127.692	539	.237		
Total	135.445	545			

a. Predictors: (Constant), do you get awards if you have performed well? do you do practical in your school?, does the class size affect your academic performance?, do you have text books for each subject you are doing?, are you shuffled in your school?, do you do practical in your school?
b. Dependent Variable: what was the pass rate of Grade 12 in the following past years in your school

Table 1 show that 53% of the students reported that the class size does not affect their academic performance, 38.8% of students do not do Physics practical in their schools because there are no laboratories and 52.9% of the students do not do Life science practical. About 30.0% of the students do not have textbooks for each of their subjects and 43.1% do not get awards from their schools irrespective of how well they perform. Out of the 58.7% of the students who get awards from their schools, some get certificates, some get vouchers, some get study materials (stationary, dictionary, memory-stick (flash drive), etc.) and some get trophies. Other awards include: bursaries, educational fields' trip, school uniform, medals and money. All these awards are meant to motivate the students to keep on doing well because their good work is acknowledged and appreciated. Table 2 gives the results from the cross-tabulation. There is a very strong relationship between performance and availability of laboratories (*p-value=0.000*). Similarly, there is a very strong relationship between performance and a text book (*p-value=0.036*); a strong association between performance and shuffling (*p-value=0.002*), and a strong association between performance and giving of awards. Thus, if students are rewarded for their good performance, they get encouraged and motivated. Furthermore, there is a very strong relationship between performance and the class size (*p-value=0.028*), such that the larger the class size

the lower the pass rate.

Table 3 gives the summary of the analysis by logistic regression. The results confirm that there is a strong association between **Performance and the availability of laboratories for Physics practical,** *p-value=0.011*. **T**he logistic regression analysis has confirmed the following: that there is a strong relationship between **performance and awards**, *(p-value=0.028*); **performance and shuffling of students**, (*p-value= 0.042*); but weak relationship between **performance and textbooks,** (*p-value = 0.098*). For the class size, the logistic regression analysis showed no relationship. Similarly there is no relationship between performance and the Life sciences, (*p-value=0.209*).

Mathematically, the model from the multiple logistic regression analysis, can be expressed as follows:

Log odd = -7.60 + 0.563 science practical + 0.309 awards +0.210 shuffle +0.184 textbooks

Implying that

Odd ratio (performance) = 0.468 + 1.756 science practical + 1.362 awards +1.233 shuffle + 1.202 textbooks.

The data were also transformed and; multiple regressions (OLS) and General Linear Modelling were also done as a further confirmation (http//www.ats.ucla.edu/stat/spss/dae/logit.htm; Menard, 1995:43; Hosmer and Lemeshow, 2000:50 - 56).

And the model from these analyses is as follows (see Tables 6 & 6b):
Performance = 2.0652 + 0.248science practical + 0.24textbooks +0.418shuffling +0.219awards***(unstandardized)***

Performance= 0.254science practical + 0.24textbooks +0.366shuffling +0.215awards ***(standardized).***

Table 5 gives the distribution of qualifications of teachers in the sampled schools. Teachers with master's degree were 4.6%; honors degree 6.9%; bachelor's degree 30.0%; diploma 25.4% and a teaching certificate 33.1%. Almost 60% of the high school teachers do not have bachelor's degrees. Most teachers have only a teaching certificate as a qualification.

Discussion: The pass rate for grade 12 in this district, according to this survey, is about 70% (see Table 4) which is commendable since Vhembe is predominantly rural with a high degree of poverty. Many high schools in the district lack good educational infrastructure such as: laboratories, classrooms, more qualified, committed and dedicated staff, textbooks, etc., which promote good performance by students. In 2012 for example, there were some schools in the Limpopo province which did not receive their textbooks until September when the academic year was almost ending. This action prompted a non-governmental organisation (NGO) called, **Section 27**, to take the Minister of the Department of Basic Education to court for various infractions, including: slow delivery of textbooks, non-provision of other resources needed for quality education, lack of commitment to education, and lack of concern for students' plight (*Sunday Times newspaper 1 July 2012, p.5 review*).

Education reflects the broad social, economic and political structure of the country it serves. In South Africa, the past education system for blacks was closely related to the broad development programme and political injustices. Poverty is concentrated in provinces that have a high rural population, which is predominantly Black. Their high poverty is due to their high illiteracy and unemployment levels. These perpetuate the problems that influence poor school performance by the children. Mji and Makgato (2006:259) cite five areas, namely: Teaching strategies; Content knowledge and understanding; Motivation and interest; Laboratory usage; and non-completion of syllabus as direct factors influencing poor performance in high schools. As mentioned earlier, the new government came with a key mechanism to redress the inequality in schools through the distribution of education budget policy that provided the framework for allocating "non-personnel recurrent costs of the basis of need." But it appears the redress formula has not worked

successfully till now. Research investigations on reasons why students do not do well are important because they help to identify the problems that need to be resolved. Some students complain that teachers at high schools are less friendly, always intimidating students with quizzes and competitions, and consequently making students feel less academically prepared. The ensuing fear makes their level of performance drops.

5. Conclusion

From the logistic regression analysis, the explanatory variables for performance are availability of laboratories for science practical, shuffling of students, and recognising and giving awards to hardworking students, which are true at a significance level of 5%; while providing textbooks to students also contributes to poor performance marginally at the 10% level. From Table 6b, the coefficient for the class size is negative (b=-0.122 for the unstandardized) and/or beta (β = - 0.156 for the standardized) confirming that a large class has a negative effect on good performance. Unfortunately the *p-value* shows that the class size has no statistical significance on performance in this instance. In short, the factors affecting the performance of students in high schools in the Vhembe district of the Limpopo province in this study are: availability of laboratories for science practical, shuffling of students in class, giving out awards to good students who excel in their studies and provision of textbooks. Large class size results in overcrowding, making some students inactive, uncontrollable, and some students hiding behind others. Large classes disturb concentration and individual attention for students is also not possible in large classes.

Recommendations: It is believed that this study has provided vital information about how awards or incentive can motivate students to strive for excellence; how much infrastructure available in public schools can contribute to good academic excellence. It has revealed in part the extent to which the attitude to work by both staff and students contribute to success rate. Stakeholders for school administration in Vhembe can look at some of the following recommendations and plan accordingly. This study recommends to the School Management Team and the Department of Education the following: To ensure that teachers identify under-performing students, put them together in one class, (say, class C), and give them extra lessons after hours. Students' support teams should also be formed to help students that may need individual help or extra lessons. Teachers are to be encouraged to give some awards to deserving and hardworking students as motivations and appreciations for their good performance, and that: the governing authority and/or government should endeavour to provide laboratories for practical for relevant (science) subjects. The governing authority and/or government should provide textbooks to schools, especially schools in rural areas; and in good time, immediately when academic year begins, so that serious academic work can start right from the beginning of the year.

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Notes

- Academic is used to describe any exercise that is related to work done in schools, colleges and universities, especially work which involves studying and reasoning rather than practical or technical skills (Collins Advanced Dictionary of English,2009).
- A performance is how successful someone is and how well they do something (Collins Advanced Dictionary, 2009).
- Academic performance refers to how learners/students deal with their studies and how they cope with or accomplish different tasks given to them by their teachers or lecturers.

Academic knowledge brings a person in and ahead of the competitive world and on the surface, someone who is performing well academically is related to the following:

- The ability to study and remember facts, this is something to do with recalling things studied.
- The ability to see how facts fit together and form larger patterns knowledge, this is called constructivism; the ability to come up with new ideas from previous known information with the newly learned ideas.
- The ability to think in relation to facts, and
- The ability to communicate your knowledge verbally or down on a paper.

Good academic performance is linked to having good organisational skills.

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Scale Development, Validation and Use of Structural Equation Modelling to Test the Impact of Consumer Confidence and Persuasibility on Dissonance

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Abstract: This study develops and validates a scale to assess the impact of consumer confidence and persuasibility on dissonance and applies the instrument to high-end consumers. It also assesses the relationship between consumer confidence and persuasibility as these constructs merge to influence dissonance. A sample of 200 new motor vehicle buyers who purchased from a leading and reputable motor vehicle company in KwaZulu-Natal, South Africa, was drawn using stratified random sampling based on range of motor vehicle (bottom, middle, top). Initially, exploratory factor analysis (EFA) was used to extract the factors. The reliability of the modified questionnaire was then assessed using Cronbach's Coefficient Alpha. Thereafter, confirmation factor analysis (CFA) was undertaken to develop and test the model structure in SEM, which generated a good model fit. Pearson r was computed to assess the relationship amongst the dimensions. Using structural equation modelling, the results support a significant relationship between consumer persuasibility and dissonance and a significant but inverse relationship between consumer confidence and dissonance, and confidence and persuasibility respectively.

Keywords: *Consumer persuasibility, consumer confidence, dissonance, scale development, structural equation modelling (SEM)*

1. Introduction

One strategy to understand and predict consumption behaviour is to analyse the various needs, motivations and goals underlying pertinent action tendencies. Among the basic needs which may have a significant effect on consumer decision-making and behaviour is the need for cognitive consistency.[1] When incongruent relations among cognitions or dissonance occurs it creates a noxious, psychologically uncomfortable state of disequilibrium, or tension/anxiety that demands reduction[2] either by changing beliefs, attitudes, perceptions or perceptions of the action in order to restore internal harmony or balance[3]. Undoubtedly, whenever a consumer makes a decision, there exists some degree of cognitive dissonance which is particularly prevalent when the consumer has to choose among alternatives. When making choices, consumers often have difficulty determining the precise utilities of alternatives and are, therefore, uncertain about their preferences and this is exacerbated when the consumer is persuaded into the purchase or simply lacks confidence in the purchase. The consumer has doubts and anxieties about the choice made because the alternatives foregone had certain desirable traits, and the option selected has undesirable elements which the individual is forced to accept with the choice, thereby adding an emotional perspective to dissonance[4]. Research indicates that numerous factors have the potential to trigger emotional and cognitive dissonance, such as, attractiveness of rejected alternative/s, degree of importance attached to a specific decision or product involvement (George & Edward, 2009; Kim, 2011), importance of the choice to the individual's self-concept (Cummings & Venkatesan, 1976;

[1] The cognitive interpreting process or desire for consistency was explored by Leon Festinger (1957) in the theory of cognitive dissonance and later revised by Elliot Aronson (1968) and the premise of the theory is that individual consumers strive toward consistency within the self. In Festinger's (1957) original formulation of dissonance theory, two elements in a cognitive system, be it a belief and an attitude, an attitude and a behaviour or a belief and behaviour, are consonant if they are in harmony with each other and dissonant if they are competing cognitions or in conflict with each other such that a discrepancy between the cognitions exist (George & Edward, 2009; Kim, 2011; Nolan & Nail, 2014; Petty, Unnave & Strathman, 1991; Soutar & Sweeney, 2003).

[2] Dissonance results in a noxious, psychologically uncomfortable state of disequilibrium, or tension/anxiety that demands reduction (Aronson, 1992; Elliot & Devine, 1994; Engel & Blackwell, 1982; Festinger, 1957; George & Edward, 2009; Hoshino-Browne, 2012; Kassarjian & Cohen, 1965; Keng & Liao, 2009; Kim, 2011; Koller & Salzberger, 2012; Sweeney, Hausknecht & Soutar, 2000; Zajonc, 1960).

[3] Dissonance is a motivating or driving force to restore internal harmony, balance, consistency or congruity among opinions, attitudes and values (Festinger, 1957; Gawronski, 2012; Kim, 2011) by either changing beliefs, attitudes, perceptions or perceptions of the action (George & Edward, 2009; Herman, 2006; Hoshino-Browne, 2012; Jarcho, Berkman & Lieberman, 2011; Nolan & Nail, 2014).

[4] Festinger (1957) conceptualized dissonance from a cognitive and emotional perspective because the dissonance experienced is painful (Koller & Salzberger, 2012; Soutar and Sweeney, 2003; Sweeney et al., 2000).

Kunreuther et al., 2002; Sweeney et al., 2000), number of negative characteristics in the chosen alternative, number of rejected alternatives, the degree of overlap between the available alternatives, time (Koller & Salzberger, 2012; Markin, 1974), preference for consistency (Nolan & Nail, 2014), threshold for dissonance (Soutar & Sweeney, 2003; Sweeney et al., 2000) and consumer.

Persuasibility and confidence during the consumer decision-making process (Bell, 1967; Engel, 1963; Bearden, Hardesty & Rose, 2001). The issue of consumer persuasibility and confidence during the purchase is particularly important because when consumers realise that they have been talked into buying a product that do not like, they will experience dissonance. Bell (1967) found no association between persuasibility and dissonance because the relationship was intercepted by consumer confidence. This study, therefore, aims to close this gap by developing and validating a scale to assess the impact of consumer persuasibility and consumer confidence or lack thereof on the prevalence and magnitude of dissonance amongst motor vehicle consumers. The purchase of a motor vehicle involves a large capital outlay and, therefore, demands extensive search, evaluation, involvement and hence, has the potential for emotional and cognitive dissonance. The study also assesses the relationship between consumer persuasibility and confidence as they merge to influence dissonance.

2. Consumer persuasibility and consumer confidence or lack thereof and dissonance

Consumers differ in their susceptibility to persuasion and those who are more easily persuaded are more likely to be highly dissonant after the purchase (Engel, 1963). For example, when a consumer realises that he/she was talked into buying a motor vehicle that he/she did not like, for a price that he/she did not want to pay, the customer is likely to experience dissonance. Therefore, Bell (1967) implies that all motor vehicle consumers may not be cognitively dissonant; instead, the amount of satisfaction a customer has with the motor vehicle purchased is a result of the individual's personality and experience when purchasing the new vehicle. However, Bell (1967) found no association between persuasibility or the degree to which the consumer is influenced by the salesperson and dissonance. The explanation for this result is that the customer's self-confidence influences persuasibility as well as dissonance. According to Stuart (1984), consumer confidence is the interplay of numerous attitudes and expectations and determines willingness to buy. Bearden, Hardesty & Rose (2001) define consumer self-confidence as the degree to which a person feels capable and comfortable with regard to his/her own decisions and behaviours in the purchase environment. Bearden et al. (2001) distinguish between decision-making self-confidence and protection. The former relates to the consumer's ability to make effective decisions by obtaining and using information in the marketplace whilst protection refers to the customer's capability to protect him/herself from "business messages aimed at misleading, deceiving and treating customers unfairly" (Clark, Goldsmith & Goldsmith, 2008).

Bearden et al. (2001) believe that self confidence may be specifically related to consumer information search. According to Loibl, Cho, Diekmann and Batte (2009), the behaviour of consumers is frequently influenced by their confidence which depends on their information search particularly in expensive purchases. Similarly, Reed, Mikels and Löckenhoff (2012) found that lower levels of self-efficacy may inhibit consumer willingness to evaluate multiple alternatives and to engage in extensive information search when undertaking complex decision making. Hence, consumers differ in the confidence needed to make a decision among alternatives and to choose the one that has the greatest potential to fulfil predetermined needs (Loibl et al., 2009). Simply put, decision-making self confidence refers to the consumer's ability to make proper judgements (Loibl et al., 2009). Bearden et al. (2001), Wells and Prensky (1996) and Loibl et al. (2009) also reported a positive relationship between high consumer confidence and high information strategy. However, Kiel and Layton (1981) reported an inverse relationship between buyer self confidence and search for information among motor vehicle buyers maintaining that less confident buyers spend more time searching for information in attempts to overcome their lack of confidence with greater information search and evaluation.

In their multi-dimensional scale on dissonance, Sweeney et al. (2000) refers to one dimension as 'concern over the deal' and assesses the extent to which the consumer after the purchase believes that he/she may have been influenced against his/her own beliefs by the salesperson, thereby making persuasion a major influence on the extent of dissonance experienced. Research has also assessed susceptibility to persuasion based on the nature of the message and has concluded that two-sided messages are superior in terms of its

cognitive effect on the recipient (consumer) as being provided with arguments in favour of and those opposing a proposition enables the recipient (consumer) to place higher confidence in the target (salesperson) resulting in greater trustworthiness and stronger positive attitudes towards the target (salesperson) (Crowley & Hoyer, 1994). However, Sanaktekin and Sunar (2008) believed that the effectiveness of two-sided messages depended on how informed the recipients (consumers) were before the message. Hence, cognitive clarity is a major source of competitive advantage in any market (Walsh, Hennig-Thurau & Mitchell, 2007). Similarly, researchers deduced that a more persuasive approach is one that is balanced and reasonable instead of one that is overly forceful and one-sided (Nadeem, 2007; Stanchi, 2013). Similarly, Koller and Salzberger (2012) and Soutar and Sweeney (2003) found that if the salespersons appear too forceful or pushy, consumers may feel forced into a decision that they were not ready to make or that was made against their will. Tabor (2005), however, believes that the power of persuasion lies in creating the lethal combination of expertise, honesty and likeability, whether superficial/apparent or ernest.

Bell (1967) deduced that a consumer's self-confidence has an unusual effect on persuasibility. Those most confident and those least confident in their car buying ability are most difficult to persuade whilst those moderately confident are the easiest to persuade (Bell, 1967). Consumers who are high in self-confidence are difficult to influence because they have experience in making suitable decisions and have faith in their own judgement. Individuals low in self-confidence is difficult to persuade because their unstable self-esteem causes them to react defensively against any attempt of persuasion (Bell, 1967). Those with a moderate degree of self-confidence are most persuasible because they are not secure with their own judgement nor highly defensive. Bell (1967) studied the effects of the associations between self-confidence and persuasibility on a consumer's psychological reactions or cognitive dissonance after purchasing a new car. Significant relations between persuasibility and cognitive dissonance were observed only when the self-confidence of the customer is controlled. Therefore, Bell (1967, p. 14-15) found:

- Customers, who are high on self-confidence, were high on dissonance if they were easily persuaded in buying their new cars, since being persuaded is contrary to their usual behaviour.
- Those who are high on self-confidence experienced very little dissonance; a finding supported in other contexts as well (Cheng & Hsu, 2012). They made their choices, accepted them and were content with their decisions.
- Those low on self-confidence had little dissonance if they were readily persuaded. They were convinced by the salesperson that they had made the right choice and their confidence was enhanced by the persuasion attempts of the salesperson.
- Those with little confidence were highly dissonant if they resisted influence attempts by the salesperson and were not easily persuaded. After completing the purchases they began to have self-doubts.

Koller and Salzberger (2012) found that the enthusiasm for information enhances the confidence of the consumer in the purchase perhaps because they feel more informed or more competent to make the decision. In addition, more confident decision-makers rely less on decision aid (Whitecotton, 1996 cited in Woolley, 2007). Lee and Dry (2006) deduced that confidence is influenced both by frequency and accuracy of the advice. Bell (1967, p. 15) found a slightly curvilinear relationship between persuasibility and quality of service, the indirect cause of dissonance:

- Those who are low on persuasibility received quite good service. These individuals, referred to as 'grinders', were difficult to persuade and wore the salesperson down in their vigorous effort to obtain a good deal. They consequently, received very high quality services, often at good prices.
- Those who are easily persuaded in their car purchases are called 'flakes'. Whilst salespersons make jokes about this type of customers, they feel sorry for them and are more likely to give them free accessories, services and special care upon delivery. 'Flakes' often get quite good service because they pay slightly more for their cars than do the 'grinders' (Bell, 1967, p. 15).
- Those medium on persuasibility get the worst service. They grind enough to put the salesperson on guard and to not feel sympathetic to the consumer and they do not have the talent or desire to wear down the salesperson to obtain good service (Bell, 1967).

Thus, persuasibility acts as an indirect cause of consumers' dissonance. Those who are moderately persuasible experience the worst service, and those who get poor service tend to be the highest on cognitive

dissonance (Bell, 1967). It is evident that the type of personality an individual brings to the dealership and the experiences encountered whilst and after purchasing the new car determines the extent of dissatisfaction and cognitive dissonance. A potential cause for post-purchase dissonance is the quality of service received. Ehrlich, Guttman, Schonbach and Mills (1957) assumed that most people who purchase new cars will be dissonant, regardless of the quality of service received. However, Bell (1967) supports the relationship between respondent's cognitive dissonance and the perceived quality of service and concludes that the better the quality of service received, the lower the degree of consumer dissonance. Taking cognisance of the aforementioned, the following premises lay the foundation of this study:

- Consumer confidence is related to consumer information search and cognitive clarity.
- Susceptibility to persuasion depends on the individual's personality, experience and confidence in the purchase.
- The level of consumer confidence influences the individual's susceptibility to persuasion and hence, dissonance, especially if the consumer is dissatisfied with the service and product after the purchase.

3. Methodology

Subjects: A sample of 200 new motor vehicle buyers was drawn using the stratified random sampling technique. Only new motor vehicle buyers (within KwaZulu-Natal, South Africa) who concluded their purchases in one major, reputable and leading motor vehicle manufacturing company and who owned the vehicle for a maximum period of seven months were considered, so as to avoid cognitive intrusion. The sample may be described in terms of ranger of motor vehicle purchased, month of purchases, gender and age of buyer. Representativeness was achieved by drawing a proportional frequency of consumers in the different ranges of motor vehicles purchased. The motor vehicles purchased were divided on the basis of price into `bottom of the range' (47.25 % of sample), `middle of the range' (33.75 %) and `top of the range' (19 %). The representation of male (47 %) and female (53 %) motor vehicle consumers were also ensured. In terms of age, the sample ranged from 20 to 65 years with a preponderance of candidates in the age group 30 to 39 years. Whilst the profile of the composition of the sample was presented in terms of these biographical characteristics, an analysis of them in terms of consumer confidence, persuasibility and dissonance did not fall within the jurisdiction of this study. The adequacy of the sample for Factor Analysis was determined on the basis of the Kaiser-Olkin Measure of Sampling Adequacy (0.938) and Bartlett's Test of Sphericity (4258.546; $p = 0.000$), which respectively showed suitability and significance. The results indicate that the normality and homoscedasticity preconditions are satisfied.

Instruments: The measuring instrument was a self-developed, precoded, standardised questionnaire comprising of Sections A and B. Section A related to biographical data of the purchasers (age, gender), month of purchases and a motor vehicle specific variable, namely, range of vehicle (bottom, middle and top of range). Section B initially included 27 items which were measured using the Likert scale ranging from strongly disagree (1), disagree (2), neither agree nor disagree (3), agree (4) and strongly agree (5) as follows:

- Consumer persuasibility (5 items)
- Consumer confidence (7 items) – these were reverse (R) items and required that the scale be reversed when capturing
- Dissonance (15 items)

Procedure: The mail survey was used and hence, the questionnaires were self-administered. The questionnaire, together with a covering letter indicating the purpose and need for the study, was posted to sample subjects using the postal services. Each respondent was contacted telephonically informing him/her of the arrival of the questionnaire, already posted. The questionnaires were numbered so as to follow up on non-responses. Those who did not respond within two weeks were again telephoned to remind them of the purpose of the study, so as to ensure a suitable response rate. A self-addressed envelope and stamp was provided so respondents need not bear a financial cost, thereby increasing the return rate.

Statistical Analysis: When designing the initial questionnaire, face and content validity was prioritised by including all aspects of persuasibility, confidence and dissonance that repeatedly surfaced when conducting the literature review. The validity of the questionnaire was statistically assessed using Exploratory Factor Analysis (EFA) to identify and extract the factors and Confirmatory Factor Analysis (CFA) to test the emerging model

structure. The reliability of the modified questionnaire was statistically assessed using Cronbach's Coefficient Alpha. The overall final questionnaire reflected a very high level of inter-item consistency (Cronbach's Alpha = 0.934). The results of the study were analysed using the Pearson Product Moment Correlation and structural equation modelling (SEM) using AMOS. SEM was used to assess the impact of consumer persuasibility and consumer confidence on dissonance experienced as well as the relationship between consumer persuasibility and consumer confidence. Hence, SEM was used to draw conclusions on the following hypotheses:

H_1: The higher the level of consumer persuasibility during the decision making process, the higher the level of dissonance experienced.

H_2: The higher the level of consumer confidence in the decision making process, the lower the degree of dissonance experienced.

H_3: Consumer confidence and consumer persuasibility are inversely related as they influence the magnitude of dissonance experienced.

4. Results

Measurement model and factor structure: The study assesses the impact of consumer persuasibility and consumer confidence on dissonance using a self-developed questionnaire comprising of these three constructs. Initially, consumer persuasibility comprised of 5 items, the consumer confidence dimension had 7 items, and dissonance comprised of 15 items. However, when structural equation modeling (SEM) was applied to these 27 initial items, it generated poor model fit indices. Hence, exploratory factor analysis with Kaiser's criterion and oblique (oblimin) rotation was conducted to assess how the key constructs cluster (Table 1).

Table 1: Exploratory Factor Analysis generating pattern matrix

Item Code	Component			
	1	2	3	4
D7	0.697			
D8	0.688			
D5	0.686			
D6	0.658			
D10	0.625			
D11	0.604			
D15	0.549			
D9	0.547			
D13	0.486			
D12	0.348			
C4		0.867		
C6		0.790		
C2		0.554		
C5		0.499		
C3		0.476		
C1		0.395		
D3			0.915	
D4			0.751	
D2			0.605	
D1			0.576	
P1				-0.873
P5				-0.847
P4				-0.821
P2				-0.696
P3				-0.690
D14				-0.496
C7				-0.366

From Table 1, it is evident that 6 items (D7, D8, D5, D6, D10 and D11) as highlighted under Factor 1 were included in the study. Items <0.6 were excluded since the factor initially had numerous (15) items. In addition, 4 of the initial dissonance items clustered together under Factor 3 (D1, D2, D3, D4) and 1 under Factor 4 (D14) since they specifically related to the performance of the motor vehicle and was thus, excluded from dissonance, whose items related directly to post-purchase regret. Hence, the 6 items selected in Factor 1 relate to *dissonance*. Five items in Factor 2 were included but the 6th item (C1) was excluded as the item loading was too small (0.348) and C7 was excluded as it loaded in Factor 4 and had a small item loading (-0.366). Hence, the 5 items selected in Factor 2 relate to *consumer confidence*. The 5 items that loaded significantly in Factor 4 relate to *persuasibility*. The aforementioned Factors have eigenvalues >1 and account for 67.1% of the variance. The selected items, statements and their items loadings are presented in Table 2.

Table 2: Selected Items, Statements and Item Loadings

Item Code	Statement (D = Dissonance, C = Confidence, P = Persuasibility)	Item Loading	Communalities
D5	The style of the car needs further improvement.	0.686	0.548
D6	The car is not as popular as I was initially given to understand.	0.658	0.552
D7	The vehicle lacks the roominess that I expected of it.	0.697	0.475
D8	Many aspects of the interior of the car need redesigning.	0.688	0.561
D10	I feel that the car that I bought does not satisfy my needs.	0.625	0.749
D11	I wish I had selected an alternative make of car when I was making my decision to purchase.	0.604	0.762
C2	I felt I did not receive the same kind of deal that other purchasers had received.	0.554	0.634
C3	When choosing amongst the alternatives considered I often felt insecure about my own judgment.	0.476	0.566
C4	When making my decision, I was reluctant 'to wear the salesperson down' in attempts to get a good deal.	0.867	0.768
C5	I feel I did not get a good deal.	0.499	0.676
C6	I lack the experience needed when selecting a car.	0.790	0.644
P1	I feel I have been talked into buying a car I do not like.	-0.873	0.829
P2	I feel I have been talked into buying a car for a price I did not want to pay.	-0.696	0.685
P3	I feel the salesperson imposed his/her views onto me.	-0.690	0.731
P4	I feel the salesperson influenced my choice of color.	-0.821	0.610
P5	I feel the salesperson influenced my choice of style of vehicle.	-0.847	0.769

The final 16 item questionnaire, therefore, defined dissonance in terms of 6 items, consumer confidence using 5 items and persuasibility in terms of 5 items and the average communalities after extraction is 0.66. The reliability of the questionnaire was then statistically assessed using Cronbach's Coefficient Alpha which generated a very high level of inter-item consistency for the questionnaire ($\alpha = 0.934$). The reliabilities for the dimensions of consumer confidence ($\alpha = 0.856$), dissonance ($\alpha = 0.863$), and persuasibility ($\alpha = 0.908$) reflect very high levels of inter-item consistency and reliability. Thereafter, confirmatory factor analysis (CFA) was undertaken to develop the model structure in SEM. Model identification was attained, and the indices for global fit reflects that the model sufficiently represented the data with CMIN/DF = 1.831, GFI = 0.9, RMSEA = 0.065 and a comparative fit (CFI) of 0.960. CMIN/DF should ideally be 2 or less than 2 (Ullman, 2001) to reflect a good fit, GFI should be >0.9 (Byrne, 1994), RMS or RMSEA should be <0.08 (Browne & Cudeck, 1993) but should not exceed 0.08 (Hu & Bentler, 1999) and CFI should exceed 0.93 (Byrne, 1994). Bollen (1989) emphasizes that these criteria simply serve as guidelines. Hence, the model adequately represents the input data particularly taking cognisance of the large sample of 200 motor vehicle consumers being studied.

Structural model: It was hypothesised that:

H_1: The higher the level of consumer persuasibility during the decision making process, the higher the level of dissonance experienced.

H_2: The higher the level of consumer confidence in the decision making process, the lower the degree of dissonance experienced.

H_3: Consumer confidence and consumer persuasibility are inversely related as they influence the magnitude of dissonance experienced.

Correlations between the constructs are reflected in Table 2.

Table 2: Pearson Correlations of the dimensions

Dimension	Consumer Persuasibility	Consumer Confidence	Dissonance
Consumer Persuasibility	1.000		
Consumer Confidence	-0.790*	1.000	
Dissonance	0.41*	-0.47*	1.000

* $p < 0.01$

Table 2 reflects that there is a significant relationship between consumer persuasibility and dissonance at the 5% level of significance. Furthermore, there is a significant but inverse relationship between consumer persuasibility and consumer confidence and between consumer confidence and dissonance respectively at the 5% level of significance. The relationship between consumer confidence and persuasibility are strong, whilst the relationships between consumer persuasibility and dissonance and, consumer confidence and dissonance are moderate. The structural model of the impact of consumer confidence and consumer persuasibility and perceived dissonance was tested by performing SEM analyses using AMOS. The structural model, as depicted in Figure 1, evaluated the hypothesised regressions. The hypothesised model, as depicted in Figure 1, provided a good fit to the data which indicated that the model represents the data well with CMIN/DF = 1.831, RMR = 0.34, GFI = 0.9, RMSEA = 0.065, a comparative fit of CFI = 0.96 and TLI of 0.951.

Figure 1: Maximum Likelihood Regression (MLR) Estimates for the hypothesized model

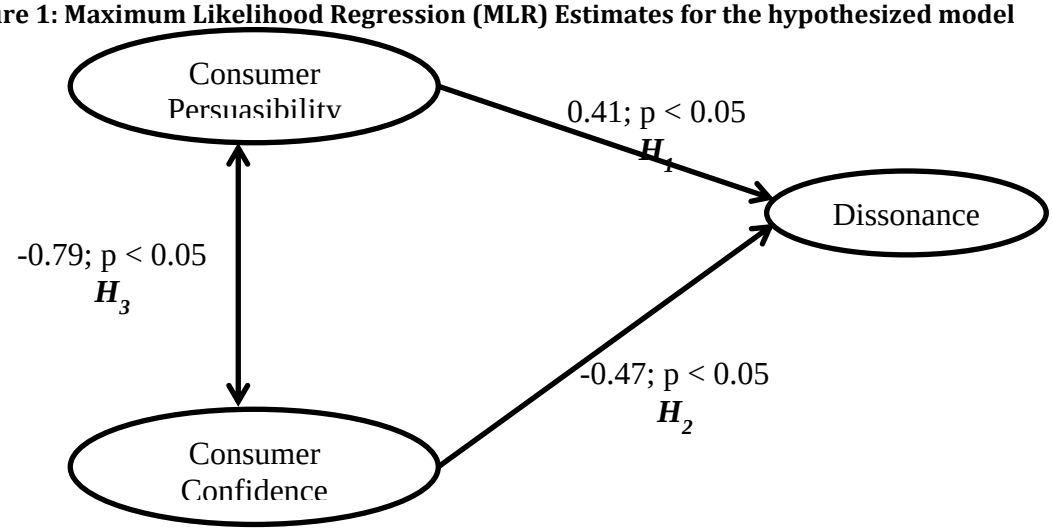

Table 3 depicts the standardized regression coefficients estimated by SEM analyses using AMOS.

Table 3: Standardized regression coefficients of the variables

Dimension Dissonance	Estimate	S.E.	p
Consumer persuasibility	0.434	0.112	0.000*
Consumer confidence	-0.538	0.131	0.000*
Consumer Confidence			
Consumer persuasibility	-0.380	0.056	0.000*

* $p < 0.01$

The structural model indicates that there is a significant, moderate relationship between consumer persuasibility and dissonance at the 1% level of significance. Hence, Hypothesis 1 may be accepted. The implication is that the higher the level of consumer persuasibility during the decision makes process, the higher the level of dissonance experienced. Furthermore, there is a significant but inverse relationship between consumer confidence in the decision making process and dissonance experienced at the 1% level of significance. Therefore, Hypothesis 2 may be accepted. As anticipated, the results imply that the higher the level of consumer confidence in the decision makes process, the lower the degree of dissonance experienced. In addition, consumer confidence and consumer persuasibility are significantly and inversely related as they influence the magnitude of dissonance experienced ($p = 0.000$). Hence, Hypothesis 3 may be accepted. The implication is that as consumer confidence in the decision-making process increases, their potential for persuasion decreases thereby decreasing dissonance experienced and vice versa. As previously indicated, a substantial amount of variation in the model is explained by the relationships depicted in the model. The model accounts for 67.1% of the variance thereby providing further support for the model's fit.

Discussion: Consumers differ in their susceptibility to persuasion. The findings of the study reflect a significant relationship between consumer persuasibility, especially by the salesperson, and dissonance experienced. Sweeney et al. (2000) refer to the consumer's feelings that he/she may have been influenced against his/her own beliefs by the salesperson as 'concern over the deal'. The results of the current study correspond with Engel's (1963) belief that consumers who are more easily persuaded will be highly dissonant after the purchase. In the current study, like that of Engel's (1963), consumers reported that they had been talked into buying a motor vehicle that they did not like and for the price that they did not want to pay. Similarly, Bell (1967) found that all consumers may not be cognitively dissonant. Instead, dissonance may be influenced by the personality type of the consumer. However, Bell (1967) found no association between persuasibility and dissonance and attributed this to the customer's self-confidence which influences persuasibility as well as dissonance.

In this study, structural equation modeling also confirmed a significant, inverse relationship between the level of confidence of the motor vehicle buyer during the decision-making process and dissonance experienced. In other words, the higher the level of consumer confidence during the decision-making process, the lower the level of experienced dissonance. Similar findings were obtained by other researchers (Bell, 1967; Cheng & Hsu, 2012). This is related to the findings of several researchers that consumer confidence is specifically related to consumer information search as more confident consumers are willing to engage in extensive search especially for high-end purchases (Bearden et al., 2001; Loibl et al., 2009) and to evaluate multiple alternatives (Reed et al., 2012). Similar findings were reported by Wells and Prensky (1996) in terms of a positive relationship between high consumer confidence and high information strategy although Kiel and Layton (1981) reported the converse. The results of the current study are congruent with that of Bell (1967) who found that consumers would be more dissonant, the more uneasy they were about the purchase decision and, the more they wondered if they had made the correct decision or received the same kind of deal that other consumers had received.

The results of the current study also reflect a significant, inverse relationship between consumer confidence and consumer persuasibility. As expected, as the consumer's level of confidence in the decision-making process increases, the potential to be persuaded by the salesperson during the purchase decreases. Likewise, Bell (1967) deduced from his study that a consumer's self-confidence has an unusual effect on persuasibility. Those most confident and those least confident in their motor vehicle buying ability are the most difficult to persuade and those who are moderately confident are most easily persuaded (Bell, 1967). Consumers who are high in self-confidence are difficult to influence because they have experience in making suitable decisions and believe in their own judgments (Loibl et al., 2009) and rely less on decision aid (Whitecotton, 1996 cited in Woolley, 2007). Lee and Dry (2006) deduced that confidence is influenced both by frequency and accuracy of the advice whilst Koller and Salzberger (2012) found that confidence is influenced by enthusiasm for information. Newman and Staelin (1971) found that consumers who hold high confidence in their own ability to assess the product reported significantly longer information search than those who believed that they had to trust the judgement and advice of others. Consumers who are low in self-confidence

are difficult to persuade because their insecure self-esteem triggers them to react defensively against any attempts to influence them (Bell, 1967).

Other researchers have also assessed susceptibility to persuasion based on the nature of the message and have concluded that two-sided message are superior in terms of its cognitive effect on the recipient (consumer) (Crowley & Hoyer, 1994; Koller & Salzberger, 2012; Nadeem, 2007; Soutar & Sweeney, 2003; Stanchi, 2013) although Sanaktekin and Sunar (2008) believed that its effectiveness depended on how informed the recipients (consumers) were before the message and Walsh et al. (2007) emphasized the importance of cognitive clarity. Greenwald (1969) maintains that self-confidence should not increase spreading apart in high-conflict decisions because an uncertain consumer who lacks justification for a decision seeks additional justification whereas a confident person need not justify a decision. Furthermore, consumer confidence and persuasibility are inversely related in their impact on dissonance. It can therefore, be concluded from the current study that dissonance arousal is a direct function of a high level of consumer persuasibility and is inversely related to consumer confidence in the decision-making process. Furthermore, consumer confidence and consumer persuasibility are significantly but inversely related as they influence the magnitude of dissonance experienced.

5. Conclusion and Recommendations

Consumers differ in their susceptibility to persuasion; however, whilst personality cannot be changed by marketing practitioners, salespersons and strategists, every attempt can be made to ensure that post-purchase dissonance is reduced by designing effective two-sided messages as they are superior in terms of their cognitive effect and their balanced perspective make them positively more persuasive. Especially before a high-end purchase, the frequency and accuracy of advice and cognitive clarity is imperative in reducing post-purchase dissonance. It is also necessary for the salesperson and decision aid to understand the consumer's needs lifestyle and purchasing power and, dealerships need to design certain advertisements for recent purchasers to bolster confidence and reinforce the correctness of the purchase decision. Merging such features into the marketing and sales strategies will increase the level of consumer confidence thereby reducing the level of dissonance experienced. This is imperative as a strong interdependence exists between consumer persuasibility, consumer confidence and post-purchase dissonance.

Limitations of the study: This study focuses on the impact of consumer confidence and consumer persuasibility on dissonance and develops, validates and applies an instrument to these constructs to the exclusion of the numerous other constructs that have the potential to influence post-purchase dissonance. It would be valuable to design similar tools to assess the impact of the other dimensions, especially with regards to high-end purchases.

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3D Experiential Marketing in International Industrial Fair

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Abstract: This study explores the effect of buyers' 3D experiences on their purchase intention, as well as the moderating effect of exhibitors' corporate image on the above relationship. This study uses the purposive sampling method to survey buyers of the famous International Woodworking Machine Fair in China. Analytical results from 91 visitors are summarized as: the higher the international mechanical fair buyers' feel experience, think experience and act experience, then the higher their purchase intention; buyers' relate experience has a negative prediction effect on purchase intention; exhibitors' corporate image has a moderating effect on the relationship between buyers' feel experiences and purchase intention; exhibitors' corporate image has a moderating effect on the relationship between buyers' relate experience and purchase intention.

Keywords: *Experiential Marketing, Purchase Intention, Corporate Image, Exhibitors, Visito*

1. Introduction

For many companies, trade shows allow them to economically enter new markets, including global markets and those that are difficult to approach (O'Hara, Palumbo & Herbig, 1993). In addition, trade shows help companies successfully establish integrated marketing communication programs because shows create sales – at least for them (Tanner, 1993). Worth noting is that according to Global Association of the Exhibition Industry, the trade fair industry listed under global marketing activities is largely moving toward Asia (Jin, Bauer & Weber, 2010; Kirchgeorg, Jung & Klante, 2010). Kirchgeorg et al. (2010) stated that the increasing supply and demand of global trade fairs in recent years have made China one of the largest regions for exhibitors. China's exhibition sessions, floor area, and exhibition income have demonstrated significant growth in recent years.

In important international mechanical fairs, enhancing buyers' purchase intention should be a top priority for exhibitors. However, the marketing strategies of a corporation cannot focus solely on product functions. They should also consider how to generate interactions with customers so that customers can experience and enjoy the process of co-creation of value (Robinette, Brand & Lenz, 2001). However, since mechanical companies provide diversified products, they are generally not able to showcase all of their products in the show. Also, since mechanical products are often bulky and heavy; the cost of transportation and staffing for exhibitions is high. Coupled with the requirement of a large exhibition area, the booth rental cost could be enormous. Recently, the term has become largely synonymous with interactive three-dimensional (3D) virtual environments, where the users take the form of avatars visible to others graphically (Shin, Biocca & Choo, 2013). Notably, many 3D virtual learning applications have been rapidly developing for a highly interactive, immersive, multi-modal and connected system (Shin et al., 2013). The above issues can be resolved by allowing customers to operate on their products through 3D simulation. If the experience is favorable, customers' experiences may result in halo effects and then the exhibitors can enhance customers' purchase intention.

However, is the effect of 3D experiential marketing on buyers' purchase intention influenced by situational factors? In other words, whether the relationship between the two dimensions is moderated by situational factors requires further examination. In international mechanical fairs, B2B exhibitions represent a large percentage. Also, most people believe corporate image is far more important to industrial marketing than consumer marketing (Bendixen, Bukasa & Abratt, 2004; Schuiling & Moss, 2004; Van Riel, Pahud de Mortanges & Streukens, 2005). Companies with fine corporate image can not only maintain permanent and stable relationships with customers, but also simplify customers' purchase decision and alleviate their concern for quality, thus stimulating purchase (Andreassen & Lindestad, 1998). Thus, from the exhibitor's standpoint, if buyers have good experiential results after their 3D experience, the exhibitor's fine corporate image may be able to strengthen the buyers' purchase intention. Although past studies have discussed the purchase intention in business to consumer (B2C) environment (e.g., Kim & Lennon, 2008; Ku, Kuo & Kuo, 2012; Park, Lennon & Stoel, 2005; Yoon, 2013) and business to business (B2B) environment (Smith, 1998). It seems that research on buyers' purchase intention in international trade shows is scant (e.g. Gopalakrishna, Lilien, Williams & Sequeira, 1995), and literature related to experiential marketing or corporate image is rare (e.g., Hung, Lee & Zhuang, 2015). According to the above, this study sampled buyers visiting the booth of a Taiwanese exhibitor in a famous China international woodworking machine fair to examine the effect of 3D experiential marketing on buyers' purchase intention, and the moderating effect of exhibitors' corporate image on the above relationship.

2. Literature Review

Purchase Intention: Fishbein & Ajzen (1975) considered purchase intention as a subjective inclination toward a product and can be an important index to predict consumer behavior. Dodds, Monroe & Grewal (1991) asserted that purchase intention indicates the likelihood of buying a certain product and that the higher the consumers' perceived value of the product, then the higher the purchase intention. Morwitz & Schmittlein (1992) proposed that purchase intention can predict actual purchase behavior. Schiffman & Kanuk (2000) asserted that purchase intention is the probability that the consumer will purchase the product; higher probability indicates that consumers are more likely to purchase the product. For international industrial fair exhibitors, the higher the participants' intention to order, then the higher the cost effectiveness of attending the show.

Experiential Marketing and Purchase Intention: Pine & Gilmore (1998) noted that as the difference between products and services is getting smaller, customers would not only pursue tangible products and services, but also personally participate in the process in order to acquire memorable and valuable experience. This gave birth to the concept of experiential marketing. The concept of experiential marketing was first proposed by Schmitt (1999a), who defined experiential marketing as the customers' recognition of and purchasing of goods or services from a company or brand after they experience activities and perceive internal and external stimuli, which further trigger motivation, imagination, acceptance, or purchase behavior. Schmitt (1999a) further pointed out that what customers want from the marketing activities is the ability to gain sense, feel, and think experiences so that the brand can be deeply immersed in their everyday lives. Based on the strategic experience model, Schmitt (1999b) divided the types of experiential marketing into five dimensions: feel experience, sense experience, think experience, act experience and relate experience. The main point of feel experience is that feelings and perceptions are consistent, and can generate sensory diversity and feelings of sensation. Sense experience emphasizes that the experience can allow changes to customers' moods; think experience relates to customers' consideration of product or service content, as well as the experience of interaction and involvement; action experience refers to changes in the lifestyle and behavior; and relate experience enables consumers' self-improvement, being perceived positively by others (e.g. colleagues, friends, family, and coworkers) and integrate individual to a social community. In international trade shows, particularly mechanical fairs, exhibitors are generally unable to present all their products due to budget concerns. Therefore, through interactive 3D simulation experience, exhibitors can create outstanding landscapes in terms of sense, feel, think, act, and relate experience.

Pine & Gilmor (1998) stressed that customers' purchase intention is determined by the customers' experience in the purchase or consumption process. Dholakia (2000) found that the stimulation provided by exhibitors in international trade shows affects consumers' perception, which further influences purchase

intention. Further, Hung et al. (2015) found that visitors with high think experience demonstrated higher purchase intention toward exhibitors with low brand equity; visitors with high think experience demonstrated lower purchase intention toward exhibitors with high brand equity. Moreover, the current study argues that the view of halo effect can support the above literatures. Thorndike (1920) considered halo effect as a tendency of raters to treat individuals as generally "rather good or rather inferior, and to color the judgments of the qualities by this general feeling". For buyers of processional mechanical shows, if they can simulate the operation of the machine through 3D experience and gain favorable results, they may treat exhibitors as rather good suppliers and color the judgments exhibitors' product quality by these favorable experiences. Finally, these buyers will likely purchase from the exhibitor. According to the above, we posit the following hypothesis:

H1: Higher trade show buyers' 3D experiential result is associated with higher purchase intention.

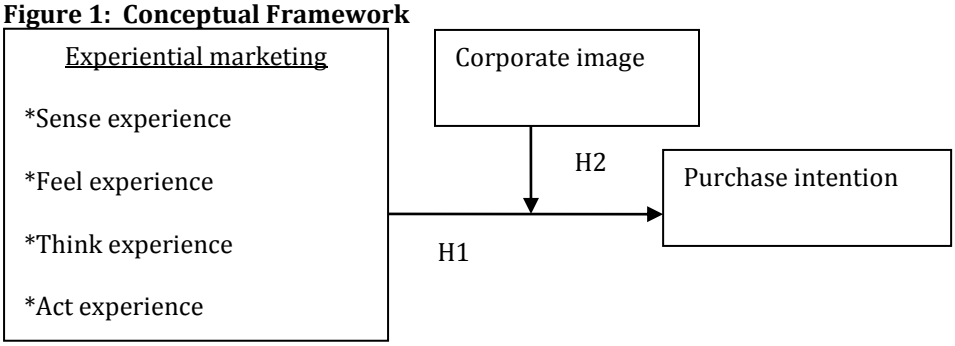
Moderating Effect of Corporate Image: Corporate image indicates a strong connection between brand image and purchase behavior (Hsieh, Pan & Setiono, 2004). Robertson & Gatignon (1986) stated that corporate image is the symbol of the products or services provided by the enterprise; it can promote consumers' understanding of certain products and services. Dowling (1988) considered corporate image as a set of beliefs, emotions, and feelings a consumer holds towards the corporation, which is based on the consumer's understanding, descriptions, and memories about the corporation. Some scholars defined corporate image as the consumer's attitude of a corporation, and corporate image can help corporations create new beliefs, which would further affect consumers' attitude toward the products offered and product preference (Homer, 1990; Simmons & Lynch, 1991). Scholars noted that the research of corporate image is very important because it is a form of valuable asset that corporations have to manage (Abratt & Mofokeng, 2001). Similar, exhibitors of international mechanical fair should treat corporate image as an important asset so as to facilitate the sale of their products in the trade show.

In some circumstances, if consumers do not have adequate or related information and the cost of information search is very high, corporate image can provide consumers with an understanding of the purchased product or service and reduce the uncertainty in the their purchase decision (Hastak & Olsen, 1989). According to the view of halo effect (Thorndike, 1920), for trade show buyers, although 3D experience can elevate their purchase intention, but if they perceive exhibitor's poor corporate image, they may treat exhibitors as rather inferior suppliers and color the judgments exhibitors' product quality. Finally, these buyers could be unwilling to purchase the exhibitor's products. In contrast, if the exhibitor has fine corporate image, buyers with good 3D experience may treat exhibitors as rather good suppliers and color the judgments exhibitors' product quality. Finally, they are very likely to purchase from the exhibitor after or even during the trade show. According to the above, this study proposes the following hypothesis:

H2: Corporate image has a moderating effect on the relationship between 3D experiential marketing and purchase intention.

According to the above literature review and hypotheses, the research framework of this study is presented in Figure 1.

Figure 1: Conceptual Framework



3. Methodology

Participants and Sampling Methods: The authors helped the managing director of Taiwan Woodworking Machinery Association who made a subsidy application for a 3D simulation system with Taiwan Ministry of Economic Affairs' Bureau of Foreign Trade. In a famous China international woodworking machine fair held in 2010, Taiwan Woodworking Machinery Association distributed surveys to visitors of the association's booth using the purposive sampling method. One hundred and fifty questionnaires were distributed and 103 surveys were returned. After removing invalid surveys, effective survey totaled 91, representing a response rate of 60.67%. Among the 91 respondents, 27.50% had 5-9 years of work experience and 23.10% had 10~14 years of work experience. Most respondents worked in the machine manufacturing industry (35.20%), followed by furniture manufacturing industry at 29.70% and machine sales industry at 19.80%. Most respondents had tenure of 10~15 years (24.20%), followed by 5-9 years (23.10%). In terms of job titles, most respondents were department supervisors (39.60%), followed by business owners (15.40%).

Measures: Details of the operational definitions and measurement tools of the major research variables in this study are provided as follows:

Purchase Intention: This study defines purchase intention as show participants' purchase intention of exhibited products. Referencing Wang, Li, Barnes & Ahn (2012), this study used 3 items to measure purchase intention: consumer's intention to buy, other things being equal it was their preferred choice, and their likelihood of purchase. The respondents were requested to indicate on a 7-point Likert scale (1='totally disagree' to 7='totally agree') the degree to which they perceived their purchase intention.

Experiential Marketing: This study defined experiential marketing as: Customers put on 3D glasses and input programmable commands in a 3D computer simulation environment according to their personal needs. From the customers' perspective, the simulation creates a marketing process, and such process emphasizes the experiential landscape created by customers' interactive utilization of sense, feel, think, act, and relate experiences. In this study, experiential marketing was measured by Schmitt's (1999a; 1999b) 5 strategic experiential modules, including sense experience, feel experience, think experience, act experience, and relate experience. Each dimension contained 3 items, or 15 items in total. The items included "3D exhibition contents can attract my eyesight and interest;" "The atmosphere created allows me to feel the advancement and speed of technology;" "I'm more curious about Taiwan woodworking machinery makers' products;" Stimulate new attempts on the production process;" and "Willing to share with my company and coworkers about my thoughts and feelings of this show." The respondents were requested to indicate on a 7-point Likert scale (1='totally disagree' to 7='totally agree') the degree to which they perceived their experience.

Corporate Image: This study defines corporate image as the symbol of an exhibitor's product or service that can promote trade show buyers' understanding of the product of service. Referencing the 5-item inventory developed by Kim & Hyun (2011), we measured corporate image by asking questions like, "Taiwan woodworking machinery makers have advanced manufacturing technologies," Taiwan woodworking machinery makers have leadership positions," and "Taiwan woodworking machinery makers have extensive production experience." The respondents were requested to indicate on a 7-point Likert scale (1='totally disagree' to 7='totally agree') the degree to which they perceived exhibitor's corporate image.

Control Variables: This study controlled variables like buyers' work experience, industry, tenure and job title as these factors are considered influential of purchase intention. Reliability and Validity: Both the reliability and the validity of the measures were examined. This work used Cronbach's α to assess the reliability of the measures. Cronbach's α was <0.7 and item-total correlation was <0.45. The standards described above were used to delete items. Cronbach's α was 0.91 for purchase intention, 0.91 for sense experience, 0.82 for feel experience, 0.91 for think experience, 0.85 for act experience, 0.85 for relate experience and 0.88 for corporate image. Each scale demonstrated satisfactory reliability (α exceeding 0.70). In order to minimize the common method variance (CMV) bias, Podsakoff, MacKenzie, Lee & Podsakoff (2003) had suggested the following preventive methods: (1) adding reverse items in the questionnaire, (2) randomly arranging measuring items in the questionnaire, (3) concealing the purpose of the study, and (4) concealing the relationship between questions. Thus, the questionnaire was formulated based on the principles suggested by Podsakoff et al. (2003), including reverse items, random item arrangement, anonymity, and concealing the purpose of the study.

Furthermore, this study followed the procedure proposed by Noble & Mokwa (1999), and performed a series of confirmatory factor analyses on construct measures and related items using the AMOS 6.0 software. Generally, the measures were acceptable, with all of the constructs having overall acceptable fit indices. The values of average variance extracted (AVE) were 0.77 for purchase intention, 0.77 for sense experience, 0.64 for feel experience, 0.77 for think experience, 0.67 for act experience, 0.70 for relate experience and 0.62 for corporate image. Almost all constructs exceeded a suggested critical value of 0.50 (Fornell & Larcker, 1981). The analytical results validated the convergent validity of the constructs. Discriminant validity can be established by demonstrating that the AVE by a particular construct from its indicators is greater than its squared correlation (shared variance) with another construct (Fornell & Larcker, 1981). Each squared phi coefficient between the purchase intention and every other variable was examined. The analytical results indicated that almost each construct's AVE was greater than its shared variance with purchase intention. The shared variances between purchase intention and sense experience, feel experience, think experience, act experience, relate experience and corporate image were 0.56, 0.70 0.60, 0.86, 0.51 and 0.25, respectively. The analytical results confirmed the discriminant validity of the constructs.

4. Results

The means, standard deviations, bivariate correlations among the variables are reported in Table 1. In order to prevent the negative impact of multicollinearity, all continuous independent variables were transformed into deviation scores (see Aiken & West, 1991).

Table 1: Means, Standard Deviations and Correlations

Variable	Means	S.D.	1	2	3	4	5	6	7
1. Purchase intention	4.95	1.17	1						
2. Sense experience	5.27	1.00	.748**	1					
3. Feel experience	5.01	1.02	.834**	.793**	1				
4. Think experience	5.14	1.09	.776**	.860**	.796**	1			
5. Act experience	5.02	1.09	.930**	.772**	.860**	.796**	1		
6. Relate experience	5.25	1.03	.711**	.809**	.858**	.829**	.800**	1	
7.Corporate image	5.21	0.93	.495**	.640**	.669**	.682**	.588**	.744**	1

Note: n=91. **P<0.01.

Table 2: Multiple Regression Analysis of Experiential Marketing for Purchase Intention

Dependent variable	
statistics	**Purchase intention**
Independent variables	
Job experience	-0.02
Current occupation	0.02
Job tenure	-0.04
Job title	-0.00
Sense experience	0.09
Feel experience	0.25*
Think experience	0.20*

Act experience	0.76***
Relate experience	-0.35**
R^2	0.89
Adjusted R^2	0.87
F	54.49***

Note: all statistical figures are β values; * p<.05, ** p<.01, *** p<.001.

The Effect of Experiential Marketing on Purchase Intention: Hypothesis 1 concerns the relationship between *experiential marketing* and purchase intention. Table 2 presents the results of multiple regression analyses, with sense experience, feel experience, think experience, act experience and relate experience as independent variable, purchase intention as the dependent variable, and job experience, current occupation, job tenure, and job title as the control variables. Table 2 shows that feel experience, think experience and act experience have positive and significant effect on purchase intention (β=0.25, 0.20 and 0.76 respectively); relate experience has negative and significant effect on purchase intention (β=-0.35), thus, relate experience failed to predict purchase intention; sense experience failed to predict purchase intention (β=0.09). Therefore, Hypothesis 1 is partially supported.

Table 3: Moderating Effect of Corporate Image on the Relationship between Experiential Marketing and Purchase Intention

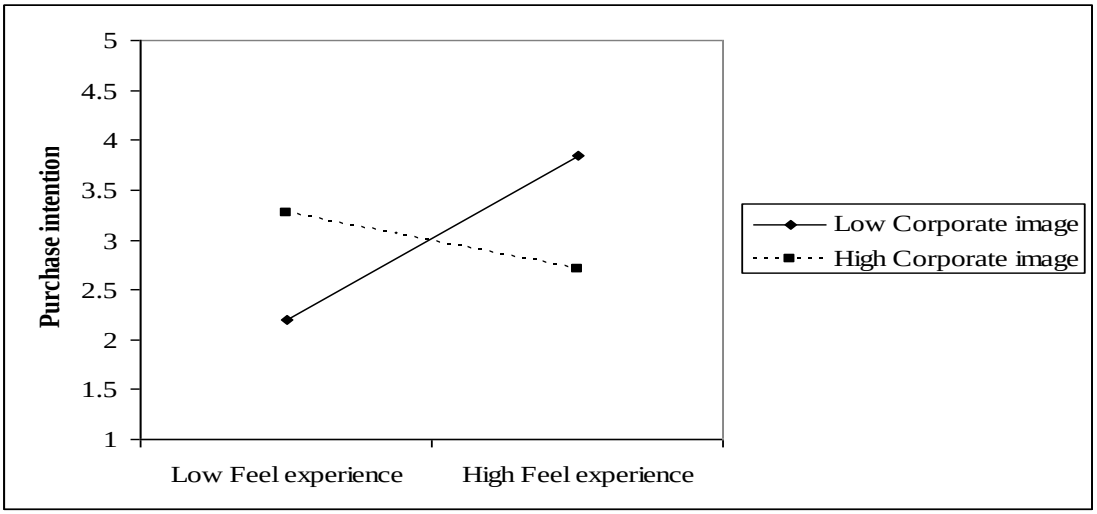
Dependent variables Statistics Independent variables	**Purchase intention**
Job experience	0.02
Current occupation	0.01
Job tenure	-0.07
Job title	-0.01
Sense experience	0.11
Feel experience	0.27*
Think experience	0.32**
Act experience	0.69***
Relate experience	-0.39***
Corporate image	-0.02
Sense experience ×corporate image	-0.19
Feel experience ×corporate image	-0.55*
Think experience ×corporate image	0.16
Act experience ×corporate image	0.25
Relate experience ×corporate image	0.41**
R2	0.91
Adjusted R2	0.88
F	32.72***

Note: (1) all statistical figures are β values; * p<.10, ** p<.05, *** p<.01.

The Moderating Effect of Corporate Image: Hypothesis 2 concerns whether corporate image moderate the relationship between experiential marketing and purchase intention. To this hypothesis, the current work conducted multiple regression analysis. Table 3 lists regression analysis results, with sense experience, feel experience, think experience, act experience and relate experience as independent variables, purchase intention as the dependent variable, corporate image as moderating variable, job experience, current occupation, job tenure and job title as control variables. Table 3 shows: (1) the interaction between sense

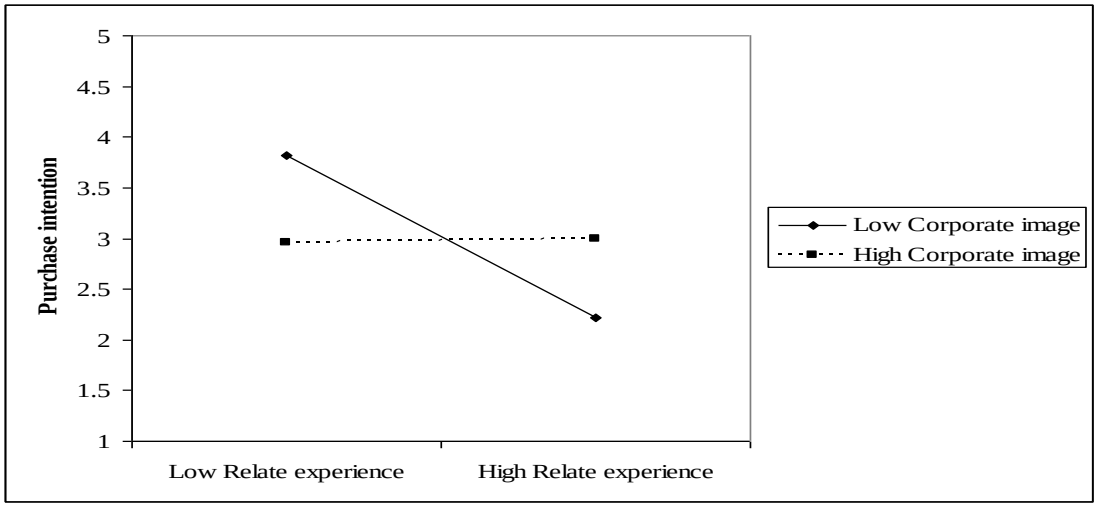
experience and corporate image failed to predict purchase intention (β=-0.19); (2) the interaction between feel experience and corporate image significantly predicted purchase intention (β=-0.55); (3) the interaction between think experience and corporate image failed to predict purchase intention (β=0.16); (4) the interaction between act experience and corporate image failed to predict purchase intention (β=0.25); (5) the interaction between relate experience and corporate image significantly predicted purchase intention (β=0.41). As such, Hypothesis 2 is partially supported. As shown in Figure 2, when buyers with low feel experience confronted an exhibitor with low corporate image, the buyers' purchase intention was reduced. In contrast, when buyers with high feel experience confronted an exhibitor with low corporate image, the buyers' purchase intention was enhanced. When buyers with high feel experience confronted an exhibitor with high corporate image, the buyers' purchase intention was reduced. In contrast, when buyers with low feel experience confronted an exhibitor with high corporate image, the buyers' purchase intention was enhanced.

Figure 2: Moderating Effect of Corporate Image on the Relationship between Feel Experience and Purchase Intention



As shown in Figure 3, when buyers with low relate experience confronted an exhibitor with low corporate image, the buyers' purchase intention was enhanced. In contrast, when buyers with high relate experience confronted an exhibitor with low corporate image, the buyers' purchase intention was reduced. When buyers with high or low relate experience confronted an exhibitor with high corporate image, the buyers' purchase intention stayed the same and the result was not significant.

Figure 3: Moderating Effect of Corporate Image on the Relationship between Relate Experience and Purchase Intention



Discussion: The purpose of this study is to examine the effect of computer technology's experiential marketing on buyers' purchase intention, and the moderating role of exhibitors' corporate image. According to literature review, this study proposed two research hypotheses that were almost fully supported. Because the literature related to experiential marketing is rare (e.g., Hung et al., 2015), the results of this study can make a theoretical contribution to the researches of international trade shows. In terms of practical contribution, the first author of this study is a 26-year veteran of company management and trade show participation. The analytical interpretation and practical implications of this study have high reference value to exhibitors of international mechanical fairs.

5. Conclusion

As expected, international mechanical fair buyers' feel experience, think experience and act experience have positive effects on their purchase intention; buyers' relate experience has a negative prediction effect on purchase intention; exhibitors' corporate image has a moderating effect on the relationship between buyers' feel experiences and purchase intention; exhibitors' corporate image has a moderating effect on the relationship between buyers' relate experience and purchase intention.

Implications for Managerial Practice: As this study predicted, the higher the international mechanical fair buyers' feel experience, think experience, and act experience, then the higher their purchase intention. The computer 3D simulation provided by the exhibitor influences the buyers' perception and further impacts their purchase intention. This result is similar to the finding of Dholakia (2000). Therefore, this study suggests international trade fair exhibitors to consider using computer 3D simulation in trade shows because this can facilitate buyers' feel experience, think experience, and act experience, as well as enhance buyers' purchase intention.

One surprising result of this research is that buyers' relate experience has a negative prediction effect on purchase intention. In other words, buyers' purchase intention is low if they feel that their knowledge of using the machine is elevated after the 3D experience. In contrast, buyers' purchase intention is enhanced if their knowledge of using the machine is not elevated after the 3D experience. One possible explanation of this result is that if international mechanical fair buyers have potential demand of the product, their background knowledge of the product should be strong. As a result, computer 3D experience is unable to enhance their product knowledge. Eventually, their purchase intention is not enhanced. In contrast, if the buyers' product knowledge is inadequate, if 3D experience can enhance their knowledge of using the product, and if they have purchase intention, then buyers would eventually choose to purchase the product. Therefore, we suggest the international mechanical fair exhibitor to make a classification of the buyers who visit. For those with inadequate product knowledge, the exhibitor can demonstrate the 3D system and offer timely explanation in order to enhance the buyers' purchase intention. For those with strong product knowledge, the exhibitor can compromise on the price in order to enhance the possibility of successfully landing the order from the buyers.

Results of this study show that the exhibitor's corporate image has a moderating effect on the relationship between buyers' feel experience and purchase intention. Relative to buyers with low feel experience, buyers with high feel experience have higher purchase intention when they confront an exhibitor with low corporate image. Relative to buyers with high feel experience, buyers with low feel experience have higher purchase intention if they confront an exhibitor with high corporate image. One possible explanation for this result could be as follows. If buyers who are experts of the product visit an exhibitor with high corporate image, the exhibitor's 3D simulation content is unable to transcend the effect of an actual physical demonstration. In other words, buyers want to see the physical demonstration and are not inclined to engage in the 3D simulation experience. Therefore, this study suggests that international mechanical fair exhibitors design 3D simulation contents that closely match the physical demonstration content and in addition, conduct a survey of their products prior to the trade show. To deal with buyers with high feel experience, the exhibitor with low corporate image should follow-up with the buyers after the show or make a personal visit to the buyers' companies in order to enhance the buyers' purchase intention. To deal with buyers with low feel experience, the exhibitor can contact the buyers by email or phone after the show to enhance the buyers' purchase intention. Similarly, to deal with buyers with low feel experience, the exhibitor with high corporate image should follow-up with the buyers after the show or makes a personal visit to the buyers' companies. In addition, the exhibitor should utilize integrated marketing strategies to enhance the product exposure and raise the corporate image in order to enhance the chance of success of landing an order. To deal with buyers with high feel experience, the exhibitor can follow-up with the buyers through email or phone after the show in order to enhance the buyers' purchase intention.

Results of this study show that relative to buyers with high relate experience, buyers with low relate experience have higher purchase intention when confronted with an exhibitor with low corporate image. Also, buyers with high or low relate experience have insignificant purchase intention when confronted with an exhibitor with high corporate image. One possible explanation is that if the buyers have strong product knowledge, the exhibitor's 3D simulation contents are unable to transcend the effect of physical demonstration. In other words, buyers only want to see the physical demonstration and are not inclined to engage in the 3D simulation experience. Therefore, to deal with buyers with low relate experience, the exhibitor with low corporate image should design 3D simulation contents that closely match the physical demonstration contents and in addition, contact the buyers after the show or make a personal visit to the buyers' companies in order to enhance the buyers' purchase intention. To deal with buyers with high or low relate experience, the exhibitor with high corporate image should consider whether or not the buyers' concern is in the pricing. We suggest that the exhibitor contact the buyers after the show. In addition to lowering the price in the short-term, the exhibitor should also pursue product differentiation and raise corporate image in the long term in order to enhance the buyers' purchase intention.

Future research direction: This survey was administered in Guangzhou's International Woodworking Machine Fair. Future studies can focus on other Asian international mechanical fairs, such as those in Taiwan, India, Japan, and Singapore, in order to further explore the effect of 3D experience on buyers' purchase intention. In addition, this study did not distinguish between the buyers' nationalities. Since buyers of international mechanical fairs come from different parts of the world, future studies can examine the effect of 3D experience on the purchase intention of buyers from different nations. Lastly, this study limits the research scope to Taiwanese exhibitors. Future studies can expand the research scope to include exhibitors and buyers from different nationalities in order to conduct a comparative analysis of the results with those of this paper.

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Effect of Deposit Interest Regional Development Bank, Deposit Interest Rate Government Bank, Inflation, GDP and Money Supply Against Exchange Rate US Dollar

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Abstract: The purpose of this study is to analyze the effect of Deposit Interest Rate Regional Development Bank, Bank Deposit Interest Rate Government, Inflation, Economic Growth (Real GDP), and the money supply of the rupiah per US dollar. The study uses panel data regression analysis with the model *Random Effects Model* (REM) method and *Pooled EGLS (cross section random effects).* The results show that factors of interest rate Regional Development Bank, the interest rate on deposits Bank government, the level of inflation, economic growth, money supply have the simultaneous and significant impact on the rupiah per US dollar. While the partial test results show that the interest rate on deposits BPD and the amount of money circulating have a significant negative effect on the rupiah per US dollar. While variable economic growth (GDP) has insignificant negative impact on the rupiah per US dollar.

Keywords: *Exchange rate of rupiah to US $, time deposit interest rate, inflationary rate, economic growth, relative money supply, total time deposits*

1. Introduction

International economic development is rapid, the economic relations between countries will be interlinked and lead to increased trade flows of goods and money and capital between countries. Changes in macro indicators in other countries, will indirectly impact on the indicators of a country. One important factor in the economy that led to the global economy is the currency exchange rate between countries, because every transaction made at this time is calculated by the value of certain currencies such as US dollars. The exchange rate of the currency of a country, especially in determining how much the value of their country's currency required to conduct transactions with other countries. With the use of the US dollar as a means of international exchange as a substitute for the gold standard after the conference Breeton Wood in 1946, then almost all countries make the US dollar as the reference exchange rate of a country that although there are several other currencies, called *"Hard Currency"* is also used as Pound Sterling, Deuce Mark and Japanese Yen.

This will have an impact on international trade because of the value of its currency will fluctuate from time to time so if a sudden change quickly it will belled to exchange rate losses due to the difference in question, including the rupiah. According Lepi (1999: 4) generally causes an economic crisis in Indonesia is not caused due to weak economic fundamentals, but because of the falling value of the rupiah against the US $. Private foreign debt short term since the early 1990s has accumulated a very large majority of not hedging (hedged against foreign currency). It is then added to the pressure on the rupiah, because there is not enough foreign exchange to pay maturing debt and interest. Table 1 shows development of the rupiah against the US dollar in Indonesia for the period 2005-2008.

Some researches about the factors that influence the exchange rate fluctuations are the economic variables that affect a country's economic fundamentals. These variables include the amount of money supply, interest rates and the level of real output. While Jeff Madura (Arifin, 1989) explains that the factors that influence the exchange rate fluctuations there are three kinds, namely) fundamental factors, related to economic indicators. b) Technical factors, relating to the conditions of demand and supply of foreign exchange. c) The market sentiment factors, associated with rumors of an incidental nature that may affect the fluctuation of foreign exchange rates in the short term. The movement of the rupiah against the US dollar after the policy is applied free floating exchange rate system in Indonesia. The data used are the monthly data started from August 1997 to December 2001. Results of his research, the independent variable that is used have no significant effect on the movement of the dependent variable value Exchange Rate, unless variable amount of money in circulation (Adwin, 2002) and several studies about the exchange rate was also conducted by Chiang (1986), Mac Donald & Taylor (1987), Putnam & Wodbury (1989), David (1989), Closterman & Schnatz (2000), Siregar & Walker (2000), and Drine & Raulty (2003).
Based on theory and some previous research related to the variables in this study there is a difference that is only use the variable value of time deposits 3 months (quarterly) on the Regional Development Bank in Indonesia and link it with the variable interest rate on deposits futures Regional Development Bank, a variable interest rate time deposits in State Bank (Persero) based on data issued by Bank Indonesia, as well as the variables of economic growth, rate of inflation, money supply and the exchange rate per US dollar. Associated with this background, the authors wanted to see whether the rate of deposit interest Regional Development Bank in Indonesia (RL), Interest Rate Deposit Bank Government (RG), Inflation (INF), Growth (Real GDP) effect positive against rupiah per US dollar (ER), while the money supply (M1) negatively affect rupiah per US dollar (ER) in Bank Indonesia year period 2005-2008.

Table 1: Exchange Rate against USD exchange (in Rupiah)

Period / Quartal		Exchange Rate (Rp / USD)	Growth (%)
2004	IV	9,126	-
2005	I	9,289	1.78
	II	9,548	2.78
	III	10,006	4.80
	IV	9,992	-0.14
2006	I	9,300	-6.93
	II	9,107	-2.07
	III	9,121	0.16
	IV	9,134	0.13
2007	I	9,099	-0.37
	II	8,973	-1.39
	III	9,246	3.04
	IV	9,234	-0.13
2008	I	9,260	0.28
	II	9,264	0.04
	III	9,216	-0.52
	IV	11,023	19.61

2. Literature Review

According Sukirno (2004: 402) that changes in supply and demand something currencies, which in turn causes changes in exchange rates, caused by factors such as changes in the taste of the public? Changes in prices of exported and imported goods raise in general prices (inflation), changes tribe interest and the return on investment, economic growth. Adwin (2002) in his study mentioned that the change of GDP that is used does not have a significant effect on the movement of rupiah per US dollar. Nawatmi (2001), the results of the first study could be concluded in the short term, variable real interest rate positive effect on the exchange rate, which means that an increase in the real interest rate would lead to depreciation of the exchange rate, a second study that the long-term, variable the effect on the real exchange rate is the real interest rate with a negative direction. That is if there is an increase in these variables will lead to appreciation of the exchange rate.

3. Methodology

This study use secondary data in the data panel *(Pooled-data).* As for the observation and measurement period is the time series data *(time series)* and the *cross section* for 4 year (quarterly data = 16) in 26 Regional Development Bank throughout Indonesia for the period 2005-2008 with 7 variables. The number of unit analysis are 416 the data (16 x 26 bank), secondary data is sourced from Bank Indonesia (BI and several various reports about amount of deposits of 26 Regional Development Bank in Indonesia. Analysis method is quantitative analysis by using linear regression equation with *pooled data* which is a combination of *time series* data with *cross section* (Gujarati, 2003). The model used by the author in this study refers to the model developed by Adwin (2002). Model for the rupiah as follows:

ER = F (RL, RG, INF, Real GDP, M1)

$ER_{it} = \beta_0 + \beta_1 RL_{it} + \beta_2 RG_{it} + \beta_3 + \beta_4 INF_{it}$ Real $GDP_t + \beta_5 M1_{it} + \varepsilon_{it}$ .. (1)

Where: ER_{it} = exchange rate rupiah to US dollar period t

β_0 = *Intercept*

RL_{it} = deposit interest rate Regional Development Bank of period t

RG_{it} = deposit rate State Bank of period t

INF_{it} = inflation rate period t

Real GDP Growth period $_{it}$ = t

$M1_{it}$ = Money Supply period t

β = *Coefficient of regression*

ε = error

4. Results and Discussion

In this experiment, the correlation between independent variables as indicators of the presence or absence of multicollinearity among the independent variables. The test results multicollinearity among the independent variables are described in the following table.

Table 2: Multicolinearity Test for Independent Variable

Korelasi	RL	RG	INF	PDB	MI	ER
RL	1.000	**0.975**	0.114	-0.171	-0.419	0.043
RG	**0.975**	1.000	0.079	-0.238	-0.236	0.134
INF	0.114	0.079	1.000	-0.277	-0.194	0.162
PDB	-0.171	-0.238	-0.277	1.000	-0.172	-0.562
MI	-0.419	-0.236	-0.194	-0.172	1.000	0.106
ER	0.043	0.134	0.162	-0.562	0.106	1.000

Table 3: Regression Model I for Exchange Rate

Variable	Coefficient	Std. Error	t-Statistic	Prob.

C	14951.96	2200.733	6.794083	0.0000
RL	-1840.202	729.4884	-2.522593	0.0303
RG	1407.190	579.4185	2.428624	0.0355
INF	40.29724	105.4348	0.382201	0.7103
PDB	-95.85677	60.74943	-1.577904	0.1457
MI	-0.006944	0.002968	-2.339911	0.0413
R-squared	0.598131	Mean dependent var		9425.690
Adjusted R-squared	0.397196	S.D. dependent var		517.4033
S.E. of regression	401.7143	Akaike info criterion		15.10936
Sum squared resid	1613744.	Schwarz criterion		15.39908
Log likelihood	-114.8748	F-statistic		2.976743
Durbin-Watson stat	2.260341	Prob(F- statistic)		0.066871

Correlation value of the variable interest rate with the Government Bank interest rates Regional Development Bank is close to 1. According Sugiyono (2004: 216), based on guidelines for the interpretation of the correlation coefficient in Table 2. Correlation between 0.80 to 1.00 can be interpreted very strong, so it can be concluded that for the deposit interest rate Development Bank Local (RL) (correlation coefficient = 1.000) were higher than the interest rate on deposits Bank Government (RG) (correlation coefficient = 0.976) which influence the amount of deposits at the Regional Development Banks in Indonesia. Based on the results as shown in Table 3 regression estimation model for exchange rate (ER):

ER=14951,96-1840,202RL+1407,190 RG+40,297 INF-95,85 PDB-0,0069 M1
(6.79) (-2.52) (2.43) (0.38) (-1.58) (-2.34)

R^2 **=** 0.5981; Adj-R^2 = 0.3972; SE = 401.71; DW -stat = 2,260

Model estimates of rupiah per US dollar (ER) above has a value of R-*Square* of 0.598, which means for 59.8% change in the exchange rate rupiah per US dollar can be explained by changes in interest rates on deposits of Regional Development Banks, Bank deposit interest rate of the Government, the rate of inflation, economic growth, and the money supply. Based on the results of the estimation parameters in the estimation model rupiah per US dollar (ER), and through testing simultaneously, the results showed that the factor interest rate Bank Government (RG) and the inflation rate (INF), positive and significant effect on the level of significant 5%, while the deposit interest rates Regional Development Bank (RL), National Economic Growth (GDP), the money supply (M1) was significantly negative effect on a significant level of 5%. The condition was supported by a coefficient of determination (Adj R^2 = 0. 3972) in which the independent variables are able to explain the exchange rate amounted to 39.72% and the rest is explained by other factors. The interest rate on deposits with BPD has a significant effect negative direction on the rupiah per US dollar. Bank deposit interest rate government significant influence with a positive direction on the rupiah per US dollar variable inflation rate does not affect the positive direction on the rupiah per US dollar. Real GDP is not significantly influenced by the negative direction of the rupiah per US dollar. The money supply influences significantly the negative direction of the rupiah per US dollar.

Factors that influence the exchange rate per US dollar result that the Government Bank deposit interest rates in Partial positive and significant impact on and the rupiah per US dollar. As for variable inflation rate is positive but not significant and the rupiah per US dollar. BPD deposit interest rates and the money supply Partial significant negative effect on and rupiah per US dollar. While variable economic growth (GDP) but no significant negative influence on and rupiah per US dollar. F statistic of 2.977 (p=0.0669) can be concluded that the fifth predictors variables in the model above is not significant to estimate exchange rate rupiah per US dollar (ER). That is simultaneously the deposit interest rate Regional Development Bank, Bank deposit interest rate of the Government, the rate of inflation, economic growth, and the money supply did not contribute significantly to exchange rate rupiah per US dollar. Based on the assumption of regression test

results, found a very strong correlation between the interest rate on deposits with the Regional Development Bank interest rate government banks (correlation coefficient = 0.976), in order to obtain the best model, one of the two variables must be drop from the model. Since the dependent variable is the exchange rate, the researchers decided to issue a variable interest rate Regional Development Bank model.

Simultaneously factors BPD interest rate, the interest rate on deposits Bank government, inflation, economic growth, the money supply significantly influence rupiah per US dollar. Increased levels of government bank deposit interest and inflation rates as well as a decrease in deposit interest rate of BPD, the money supply and economic growth will boost the exchange rate (depreciated). The model estimates the amount of rupiah per US dollar (ER) above has a value of R-Square (coefficient) of 0.317 which means that only 31.7% change in the exchange rate rupiah per US dollar (ER) can be explained by changes in interest rates Government bank deposits, inflation, economic growth, and the money supply. F statistic of 1,274 (p=0.338) can be concluded that the four variable predictors in the model above is not significant to estimate rupiah per US dollar. That is the simultaneous deposit rates Bank government, inflation, economic growth, and the money supply is not significant in estimating rupiah per US dollar.

Table 4: Regression Model II for Exchange Rate

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	9545.774	878.8126	10.86213	0.0000
RG	1.156694	51.69291	0.022376	0.9825
INF	6.766836	161.5094	0.041897	0.9673
PDB	-120.1589	87.92120	-1.366665	0.1990
MI	8.76E-05	0.001598	0.054832	0.9573
R-squared	0.316578	Mean dependent var		9425.690
Adjusted R-squared	0.068060	S.D. dependent var		517.4033
S.E. of regression	499.4858	Akaike info criterion		15.51534
Sum squared resid	2744346.	Schwarz criterion		15.75678
Log likelihood	-119.1227	F-statistic		1.273866
Durbin-Watson stat	1.240191	Prob(F- statistic)		0.337853

Based on the regression results as shown in Table 4 can be formed a new model for estimation of the exchange rate (ER) as follows.

ER = 9545.774 + 1.157RG + 6.767 INF - 120.159 GDP + 0.0000876 M1
(10.86) (0.02) (0,042) (-1.37) (0,055)

R^2 = 0.3167; Adj R^2 = 0.0681; SE = 499.4858; DW -stat = 1.240191

Influence of Interest Rate Government Bank: The results in model estimation II can be seen that the regression coefficients were obtained for the variable interest rate government banks (RG) of 1.1567 indicates that the interest rate of government banks contributed positively (proportional) to the exchange rate rupiah per US dollar. Bank interest rate increase of one per cent predicted the government will make the rupiah against the US dollar depreciated by 1.1567 rupiah assuming other independent variables unchanged. Statistical test results conclude deposit interest rate the government bank does not have a significant influence (p>0,05) on the exchange rate rupiah per US dollar.

Hypothesis: Bank Deposit Interest Rate Government (RG) positive effect on exchange rate rupiah per US dollar (ER).

Effect of Inflation: The results of model estimation II can be seen that the regression coefficient variable inflation rate (INF) of 6.767 showed the inflation rate contributed positively (proportional) to the exchange rate rupiah per US dollar. The increase in the inflation rate by one percent predicted to make exchange rate rupiah per US dollar depreciated by 6.767 rupiah assuming other independent variables unchanged. Statistical test results conclude the inflation rate does not significantly influence (p>0,05) the exchange rate rupiah per US dollar.
Hypothesis: Inflation rate (INF) positive effect on exchange rate rupiah per US dollar (ER).

Effect of National Economic Growth: The results of model estimation II can be seen that the regression coefficient variable national economic growth (GDP) amounted to -120.159 showed economic growth regions contributed negatively (inversely) to the exchange rate rupiah per US dollars. The increase in national economic growth by one percent is predicted to make the rupiah against the US dollar appreciated by 120.159 rupiah assuming other independent variables unchanged. Statistical test results concluded national economic growth does not significantly influence (p>0,05) the exchange rate.
Hypothesis: Economic Growth (Real GDP) positively affects on exchange rate rupiah per US dollar (ER).

Effect of Money Supply: The results of model estimation II can be seen that the regression coefficient of variable of money supply (M1) amounted to 0.0000876 showed money supply contributed positively (proportional) to the exchange rate , The increase in the money supply amounted to one billion rupiah is predicted to make rupiah per US dollar depreciated by 0.0000876 rupiah assuming other independent variables unchanged. Statistical test results conclude the money supply does not significantly influence (p>0,05) the exchange rate rupiah per US dollar.
Hypothesis: The money supply (M1) has a negative effect on exchange rate rupiah per US dollar (ER)

The Economic Meaning and Implications: Results of the estimated average rupiah per US dollar, using the National Economic growth (GDP) showed the same value that is Rp 9425.69. The test results of the panel regression model estimation data for the model number of deposits obtained the test results in partial coefficients with t-test showed that the growth of the national economy (GDP) and money supply (M1) a negative effect. While the deposit interest rate Regional Development Bank (RL), the deposit interest rate Bank Government (RG), the rate of inflation (INF) does not affect the exchange rate rupiah per US dollar.

Deposit interest rate Government Bank: Bank deposit interest rate Government (RG) positive effect on rupiah per US dollar (ER). The results of this study support the hypothesis that the deposit interest rate Regional Development Bank has positive influence on rupiah per US dollar, by looking at the results of statistical tests conclude the deposit interest rate State Bank has significant impact on the exchange rate rupiah per US dollar (ER). Post estimation results, it turns out the deposit rate and rupiah per US dollar (ER) have the relationship is positive, this means that the theoretical consistency can be proved empirically. From the estimation results obtained that the variable interest rates on deposits in the State Bank has a positive sign towards rupiah per US dollar, it has no meaning if the interest rate goes up, then the rupiah / US $ will rise.

The estimation results are the same as the results of research conducted by Chiang (1986), Siregar and Walker (2000), the research results that the effects of shocks in monetary aggregates, (r*) real interest rate on the *rer (real exchange rate),* can be explained (significantly influenced) by any change in the variance (r*) real interest rates. Mollick (2000), the research results stated that the interest rate between Mexico and the United States significantly affect the exchange rate Peso against the US Dollar. Nawatmi (2001), the results of research can be concluded first that the short term, variable real interest rate positive effect on the exchange rate, which means that an increase in the real interest rate would lead to depreciation of the exchange rate. On the contrary, according Adwin (2002), the research results stated that the interest rate that is used does not have a significant effect on the movement of the rupiah against the US dollar after the policy is applied free floating exchange rate system in Indonesia. Nawatmi (2001), the results of research can be concluded

that in the long second, the variables that affect the real exchange rate is the real interest rate with a negative direction. That is if there is an increase in these variables will lead to appreciation of the exchange rate.

The level of inflation: Inflation has positive effect (INF) against the exchange rate rupiah per US dollar (ER). The results support the hypothesis by looking at the statistical test results conclude significant effect on the inflation rate rupiah per US dollar, this is indicated by the value of the variable probability inflation rate (0.967) is greater than 5% error rate. This is in line with research Chiang (1986), the research results show that the rate of inflation is positive influence exchange rate against the United Kingdom, France, West Germany, Italy, the Netherlands, except Canada where the coefficient is negative. Mac Donald and Taylor (1987), the results of research that affects a significant interest rate to exchange rate movements. However, contrary to the Nawatmi research (2001), which can be concluded that in the short term, the variables that influence the exchange rate is the expectation of inflation with negative direction, which means that if there is an increase in these variables will lead to appreciation of the exchange rate. Adwin (2002), the research results stated that the inflation rate which is used does not have a significant effect on the movement of the rupiah against the US dollar after the policy is applied free floating exchange rate system in Indonesia.

National Economic Growth: National Economic Growth (GDP) positive effect on rupiah per US dollar (ER). The results of this study do not support the hypothesis, to see the results of statistical tests concluded national economic growth does not significantly influence the exchange rate rupiah per US dollar, and this is indicated by the value of probability variables national economic growth (0.199) is greater than the error rate of 5%. Post estimation result is similar to the results of research conducted by Adwin (2002), the research results stated that the change of GDP used does not have a significant effect on the movement of rupiah per US dollar after the policy is applied free floating exchange rate system in Indonesia. Economic growth Pre Estimates have a positive relationship is consistent with the hypothesis reinforced by theoretical study, proposed that the national economic growth positively effects rupiah per US dollar, this means that if the National Economic Growth rise, then the exchange rate against the dollar America will rise, and vice versa, this was confirmed by the results found among other previous empirical research Drine and Raulty (2003), the research results that the coefficient of per capita GDP significantly.

The money supply: The money supply (M1) has a negative effect against rupiah per US dollar (ER). The results of this study do not support the hypothesis by looking at the statistical result concluded the money supply significantly influence rupiah per US dollar, this is indicated by the value of the variable probability of the money supply (0.957) is greater than 5% error rate. Results of post estimates that the amount of money supply (M1) has positive effect against rupiah per US dollar (ER). Post estimation result is similar to the results of research conducted by Mac Donald and Taylor (1987), the results Mac Donald and Taylor that the money supply significant impact on exchange rate movements. Chiang (1986), the results of research that the amount of money circulating positive and significant impact on the exchange rate countries Canada, France, Italy. But not significant for the United Kingdom, the Netherlands and West Germany. The money supply Pre Estimates have a negative relationship is consistent with the hypothesis reinforced by theoretical study, proposed that the money supply negatively affect rupiah per US dollar, this means that if the money supply rises, the exchange rate rupiah per US dollar will go down, and vice versa, this was confirmed by the results found empirical by Adwin (2002), the results Adwin mention that the money supply that is used does not have a significant effect on the movement of the rupiah against the US dollar after the applied policy value system free floating exchange in Indonesia

5. Conclusion

Partially that the government bank deposit interest rates have positive and significant impact on the exchange rate rupiah per US dollar. As for the variable rate of inflation but not significant positive effect on the exchange rate rupiah per US dollar. BPD deposit interest rates and the money supply a significant negative effect on the exchange rate rupiah per US dollar. While variable economic growth (GDP) but no significant negative impact on the exchange rate rupiah per US dollar. Simultaneously factors BPD interest rate, the interest rate of government bank deposits, the rate of inflation, economic growth, the money supply effect significant against rupiah per US dollar. Increased levels of government bank deposit interest and

inflation rates as well as a decrease in deposit interest rate of BPD, the money supply and economic growth will boost the rupiah (depreciate).

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The Relationship between External Financial Flows and Economic Growth in the Southern African Development Community (SADC): The Role of Institutions

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Abstract: The study examined the relationship between external financial flows, domestic savings and economic growth in the SADC region for the period from 1980 to 2009 specifically looking at the role played by institutions. The majority of countries in the SADC region are experiencing low levels of savings, which has led to them relying more on external financial flows to bridge the gap between domestic demand for finance and domestic supply. However the relationship between external finance and economic growth is still a contentious issue. Given this, the study has thus examined the link between growth and external finance in the region, specifically focusing on the impact of the different forms of external financial flows on economic growth in the region incorporating the role played by institutions. The empirical results revealed that three types of external financial flows have a significant impact on economic growth in the SADC region except ODA; however when all the different types of external financial flows were interacted with the measure of institutions, they all become significant and more enhanced in explaining economic growth in the region. This supports the hypothesis that good institutions are necessary in promoting economic growth in developing countries. The empirical results also suggest that foreign capital is another channel through which a crisis in developing countries can be transmitted to the SADC region.

Keywords: *External Financial Flows; Economic Growth; SADC; Panel Model; Institutions*

1. Introduction and Background to the Study

Generally it is accepted that foreign capital influences the course of the real economy, and this accounts for the popularity of the subject of capital flows in academic and official policy discourse. Several studies (e.g. Papaioannou, 2005; Prasad and Subramanian, 2007; Cali, Massa and Willem, 2008; Obstfeld, 2008; Adams, 2009; Macias and Massa, 2009) documents the pivotal role of private capital flows in promoting economic growth, especially in developing countries. However, the conclusions have been mixed. The available studies on the relationship between external financial flows and economic growth documents that foreign capital flows may impact positively on both the country of origin and recipient countries. A study by Schoenmaker and Wagner (2011) indicates that the presence of external finance in the form of foreign banks in the domestic economy bring about diversification effects. Foreign banks allow domestic firms to have a multiple lending relationships with domestic and foreign banks. In cases in which domestic banks are lending-constrained, firms will have the option of the foreign banks. In addition to the benefits which come with cross border banking, there are studies which argue that FDI provides benefits that domestic investment does not. FDI inflows are seen as vehicles for the international transfer of technology and knowhow. Borensztein et al. (1998) and Choong et al. (2010) suggest that foreign capital inflows can provide additional capital and augment domestic savings, promoting capital accumulation and increase the growth rate. Also, external financial flows in the form of portfolio investment are thought to help in the modelling of financial markets in developing countries through knowledge spillover and market efficient effects (Choong et al., 2010).

Within the SADC region, the Regional Interactive Strategic plan states that savings and investments are central determinants of the rate and pattern of economic growth in the region. Through increasing domestic savings and using the resources in productive domestic investment, SADC countries will strengthen the region's prospects for accelerated economic growth, poverty eradication and sustainable development. The report shows that between 2008 and 2012, regional Gross National Savings (GNS) fell short of regional Gross Domestic Capital Formation (GDCF). In 2012, the average SADC GDCF was 20.9 percent of GDP against a regional GNS of 16.6 percent of GDP, leaving a resource gap of 4.3 percent and among individual countries, there were wide disparities between saving and investment rates, with most countries recording negative resource balances. Given the low savings rates in the region, this suggests that foreign capital can be another

source of capital to support the domestic investments and hence achieve economic growth. However a number of studies such as Acemoglu et al. (2001), Djurovic (2012), Driffield and Jones (2013) have stressed that foreign capital flows are effective given that there are good institutions in the recipient country.

Nevertheless, despite the positive effects associated with foreign capital flows, the ECA (2006) report shows that external financial flows may have negative effects on African economies through the "Dutch Disease" effects in which the increase in the flow of capital increases the demand for the domestic currency which will in turn reduce the competitiveness of a country's export industry and make imports cheaper deteriorating the country's external position. In addition, external financial flows may increase the vulnerability of a country which is caused by the high volatility and unpredictability of capital flows. In addition, studies such as Macias and Massa (2009) argue that the 2008 global financial crisis impacted negatively on the volume of external financial flows to developing countries such as those in the SADC region as the source countries focused on their domestic economy. Also the SADC (2009) report indicates that Oversees Development Assistance to the region was on the decline as donor countries budgets were under pressure. This dilemma was further enhanced by a decline in employment levels, real incomes and remittances from developed countries to the region (SADC Report, 2009). The discussion above thus indicates that there are mixed views regarding the impact of external financial flows on economic growth. This becomes important in the case of SADC countries given the low levels of savings in the region also considering the important role of savings towards investment. Thus the study aims to address a number of questions: Firstly, the study explores the relationship between foreign financial flows and economic growth in the SADC region. Secondly the paper seeks to establish the extent to which SADC countries' growth might have been adversely affected by the foreign capital inflow channel given the uncertainty associated with some of its components. Furthermore, the study looks at the growth impact of the different components of external financial flows, given their unique characteristics.

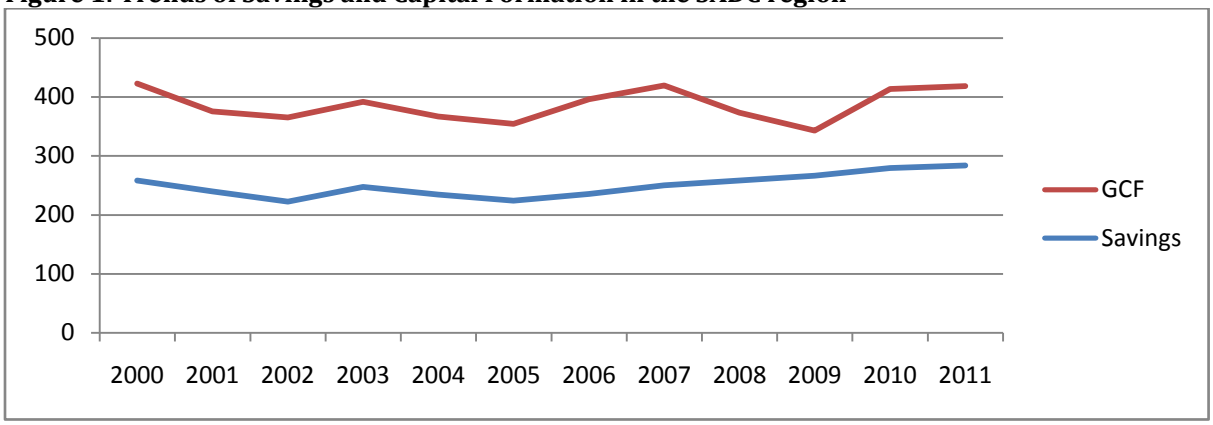
Overview of Macroeconomic Variables and Trends in Financial Flows in the SADC region: Assessing the state of macroeconomic conditions in the region, as indicated in table 2, on average the SADC region's growth have averaged around 5%. In addition the SADC countries on average have managed to reduce inflation to single digit figures. However government expenditure still surpasses government revenue. In addition public debt is still huge in the region. Another interesting finding is the deficit between investment and savings. From 2008 to 2012 there is a shortfall in that investment surpasses savings. This suggests the importance of external finance to bridge the gap between the two. This is further illustrated in figure 2.

Table 1: SADC Economic Indicators

Period	2008	2009	2010	2011	2012
Real GDP (% Growth)	4.1	1.5	5.5	4.7	5.1
Inflation (%)	13.1	12.3	8.4	8.3	7.9
Government Revenues (% of GDP)	30.2	29.3	29.7	29.2	29.7
Government Expenditures (% of GDP)	30	33.4	32.8	33.5	32.7
Overall Fiscal Balance (% of GDP)	2.4	-4.3	-3.2	-4.8	-3.6
General Public Debt (% of GDP)	42.9	45.8	39.1	39.2	39.5
Total Investment (% of GDP)	23.5	21.6	22.2	21.3	20.9
National Savings (% of GDP)	16.4	13.1	15.5	14.9	16.6
Per Capita GDP based on PPP (% Growth)	4.1	-8.1	18.9	10.3	4.2
Volume of Exports (% of Growth)	6.7	-1.7	5.7	4.8	8.5
Volume of Imports (% Growth)	12.1	-2.2	6.1	2.3	4.6
Current Account Deficit (% of Growth)	-	-	-8.8	-8.3	-6.6

Source: SADC Facts and Figures (2013)

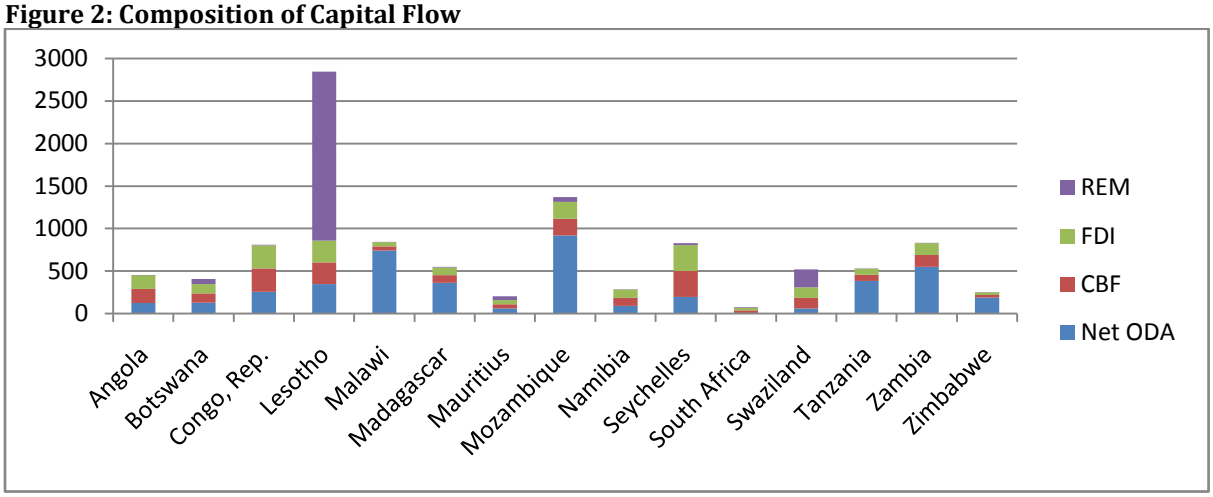
Figure 1: Trends of Savings and Capital Formation in the SADC region



Source: World Bank African Development Indicators

Figure 1 shows the composition of the different capital flows in the SADC region for each country. The four types of external finance analysed are remittances, Foreign Direct Investment, Cross Boarder Bank Flows and Oversees Developemnt Assistance. Figure 2 shows all the four types of foreign capital normalised against GDP. It is clearly evident that ODA, FDI and remittances are the major sources of foreign capital in the SADC region. For countries such as Lesotho, remittances surpasses all other types of capital. However for Mozambique ODA is the major source of foreign capital. The same applies to Malawi and Zambia and Zimbabwe. However countries such as South Africa and Mauritius seem to depent less on these types of foreign capital, on a closer analysis Foreign Portfolio investment which is not icoporated due to lack of data on other coutries seem to be the major component.

Figure 2: Composition of Capital Flow



Source: World Development Indicators (2013)

2. Literature Review

The majority of studies which have analysed the impact of foreign capital on economic growth have largely relied on the Harold-Domar model which highlights that domestic resources are not sufficient to support investment. Foreign capital therefore bridges the gap between domestic capital supply and demand. It is interesting to note that the major focus of the available studies on the relationship between external financial flows and economic growth have concentrated on establishing the impact of foreign capital on economic growth at macroeconomic level either applying cross-sectional or panel data to a number of countries (Borensztein, De Gregorio and Lee, 1998; Carkovic and Levine, 2002). In addition to those focusing at cross-sectional or panel data, there are studies based at micro level data or case studies. These studies include

Atique, Ahmad & Azhar (2004), Ayanwale (2007), and Khaliq & Noy (2007). However, the empirical literature on the impact of foreign capital on economic growth is largely inconclusive. Of noteworthy is that the majority of the cross-sectional and panel data studies, irrespective of the forms of foreign capital, tend to establish a significant positive relationship between the measure of external finance and economic growth (see Borensztein, De Gregorio, and Lee, 1998; Week, 2012). On the other hand the majority of time series country-specific studies have established either a negative relationship or insignificant relationship (see Khaliq and Noy, 2007; Duasa and Kassim, 2009).

Of the available studies, Macias and Massa (2009) analysed the impact of the different forms of capital on economic growth in the Sub-Saharan Africa (SSA) for the period 1980 to 2007. The authors used Bond flows, Cross border bank lending and FDI. Empirical results revealed that both FDI and cross-border bank lending exert a positive and significant impact on economic growth in SSA, whereas portfolio equity flows and bonds flows have been found to have no growth impact. The authors also highlighted that the benefits of cross-border bank flows are still to be realised in Africa due to underdevelopment and fragmentation of the financial markets. This suggests that a well-integrated market may attract more CBF which amongst the other financial and economic spill overs, increase the availability of development finance. The results on FDI are in agreement with Reisen and Soto (2001), Muradzikwa (2002), Toulaboe, Terry and Johansen (2009), Agrawal and Khan (2011), Rachdi and Saidi (2011), Weeks (2012) who shows that an increase in FDI promotes economic growth.

In another separate study, Driffield and Jones (2013) analysed the impact of foreign capital inflows on economic growth of developing countries for the period 1984 to 2007. The authors employed three major measures of foreign capital, remittances, ODA and FDI. Empirical results reveal that both FDI and migrant remittances have a positive impact on growth in developing countries. In addition, the authors argue that the impact of these types of foreign capital is also determined by a better institutional environment in that countries that protect investors and maintain a high level of law and order will experience enhanced growth. However, as regards the impact of aid on economic growth, the authors argue that it is not clear. This suggest that aid is usually "poorly targeted". These results are in line with prior studies such as Griffin (1970), Rana and Dawiling (1990) and Waheed (2004). These studies have suggested that foreign financial flows, especially aid are used for consumption instead of investment in what has come to be known as the fungibility of aid. However this result was found to be contradictory to Ekanayake and Chatrna (2008) study on 85 developing countries covering Asia, Africa, and Latin America and the Caribbean for the period from 1980-2007. The authors established that foreign aid has a positive impact on African countries due to these countries being the largest recipient of foreign aid.

In addition to the studies which have analysed the impact of the different forms of capital on economic growth, there has been a proliferation of studies which have emphasised the importance of institutions in harnessing the positive impact of foreign capital. Based on the work of North (1981), La Porta et al. (1997) and Acemoglu et al. (2001), Driffield and Jones (2013) argue that even though the institutional variables are not strongly linked to economic growth they are however strongly correlated with all three types of capital flows analysed by the author (FDI, Remittances and Aid). In addition the authors argue that investor protection, good governance and the maintenance of law and order increase the extent to which inward capital flows stimulate economic growth. The authors concluded therefore that FDI and remittances may be the trigger that generates a sizeable growth payoff. In the same vein, Djurovic (2012) found that inward FDIs were attracted to the developing nations with higher availability of educated labour, higher government spending and more efficient quality of governance. The study point to an existence of a connection between FDI and economic growth which is strengthened when other factors are included in the analysis. In line with the previous studies of North (1981), La Porta et al. (1997) and Acemoglu et al. (2001), Driffield and Jones (2013) reviewed this further shows the importance of other institutional factors when it comes to realising the positive effects of FDI.

The argument of institutions is further supported by Moura and Forte (2010). Reviewing the available studies on the impact of foreign capital on economic growth, the authors concluded that a common feature in most of the studies analysed suggest that the effects of foreign capital, specifically FDI depend on the most varied conditions existing in each country, when FDI occurs or is provided subsequently, whether they can be

economic, political, social, cultural or other. The authors suggest that the reasons most frequently mentioned derived from the way the country can benefit from the presence of multinationals and the advantages they carry and that can be used to improve the host country's economy performance. Among these, the most mentioned is how the host country can gain by using more advanced technologies and knowledge. The review of literature has highlighted that the impact of capital flows on economic growth is not the same. FDI and remittances have featured as influencing economic growth positively; on the other hand aid presents mixed results. It is also interesting to note that the available studies in the case of the SADC region have focused much on FDI; there are no studies which have analysed the impact of the different forms of external financial flows in the region. Thus this study contributes in that context.

3. Methodology and Theoretical Framework

The study is underpinned by the standard endogenous growth model in which economic growth is influenced by the four forms of capital, Foreign Direct Investment (FDI), Oversees Development Assistance (ODA), Portfolio Investment (PI) and Remittances (R). Based on the work of Catrinescu et al. (2009) and Driffield and Jones (2013) it is assumed that each type of financial flow finances its own form of investment that determines economic growth. Investment is regarded as an aggregate of public and private investment, with public investment generally financed by aid in part, whilst private investment is influenced by FDI, R and FPI. The production function in this case can be stated accordingly as:

$$Y_t = T_t(G_t + \varphi A_t + DI_t + FDI_t + \lambda R_t)^{\phi} \quad 4.1$$

Where Y_t represents output, G_t represents government investment spending, A_t is ODA, φ is share of ODA used for public investment purposes, DI_t is domestic investment, FDI_t is foreign direct investment which also incorporates Portfolio investment (PI), R_t is remittances and λ is the share of remittances devoted to private investment. Equation 4.1 was expanded to take into account Cross boarder bank flows. Thus the model becomes:

$$Y_t = T_t(G_t + \varphi A_t + DI_t + FDI_t + \lambda R_t + CBF)^{\phi} \quad 4.2$$

In this case CBF represents Cross Boarder Bank flows. Driffield and Jones (2013) argue that Aid can influence economic growth directly or via public investment, whilst FDI and remittances influences economic growth through external private sources. The same also applies to CBF considering that it is a private source. In addition to the different forms of capital, institutional factors have emerged also as important factors determining the contribution of the forms of capital towards economic growth. Though Portfolio investment has featured as a very important source of capital as indicated in the literature review section, it is interesting to note that the majority of countries in the SADC region financial markets are still at their infancy. The stock markets are prominent but still underdeveloped. The bond market in some of the countries is non-existent. Given this, this variable was dropped in the analysis therefore. The study will therefore be based on the above framework examining four types of external finance which are FDI, CBF, ODA and remittances.

Model Specification: Based on the theoretical framework discussed in 4.1 and 4.2, the study will employ a model in which the four conventional forms of external finance are independent variables. The following equation encapsulates the estimated model:

$$Y_i = \alpha_i + \sum_i \beta_i X_i + \varepsilon_i \quad 4.3$$

Where:

Y_i = measure of economic growth for country *i.*

X_i= the different forms of external finance for country *i.*

In addition to the conventional model specified above, the study will also consider other variables that determine economic growth and augments them with the different forms of external financial variables. This is important taking into account the heterogeneity of SADC countries. The review of literature has indicated that factors such as institutional quality, corruption, law and order are other variables which have been

levelled out as other determinants of capital flows and hence economic growth. Thus the model shall incorporate these variables to come up with the following model:

$$Y_i = \alpha_i + \sum_i \beta_i X_i + \sum_i \gamma_i Z_i + \varepsilon_i \qquad 4.4$$

Where:

Y_i = measure of economic growth for country *i.*

X_i = Conventional explanatory variables representing the different forms of capital flows (FDI, R, ODA and FPI) for country *i.*

Z_i = vector of explanatory variables affecting economic efficiency such as Openness as a percentage of GDP, human capital, domestic investment, exchange rate, inflation rate, government expenditure, measure of financial development, polity.

The model can thus be written as:

$$\begin{aligned} Gdp_{it} &= \alpha_{it} + \beta_1 FDI_{it} + \beta_2 REM_{it} + \beta_3 ODA_{it} + \beta_4 CBF_{it} + \beta_5 GFCF_{it} + \beta_6 M3/GDP_{it} + \\ &\beta_7 BCP/GDP_{it} + \beta_8 POL_{it} + \beta_9 OPE_{it} + \beta_{10} GDS_{it} + \beta_{11} INF_{it} + \beta_{12} EXT\_DBT_{it} \\ &+ \beta_{13} REM\_POL_{it} + \beta_{14} FDI\_POL_{it} + \beta_{15} ODA\_POL_{it} + \beta_{16} CBF\_POL_{it} + \beta_{17}\tau_{it} + \beta_{18}\delta_{it} + \varepsilon_{it} \end{aligned} \qquad 4.5$$

The model will include two interactive dummy variables; τ and δ following the work of De Wet and Van Eyden (2005). The two authors argue that it is imperative to take into account the state of development of the South African economy when carrying out a cross-country study in which it is included. In this case τ represents the South African interactive dummy variable which will be constructed by multiplying the savings rate for each country by the South African dummy variable to take into account that South Africa has a different level of capital mobility as well as the level of savings as compared to other countries in the SADC region. De Wet and Van Eyden (2005) show that South Africa can be regarded as a 'developed' country in the context of SADC or looking at Sub-Saharan Africa. Therefore failure to take this into account would bias the rest of the region upwards. In the event that it is significant, the actual coefficient of the savings rate would be the sum of β_{10} which represents Gross domestic savings and β_{17}. The time interactive dummy (δ) on the other hand was constructed by multiplying a time trend with the savings rate for each country. This is supported by Isaksson (2001) who argues that it captures the change in capital flows for the time period in order to evaluate the effectiveness of policy and institutional changes which are aimed at capital mobility. De Wet and Van Eyden (2005) argue that a negative value for β_{18} will be an indication of a decrease in the savings rate, implying that policy changes are effective and capital is mobile in the region.

Estimation Techniques: The study focused on modelling the impact of the different macroeconomic and external financial variables established in the model through the simple panel modelling technique. However prior to estimating the panel technique, the properties of the data will be analysed through panel unit root tests.

Panel Unit Root tests: To obtain robust results, the study utilised several methods to carry out the unit root tests in the panels used in the study. These methods are discussed in this section.

The Levin and Lin (LL) test: This test was originally developed by Levin and Lin (1992). The test is an extension of the DF test. The model is of the following form:

$$\Delta Y_{i,t} = a_i + \rho Y_{i,t-1} + \sum_{k=1}^{n} \phi_k \Delta Y_{i,t-k} + \delta_i t + \theta_t + u_{it} \qquad 4.6$$

Asteriou and Hall state that the model allow for two-way fixed effects, one coming from a_i and the other from θ_t. Therefore, both unit-specific fixed effects and unit specific time effects are included. The unit-specific

fixed effects allow for heterogeneity since the lagged Y_i is restricted to being homogenous across all units of the panel. The null and the alternative hypotheses are stated as:

$H_0 : \rho = 0$

$H_a : \rho < 0$

The LL test also assumes that the individual processes are cross-sectionally independent implying that the pooled OLS estimator of ρ will follow a standard normal distribution under the null hypothesis. However the LL test was criticised on restricting ρ to be homogenous across all i.

The Im, Pesaran and Shin (IPS) test: Im, Pesaran and Shin (2003) extended the LL test taking into account heterogeneity on the coefficient of the $Y_{i,t-1}$ variable and proposing a procedure which relies on the average of the individual unit-root test statistics. The IPS test provides separate estimations for each i section, allowing different specifications of the parametric values, the residual variance and the lag lengths. The model is given as:

$$\Delta Y_{i,t} = a_i + \rho_i Y_{i,t-1} + \sum_{k=1}^{n} \phi_{ik} \Delta Y_{i,t-k} + \delta_i t + u_{it} \qquad 4.7$$

The null and the alternative in this case will be formulated as:

$H_0 : \rho_i = 0$ for all i

$H_a : \rho < 0$ for at least one i

The null in this case assumes that all series are non-stationary process under the alternative that a fraction of the series in the panel are assumed to be stationary. This contradicts the LL test which assumes that all series are stationary under the alternative hypothesis.

It is also important to note that Im et al. (2003) formulated their model under the assumption that T is the same for all cross-sections. This therefore requires a balanced panel in the computation of the $\bar{t}$-test statistic which is the average of the individual ADF $\bar{t}$-statistic computed as:

$$\bar{t} = \frac{1}{N} \sum_{i=1}^{N} t_{\rho i} \qquad 4.8$$

The authors also constructed the IPS statistic for testing for unit root in panels given by:

$$t_{IPS} = \frac{\sqrt{N}(\bar{t} - 1/N \sum_{i=1}^{N} E[t_{iT} | \rho_i = 0])}{\sqrt{Var[t_{iT} | \rho_i = 0]}} \qquad 4.9$$

Panel Data Estimation Methods: The impact of the different variables to be employed in the study were analysed through panel data model. The Panel data analysis has a number of advantages over the other approaches. These include its ability to increase the sample size and hence obtaining better estimates. Also Asteriou and Hall (2011) argue that under certain circumstances the problem of omitted variables which at times cause biased estimates in a single individual regression is not likely to occur. Also, Wooldridge (2002) argues that panel data controls for unobserved cross-section heterogeneity. There are three basic panel data estimation methods namely Pooled OLS, Random Effects Model (REM) and Fixed effects Model (FEM).

Pooled Regression Model: The pooled regression model emphasises the joint estimation of coefficients using the ordinary least squares (OLS) thereby increasing degrees of freedom and decreasing standard errors of the coefficients (Baltagi, 2008). Given an equation with two explanatory variables x_2 and x_3 a pooled model can be written as:

$$y_{it}\beta_1 + \beta_2 x_{2it} + \beta_3 x_{3it} + e_{it} \qquad 4.10$$

The coefficients ($\beta_1, \beta_2, \beta_3$) are assumed to be constant for all individual countries in all time periods, and do not allow for possible individual heterogeneity. This characteristic is what led to equation 4.10 being called a pooled model. However its major weakness is that it pools all cross-sections and time series data and estimates a common regression disregarding possible country-specific differences.

Random Effects Model: In the random effects model (REM) or the error component model (ECM), the individual effects are treated as random draws from a larger population. The random effects model can be written as:

$$y_{it} = \beta_0 + x'_{it}\beta + \alpha_i + u_{it}, \quad u_{it} \sim IID(0, \sigma_u{}^2); \ \alpha_i \sim IID(0, \sigma_\alpha^2) \qquad 4.11$$

Where $\alpha_i + u_{it}$ is treated as an error term consisting of two components; an individual specific component, which does not vary over time, and a remainder component, which is assumed to be uncorrelated over time. In other words all correlation of the error terms over time is attributed to the individual effects α_i . It is assumed that α_i and u_{it} are mutually independent and independent of x_{js} (for all j and s). This implies that the OLS estimator for β_0 and β in equation 4.10 is unbiased and consistent.

However, Gujarati (2004, 648) states that if the cross-section or individual-specific error component is zero there will be no difference between the pooled and the random effects model in which case one would simply run a pooled regression. Baltagi (2008, 17) maintains that the random effects model is appropriate if draws are made randomly from a large population where *N* is generally large.

Fixed Effects Model (FEM): A Fixed Effects Model is a linear regression model in which the intercept terms vary over the individual countries *i*. Thus:

$$y_{it} = \alpha_i + x'_{it}\beta + u_{it}, \ u_{it} \sim IID(0, \sigma_u{}^2), \qquad 4.12$$

Where it is usually assumed that all x_{it} are independent of all u_{it}.

Gujarati and Porter (2009), states that these intercepts capture the different special features of each country. In addition, Hill et al. (2008) also states that these fixed effects can be analysed to study the extent of country heterogeneity and to examine any particular countries of interest. However, in the event that these individual effects are identical, one can then use a pooled least squares regression model. The fixed effects model can be estimated by employing the "Within" Q estimation technique or the least square dummy variable (LSDV) technique. Writing equation 4.11 in a usual regression framework including a dummy variable for each unit in the model:

$$y_{it} = \sum_{j=1}^{N} \alpha_j d_{ij} + x'_{it}\beta + u_{it} \qquad 4.13$$

Where d_{ij} = 1 if $i = j$ and 0 otherwise. There are a set of N dummy variables in the model. The parameters $\alpha_1 \ldots\ldots, \alpha_N$ and β in equation 4.12 can be estimated by ordinary least squares. The implied estimator for β is referred to as the least squares dummy variable (LSDV) estimator. The estimator of β can be obtained by performing the regression as deviations from individual means. This implies eliminating all the individual effects α_i first by transforming the data to obtain:

$$y_{it} - \overline{y_i} = (x_{it} - \overline{x_i})'\beta + (u_{it} - \overline{u_i}) \qquad 4.14$$

Equation 4.13 does not include the individual effects α_i . The transformation that produces observations in deviations from individuals means in equation 4.13 is called the within transformation. The OLS estimator for β obtained from the transformed model is called the within estimator or fixed effects estimator and it is identical to the LSDV. It is given by:

$$\hat{\beta}_{FE} = \left(\sum_{i=1}^{N} \sum_{i}^{T} (x_{it} - \bar{x}_i)(x_{it} - \bar{x}_i)' - \right)^{-1} \sum_{i=1}^{N} \sum_{t=1}^{T} (x_{it} - \bar{x})(y_{it} - \bar{y}_i) \quad 4.15$$

Assuming that all x_{it} are independent of all u_{it}, the fixed effects estimator will be unbiased for β. Both fixed effects modeling techniques namely LSDV and "WITHIN"/Q estimation methods basically produces the same results. For making inferences, the LSDV is reported as it *estimates* as opposed to *calculating* the intercept coefficients and as such produces standard errors, *t*-statistic and *p*-values.

Choosing the appropriate model: To decide between a pooled regression model (restricted) and a fixed effects model (unrestricted), the F-test was performed.

F-test: The F-test is constructed as follows:

$$H_0 : \mu_1 = \mu_2 = \ldots = \mu_{N-1} = 0$$

$$H_A : \text{Not all equal to 0}$$

$$F \ statistic = \frac{(RSS - URSS)/(n-1)}{URSS/(nt - n - k)} \sim F_{(n-1),(nt-n-k)} \quad 4.16$$

Where:

RSS	-	Residual sum of squares from the pooled model (restricted model)
URSS	-	Residual sum of squares from the FEM (unrestricted model)
n	-	Number of cross sections (countries in the SADC region)
t	-	Number of time periods
k	-	Number of explanatory variables

The F-test essentially involves a comparison of the residual sum of squares (RSS) of both models. This method is justified on the basis that OLS entails minimising the residual sum of squares. The rationale of the F-test is that if after imposing restrictions a much greater RSS is obtained then the restricted model is not supported by the data. Similarly, if the RSS decreases significantly following the restrictions then it is concluded that the restricted model is supported by the data. The null hypothesis of cross-section homogeneity is rejected if F-statistic > F-critical value at 0.05 level of significance.

The Hausman Test: The Hausman test was also carried out as a robust check to choose the appropriate technique. The general idea of the Hausman test is that two estimators are compared in which one is consistent under both the null and alternative hypothesis and one that is consistent under the null hypothesis only. A significant difference between the two estimators indicates that the null hypothesis is unlikely to hold. Assuming that $E\{u_{it} x_{is}\} = 0$ for all *s, t* so that the fixed effects estimator $\hat{\beta}_{FE}$ is consistent for β irrespective of the question as to whether x_{it} and α_i are uncorrelated , while the random effects estimator $\hat{\beta}_{RE}$ is consistent and efficient only if x_{it} and α_i are not correlated.

In examining the difference between $\hat{\beta}_{FE}$ and $\hat{\beta}_{RE}$ requires estimating the covariance between the two which is:

$$V\{\hat{\beta}_{FE} - \hat{\beta}_{RE}\} = v\{\hat{\beta}_{FE}\} - v\{\hat{\beta}_{RE}\}, \quad 4.17$$

The Hausman test statistic will thus be computed as:

$$\xi_H = (\hat{\beta}_{FE} - \hat{\beta}_{RE})'[\hat{V}\{\hat{\beta}_{FE}\} - \hat{V}\{\hat{\beta}_{RE}\}]^{-1}(\hat{\beta}_{FE} - \hat{\beta}_{RE}), \quad 4.18$$

Where the $\hat{V}$ s denotes estimates of the true covariance matrices. Under the null hypothesis, which implicitly states that plim $(\hat{\beta}_{FE} - \hat{\beta}_{RE}) = 0$; the statistic ξ_H has an asymptotic Chi-squared distribution with K degrees of freedom, where K is the number of elements in β. The Hausman test thus will test whether the fixed effects and random effects estimators are significantly different.

4. Results and Discussion

As part of the analysis of the data prior to estimation, unit root tests were performed on the data to establish the level of integration of the data. The study utilised two tests, Levin and Lin (1992) and Im et al. (2003) IPS panel unit root test so as to obtain robust results thought the IPS test was considered more robust as compared to other tests as it has the ability to preserve sample properties of the data in the case of small samples. The results are reported in table 2. However all tests indicate that the variables are stationary at level series. Having established the level of stationarity of the variables the study proceeds with the panel estimations in the next section.

Table: 2: Panel Unit Root tests

Tests	Statistic	P-value
Null Hypothesis:	Each individual series contains a unit root	
Im, Pesaran & Shin (IPS)	-2.759	*0.004****
ADF - Fisher Chi-square	102.2	*0.002****
PP - Fisher Chi-square	87.49	*0.037***
Null Hypothesis:	Assumes common unit root process	
Levin, Lin & Chu (LLC)	-5.734	*0.000****

* / [**]/ (***) denotes significance at 10%, / [5%] / (1%) level of significance respectively.

Source: Author's computation using *Eviews 8* Econometric Software

Panel Model Estimation Results: Different tests were conducted to choose the appropriate model between the random and the fixed model. The results are reported in the appendix. The results indicate that the calculated F-statistic exceeds the F-critical value; we reject the null hypothesis that the sample of the SADC countries is homogenous. This implies that the FEM model should be utilised since it allows for country specific effects in the specification. The Husman test was also carried out to test the better model between FEM and REM, χ^2 (Chi-Square) tests results confirmed that the FEM was the appropriate model that fit our data. The results from the FEM Model are therefore interpreted in detail. The fixed effects model takes into account the heterogeneity in the cross-section and it also assumes a different intercept for each country which is included in the sample. In this case fixed effects may represent differences in political, institutions, economic systems amongst others which are not explicitly included in the specification, which are however accounted for when estimations are carried out. The model was estimated and the results are reported in table 3.

The results indicate that all the coefficients of the different forms of external finance are positively related to economic growth in the region. The time dummy variable is positive and statistically significant in this case suggesting that changes which have occurred in the different countries have influenced the flow of capital in the different countries. This suggests also that there is a difference in the amount external finance which is attracted between South Africa and the other countries in the region. The model has an adjusted R^2 which is higher than the other models. The empirical results reveal that there is a positive and significant relationship between FDI and economic growth. The coefficient of FDI is 0.22, suggesting that a unit increase in FDI will result in economic growth increasing with about 0.22. This is consistent with the *apriori* expectation as well as a number of available studies. The result in consonance with Rivera-Batiz and Romer (1991), Borensztein et al. (1998), Balasubramanyam et al. (1996), Workie (2007) and Petrakos et al. (2007). Trpkova and Tashevska (2011) argues that this is likely to arise as FDI inflows foster internationalization of production

through the transmission of ideas that can be traded independently of goods and trade in intermediate and capital goods that embody technology, increases trade openness as well as increasing favourable spillover effects and finance external current account deficits which is a common feature in many of the SADC countries.

Table3: Fixed Effects Model Results

Dependent variable: GDP

	Model 1	Model 2	Model 3	Model 4	Model 5
Const	3.3006***	3.5556*	3.5556	3.1288	3.9736
	(0.9509)	(0.9290)	(1.9290)	(1.9436)	(0.8516)
FDI	0.1272**		0.2599**	0.2709**	
	(0.0286)		(0.0298)	(0.0301)	
REM	0.1077**	0.05654		0.0820**	
	(0.0232)	(0.0671)		(0.0166)	
ODA	0.1136	0.0897*	0.0935*		
	(0.0301)	(0.0350)	(0.0346)		
CBF	0.0888**	0.0827**	0.0544**	0.0779**	
	(0.0360)	(0.0170)	(0.0170)	(0.0172)	
GFCF	0.0896	0.0870**	0.0936**	0.1134**	0.0986***
	(0.0214)	(0.0354)	(0.0368)	(0.0364)	(0.0348)
M2/GDP	0.0429**	0.0235**	0.2470**	0.2612**	0.0365***
	(0.0157)	(0.0193)	(0.0192)	(0.0194)	(0.0182)
	0.2413**	0.3210**	0.4210**	0.4012**	0.4123***
BCP/GDP	(0.0021)	(0.0124)	(0.0131)	(0.0312)	(0.0012)
POL	0.0269	0.2579***	0.2585**	0.2935**	0.2883***
	(0.0723)	(0.0962)	(0.0962)	(0.0961)	(0.0961)
OPE	0.0294	0.0370**	0.2226***	0.0230*	0.0227*
	(0.0070)	(0.0136)	(0.1365)	(0.0137)	(0.0136)
GDS	0.0025	0.1438**	0.1516**	0.1394**	0.1427**
	(0.0359)	(0.0621)	(0.0622)	(0.0627)	(0.0623)
INF	-0.0002	-0.0002*	-0.0002*	0.0003*	-0.0003**
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
EXT_DBT	-0.0230**	0.0237***	-0.0236***	-0.0161***	-0.0167***
	(0.0049)	(0.0059)	(0.0059)	(0.0052)	(0.0052)
REM_POL	0.2047**	0.4065***	0.3010**	0.4121**	0.7503**
	(0.0902)	(0.0036)	(0.0127)	(0.0366)	(0.2486)
FDI_POL	0.1505**	0.3431**	0.0659**	0.5868**	0.5311***
	(0.0464)	(0.0164)	(0.0729)	(0.1730)	(0.0165)
ODA_POL	0.1310**	0.0070*	0.6745**	0.0749**	-0.0075
	(0.0640)	(0.0047)	(0.0147)	(0.0481)	(0.0048)
CBF_POL	0.0904	0.0182**	0.0178**	0.0187**	0.5214**
	(0.0239)	(0.0048)	(0.0048)	(0.0048)	(0.1240)
SA dummy	0.2191**	0.2290**	0.2141**	0.2345**	0.2145**
	(0.0120)	(0.0241)	(0.0125)	(0.0214)	(0.0312)
Time_Dummy	-0.0864	-0.2406	-0.2425	-0.5562	-0.6356
	(0.1306)	(0.9461)	(0.9461)	(0.9450)	(0.9430)
F	33.992**	4.112**	0.2066**	3.8142**	4.0150*

Notes:
Standard errors reported in parentheses.
*/(**)/[***] indicates significance of the coefficients or rejection of the null hypothesis on a 10%/(5%)/[1%] level of significance.
Source: Author's computation using *Eviews 8* Econometric Software

The empirical results also suggest that there is a positive relationship between remittances and GDP in the SADC countries. The coefficient for remittances is 0.36, which is relatively high. This result is consistent with Taylor (1992), Woodruff and Zenteno (2001), Giuliano and Ruiz-Arranz (2009), Adams and Cuecuecha (2010). These authors argue that remittances act as a developmental tool through their effect on investment. This is further supported by Ratha (2013) who argues that an increase in remittances apart from benefiting individuals at the household level benefits the national economy as well through increased investment. The author shows that a number of studies in Mexico have indicated that receipt of remittances is associated with greater accumulation of assets in farm equipment, higher levels of self-employment and increased small-business investments in migrant-sending areas. In addition, remittances also boost domestic savings and improve financial intermediation which is a very important factor in aiding access to the financial system. A good case in point is Zimbabwe. There are a number of studies (Maphosa, 2005; Bracking & Sachikonye, 2006; Tevera & Chikanda, 2009) which indicates that the inflow of remittances supported development programmes in the country as the country was not able to access international funding. The ODA variable was found to be positive though economically insignificant in the base model. This is not in line with the *apriori* expectation, however it is supported by a number of empirical studies such as Burnside and Dollar (2004) who argues that ODA on its won it cannot influence growth in Africa. However the author argues that it becomes effective when interacted with another policy variable such as institution or a proper monetary or fiscal policy. However other studies such as Alesina and Weder (2002), Easterly et al. (2004) and Brautigam and Knack (2004) argue that there is evidence suggesting that high levels of AID is associated with deterioration in governance in Africa.

Cross Boarder banking was found to be significant and positive though the coefficient has low power. The results suggest that a unit increase in CBF will amount to about 0.09 increases in economic growth in the SADC region in the base model. This result is consistent with Macias and Massa (2009) on a study on Sub-Saharan Africa. The authors argue that cross boarder bank flows allows the realisation of potential benefits of financial integration which includes risk sharing, diversification and better allocation of capital among investment opportunities. In addition, cross boarder banking allows banks to take advantage of economies of scale and scope, diversify activities as well as spread risk and revenues. This will result in banks being able to improve resource allocation, risk management and improve on their profitability. Also, an increase in cross boarder bank flows augments domestic financial capacity and increases the pool of borrowing. The low impact of cross border bank flows on economic growth can be attributed to disintegration of the SADC economies. Macias and Massa show that the benefits of cross border bank flows can be realised to a greater extent if the countries concerned are integrated. However Macias and Massa (2009) argue that international banks should not control a large section of the banking sector as this would expose the banking sector to crises, for example the global financial crises of 2008 which crippled other countries banking sector. However this result is antagonistic to Durham (2003).

The four types of financial flows were interacted with institutions to examine if institutions play a role in determining their magnitude. The empirical results show that all the coefficients of the different types of external finance became more significant as compared when they are on their own. The empirical results reveal that the coefficient for FDI became 0.54, from 0.22. This suggests that institutional framework plays a very important role in the determination of the effectiveness of FDI flows. This is in line with Ades and Di Tella (1999), Dreher et al. (2007) and Boerner and Hainz (2009) who suggest that institutional reforms reduce investment risk, generates greater returns to the private sector investors as well as improve on innovation. At the same time institutional reform is likely to eliminate sources of corruption. Coricelli et al. (2012) also argues that the quality of institutions determine capital market efficiency in terms of property rights and in freedom from corruption. Where property rights are enforced and there are low levels of corruption, this will encourage investment, reduce transaction costs and therefore encourage FDI flows. This is further supported by Driffield and Jones (2013) who point out that where institutions fail to protect intellectual property rights of investors; this will influence the extent to which FDI will impact on growth. This occurs mainly through a reduction in the propensity of firms to invest in a country as well as impacting negatively on technology transfer as well as the extent to which investors will engage with the country's firms.

The empirical results also suggest that the magnitude of remittances becomes more pronounced when it is interacted with institutions. This again stresses the importance of institutions in determining the extent to which remittances impact on economic growth. This is supported by a number of studies such as Catrinescu et al. (2009). The authors argue that good institutions are important to encourage people to remit to their countries. In a situation where institutions are not in order, for example the case of an informal economy, there is likely to be high transaction costs. Also in such instances there maybe theft of remittances. In such cases their effect on economic growth will be reduced. The results thus suggest that SADC countries should improve on their institutional frameworks so as to realise the benefits of remittances. The effect of AID on the other hand when interacted with institutions becomes significant suggesting that good institutions are a prerequisite for the effectiveness of aid. This is consistent with Burnside and Dollar (2004) who established that aid on its own has no effect on growth; however when it is interacted with institutions it will have a conditional effect. This is also consistent with Burnside and Dollar (2004), Chauvet and Guillaumont (2004). However cross boarder bank flows become more significant when interacted with institutions. This again supports the importance of institutions in determining the effectiveness of external finance. The positive impact of foreign capital on economic growth suggest that this is another channel through which a crisis in developed countries may be transmitted to the SADC region as a reduction in foreign capital will negatively impact the growth prospects of SADC countries.

The measure of institutional quality on its own was found to have a positive relationship with growth. This is supported by Acemoglu et al. (2001) and Rodrik (2004). The results suggest that institutions are of great importance to the success of the economies in the SADC region. Driffield and Jones (2013) argue that institutions act as the bedrock of a successful functioning mixed economy as markets are embedded in the institutions. The role of institutions as indicated earlier on impacts also on other important determinants of economic growth. Thus it becomes important to always maintain quality institutions. Another important finding in the study is the negative value of the time interactive dummy which was negative in all the estimations suggesting that institutional changes and policies aimed at attracting external finance has been successful. In addition to the different types of financial flows examined in the study, a number of macroeconomic variables were also examined which include inflation, openness, financial development, Gross fixed capital formation, institutional quality, and domestic savings. All these macroeconomic variables have proved to have a positive impact on economic growth in the SADC region.

5. Conclusion and Policy Implications of the Study

The study focused on analysing the impact of the different forms of external financial flows on economic growth in the SADC region emphasising the importance of institutions utilising a panel model. The analysis in the study highlights that the importance of external financial flows to countries in the SADC region cannot be underestimated given that countries have low levels of savings to finance investment. Thus the gap between savings and investment can only be filled in with external financial flows. The empirical results revealed that three types of external finance, FDI, CBF and remittances have a positive impact on economic growth in the region. On the other hand ODA was found to be insignificant. However when all the types of external financial flow were interacted with the measure of institutions, they all became significant including ODA. For the other three types of financial flows the impact was more significant stressing the important role played by institutions in enhancing growth in the region. The empirical results strongly suggest that policies targeted at enhancing the flow of the different forms of financial flows (especially FDI, Remittances and Cross Border bank flows) should be adopted in the region. Attention should also be paid on how macroeconomic policies can be designed with the aim of bolstering domestic productivity and improving institutional infrastructure so as to promote economic growth as a way of stimulating the inflow of foreign direct investment, Cross border bank flows and ODA. There is also need to diversify the economic base so as to establish other avenue which can support economic growth in addition to foreign capital flows.

Countries in the region should also pursue the objective of financial integration in the region. This will enable countries to benefit from cross-border bank flows as it increases opportunities for risk sharing and diversification as well as better allocation of capital amongst investment opportunities. However, there is need to also consider the potential vulnerability which can emanate from such an arrangement as it exposes the banking system to crises through opening transmission channels of systemic risk across borders.

However, reinforcing the regulatory and supervisory framework can mitigate this. The growth regression results have strongly indicated that the quality of institutions matter most for growth in the SADC region. Apart from improved institutional quality attracting foreign financial flows, it also has a positive impact on growth. This shows the importance of the institutional variables in promoting growth in the region. Countries where there is no investor protection and maintenance of law and order are likely to lose out on attracting financial flows. This will retard economic growth. A good case is Zimbabwe which based on its law of indigenisation, there has been capital flight coupled with a shrunk in GDP. The results also imply that the foreign financial flow is another channel through which crises in developed countries can be spread to developing countries through a reduction in finance. This suggests the need to focus on policies aimed at mobilising domestic resources if a country is to achieve sustainable economic growth in the long-run. The initiative of regional integration in the region should be pursued as it has the potential of increasing cross border bank flows.

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APPENDIX

Sample Countries

Angola
Botswana
Democratic Republic of the Congo
Lesotho
Madagascar
Malawi
Mauritius
Mozambique
Namibia
Seychelles
South Africa
Swaziland
Tanzania
Zambia
Zimbabwe

Testing for the Best Model

Test	Test Statistic	Critical Value	Inference
Redundant Fixed Effects Test H_0 : Cross-sections are homogenous H_1 : Cross-sections are heterogeneous	F = 5.567	P-value = 0.000	*We reject H_0 and conclude that country specific features should be accounted for using the FEM.*
Random vs. Fixed Effects: $H_0 : \mu_1 = \mu_2 = \ldots = \mu_{N-1} = 0$ H_A : *Not all equal to 0*	Chi-Square = 44.798	P-value = 0.002	*We therefore reject H_0 implying that the FEM is a better model to allow for country heterogeneity*
Test for Serial Correlation: $H_0 : \rho = 0$ (no serial correlation) $H_A : \rho \neq 0$ (serial correlation)	DW = 2.094	No correlation if: $D_U < D_W < 4 - D_U$ $1.9850 < D_w < 2.1011$	*We conclude that the iterative procedure did remove negative serial correlation*
Heteroscedasticity: $H_0 : \sigma_i^2 = \sigma$ (homoscedastic errors) H_A : *Not equal for all i* (heteroscedastic errors)	White diagonal standard errors and covariances were used to correct the problem of heteroscedasticity.		

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Determinants of Foreign Direct Investment: New Granger Causality Evidence from Asian and African Economies

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Abstract: Previous studies on the determinants of foreign direct investment (FDI) have predominantly focused on developed and emerging economies. However, there seem to be few studies concentrating on a comparative analysis of vast African and Asian countries. This paper analysed drivers of foreign direct investments (FDI) to Asian and African economies using a panel dataset from 1980 to 2013.This study used Granger causality test, under vector error correction modelling (VECM) to test for causality among the variables. While the drivers of FDI inflows were measured using five dimensions as proposed by Anyanwu; the dependent variable, FDI inflows, was proxied by the ratio of FDI flows to gross domestic product (GDP). Findings revealed that variables manifesting the determinants of FDI inflows positively affected FDI into these continents. Specifically, factors such as trade openness, macroeconomic condition, infrastructural development, and monetary union have positive and significant effect on FDI to Asian economies. No significant relationship was found between FDI inflows and market size to the Asian continent during the study period. On the other hand, trade openness, macroeconomic condition, market size and infrastructural development have positive and significant effects on FDI inflows to African economies although there was no significant relationship between FDI inflows and monetary union to the African continent during the study period. In fact, there were bi-directional relationships between FDI inflows and some of the determinants in both continents. Theoretically, this model provides predictive implications on improved FDI inflows, given the activities of critical variables manifesting as determinants of FDI inflows.

Keywords: *Foreign Direct Investment, FDI Determinants, Granger Causality Test, Africa, Asia*

1. Introduction

In the past few decades, globalisation has played a significant role in developing international trade and finance, and has facilitated the acceptance and integration of a number of the world's developing and emerging nations into the global economy (Hailu, 2010; Kimura and Todo, 2010). One of the cornerstones upon which globalisation has grown is foreign direct investment (FDI); flowing predominantly from high income western nations to these emerging economies (Pantelidis, Kyrkilis, and Nikolopoulos, 2012; Usman and Ibrahim, 2012; Anyanwu and Yameogo, 2015). Accordingly, FDI has evolved into a major source of development finance, contributing to the economic growth of many Asian and African economies (UNCTAD, 2015, 2013). Specifically, FDI flows to developing countries considerably increased from a paltry annual average of $50billion in 1985-1995 to over $233bn in 2004 (Anyanwu, 2012). Africa in particular has benefited enormously from FDI flows from both developed and emerging economies. Consequently, contrary to the earlier description of Africa as a 'forgotten continent', the rate of foreign direct investment (FDI) inflow to Africa has accelerated in the last two decades (Aregbesola, 2014; UNCTAD, 2013; Anyanwu, 2012). Apart from the inward FDI from developed and 'emerging economies', the rate of Africa-to-Africa internationalisation has also been impressive. Indigenous companies in Nigeria (such as Dangote, Glo, GT Bank and First Bank Plc.), South Africa (such as MTN, Standard Bank, and Shoprite), Kenya (Equity Bank and KCB) and Togo (Ecobank) can now boast having operations in more than two countries on the continent (UNCTAD, 2015). Although global FDI has made rapid increases in the past two decades, the growth in Africa has been most impressive. For example, after almost ten years of growth, inflows of FDI to Africa fell by 19 percent, from US$72 billion in 2008 to US$44 billion in 2010 due to the international financial and economic crisis experienced during this period (Aregbesola, 2014). However, a gradual recovery ensued from 2011 and FDI flows to Africa grew by 3.6% in 2013 to reach US$57 billion from US$55 billion in 2012, representing 3.9% of the global total stock (UNCTAD, 2015; UNCTAD, 2014; Anyanwu, 2012).

However, regardless of the impressive performance of African countries, Asia continues to be the world's top recipient of foreign direct investment (FDI), accounting for nearly 30% of global FDI inflows (UNCTAD, 2014).

For example, with inflows at US$124 billion, China was again ranked second in the world and narrowed the gap between itself and the United States, the country with the largest global inflows of FDI in 2014 (UNCTAD, 2015). Inflows to the Republic of Korea reached $12 billion (the highest level since the mid-2000s), while FDI inflow to Taiwan rose to $4 billion. Hong Kong (the second largest FDI recipient in East Asia) experienced only 2% growth in FDI inflows to $77 billion (UNCTAD, 2015). Although inflows to the Association of Southeast Asian Nations (ASEAN) countries rose by 7 per cent to $125 billion in 2013, the rapid growth of FDI inflows to the regional grouping, from $47 billion in 2009 to $118 billion in 2012, has now slowed (UNCTAD, 2014). India also experienced a 17% increase in FDI inflows to $28 billion in 2013 despite the macroeconomic uncertainties (UNCTAD, 2015).

Despite the impressive increase in FDI inflow to African and Asian economies, many of the previous studies on the determinants of foreign direct investment (FDI) inflow have been focused on the developed and emerging economies (Asiedu, 2002; Culem, 1988; Billington, 1999; Asheghian, 2004). While a few have concentrated on some countries in Africa (Alba, Park and Wang, 2009; Alfaro, Chanda, Kalemli-Ozcan and Sayek, 2004). However, there would appear to be very few studies which have made on a comparative analysis of vast African and Asian countries. Based on gaps identified by Asiedu (2002) and Lee and Tan (2006).this study seeks to fulfil this inquiry. In addition, there is a dearth of studies on FDI-determinants in the context of African versus Asian economies (Adam and Tweneboah, 2009; Billington, 1999). Furthermore, increasing globalisation as well as the shift towards free market ideology, necessitates an urgent call for studies to focus on causal relationship between FDI and the various determinants of FDI inflows into both developed and developing economies (Adam and Tweneboah, 2009; Hill, 2013; Porter, 1990). According to Lee and Tan (2006), despite the importance of FDI in conveying knowledge spillovers among countries, evidence regarding FDI inflows and its determinants has been mixed. Most existing literature has failed to prove a clear relationship between FDI inflows and the various determinants of these inflows. Corroborating their earlier stance, Lee and Tan (2006) also observed that despite strong empirical evidence supporting the influence of FDI inflows on economic growth and development in many developed and developing countries, evidence regarding the major determinants of FDI inflows has been mixed. Consequently, the main objective of this paper was to evaluate the determinants of FDI flows into the selected African and Asian economies. The specific objectives were achieved by testing the effects of the various institutional policy measures (trade openness, macroeconomic condition, market size, infrastructural development, and monetary union) on FDI inflows into the selected African and Asian economies between1980 and 2013.

The analytical focus was premised on developing countries, due to the submission of Anyanwu and Yameogo (2015). This paper, therefore argue that the practice of pooling developed and developing economies together in analysing the determinants of FDI inflows is inappropriate. This is on the premise that while developed economies have substantial amounts of two-way FDI flows, developing economies on the other hand are almost exclusively recipients of FDI flows (Aregbesola, 2014). This study was also premised on the fact that every country has the chance to recognize and develop its competitive advantages in its quest for more FDI inflows (Pelinescu, 2015; Awan, 2013). Improving FDI inflows are still very important to many Asian and African economies (Anyanwu, 2012), since many countries in these continents are still confronted with numerous problems (for example, poor infrastructural facilities, obsolete capital equipment, high public debt, high unemployment rates, and poverty) (Usman and Ibrahim, 2012; El-Wassal, 2012). Therefore, there is an urgent need to put in place strategies aimed at encouraging inflows of FDI in critical infrastructures and human capital development (Kimura and Todo, 2010; Kinda, 2010). In addition, a comparative study of the various determinants of FDI inflows using a panel regression technique of African and Asian economies will be beneficial to many countries in these continents, especially in the formulation of their trade and FDI policies (Pelinescu, 2015). This paper is divided into five sections. Section one is the introduction. Section two reviews the related literature, while section three describes the adopted methodology. Section four presents the results and the discussion of findings. The last section, section five presents the conclusion and the various implications of the study.

2. Literature Review

Theoretical Framework: Dunning's (1981) (cited by Brouthers and Hennart, 2007) proposition is that a single theoretical perspective could not adequately explain FDI decisions or the mode of international

expansion. Consequently, this study adopted the Ownership, Location Specific Advantage Considerations and the Internalisation Theories, as these theories have been identified as the major regulatory determinants of FDI behaviour in most developing countries (Dunning, 1981; Aregbesola, 2014). Dunning's Eclectic Theory identifies three components or conditions: ownership advantages, location advantages, and internalisation advantages (OLI). Dunning's Eclectic Theory is a transaction cost-based theory that seeks to explain the transfer, internationalisation, and firm-specific ownership advantages (Brouthers and Hennart, 2007).Hence, the theory suggests the importance of firm- and location- specific factors to explain the determinants of FDI inflows. Dunning's (1993) Eclectic or OLI (ownership, location, internalization) framework can be conceptualised as a tool that combines insights from resource-based (firm-specific), institutional (location) and transaction cost (internalisation) theories (Brouthers and Hennart, 2007). According to Billington (1999) and Aregbesola (2014).the location-specific advantage (e.g. markets, resources, technology, human capital, or favourable political economy) could be viewed from the perspectives of government policies (e.g. monetary and fiscal policies).This is based on the premise that FDI inflows to most countries will depend on the efficiency of the political institutions in the host country to formulate relevant investment-related fiscal and monetary policies (Barro and Sala-i-Martin, 1995; Steers and Nardon, 2006). Internalisation theory, on the other hand, is based on the premise that firms extract above-normal returns from FDI by internalising the host country's imperfections when their firm-specific assets cannot find comparable value elsewhere (Steers and Nardon, 2006; Stiglitz and Charlton, 2005). There are advantages to be had from exploiting imperfections in external markets, including the reduction of uncertainty and transaction costs in order to generate knowledge more efficiently and the reduction of state-generated imperfections such as tariffs, foreign exchange controls, and subsidies (Anyanwu and Erhijakpor, 2004; Anyanwu, 2006). Consequent upon this framework, Dunning (1993) identified four categories of motives for FDI: resource seeking, market seeking, efficiency seeking and strategic-asset seeking (Alsan, Bloom and Canning, 2006).

FDI and its Determinants: Previous studies to understand the determinants of FDI destination have produced mixed results. For example, Nnadozie and Osili (2004) find less robust evidence of the role of gross domestic product per capita on foreign domestic investment inflow, while GDP growth was alternatively found to have a significant impact on FDI inflow. In a similar study, Chakrabarti (2001) reviewed the findings of previous studies along a continuum of eight independent variables, namely: market size, labour cost, trade barrier, growth rate, economic openness, trade deficit, exchange rate volatility, and tax. In his findings, variables like market size, growth rate, and economic openness were found to be positively significant for FDI inflows in the studies evaluated. Market size was also found to play an important role in FDI inflows in the studies of Anyanwu (1998, 2011, 2012), while market size was observed not to be significantly related to FDI inflows in the work of Kyereboah-Coleman and Agyire-Tettey (2008) in Ghana. This was corroborated by similar studies in the African context (Al-Sadig, 2009; Anyanwu, 2012). Another review by Asiedu (2002) compiled 29 previous studies on the impact of six explanatory variables on FDI inflows. Although her findings exhibited some deviation from the findings of Chakrabarti, she also posited that factors revolving around regulatory framework are positively significant with inflow of foreign investment. Specifically, trade openness was found to be positively associated with FDI inflows. She observed that the effect of trade openness depended on the type of FDI. Some studies revealed a negative impact of trade openness on market-seeking FDI inflows due to the tariff jumping theory (Anyanwu, 2012) while other studies found that countries that are more opened for international trade receive more FDI inflow (Asiedu, 2002). Alfaro et al.'s (2004) study was focused on financial inducements. In their study, the role of the local financial market was established as a determinant of the absorptive capacity of the southern Africa host countries.

Study by Dupasquier and Osakwe (2006) was centred on infrastructural inducements in Africa. The study showed that FDI in Africa is dependent on the development of infrastructure. A similar study on US FDI flow to Africa by Nnadozie and Osili (2004) found less robust evidence of the role of infrastructure on foreign direct investment inflows. Furthermore, literature (Buckley, 1990; Asheghian, 2004; Peng, 2009) also suggested the influence of favourable investment environments on FDI inflows. According to Aregbesola (2014), this may be in form of favourable interest- and exchange rate differentials for foreign investors (Levi, 2009; Stiglitz, 2002). In addition, the influence of location advantages was also recognised in the literature as another determinant of FDI inflows. These advantages may arise from differences in a country's natural endowments, transport costs, government regulations, cultural factors and macroeconomic stability (Hill, 2013; Porter, 1990; Schmitz, 2007). According to Dunning (1993) FDI motives may be: (1.) to access labour

force, raw materials, and physical resources (2.) to access the host-country domestic market, (3.) to take advantage of lower labour costs, and (4.) to access research and development, innovation, and advanced technology (Anyanwu, 2012; Aizenman and Noy, 2006). Monetary union or integration is also another driver of FDI inflows. This is premised on the ability of a currency union to reduce macroeconomic instability and increase the transparency and credibility of rules and policies (Usman and Ibrahim, 2012). Another benefit of monetary integration is the tendency to reduce trading costs, stabilise exchange rate volatility, trade openness and infrastructural development thereby facilitating foreign direct investment inflows (Asiedu, 2004). In addition, Anyanwu (2012) maintained that the enlarged market as a result of a currency union would also facilitate the exploitation of economies of scale by multinational corporations operating in the host country (Pantelidis, Kyrkilis and Nikolopoulos, 2012; Brouwer, Paap and Viaene, 2008).

3. Methodology

This research employed a panel dataset of forty (40) and forty one (41) selected Asian and African countries (see appendix 1 for the list of selected countries) from 1980 to 2013. The other Asian and African countries were eliminated from the analysis because data could not be generated for most of the variables used in the study. The data used in this analysis was generated from the World Trade Organisation (WTO) database, the World Bank's African Development Indicators (ADI), United Nations Commodity Trade Statistics (UNCTS) Database, International Monetary Fund (IMF). Others are United Nations Statistics Database (UNdata), World development indicators ONLINE, and UN Statistics Database (UNdata). Multivariate co integration analysis via granger-causality tests within the framework of Vector Error-correction Model (VECM) was used to analyse the dynamic relationships among the variables (Johansen and Juselius, 1990).

Econometric Model: Baltagi's (2008) criticism of the identification of endogenous and exogenous variables in models of simultaneous equations, paved way for the equal treatment of and no distinction between endogenous and exogenous variables. Once this distinction is ignored, all the variables are treated as endogenous. However, this will lead to the development of the Vector Autoregressive (VAR) models, where all the equations have the same set of regressors (Asteriou and Hall, 2007). VAR model is therefore, important in testing for causality (Correa and Kumar, 2003). Consequently, the model utilised in this study was exclusively adapted from past empirical and theoretical studies (Lee and Tan, 2006). These are represented in the following equations:

$$FDII_{it} = a_1 + a_2\, TOP_{it} + a_3\, RGDP_{it} + a_4\, MKTS_{it} + a_5\, IDEV_{it} + a_6\, MU_{it} + u_{it} \text{.....equ. (1)}$$

$$TOP_{it} = b\,1 + b_2\, FDII_{it} + b_3\, RGDP_{it} + b_4\, MKTS_{it} + b_5\, IDEV_{it} + b_6\, MU_{it} + u_{it} \text{ ... equ. (2)}$$

$$RGDP_{it} = c\,1 + c_2\, FDII_{it} + c_3\, TOP_{it} + c_4\, MKTS_{it} + c_5\, IDEV_{it} + c_6\, MU_{it} + u_{it} \text{... equ. (3)}$$

$$MKTS_{it} = d\,1 + d_2\, FDII_{it} + d_3\, TOP_{it} + d_4\, RGDP_{it} + d_5\, IDEV_{it} + d_6\, MU_{it} + u_{it} \text{...equ. (4)}$$

$$IDEV_{it} = e\,1 + e_2\, FDII_{it} + e_3\, TOP_{it} + e_4\, RGDP_{it} + e_5\, MKTS_{it} + e_6\, MU_{it} + u_{it} \text{ ... equ. (5)}$$

$$MU_{it} = f\,1 + f_2\, FDII_{it} + f_3\, TOP_{it} + f_4\, RGDP_{it} + f_5\, MKTS_{it} + f_6\, IDEV_{it} + u_{it} \text{ ... Equ. (6)}$$

where:
FDII = foreign direct investment inflow, which is expressed as a percentage of GDP
TOP = trade openness, which is measured by merchandise trade to GDP (in percentage)
RGDP = macroeconomic condition, measured by real GDP growth
MKTS = market size, measured by Population growth
IDEV = infrastructure development
MU = monetary union dummy
$_i$ = represents the country

$_t$ = represents time
u_{it}= the disturbance
The unknown population parameters are represented by a1…a6.

A disturbance is inserted into the models because of the likely omission of explanatory variables, aggregation of variables, model specification, functional misspecification and measurement errors. In addition, it is important to note the following assumptions of the models above: all explanatory variables have values that are fixed in repeated samples, each (u_{it}) disturbance is normally distributed, and there is the non-existence of linear relationships among the values of any two or more of the explanatory variables. That is, perfect multicollinearity is absent (Asteriou and Hall, 2007).

Operationalisation of the Dependent and Explanatory Variables: In focusing this study, the operationalisations of the various determinants (Table 1) were distilled from various articles and empirical research on FDI inflows. They were then categorised into a number of subgroups, similar to the work of Anyanwu (2012). The dependent variable in this research is FDI inflows, proxied by the ratio of FDI flows to GDP. This variable has been used in previous studies (Aregbesola, 2014; Alba, Park & Wang, 2009; Alfaro et al., 2004; Asiedu, 2002), due to the fact that it accurately captures the relative contribution of FDI to GDP. The independent variables are trade openness, macroeconomic condition, market size, infrastructural development, and monetary union (Anyanwu, 2012; Asheghian, 2004). All the constructs (determinants) and their measures are shown in Table 1.

Table 1: The measure of FDI Determinants (Dependent and Explanatory variable)

Variable	Measure	Author
FDII (FDI Inflow)	Expressed as a percentage of GDP	Alba et al., 2009; Alfaro et al., 2004; Asiedu, 2002
TOP (Trade Openness)	Ratio of merchandise trade to GDP (in Percentage).	Wheeler and Mody, 1992; Ponce, 2006; Asiedu, 2002; Anyanwu, 2012;
RGDPG (macroeconomic condition)	Real GDP growth	Aregbesola, 2014; Nnadozie and Osili, 2004.
MKTS (Market size)	Population growth	Anyanwu, 1998, 2011, 2012; Kyereboah-Coleman and Agyire-Tettey, 2008
IDEV (Infrastructure Development)	Infrastructure development	Dupasquier and Osakwe, 2006; Nnadozie and Osili, 2004
MU (Monetary Union)	A dummy variable of '1'if a country is a member of monetary or currency union. Another dummy of '0' if otherwise	Usman and Ibrahim, 2012; Pantelidis, Kyrkilis and Nikolopoulos, 2012

In this study, economic openness is proxied by the ratio of merchandise trade to GDP. Macroeconomic condition was measured by real GDP growth, on the premise that a country with perceived stable macroeconomic fundamentals is adjudged a stable investment environment (Aregbesola, 2014; Nnadozie and Osili, 2004). In addition, population growth was introduced because this variable is considered an important determinant of market size, especially if the population growth is accompanied by a rise in income level or potential improvement in the standard of living (Anyanwu, 2011, 2012). Infrastructure development was also introduced due to the influence of the various aspects of infrastructural facilities such as roads, electricity, transportation, insurance, banking and finance on FDI inflows (Dupasquier and Osakwe, 2006; Nnadozie and Osili, 2004). Lastly, monetary union is proxied by a dummy, monetary integration, which assumes the value of 1 if a country is a member of a Monetary Union, but =0 if otherwise (Anyanwu, 2012)

4. Results and Discussion of Findings

Descriptive Statistics: This study used Granger causality test, under vector error correction modelling (VECM) to test for causality among the panel variables. However, before the application of these techniques, a

series of diagnostic tests were undertaken to cater for sensitivity and reliability (Hailu, 2010; Kimura and Todo, 2010). Redundant variables were also eliminated, while provision was made for the possibility of omitted variables. Initially, the Hausman test was conducted (Dupasquier and Osakwe, 2006; Aseidu, 2002) to control for autocorrelation. Standard errors were catered for via White diagonal standard errors and covariance technique (Aregbesola, 2014). Table 2 shows the correlation matrix of all the variables (except the Dummy Variable). Significantly, none of the explanatory variables were strongly correlated. Consequently, all the variables were used in our analysis. These results were robust and show the absence of arbitrary serial correlation and time varying variances in the disturbances.

Table 2: Descriptive Statistics and Correlations of all Regression Variables (excluding Dummies) from 1980-2013

Constructs (Asia: Panel A)	**Obs.**	**Mean**	**S.D**	**1**	**2**	**3**	**4**	**5**
LnFDII	585	1.21	0.89	1.00				
LnTOP	509	2.63	1.47	0.19*	1.00			
LnRGDP	575	3.24	1.47	0.24**	0.18*	1.00		
LnMKTS	538	4.34	1.43	0.23**	0.24**	0.09	1.00	
LnIDEV	507	3.51	0.54	0.10	0.25**	0.21**	0.22*	1.00
Constructs (Africa: Panel B)	Obs.	Mean	S.D	1	2	3	4	5
LnFDII	562	3.22	1.48	1.00				
LnTOP	525	2.61	1.02	0.13	1.00			
LnRGDP	560	3.25	1.10	0.21**	0.21**	1.00		
LnMKTS	522	4.34	0.48	0.11	0.24**	0.31**	1.00	
LnIDEV	501	3.51	0.51	-0.23*	0.21**	0.09	0.11	1.00

Note: *p≤0.1,**p≤0.05,***p≤0.001

Secondly, in order to determine the order of integration, a unit root test was conducted. This was an attempt to identify non-stationarity (unit roots).

Unit Root Test: The standard Augmented Dickey-Fuller (ADF) test was conducted to eliminate autocorrelation and whiten noise (Anyanwu, 2012). Phillips Perron (PP) test was also conducted given the imperative of uncorrelated error terms (Asteriou and Hall, 2007). These tests are important since the data used in this study, as is frequently the case with macroeconomic time series, are often trended and non-stationary. According to Blaise (2005) a regression of one series on the other is most likely an indication that a significant positive or negative relationship would result; even though they are really unrelated. This is the concept of spurious regression, hence, a violation of the Classical Linear Regression Model (CLRM) (Fedderke and Romm, 2006; Asteriou and Hall, 2007). The ADF test was also performed to take care of structural breaks, since country-specific conditioning variables can be permanently altered by major shocks (Harms and Lutz, 2006). In addition, the unit root test is also a precursor for the Granger Causality test, as adopted in this study. The Granger Causality test is based on the asymptotic theory, which prescribes the stationarity of variables in the same order of integration (Granger, 1988).The two tests were conducted at the level, first difference and second difference series (Hair et al., 1998). The results of the unit root tests are presented in Table 3.

Table 3: Results of Unit Root Tests

Variables	ADF Test: First Difference: Constant with Trend	2nd Diff. Statistics	PP Test: First Difference: Constant with Trend	2nd Diff. Statistics	Order of Integration
Asia (Panel A)					
LnTOP	-5.332540**	-6.273847	-5.234606*	-4.237646	1(2)
LnRGDP	-3.322673*	-3.842837	-4.234134**	-3.692837	1(2)
LnMKTS	-4.027389*	-4.429874	-3.236805*	-4.583837	1(2)
LnIDEV	-2.347831* *	-3.237845	-2.173741***	-5.239946	1(2)
LnMU	-2.734534*	-2.293494	-1.746836*	-2.838374	1(2)
Africa (Panel B)					
LnTOP	-5.273640*	-5.423839	-6.387374* *	-6.476575	1(2)
LnRGDP	-3.278346**	-4.838398	-3.128842**	-5.384748	1(2)
LnMKTS	-3.092839**	-3.883743	-4.447847**	-3.283735	1(2)
LnIDEV	-4.237458*	-3.283974	-4.384741*	-3.384748	1(2)
LnMU	-2.273844*	-2.233647	-2.364767*	-2.857587	1(2)

Note: *, ** and *** implies 1%, 5% and 10% levels of significant respectively

The result of the unit root test assumed stationarity of the series for all the variables by the rejection of the null hypothesis for second difference at all the critical values (maximum lag of one). Therefore, the models follow an integrating order of 1(2) process and are therefore a stationary process (Kok and Ersoy, 2009). The computed value of the test statistic was also compared to the critical value for both the ADF and PP test (constant with trend) in order to reject or accept the null hypothesis. Consequently, a null hypothesis was rejected, since the former was greater (in absolute value) than the latter (Hair et al., 1998).

Granger Causality Test, under VECM: Cointegration was tested using the Johansen approach. An approach referred to as reduced-rank regression methodology was employed (Levin, Lin, and Chu, 2002). Step one was to determine the order of integration. This was done by testing for unit-roots to determine the level of co integration and the appropriate models were selected using the Mohamed and Sidiropoulos (2010) criterion. The second step was to determine the optimal lag length. This was estimated for a low number of lags and then reduces down to check for the AIC and SBC optimal value (Asteriou and Hall, 2007). It is also important to note that diagnostics methodology often reduces the number of panel units in the estimation and as such, influences the explanatory power of the model. According to Aregbesola (2014) this justifies the application of the orthogonal deviation technique, which is more efficient than differencing the panel data. However, co-integration only indicates the presence or absence of Granger-causality, and it often failed in any way show the route of causality hence, this route was decided via VECM (Oladipo, 2008). This research, however, used Granger causality test (modified by Pantelidis and Nikopoulos, 2008) under VECM to test for causality among the variables. In this study, the null hypothesis of causality test holds if the probability statistics do not fall within the range of 0.01 or 0.10, and vice versa. The results of this analysis are reported in Tables 4 and 5 for the two panels, Asia (Panel A) and Africa (Panel B) respectively. From Tables 4 and 5 respectively, the Sargan tests (0.2633 and 0.2132) negates the over identifying restrictions (Asteriou and Hall, 2007). Furthermore, as a diagnostic measure, Durbin-Watson statistics of 2.122 and 2.091, respectively for the two panels posits the absence of potential first order autocorrelation in all the variables. The results of VECM in Table 4, therefore, suggests that apart from market size (population growth; 1.23133, p=0.1723),all the variables tested in this study are regarded as important considerations for attracting FDI to Asian economies. Specifically, in order of importance, macroeconomic condition, trade openness, monetary union, and infrastructural

Table 4: VECM Results for Asian Panel (p=2)

Variable-Dependent	Variables-Independent [Wald Test Chi Square (Significance level)]						
	ΔFDIIΔTOP	**ΔRGDP**	**ΔMKTS**	**ΔIDEV**	**ΔMUECT** $_{t-1}$		
ΔFDII	----------	12.4569** (0.02263)	27.2387* (0.00124)	1.23133 (0.1723)	12.7322** (0.03223)	11.3740** (0.02928)	19.38567* (0.0034)
ΔTOP	12.27833** (0.0303)	----------	2.13892 (0.1203)	14.2893** (0.01250)	16.37478* (0.00234)	2.123847 (0.23846)	21.38549* (0.04576)
ΔRGDP	11.8773** (0.03748)	21.78837* (0.0012)	----------	18.28384* (0.0012)	3.238549 (0.188374)	11.3453** (0.0334)	20.3457* (0.00343)
ΔMKTS	2.9348873 (0.26374)	1.26378 (0.2137)	1.289403 (0.237844)	----------	6.23874** (0.0422)	1.347581 (0.23461)	1.273464 (0.2223)
ΔIDEV	2.384873 (0.2138)	15.68773** (0.04238)	18.28388** (0.02901)	18.23874* (0.00403)	----------	1.36746 (0.1534)	18.2345** (0.0466)
ΔMU	1.237874 (0.23748)	3.289473 (0.12939)	2.384899 (0.211183)	10.38494** (0.0464)	7.38497*** (0.0834)	----------	17.3454* (0.04223)\
Observations						1282	
R-squared						0.5812	
Standard error						0.0023	
Wald chi2(40)						162.33	
Prob> chi2						0.0001	
Sargan Test (Prob> chi2)						0.2633	
Durbin-Watson statistics						2.122	
Number of countries						40	

Note: *, ** and *** indicate statistical significant at 1%, 5% and 10%

Table 5: VECM Results for African Panel (p=2)

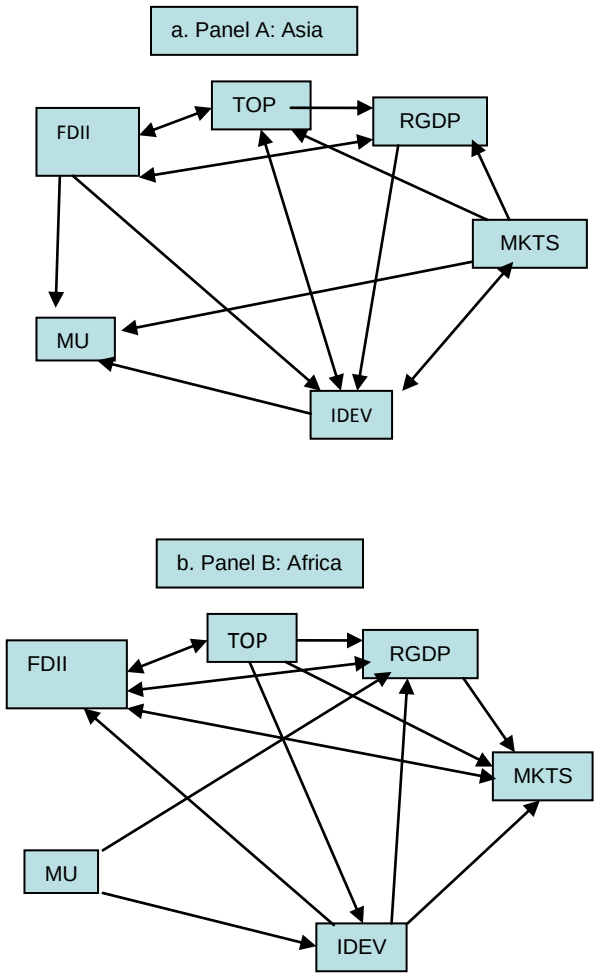
Variable-Dependent	Variables-Independent [Wald Test Chi Square (Significance level)]						
	ΔFDIIΔTOPΔRGDP		**ΔMKTSΔIDEV**		**ΔMUECT** $_{t-1}$		
ΔFDII	-----	9.26763*** (0.06875)	21.27735* (0.004334)	28.7271* (0.00246)	20.272867* (0.00535)	2.27377 (0.299387)	23.2736* (0.00222)
ΔTOP	12.876339** (0.0423)	---------	2.83784 (0.23334)	16.2838* (0.00346)	1.28373 (0.2230)	3.363737 (0.2332)	20.2828* (0.002331)
ΔRGDP	21.28372* (0.00384)	7.27378*** (0.0689)	--------	2.73833 (0.1253)	9.28383** (0.03111)	13.3748** (0.04556)	13.2838** (0.0456)
ΔMKTS	16.7378* (0.00234)	1.272883 (0.2366)	10.92728** (0.0337)	--------	21.28288* (0.00235)	1.28383 (0.1439)	11.73736** (0.0421)
ΔIDEV	2.83782 (0.4333)	11.283783** (0.0290)	3.73637 (0.13784)	2.2838 (0.1201)	-------	12.26387** (0.0393)	23.83672* (0.002671)
ΔMU	2.2838737 (0.2738)	2.572878 (0.14146)	3.2938783 (0.33782)	1.84781 (0.1346)	3.267362 (0.2387)	-------	2.273733 (0.32891)
Observations						1267	
R-squared						0.5123	
Standard error						0.0022	
Wald chi2(41)						166.21	
Prob> chi2						0.0004	
Sargan Test (Prob> chi2)						0.2132	
Durbin-Watson statistics						2.091	
Number of countries						41	

Note: *, ** and *** indicate statistical significant at 1%, 5% and 10%

Development is statistically significant at 1%, 5%, 5%and 5% levels respectively. On the other hand, the results of VECM in Table 5, also suggest that apart from monetary union (2.27377, p=0.299387), all the variables tested in the model are regarded as important considerations for inward FDI to African economies. Specifically, in order of importance, market size (population size), macroeconomic condition, infrastructural development, and trade openness are statistically significant at 1%, 1%, 1% and 10% levels respectively.

Asian panel (A) and African panel (B) consists of three and four co-integrating vectors respectively, consequently, a Wald test was carried out on each of the error correction terms (Tsai, 1994). This simply denotes that three and four (regulatory and non-regulatory) variables are interacted (in pairs) to investigate the explosive nature of the estimations. The robust standard errors (0.0023 and 0.0022) and the p-value of the estimation (0.0001 and 0.0004) attest to the statistical significance of the results for the two continents respectively (Aregbesola, 2014).The Granger-causality result for Asian and African panels are shown in Tables 4 and 5 respectively. The Wald test Chi Square result, for the two continents showed a causal effect both running bi-directionally and uni-directionally for the two panels. For clarity of purpose, the lead-lag linkages for each continent are shown in Figures 1(a and b).

Figure 1: Lead-lag Linkages in the Short Run from VECMs



Discussion of Findings: In Figure 1a, this study found bi-directional causal relationships between FDII and both TOP and RGDP in Asia. In addition, TOP and IDEV also experienced a bi-directional causal relationship during the study period. This simply implied that, while trade openness and macroeconomic condition positively contributed to FDI inflows to Asia, improved FDI inflow also contributed positively to both trade

openness and real GDP growth during the study period. Furthermore, in Figure 1b, the study also found a bi-directional causal relationship between FDII and TOP, RGDP and MKTS in Africa during the study period. This also implied that, while trade openness, macroeconomic condition and market size positively contributed to FDI inflows to Africa, improved FDI inflow also positively contributed toward improvements in trade openness, real GDP growth (macroeconomic condition) and population growth (market size) during the study period. These results are similar to previous studies (Nnadozie and Osili, 2004; Dupasquier and Osakwe, 2006; Asiedu, 2002; Ashegian 2004; Akinkugbe, 2005; Caves, 2007). For example, economic openness was found by Asiedu (2002)to have a direct causal relationship with inflow of FDI. This further buttresses the possible impact of economic liberalisation as an important determinant of the attractiveness of both Asia and Africa to inflow of FDI (Aregbesola, 2014). In addition, the reverse causality between inflow of FDI and population growth in Africa may imply that an increase in inflow of FDI may precipitate population growth (Akinkugbe, 2005). Logically, an increase in income level and standard of living due to increased inflow of FDI may result in creating a larger consumer market size (Ashegian 2004; Caves, 2007). However, some studies cautioned about the effect of trade openness on the type of FDI while others found a negative impact of trade openness on market-seeking FDI inflows, due to what is referred to as tariff jumping theory effect (Anyanwu, 2012).

In terms of the influence of real GDP growth on FDI inflows, this study concurs with the submissions of Nnadozie and Osili (2004) which found less evidence of the role of GDP per capita on FDI inflow, while GDP growth is found to have significant impact. Furthermore, Lee and Tan's (2006) study on a few selected ASEAN countries concluded that increasing GDP and regulatory environments actually influenced the level of FDI flows to this region. This finding is similar to that of Yasin (2005) in terms of economic growth and FDI linkages from developed countries. On the contrary, other studies have concluded that macroeconomic condition, namely, poor governance and inhospitable regulatory environments (foreign ownership ceiling; policy on repatriation of capital and remittance of profit; and government regulations and restrictions on equity holdings) were found to have a negative impact on FDI inflow (Nnadozie and Osili, 2004; Dupasquier and Osakwe, 2006). The role of market size as driver of FDI inflow was mixed in this study. While market size (population growth) was found to be statistically significant with FDI inflow to African countries, the reverse was the case in Asia during the study period. This scenario is akin to the conclusions of Anyanwu (1998, 2011, 2012) and Kyereboah-Coleman and Agyire-Tettey (2008). While maintaining the important role of market size in influencing FDI inflows (Anyanwu, 1998, 2011, 2012), the results of Kyereboah-Coleman and Agyire-Tettey (2008) indicated that most foreign investors do not consider this factor in making a decision to invest in Ghana. Furthermore, this study also concurs with the findings of Dupasquier and Osakwe (2006) which showed that FDI in Africa is dependent on the development of infrastructure. However, the results of a similar study on US FDI flow to Africa by Nnadozie and Osili (2004) found less robust evidence on the role of infrastructure on FDI inflows. Findings by Sekkat and Veganzones-Varoudakis (2007) also indicated that infrastructure availability, openness, and sound economic and political conditions are important for South Asia, Africa, and the Middle East in attracting FDI.

A key novel finding in this paper was the mixed results on the influence of monetary union on FDI inflow to the two continents. It should be noted that, unlike the influence in Asia, monetary union was not as effective in Africa during the study period. In fact, none of the variables contributed towards the advancement of monetary union in Africa, while monetary unions, on the other hand, only managed to influence population growth and improvement in infrastructural development. This result might not be unconnected with the level of monetary union or integration in the Asia Pacific region, compared with the African region. Consequently, the benefits of monetary integration, namely are duction in trading costs, the elimination of exchange rate volatility, and the reduction of future competitive devaluation may facilitate the inflow of foreign direct investment. The enlarged market as a result of currency union may also encourage economies of scale by MNCs (Pantelidis, Kyrkilis and Nikolopoulos, 2012).

5. Conclusion and Implications of the Study

Unlike earlier studies based on developed and emerging economies (and only a few concentrated on a comparative analysis of vast African and Asian countries), this paper analysed the determinants of foreign direct investments (FDI) inflow to Asian and African economies using a panel dataset from 1980 to 2013. This

study used Granger causality test, under vector error correction modelling (VECM) to test for causality among the variables. Findings based on the study revealed that variables manifesting the determinants of FDI inflows positively affected FDI into these continents. Specifically, trade openness, macroeconomic condition, infrastructural development, and monetary union have positive and significant effects on FDI inflows to Asian economies while there is no significant relationship between FDI inflows and market size on the continent during the study period. On the other hand, trade openness, macroeconomic condition, market size and infrastructural development have positive and significant effects on FDI inflows to African economies while there is no significant relationship between FDI inflows and monetary union on the African continent during the study period. These results are similar to previous studies (Nnadozie and Osili, 2004; Dupasquier and Osakwe, 2006; Asiedu, 2002; Ashegian 2004; Akinkugbe, 2005; Caves, 2007). In addition, there was a bi-directional relationship between FDI inflows and some of the variables in the model of both continents. For example, the study found bi-directional causal relationships between FDII and both TOP and RGDP in Asia. In addition, TOP and IDEV also experienced another bi-directional causal relationship during the study period. This simply implied that while trade openness and macroeconomic condition positively contributed to FDI inflows to Asia, improved FDI inflow also contributed positively to both trade openness and real GDP growth during the study period. In the African model, the study found a bi-directional causal relationship between FDII and TOP, RGDP and MKTS. This also implied that, while trade openness, macroeconomic condition and market size positively contributed to FDI inflows to Africa, improved FDI inflow also positively contributed toward improvements in trade openness, real GDP growth, and population growth. However, a key novel finding in this paper was the mixed results in terms of the influence of monetary union on FDI inflow to the two continents. These offered various theoretical and empirical implications.

Theoretical and Empirical Implications: Theoretically, this model provides predictive implications on improved FDI inflows, given the activities of critical variables manifesting determinants of FDI inflows. According to UNCTAD (2014) the increased FDI inflow to Africa in 2013 was driven by international and regional market-seeking investments as well as infrastructure investments. This concurs with the location specific advantage of Dunning's (1981) Eclectic theory which was used as the theoretical framework for this study. The theory suggests the importance of firm- and location-specific factors to explain the determinants of FDI inflows. The location-specific advantages in this scenario are the available markets for both inputs and finished products; resources in terms of raw materials; availability of human capital; or a favourable political economy (Dunning, 1981; Aregbesola, 2014). Furthermore, policy makers in both developing and emerging economies should be interested in the findings of this study, since the results have highlighted some of the benefits, linkages and relationships among FDI inflows and its various determinants. This may therefore give policy makers working at government agencies or trade representative's office some helpful information to bring to the negotiating table. Although the Asia region is becoming increasingly attractive to FDI, liberalisation of FDI policies is essential for attracting further inflows. In addition, policy makers need to remain vigilant and keep the reform momentum going forward rather than sliding backwards, particularly in the current context of the South Asia's economic slowdown. In Africa, the positive and significant relationship between real GDP growth and population growth should be sustained. This was, however, boosted by the recent UNCTAD report. Specifically, UNCTAD (2014) posit for the continuation of a sustained economic and population growth in Africa to attract market-seeking FDI into consumer-oriented industries. There is an urgent need to strengthen intra-regional investments, since most of the outflows were directed to other countries in the continent, paving the way for investment-driven regional integration.

Although, this study found a bi-directional causal relationship between FDI inflow and trade openness in Asia, openness to FDI has historically been far from uniform across Asia. While China and the Association of Southeast Asian Nations (ASEAN) have embraced FDI, other economies have been comparatively unreceptive. In addition, regional powerhouses such as India, South Korea and Japan have been hesitant to open themselves fully to FDI inflow (Anyanwu, 2012; Pantelidis et al., 2012; Reiter et al., 2010). Consequently, as the global economy begins to slow again, a number of the regions largest economies must formulate policies that will make them becoming more receptive to the possibilities of FDI (Aregbesola, 2014; UNCTAD, 2015). On the other hand, for African economies to counter the impact of the declining commodities and crude oil prices. Despite the considerable investment from foreign transnational corporations (TNCs) in 2013 in Ghana, Gabon and Côte d'Ivoire, there is need to develop a favorable business hub, not only for oil and gas exploration in the sub region, but also in industrial production and transport services. There is also the need

for other African countries to emulate Ethiopia's industrial strategy which focuses on attracting capital induced FDI inflows to develop their manufacturing base. Looking forward to the sustainable development goals (SDGs) that will succeed the Millennium Development Goals, for Asian countries to improve on the current tempo of FDI inflow, the stable performance of East Asia (rose by 3 per cent to $221 billion in 2013) must be utilized as a strategic imperative to counter slower growth in South-East Asia (Aregbesola, 2014). This study also recognized the influence of macroeconomic condition as a veritable driver of FDI inflow to Asia. Unlike many African countries, some Asian countries have utilized both monetary and non-monetary incentives effectively to encourage FDI. Malaysia, for example, has been offering incentives such as tax holidays of up to 10years with pioneer status; an investment tax allowance; a reinvestment allowance; and special deductions for training in the last two decades (UNCTAD, 2014; Lee and Tan, 2006). Singapore's government also provides many competitive direct and indirect incentives for FDI in targeted sectors. That notwithstanding, effort should be made to eliminate the seemingly macroeconomic uncertainties in India. Improvements in FDI inflow to Bangladesh should also be complemented by strengthening the reforms in the manufacturing sector to be able to contribute significantly to employment creation (UNCTAD, 2015). There is an urgent need to sustain the robust economic growth, while new liberalization measures, such as the launch of the China (Shanghai) Pilot Free Trade Zone, East Asia (Aregbesola, 2014; UNCTAD, 2015) are put in place.

Although the influence of monetary union on FDI inflow to Asia was significant in this study, further reforms are needed to bring about the much desired benefits of monetary integration, namely the reduction in trading costs; elimination of exchange rate volatility; and reduction of future competitive devaluation. These may facilitate the inflow of foreign direct investment (Pantelidis, Kyrkilis and Nikolopoulos, 2012). This was also corroborated by the recent UNCTAD report. According to UNCTAD (2014), although Asia tops the world in foreign direct investment, better regional integration and connectivity would boost further FDI flows and prompt development. There is also the need to sustain the 2013FDI inflows to South Asia (which rose by 10 per cent to $36 billion) by vigorously pursuing the sub regional cross-border M&A. Attempts should be made to forestall the declining level of Greenfield investments in the region (UNCTAD, 2015). Although many reforms have been mooted to achieve these objectives, it is the view of this study that a region-wide reduction of FDI barriers has the potential to be one of the most transformative of all the reforms. The insignificant relationship between monetary union and FDI inflow into Africa during the study period might not be unconnected with inactivity of monetary or trade union in the continent. Specifically, UNCTAD (2014) observed that only in two regional economic cooperation (REC) initiatives does intra-group FDI make up a significant part of intra-African investments (in the East African Community-EAC, and the South African Development Community-SADC). Consequently, there is a need to strengthen the existing monetary union in Africa. This is on the premise that a monetary union can contribute to the build-up of regional value chains through intra-regional investments (Akinkugbe, 2005; Caves, 2007). Because an increasing part of value added in trade consists of services, FDI in services is important in supporting the participation of African economies in global value chains. It is also important in the context of financing progress towards the sustainable development goals (UNCTAD, 2015).

Regarding the influence of infrastructural development, UNCTAD's report highlighted the influence of weak infrastructure in some low-income countries in developing Asia. Specifically, UNCTAD (2015) challenged the rising intra-regional FDI in infrastructure industries, driven by regional integration efforts and enhanced connectivity between sub regions, as a catalyst to accelerate infrastructural build-up and promote economic development. In addition, the potential establishment of the Bangladesh-China-India-Myanmar Economic Corridor and the China-Pakistan Economic Corridor are likely to accelerate infrastructural development by attracting foreign investment in related countries (UNCTAD, 2015). The significant influence of infrastructural development was also evidenced in Southern Africa inflows of $13 billion in 2013, mainly due to record-high flows into South Africa and Mozambique, where infrastructure was the main attraction (Aregbesola, 2014; UNCTAD, 2014). Intra-African investments also need to be increased. This should be led by South African, Kenyan, and Nigerian TNCs. This is on the premise that intraregional FDI could serve as a significant source of foreign capital for many smaller, often landlocked or non-oil-exporting countries in Africa. However, the results of this study should be adopted with care. Since our findings only indicate the Granger-exogeneity of the dependent variable within the sample period, they do not provide information regarding the relative strength of the Granger-causal chain among the variables outside the sample period (Asiedu, 2006; Lee and Tan, 2006). In addition, it could be argued that grouping some determinants that have

been identified in the literature as prerequisites to improved inflow of FDI in one set and treating them equally may be misleading because they are not of equal importance. Another limitation was the not availability of data in many developing countries, and even when available, they are often distorted. This may be due to the level of poverty, corruption, illiteracy and inability of the relevant government agencies to collect and update data. Consequently, the main "inevitable" weakness of our regression results was the specifications used to measure the determinants of FDI inflow, which do not include a number of other relevant variables. Further studies might consider the inclusion of these variables; chiefly among the variable are institutional quality, resource endowments, agglomeration effects and the degree of diversification of the economy (Anyanwu & Yameogo, 2015; El-Wassal, 2012).

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Appendix A: List of Asian and African countries covered in the study

S/N	Asian Countries (Panel A)	African Countries (Panel B)
1	Afghanistan	Algeria
2	Armenia	Angola
3	Azerbaijan	Benin
4	Bahrain	Botswana
5	Bangladesh	Burkina Faso
6	Bhutan	Burundi
7	Brunei	Cameroon
8	Cambodia	Central African Republic
9	China	Chad
10	Cyprus	Congo Dem. Rep
11	Georgia	Cote d'Ivoire
12	India	Egypt
13	Indonesia	Equatorial Guinea
14	Iran	Ethiopia
15	Iraq	Gabon
16	Israel	Gambia
17	Japan	Ghana
18	Jordan	Guinea
19	Kazakhstan	Guinea-Bissau
20	Kuwait	Kenya
21	Kyrgyzstan	Liberia
22	Laos	Madagascar
23	Lebanon	Malawi
24	Malaysia	Mali
25	Maldives	Mauritania
26	Mongolia	Mauritius
27	Myanmar	Morocco
28	Nepal	Mozambique
29	North Korea	Namibia
30	Oman	Niger
31	Pakistan	Nigeria
32	Philippines	Rwanda
33	Qatar	Senegal
34	Saudi Arabia	Sierra Leone
35	Singapore	South Africa
36	South Korea	Sudan
37	Sri Lanka	Swaziland
38	Syria	Togo
39	Tajikistan	Tunisia
40	Thailand	Uganda
41		Zambia